

- AAFC Agriculture and Agri Food Canada (2008) Analysis of the logistical costs associated with second generation biofuel feedstocks modelled supply chain logistical costs associated with cellulosic ethanol production in Canada. <http://www.agr.gc.ca/eng/about-us/publications/economic-publications/alphabetical-listing/analysis-of-the-logisticalcosts-associated-with-second-generation-biofuel-feedstocks-modelled-supply-chain-logistical-costs-associatedwith-cellulosic-ethanol-production-in-canada/?id=1247181726624>. In.
- Offset Carbon Emissions the Prakriti Way. *EINPresswire*. Retrieved from https://www.einnews.com/pr_news/543030967/offset-carbon-emissions-the-prakriti-way
- PowerMax (2015) 1000kw Biomass pyrolysis/gasification system technical specification. http://powermax1234.en.ec21.com/Biomass_Gasifier_Power_Plant--7762130_7762661.html. In.
- Massacres and paramilitary land seizures behind the biofuel revolution. (2007). *The Guardian*. Retrieved from <https://www.theguardian.com/world/2007/jun/05/colombia.energy>
- An Assessment of the Benefits and Issues Associated with the Application of Biochar to Soil*. (2009). Retrieved from http://www.geos.ed.ac.uk/homes/sshackle/SP0576_final_report.pdf
- 'Climate fix' ship sets sail with plan to dump iron. (2009). *New Scientist*, 201(2691), 5. doi:[https://doi.org/10.1016/S0262-4079\(09\)60121-4](https://doi.org/10.1016/S0262-4079(09)60121-4)
- DIRECTIVE 2009/31/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 April 2009 on the geological storage of carbon dioxide and amending Council Directive 85/337/EEC, European Parliament and Council Directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC, 2008/1/EC and Regulation (EC) No 1013/2006, L 140/114 Stat. (2009).
- Ocean fertilisation geoengineering experiment fails. (2009). *New Scientist*, 201(2701), 5. doi:[http://dx.doi.org/10.1016/S0262-4079\(09\)60825-3](http://dx.doi.org/10.1016/S0262-4079(09)60825-3)
- Ocean Fertilization: A Scientific Summary for Policy Makers*. (2010). Retrieved from <http://www.igbp.net/download/18.1b8ae20512db692f2a680004381/1376383081959/oceanfertilization.pdf>
- Report to Congress, Ocean Fertilization: The potential of ocean fertilization for climate change mitigation*. (2010). Retrieved from https://www.gc.noaa.gov/documents/2010_climate_fert_rept_Congress_final.pdf
- Carbon Sequestration in Agricultural Soils. A Multidisciplinary Approach to Innovative Methods*. (2012).
- IRENA International Renewable Energy Agency (2012) Renewable Energy Technologies: Cost Analysis Series. Biomass for power generation.. . (2012). In (Vol. 1).
- . *The Social Dynamics of Carbon Capture and Storage: Understanding CCS Representations, Governance and Innovation*. (2012).
- Stripping CO₂ from air requires largest ever industry. (2012). *New Scientist*, 214(2859), 4. doi:[http://dx.doi.org/10.1016/S0262-4079\(12\)60863-X](http://dx.doi.org/10.1016/S0262-4079(12)60863-X)
- Advanced Biofuels and Bioproducts*. (2013).
- Biochar and Soil Biota*. (2013). CRC Press.
- . Biofuel Crops and Soil Quality and Erosion. (2013). In B. P. Singh (Ed.), *Biofuel Crop Sustainability* (pp. 261-297).
- Negative emissions technologies could become the world's largest industry. (2013). *Proceedings of the Institution of Civil Engineers-Civil Engineering*, 166(2), 51-51. doi:[10.1680/cien.2013.166.2.51](https://doi.org/10.1680/cien.2013.166.2.51)
- Carbon dioxide adsorption on coconut shell biochar*. (2014). Paper presented at the 13th International Conference on Clean Energy 2014 (ICCE 2014). <http://psasir.upm.edu.my/31790/>
- Heavy Metal Removal Efficiency of Paper Mulberry Biochar and Commercially Available Silica

- Powder from Simulated Industrial Wastewater. (2014). *Iranica Journal of Energy & Environment*, 5(4), 446-452. doi:10.5829/idosi.ijee.2014.05.04.12
- Influence of biochar on growth and photosynthetic attributes of Triticum aestivum L. under half and full irrigation. (2014). *International Journal of Biosciences (IJB)*, 5(7), 101 - 108. doi:10.12692/ijb/5.7.101-108
- Phytoremediation Phytomanagement: Phytoremediation and the Production of Biomass for Economic Revenue on Contaminated Land*. (2014). Cham: Springer International Publishing.
- Quantifying the Effects of Moisture Content on Transport and Adsorption of Methane through Biochar in Landfills. (2014). Retrieved from <http://cedb.asce.org/cgi/WWWdisplay.cgi?318418>
- . Biochar amendment improves lettuce quality in metal contaminated soils. (2015). In *XIII FISV Congress Book of Abstracts*.
- Biochar for Climate Change Mitigation and Ameliorating Soil Health—A Review. (2015). *Journal of AgriSearch*, 2(1), 1-6. Retrieved from <http://jsure.org.in/journal/index.php/jas/article/view/120>
- Biomass pyrolysis in a vertical auger reactor: Effect of operational conditions on products yields and analysis of bio-oil and biochar characteristics. (2015). In B. Patrick, Z. Dan, G. Stéphane, & V. G. S. Raghavan (Eds.).
- Characterization and Surface Analysis of Commercially Available Biochars for Geoenvironmental Applications*. (2015). Paper presented at the IFCEE 2015IFCEE 2015, San Antonio, TexasReston, VA. <http://ascelibrary.org/doi/abs/10.1061/9780784479087.245>
- Characterization of biochar from rice hulls and wood chips produced in a top-lit updraft biomass gasifier*. (2015). Paper presented at the 2015 ASABE International Meeting2015 ASABE International Meeting. <http://elibrary.asabe.org/abstract.asp?aid=46252>
- Comparison of Standard Soil Amendments and Calcined Clay on Crop Yields in an Urban Garden at the University of North Carolina Asheville, Asheville, North Carolina. (2015). *Journal of Undergraduate Research*. Retrieved from http://libres.uncg.edu/ir/unca/f/P_Johnston_Comparison_JrnLungRes_2014.pdf
- Contrasting agronomic response of biochar amendment to a Mediterranean Cambisol: Incubation vs. field experiment. (2015). *Geophysical Research Abstracts*. Retrieved from <http://meetingorganizer.copernicus.org/EGU2015/EGU2015-1480.pdf>
- Evaluating the role of Bio-char application under two levels of water requirements on wheat production under sandy soil conditions. (2015). *Global Journal of Advanced Research*. Retrieved from <http://gjar.org/publishpaper/vol2issue2/u38.pdf>
- . Evolution of biochar properties in soil. (2015). In J. P. Joseph, U. Minori, A. Samuel, & M. W. I. Schmidt (Eds.), *Biochar for Environmental Management: Science and Technology and Implementation*.
- Exploration of Lignocellulosic Biomass Precision Pyrolysis for Advanced Biofuel Production*. (2015). Paper presented at the 2015 ASABE International Meeting2015 ASABE International Meeting. <http://elibrary.asabe.org/abstract.asp?aid=46139>
- Growth performance of goats was improved when a basal diet of foliage of Bauhinia acuminata was supplemented with water spinach and biochar. (2015). *Livestock Research for Rural Development*, 27(3). Retrieved from <http://lrrd.cipav.org.co/lrrd27/3/sili27058.html>
- Impact of biochar additions to nitrogen leaching in sand columns*. (2015). Paper presented at the 2015 ASABE International Meeting2015 ASABE International Meeting. <http://elibrary.asabe.org/abstract.asp?aid=45939>
- Influence of Physico-Chemical Properties of Different Biochars on Landfill Methane Adsorption*. (2015). Paper presented at the IFCEE 2015IFCEE 2015, San Antonio, TexasReston, VA.

<http://ascelibrary.org/doi/abs/10.1061/9780784479087.246>

- Phytoremediation of Mixed Contaminated Soils: Enhancement with Biochar and Compost Amendments.* (2015). Paper presented at the IFCEE 2015IFCEE 2015, San Antonio, TexasReston, VA. <http://ascelibrary.org/doi/abs/10.1061/9780784479087.250>
- Progress in Clean Energy, Volume 1Carbon Dioxide Adsorption on Coconut Shell Biochar.* (2015). Cham: Springer International Publishing.
- Pyrolysis of Bioenergy Crops (Switchgrass and Miscanthus) Grown on Reclaimed Mining Land in West Virginia.* (2015). Paper presented at the 2015 ASABE International Meeting2015 ASABE International Meeting. <http://elibrary.asabe.org/abstract.asp?aid=45760>
- Removal of ammonia from aqueous solution for swine wastewater with swine manure compost-based char. (2015). *Water Practice & Technology*, 10(2), 409 - 414. doi:10.2166/wpt.2015.051
- Response of maize varieties (*Zea mays*) to biochar amended soil in Lafia, Nigeria. (2015). *American Journal of Experimental Agriculture*, 5(6), 525-531. Retrieved from <http://www.cabdirect.org/abstracts/20153071748.html>
- Biochar could be a game changer. (2016). *Canadian Cattlemen*. Retrieved from <https://www.canadiancattlemen.ca/2017/07/07/biochar-research-to-look-at-methane-emission-reductions-in-cattle/>
- IBI International Biochar Initiative (2016) Biochar research and educational resources. <http://www.biocharinternational.org/research/education> [Accessed 10 Dec 2015]. (2016). In. *Analysis of Options to Overcome Barriers to Unilateral and Multilateral Large-Pilot Projects for Fossil Fuel Based Power Plants Equipped with CCS.* (2017). Retrieved from <http://64.106.168.122/webfiles/CURC/Final%20Report%20-%20Analysis%20of%20Options%20for%20Financing%20CCUS%20Projects.pdf>
- Bioenergy combined with CCS will help UK to transition to low-carbon energy economy, expert says. (2017). Retrieved from http://www.bioenergy-news.com/display_news/13180/bioenergy_combined_with_ccs_will_help_uk_to_transition_to_lowcarbon_energy_economy_expert_says/
- Can Regenerative Agriculture & Healthy Soils Help Combat Climate Change (David C. Johnson). (2017). Youtube.
- . Can Seaweed Save the World? (2017). In: Australian Broadcasting Corporation.
- . CCS technology glossary. (2017). In S. A. Rackley (Ed.), *Carbon Capture and Storage (Second Edition)* (pp. 635-643). Boston: Butterworth-Heinemann.
- China is Building Carbon Capturing Plants to Reduce Greenhouse Gas Emissions. (2017). Retrieved from <https://futurism.com/china-is-building-carbon-capturing-plants-to-reduce-greenhouse-gas-emissions/>
- Crystallization Method Offers New Option for Carbon Capture from Ambient Air. (2017). *FARS News Agency*. Retrieved from <https://www.ornl.gov/news/crystallization-method-offers-new-option-carbon-capture-ambient-air>
- Enerkem begins commercial production of cellulosic ethanol from garbage at its state-of-the-art Edmonton biofuels facility. (2017). *Markets Inside*. Retrieved from <http://markets.businessinsider.com/news/stocks/Enerkem-begins-commercial-production-of-cellulosic-ethanol-from-garbage-at-its-state-of-the-art-Edmonton-biofuels-facility-1002375379>
- ExxonMobil and Synthetic Genomics achieve algae biofuel breakthrough. (2017). Retrieved from <https://ilbioeconomista.com/2017/06/21/exxonmobil-and-synthetic-genomics-achieve-algae-biofuel-breakthrough/>
- Funding for North Sea carbon capture study announced by Nicola Sturgeon. (2017). *BBC News*. Retrieved from <http://www.bbc.com/news/uk-scotland-north-east-orkney-shetland-41167176>

- Greenhouse gases must be scrubbed from the air. (2017). *The Economist*. Retrieved from <https://www.economist.com/news/briefing/21731386-cutting-emissions-will-not-be-enough-keep-global-warming-check-greenhouse-gases-must-be>
- How Biochar supports the UN Sustainable Development Goals. (2017). Retrieved from <http://fingerlakesbiochar.com/how-biochar-supports-the-un-sustainable-development-goals/>
- US ADM begins carbon capture project in Illinois. (2017). *ICIS News*. Retrieved from <https://www.icis.com/resources/news/2017/04/07/10095982/us-adm-begins-carbon-capture-project-in-illinois/>
- What they don't tell you about climate change. (2017). *The Economist*. Retrieved from <https://www.economist.com/news/leaders/21731397-stopping-flow-carbon-dioxide-atmosphere-not-enough-it-has-be-sucked-out>
- Carbon Capture and Sequestration Protocol Under the Low Carbon Fuel Standard. (2018). In: California Air Resources Board.
- CARBON DIOXIDE REMOVAL, INCLUDING CARBON SEQUESTRATION IN NATURAL SYSTEMS. (2018). *WWF Climate & Energy Position Paper*. Retrieved from https://wwfeu.awsassets.panda.org/downloads/wwf_1_5c_position_paper__carbon_dioxide_removal_including_carbon_sequestration_in_natur.pdf
- Carbon Engineering raises \$11M to commercialize its technology that creates clean fuel from air. (2018). *Global Newswire*. Retrieved from <https://globenewswire.com/news-release/2018/07/12/1536582/0/en/Carbon-Engineering-raises-11M-to-commercialize-its-technology-that-creates-clean-fuel-from-air.html>
- Extracting carbon dioxide from the air is possible. But at what cost? (2018). *The Economist*. Retrieved from <https://www.economist.com/science-and-technology/2018/06/07/extracting-carbon-dioxide-from-the-air-is-possible.-but-at-what-cost>
- The IPCC's Recipe for a Livable Planet: Grow Trees, Don't Burn Them. (2018). Retrieved from <http://www.pfpi.net/the-ipccs-recipe-for-a-livable-planet-grow-trees-dont-burn-them>
- Land Management Practices for Carbon Dioxide Removal and Reliable Sequestration*. (2018). Retrieved from <https://www.nap.edu/download/25037#>
- Marginalized by Conservation: The Billion Tree Tsunami Project. (2018). *Jamhoor*. Retrieved from <https://www.jamhoor.org/read/2018/2/8/marginalized-by-conservation-the-billion-trees-tsunami-project>
- (2018, November 16). *Marine Permaculture with Brian Von Herzen* [Retrieved from <http://thedrawdownagenda.com/podcast/episode-8-marine-permaculture-with-brian-von-herzen/>
- Negative emissions: Scientists meet in Sweden for first international conference. (2018). *CarbonBrief*. Retrieved from <https://www.carbonbrief.org/negative-emissions-scientists-meet-sweden-first-international-conference>
- Why current negative-emissions strategies remain 'magical thinking'. (2018). *Nature*, 554, 404. Retrieved from <https://www.nature.com/articles/d41586-018-02184-x>
- Carbon removal requires multiple technologies. (2019). *Physics World*. Retrieved from <https://physicsworld.com/a/carbon-removal-requires-multiple-technologies/>
- Climate change: 'Magic bullet' carbon solution takes big step. (2019). *Stock Daily Dish*. Retrieved from <https://stockdailydish.com/climate-change-magic-bullet-carbon-solution-takes-big-step/>
- Do 'mechanical trees' offer the cure for climate change? (2019). *Strait Times*. Retrieved from <https://www.straitstimes.com/world/united-states/do-mechanical-trees-offer-the-cure-for-climate-change>
- Drax strengthens biomass sustainability policy and appoints Independent Advisory Board (2019). [Press release]. Retrieved from Drax strengthens biomass sustainability policy

and appoints Independent Advisory Board
Enhancing Fossil Fuel Energy Carbon Technology Act, S. 1201, U.S. Senate, Committee on Energy and Natural Resources (2019).

Geoengineering Developments: Carbon Capture, Venture Capital and Would-be Megaprojects. (2019). *Geoengineering Monitor*. Retrieved from <http://www.geoengineeringmonitor.org/2019/05/geoengineering-developments-carbon-capture-venture-capital-and-would-be-megaprojects/>

Grant for climate-positive agriculture. (2019). *Southwest Daily News*. Retrieved from http://www.sulphurdailynews.com/news/grant-for-climate-positive-agriculture/article_3f2f1ce0-2ce9-5ada-9478-3b6e1c9126bc.html

A Hard Look at Negative Emissions. (2019). Kleinman Center for Energy Policy, University of Pennsylvania.

Is het verstandig van Staatsbosbeheer om een deal te sluiten met Shell? (2019). *Trouw*. Retrieved from <https://www.trouw.nl/nieuws/is-het-verstandig-van-staatsbosbeheer-om-een-deal-te-sluiten-met-shell~b9ec6f5f/?referrer=https%3A%2F%2Fwww.desmog.co.uk%2F>

The necessity of pulling carbon dioxide out of the air. (2019). *The Economist*. Retrieved from <https://www.economist.com/leaders/2019/12/07/the-necessity-of-pulling-carbon-dioxide-out-of-the-air>

Powerful Mechanical Trees Can Remove CO₂ From the Air to Combat Global Warming at Scale. (2019). *Business Wire*. Retrieved from <https://www.businesswire.com/news/home/20190429005245/en/>

Researchers: Recycle CO₂ in Floating Methanol Power Plants. (2019). *The Maritime Executive*. Retrieved from <https://www.maritime-executive.com/article/researchers-recycle-co2-in-floating-methanol-power-plants>

Risky Dreams: Carbon Capture, Utilization, and Storage (CCUS) (Original Japanese name of translated article: “Enerugi Kankyo Gijyutsu no Potential Jitsuyoka Hyoka Kentokai”). (2019). Retrieved from <https://www.kikonet.org/eng/publication-en/2019-08-15/paper-on-ccus>

Studying the Societal Dimensions of Atmospheric Carbon Removal. (2019). Paper presented at the Workshop on Human/Societal Dimensions of a New Carbon Economy with Carbon180, Washington, DC.

To support carbon dioxide utilization and direct air capture research, to facilitate the permitting and development of carbon capture, utilization, and sequestration projects and carbon dioxide pipelines, and for other purposes., S383, U.S. Senate (2019).

222 organizations reject “Growing Climate Solutions Act”. (2020). Retrieved from <https://foe.org/news/organizations-reject-growing-climate-solutions-act/>

Bioenergy with carbon capture and storage (BECCS). (2020). Retrieved from <https://post.parliament.uk/research-briefings/post-pn-0618/>

bp Acquires Majority Stake in Largest US Forest Carbon Offset Developer Finite Carbon. (2020). [Press release]. Retrieved from https://www.finitecarbon.com/2020/12/16/bp-acquires-majority-stake-in-largest-us-forest-carbon-offset-developer-finite-carbon/?utm_source=newsletter&%3Butm_medium=rss&%3Butm_campaign=bp-acquires-majority-stake-in-largest-us-forest-carbon-offset-developer-finite-carbon&utm_medium=email&utm_campaign=verge&utm_content=2020-12-30&mkt_tok=eyJpljoiWkRJME5XVmhNemMxWVRGailsInQiOiJZQ0F1XC8rTGFra2RmVXNrNXduaEdiSVRWUmtsbkVDTkM2ZzNsTFBoRkVSR0t4K1wvVE4xM3dzUVo0czVUNKZ4VkdIVnJ6WFGBalh3T0cxSkt4YzI5VmFFdUlyWIJQK2NsSEgwTGRycHRUQmRpZUIrTncrUHJO NIV0WnZjM2tNd081ZXI2MEdZM2Z2Y21MSnFOZWdHOWs3bXRvctlY09aVU1LanRPd

Ep0TjJZVT0ifQ%3D%3D

- California And Trump Push Geoengineering—A Fraught Climate Crisis Fix. (2020). *The Real News Network*. Retrieved from <https://therealnews.com/stories/california-trump-geoengineering-direct-air-capture-technology>
- Carbon Capture Coalition Statement on the Introduction of the Accelerating Carbon Capture and Extending Secure Storage Act through 45Q (ACCESS 45Q Act). (2020). Retrieved from <https://carboncapturecoalition.org/carbon-capture-coalition-statement-on-the-introduction-of-the-accelerating-carbon-capture-and-extending-secure-storage-act-through-45q-access-45q-act/>
- Carbon Capture Coalition Welcomes IRS Issuance of Final 45Q Rule. (2020). Retrieved from <https://carboncapturecoalition.org/carbon-capture-coalition-welcomes-irs-issuance-of-final-45q-rule/>
- Carbon removal mechanisms. (2020). *Carbon Plan*. Retrieved from <https://carbonplan.org/research/carbon-removal-mechanisms?s=09>
- The case for carbon action. (2020). *Bangkok Post*. Retrieved from <https://www.bangkokpost.com/business/2038751/the-case-for-carbon-action>
- CREATE Act of 2020, S. 4341 (2020).
- Credit for Carbon Oxide Sequestration*. (2020). Retrieved from <https://www.irs.gov/pub/irs-drop/td-9944.pdf>
- Dr Charles DeLisi – Genetically Engineered Plants: A Potential Solution to Climate Change. (2020). *Scientia*. Retrieved from <https://www.scientia.global/dr-charles-delisi-genetically-engineered-plants-a-potential-solution-to-climate-change/>
- Drax launches Biomass Carbon Calculator to measure supply chain emissions. (2020). *Bioenergy Insight*. Retrieved from <https://www.bioenergy-news.com/news/drax-launches-biomass-carbon-calculator-to-measure-supply-chain-emissions/>
- Drax's new biomass policy paves the way for world-leading sustainability standard (2020). [Press release]. Retrieved from https://www.drax.com/press_release/draxs-new-biomass-policy-paves-the-way-for-world-leading-sustainability-standard/
- Driving Action for Carbon Neutrality: British-Nordic Experiences of Negative Emissions Technologies in Practice. (2020). Retrieved from <http://negative-emissions.info/2020/10/15/driving-action-for-carbon-neutrality-british-nordic-experiences-of-negative-emissions-technologies-in-practice/>
- Energy Technology Perspectives 2020: Special Report on Carbon Capture Utilisation and Storage CCUS in clean energy transitions*. (2020). Retrieved from <https://www.iea.org/reports/ccus-in-clean-energy-transitions>
- Environmental Justice and Carbon Removal. (2020). [Mobile application software]. Retrieved from <https://www.youtube.com/watch?v=PAvkZ5Rt-P8&feature=youtu.be>
- Exxon holds back on technology that could slow climate change. (2020). Retrieved from <https://www.livemint.com/industry/energy/exxon-holds-back-on-technology-that-could-slow-climate-change-11607353597868.html>
- Global Carbon Capture Technology Leaders, Svante and Climeworks, Agree to Collaborate on Solutions for a Net-Zero-Emissions World. (2020). *BusinessWire*. Retrieved from <https://www.businesswire.com/news/home/20200127005396/en/Global-Carbon-Capture-Technology-Leaders-Svante-Climeworks>
- Guest post: Who should be responsible for removing CO₂ from the atmosphere? (2020). *CarbonBrief*. Retrieved from <https://www.carbonbrief.org/guest-post-who-should-be-responsible-for-removing-co2-from-the-atmosphere/amp>
- How Green Sand May Save Us. (2020). YouTube: Project Vesta.
- An investor guide to negative emission technologies and the importance of land use*. (2020). Retrieved from <https://www.unpri.org/download?ac=11980>

- LLNL, partners open access to CO2 storage simulator. (2020). [Press release]. Retrieved from <https://www.llnl.gov/news/llnl-partners-open-access-co2-storage-simulator>
- Menendez Releases Inspector General Investigation Finding Fossil Fuel Companies Improperly Claimed Nearly \$1B in Clean Air Tax Credits. (2020). [Press release]. Retrieved from <https://www.menendez.senate.gov/newsroom/press/menendez-releases-inspector-general-investigation-finding-fossil-fuel-companies-improperly-claimed-nearly-1b-in-clean-air-tax-credits>
- Microsoft pledges to be 'carbon negative' by 2030. (2020). *The Guardian*. Retrieved from <https://www.theguardian.com/technology/2020/jan/16/microsoft-carbon-emissions-negative-2030>
- Microsoft Unveils Plan to Go 'Carbon Negative'. (2020). *CFO*. Retrieved from <https://www.cfo.com/strategy/2020/01/microsoft-unveils-plan-to-go-carbon-negative/>
- Nature-based Solutions to Climate Change. (2020). Retrieved from [https://www.ox.ac.uk/news/2020-09-29-oxford-launches-new-principles-credible-carbon-offsetting](https://nbsguidelines.info/. Ocean Alkalinity Enhancement. (2020) [YouTube]. In. Oceans 2050 Leads Global Effort to Quantify Seaweed Carbon Sequestration. (2020). 3BL CSWire.</p><p>Oxford launches new principles for credible carbon offsetting. (2020). Retrieved from <a href=)
- The Oxford Principles for Net Zero Aligned Carbon Offsetting*. (2020). Retrieved from <https://www.smithschool.ox.ac.uk/publications/reports/Oxford-Offsetting-Principles-2020.pdf>
- Oxy Low Carbon Ventures, Rusheen Capital Management Create Development Company 1PointFive to Deploy Carbon Engineering's Direct Air Capture Technology. (2020). Retrieved from <https://www.1pointfive.com/launch-release>
- Regenerative Organic Certification, progress towards a Biogeotherapy Certification. (2020). Retrieved from <https://cologie.wordpress.com/2020/08/02/regenerative-organic-certification-progress-towards-a-biogeotherapy-certification-regeneratrice-biologique-progres-vers-une-biogeotherapie/>
- Remove: Carbon Capture and Storage*. (2020). Retrieved from <https://www.globalccsinstitute.com/resources/publications-reports-research/remove-ccs/>
- Removing CO2 from the atmosphere and the Desarc-Maresanus project. (2020). *Eureka Alert*. Retrieved from https://www.eurekalert.org/pub_releases/2020-02/pdm-rcf021020.php
- Toshiba Starts Operation of Large-Scale Carbon Capture Facility -Towards the world's first negative emission biomass power plant- (2020). [Press release]. Retrieved from https://www.toshiba-energy.com/en/info/info2020_1031.htm
- What if carbon removal became the new Big Oil? (2020). *The Economist*. Retrieved from <https://www.economist.com/the-world-if/2020/07/04/what-if-carbon-removal-becomes-the-new-big-oil>
- 4th Puro.earth Carbon Removal Ecosystem Meeting. (2021).
- \$100M XPRIZE FOR CARBON REMOVAL FUNDED BY ELON MUSK TO FIGHT CLIMATE CHANGE. (2021). Retrieved from <https://www.xprize.org/prizes/elonmusk/articles/100m-xprize-for-carbon-removal-funded-by-elon-musk-to-fight-climate-change>
- Abbott Produces Power... and Data. (2021). Retrieved from <https://fs.web.illinois.edu/Insider/2021/05/07/abbott-produces-power-and-data/>
- Accenture Helps Climeworks Filter More CO2 from the Air and Inspire One Billion People to Be Climate Positive. (2021). *Business Wire*. Retrieved from <https://www.businesswire.com/news/home/20210701005110/en/Accenture-Helps-Climeworks-Filter-More-CO2-from-the-Air-and-Inspire-One-Billion-People-to-Be-Climate-Positive>
- Aligning Voluntary Carbon Markets with the 1.5C Paris Agreement Ambition*. (2021). Retrieved from <https://vcminintegrity.org/consultation-hub/>

- America's Revegetation and Carbon Sequestration Act of 2021.* (2021). Retrieved from <https://go.politicoemail.com/?qs=2a8b8bd9d467c5053ccb2436ef3af5ce515766c3a26b83dba80294bb8e96580b51eb66a78887c3ad72284504417f0e8e>
- Apple and partners launch first-ever \$200 million Restore Fund to accelerate natural solutions to climate change (2021). [Press release]. Retrieved from <https://www.apple.com/newsroom/2021/04/apple-and-partners-launch-first-ever-200-million-restore-fund/>
- Barrasso: Wyoming is on the cutting edge of carbon capture research and innovation. (2021). Retrieved from https://www.kulr8.com/news/barrasso-wyoming-is-on-the-cutting-edge-of-carbon-capture-research-and-innovation/article_4e083760-a3a9-11eb-8146-6f2e24ba21fa.html
- Best CO2 Utilisation 2021":The three winners of the innovation award are turning CO2 into methanol, cleaners, plastic packaging or surfactants. (2021). *Bio-Based News*. Retrieved from <https://news.bio-based.eu/best-co2-utilisation-2021-the-three-winners-of-the-innovation-award-are-turning-co2-into-methanol-cleaners-plastic-packaging-or-surfactants/>
- Beyond Carbon Neutral: CarbonCure's Investments to Fight Climate Change, Internally and Globally. (2021). Retrieved from <https://www.carboncure.com/concrete-corner/beyond-carbon-neutral-carboncures-investments-to-fight-climate-change-internally-and-globally/>
- Beyond Climate Neutrality* (2021). Retrieved from <https://www.wbgu.de/en/publications/publication/pp12-2021>
- Biphasic CO2 Absorption Process (BiCAP). (2021). Retrieved from https://www.istc.illinois.edu/research/energy/carbon_capture/BiCAP/
- The California Climate Crisis Act, AB 1395 (2021).
- . Can An Abundant Green Mineral Capture CO2 From The Atmosphere? --EXPLAINED! (2021). In: India Science.
- Carbon Capture. (2021). Retrieved from <https://icap.sustainability.illinois.edu/project/carbon-capture>
- Carbon Capture and Storage: An Expensive and Dangerous Proposition for Louisiana. (2021). Retrieved from <https://www.ciel.org/carbon-capture-and-storage-an-expensive-and-dangerous-proposition-for-louisiana-communities/>
- Carbon capture innovator completes £8m funding round. (2021). Retrieved from <https://www.powerengineeringint.com/emissions-environment/carbon-capture-innovator-completes-8m-funding-round/>
- Carbon Dioxide (CO2) as Chemical Feedstock for Polymers – already nearly 1 million tonnes production capacity installed! (2021). *Bio-Based News*. Retrieved from <https://news.bio-based.eu/carbon-dioxide-co2-as-chemical-feedstock-for-polymers-already-nearly-1-million-tonnes-production-capacity-installed/>
- Carbon Dioxide Removal with Roger Aines. (2021). [Mobile application software]. Retrieved from <https://podcasts.apple.com/us/podcast/carbon-dioxide-removal-with-roger-aines/id1565404483?i=1000531561674>
- Carbon Engineering | Direct Air Capture of CO2 from the Atmosphere. (2021). [Mobile application software]. Retrieved from <https://www.youtube.com/watch?v=Rf7pTfCxNW4&list=PLF8369A27273314D8>
- (2021). *Carbon removal in the Biden Administration—w/ Dr. Jan Mazurek, ClimateWorks Foundation* [Retrieved from <https://nori.com/podcasts/reversing-climate-change/S2E63-Carbon-removal-in-the-Biden-Administrationw-Dr--Jan-Mazurek--ClimateWorks-Foundation-e106dhl>
- CarbonCure's Path to the Decarbonization of Concrete.* (2021). Retrieved from <http://go.carboncure.com/rs/328-NGP-286/images/>

- CarbonCure%27s%20Path%20to%20the%20Decarbonization%20of%20Concrete%20Book.pdf
- China Pursuing Bigger Ocean Carbon Sinks to Help Meet Climate Goals. (2021). *Marine Technology News*. Retrieved from <https://www.marinetechologynews.com/news/china-pursuing-bigger-ocean-613301>
- CJA Condemns the US Senate's Vote for a False Promise: the Growing Climate Solutions Act. (2021). Retrieved from <https://climatejusticealliance.org/cja-condemns-the-us-senates-vote-on-a-false-promise-the-growing-climate-solutions-act/>
- Clean Tech Company, CarbonCure Wins NRG COSIA Carbon XPRIZE. (2021). [Press release]. Retrieved from <https://www.carboncure.com/news/clean-tech-company-carboncure-wins-nrg-cosia-carbon-xprize/>
- Companies Commit to Development of Carbon Capture at Biomass Plants. (2021). *Renewable Energy Magazine*. Retrieved from <https://www.renewableenergymagazine.com/biomass-companies-commit-to-development-of-carbon-capture-20210310>
- Council on Environmental Quality Report to Congress on Carbon Capture, Utilization, and Sequestration*. (2021). Retrieved from <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjwmsrb0cPxAhWFQs0KHapiB1UQFnoECAQQAw&url=https%3A%2Fwww.whitehouse.gov%2Fwp-content%2Fuploads%2F2021%2F06%2FCEQ-CCUS-Permitting-Report.pdf&usg=AOvVaw0mU1qZkYTWeJIUfFrRQfGb>
- Dac City. (2021). Retrieved from <https://www.daccity.com/#intro>
- Direct Air Capture project awarded funding under Government plans to make UK world leader in Greenhouse Gas Removals. (2021). [Press release]. Retrieved from https://carbonengineering.com/news-updates/dac-project-awarded-funding/?utm_campaign=Newsletter%20Content&utm_source=email&utm_content=Q2%202021%20Carbon%20Quarterly
- Direct Air Carbon Dioxide Capture & Storage (DACCs)*. (2021). Retrieved from <https://www.c2g2.net/wp-content/uploads/DACCS-Policy-Brief.pdf>
- The Direct-Air Capture Debate. (2021). *Anthropocene*. Retrieved from <https://www.anthropocenemagazine.org/2021/03/the-direct-air-capture-debate/>
- The Direct-Air Capture Debate. (2021). *Anthropocene*. Retrieved from https://www.anthropocenemagazine.org/2021/03/the-direct-air-capture-debate/?utm_source=Anthropocene&utm_campaign=16b2776c9d-EMAIL_CAMPAIGN_2019_10_17_02_17_COPY_01&utm_medium=email&utm_term=0_ececcea89a-16b2776c9d-294293021
- DOE to award up to \$24M to advance direct air carbon capture technology. (2021). Retrieved from <https://www.greencarcongress.com/2021/03/20210306-dac.html>
- Drax and Mitsubishi Heavy Industries sign pioneering deal to deliver the world's largest carbon capture power project. (2021).
- The Economist Group becomes first media group to include Climeworks' carbon dioxide removal in its sustainability strategy (2021). Retrieved from <https://climeworks.com/news/the-economist-group-includes-climeworks-in-its-sustainability-strategy>
- Effectively Removing CO2 From the Atmosphere (2021). *The Ritz Herald*. Retrieved from <https://ritzherald.com/effectively-removing-co2-from-the-atmosphere/>
- Elizabeth Kolbert: Driving across Iceland to visit my carbon emissions (2021). *Wisconsin State Journal*. Retrieved from https://madison.com/wsj/opinion/column/elizabeth-kolbert-driving-across-iceland-to-visit-my-carbon-emissions/article_f485ebc3-469b-5ad7-94ef-83004f8daf77.html
- Exxon Mobil to invest \$3 billion in carbon capture and other projects to lower emissions. (2021). *New York Times*. Retrieved from <https://www.nytimes.com/2021/02/01/business/energy/>

environment/exxon-mobil-carbon-capture.html

Flagstaff City Council Wants Community Feedback On The City's Carbon Neutrality Plan. (2021). Retrieved from https://gcmaz.com/kaff-news/kaff_news/flagstaff-city-council-wants-community-feedback-on-the-citys-carbon-neutrality-plan/

From net-zero to net-negative: policy implications for Carbon Dioxide Removal. (2021). [Mobile application software]. Retrieved from https://www.youtube.com/watch?v=Nqq4CzbQ_EA

Gemini Offsets Bitcoin Carbon Emissions, Launches Gemini Green. (2021). Retrieved from <https://aithority.com/technology/cryptocurrency/gemini-offsets-bitcoin-carbon-emissions-launches-gemini-green/>

Geoengineering Map. (2021).

Georgia Tech Researchers Awarded Total of \$4.35 Million in 2020 for Direct Air Capture Projects. (2021). [Press release]. Retrieved from <https://rh.gatech.edu/news/645171/georgia-tech-researchers-awarded-total-435-million-2020-direct-air-capture-projects-0>

The Godfather of Carbon Capture: Klaus Lackner Interview. (2021).

Growing Climate Solutions Act of 2021, S1251 (2021).

How an Australian biochar start-up inspired Microsoft's negative carbon plan. (2021). Retrieved from <https://reneweconomy.com.au/how-an-australian-biochar-start-up-inspired-microsofts-negative-carbon-plan/amp/>

How Finland's Puro.earth plans to scale up carbon removal to help the world reach net zero emissions. (2021). *European Ceo*. Retrieved from [https://www.europeanceo.com/profiles/how-finlands-puro-earth-plans-to-scale-up-carbon-removal-to-help-the-world-reach-netzero-emissions/](https://www.europeanceo.com/profiles/how-finlands-puro-earth-plans-to-scale-up-carbon-removal-to-help-the-world-reach-net-zero-emissions/)

It's Time to End the Carbon Capture of Climate Policy: 500+ Organizations Call on US and Canadian Leaders to Reject Carbon Capture and Storage as a False Solution to Climate Crisis. (2021). Retrieved from <https://www.ciel.org/news/end-the-carbon-capture-of-climate-policy/>

Kurzgutachten im Rahmen der dena-Leitstudie Aufbrauch Klimaneutralität. (2021). Retrieved from <https://www.dena.de/newsroom/publikationsdetailansicht/pub/kurzgutachten-im-rahmen-der-dena-leitstudie-aufbrauch-klimaneutralitaet/>

Major global initiative to bring rigour and transparency to net zero and carbon neutral claims. (2021). [Press release]. Retrieved from [https://www.climateaction.org/news/major-global-initiative-to-bring-rigour-and-transparency-to-netzero-and-ca?vgo_ee=YZXCRBjwINF75YoVimf7JQ%3D%3D](https://www.climateaction.org/news/major-global-initiative-to-bring-rigour-and-transparency-to-net-zero-and-ca?vgo_ee=YZXCRBjwINF75YoVimf7JQ%3D%3D)

Muratsuchi's Climate Crisis Act Passes Senate Committee (2021). *The Rafu Shimpo*. Retrieved from <https://rafu.com/2021/07/muratsuchis-climate-crisis-act-passes-senate-committee/>

Oslo CCS project is one step closer to EU funding. (2021). Retrieved from <https://bellona.org/news/ccs/2021-03-oslo-ccs-project-is-one-step-closer-to-innovation-fund>

Our CO2 solution. How MCi is addressing the challenge of CO2 emissions. (2021). Retrieved from <https://www.mineralcarbonation.com/our-co2-solution>

Policies for the promotion of BECCS in the Nordic countries. (2021). (538). Retrieved from <https://pub.norden.org/temanord2021-538/#>

Polychroniou, C.J. (2021). *TruthOut*. Retrieved from <https://truthout.org/articles/chomsky-and-pollin-we-cant-rely-on-private-sector-for-necessary-climate-action/>

Project to Test CO2 Capture is First Funded with Support from Office of Proposal Development. (2021). Retrieved from <http://research.illinois.edu/features/project-test-co2-capture-first-funded-support-office-proposal-development>

Project Vesta announces \$1.6M grant from Additional Ventures. (2021). *Cision PR Newswire*. Retrieved from <https://www.prnewswire.com/news-releases/project-vesta-announces-1-6m-grant-from-additional-ventures-301248574.html>

Puro.earth chosen by Microsoft for carbon dioxide removal (2021). Retrieved from <https://>

puro.earth/articles/puro-earth-chosen-by-microsoft-for-carbon-dioxide-removal-583
Reforestation Directory. (2021). *Mongabay*. Retrieved from <https://reforestation.app/?sort=Context&country>All&filters=%5B%5D&embed=false&embedType=null&id=undefined>

Responsible Carbon Removal Means Putting Science First. (2021). Retrieved from <https://carbon-direct.com/responsible-carbon-removal-means-putting-science-first/>

Schlumberger, Chevron, Microsoft plan BECCS project in California. (2021). *Biomass Magazine*. Retrieved from <http://www.biomassmagazine.com/articles/17779/schlumberger-chevron-microsoft-plan-beccs-project-in-california>

Should We Genetically Engineer Carbon-Hungry Trees? . (2021). *Freethink*. Retrieved from <https://www.freethink.com/articles/genetically-modified-trees>

Source materials supporting Stripe Climate carbon removal purchases (2021). In: Stripe. Startup Plans To Remove 1 Billion Tons of CO2 from Atmosphere by 2035, By Turning It To Stone (2021). Retrieved from <https://www.indianweb2.com/2021/06/startup-plans-to-remove-1-billion-ton.html>

State seeks input on ways to protect communities from climate change. (2021). *Appeal-Democrat (Marysville, CA)*. Retrieved from <https://news.yahoo.com/state-seeks-input-ways-protect-040100396.html>

Summit Agricultural Group Announces Creation of Summit Carbon Solutions and World's Largest Carbon Capture and Storage Project. (2021). [Press release]. Retrieved from <https://www.summitag.com/news/summitcarbonsolutions>

Supporting the projects needed to solve the climate crisis. (2021). Retrieved from <https://www.milkywire.com/giveone/climateinitiative-readmore>

Taskforce on Scaling Voluntary Carbon Markets: Final Report. (2021). Retrieved from https://www.iif.com/Portals/1/Files/TSVCM_Report.pdf

Third Global Olivine Conference (2021). In.

This Is CDR EP06: SEA MATE with Matthew Eisaman, PhD. (2021). [Mobile application software]. Retrieved from <https://www.youtube.com/watch?v=950SLzuAuCo&list=PLF8369A27273314D8>

This Is CDR EP07: Geological Sequestration with David Goldberg, PhD. (2021). [Mobile application software]. Retrieved from <https://www.youtube.com/watch?v=qqpYVXFqr9Q&list=PL1je2pACUAbKdS4529vLLHgZR2MGk9KLM&index=8>

This Machine Will Make Seashells Out of CO2 (2021). *Freethink*. Retrieved from <https://www.freethink.com/articles/making-seashells-out-of-co2>

This startup grows kelp then sinks it to pull carbon from the air. (2021). Retrieved from <https://www.wthitv.com/content/national/574338522.html>

Tim Kruger & Dr Steve Smith in conversation: "Beyond zero: the role of negative emission. (2021). *YouTube*. Retrieved from <https://www.youtube.com/watch?v=oqN1vTK6J1g>

Treasury Department and Internal Revenue Service Release Final Rule on Section 45Q Credit Regulations. (2021). [Press release]. Retrieved from <https://home.treasury.gov/news/press-releases/sm1227>

Two European companies are mapping a future service for direct air capture to sequestration of CO2. (2021). *Tech Crunch*. Retrieved from <https://techcrunch.com/2021/03/09/two-european-companies-are-mapping-a-future-service-for-direct-air-capture-to-sequestration-of-co2/>

U.S. Department of the Treasury Announces U.S. Support For a Proposal At the OECD To End Official Financing Support for Unabated Coal Power. (2021). Retrieved from <https://mondovisione.com/media-and-resources/news/us-department-of-the-treasury-announces-us-support-for-a-proposal-at-the-oecd/>

Working on a project to fight climate change? Apply now to be considered for funding. (2021).

Retrieved from <https://www.shopify.ca/about/environment/sustainability-fund/application-process>

- Aalbers, R., & Bollen, J. (2017). *Biomass Energy with Carbon Capture and Storage can reduce costs of EU's Energy Roadmap with 15-75%*. Retrieved from https://www.cpb.nl/sites/default/files/omnidownload/CPB-achtergronddocument-Biomass-Energy-with-Carbon-Capture-and-Storage-can-reduce-costs_0.pdf
- Aaron, D., & Tsouris, C. (2005). Separation of CO₂ from Flue Gas: A Review. *Separation Science and Technology*, 40(1-3), 321-348. doi:10.1081/SS-200042244
- Abadie, C., Lacan, F., Radic, A., Pradoux, C., & Poitrasson, F. (2017). Iron isotopes reveal distinct dissolved iron sources and pathways in the intermediate versus deep Southern Ocean. *Proceedings of the National Academy of Sciences*, 114(5), 858-863. doi:10.1073/pnas.1603107114
- Abanades, J. C., Alonso, M., & Rodríguez, N. (2011). Biomass Combustion with in Situ CO₂ Capture with CaO. I. Process Description and Economics. *Industrial & Engineering Chemistry Research*, 50(11), 6972-6981. doi:10.1021/ie102353s
- Abanades, J. C., Arias, B., Lyngfelt, A., Mattisson, T., Wiley, D. E., Li, H., . . . Brandani, S. (2015). Emerging CO₂ capture systems. *International Journal of Greenhouse Gas Control*, 40, 126-166. doi:<http://dx.doi.org/10.1016/j.ijggc.2015.04.018>
- Abanades, J. C., Murillo, R., Fernandez, J. R., Grasa, G., & Martínez, I. (2010). New CO₂ Capture Process for Hydrogen Production Combining Ca and Cu Chemical Loops. *Environmental Science & Technology*, 44(17), 6901-6904. doi:10.1021/es101707t
- Abanades, J. C., Rubin, E. S., Mazzotti, M., & Herzog, H. J. (2017). On the climate change mitigation potential of CO₂ conversion to fuels. *Energy & Environmental Science*, 10(12), 2491-2499. doi:10.1039/C7EE02819A
- Abas, F. Z., & Ani, F. N. (2014). Comparing Characteristics of Oil Palm Biochar Using Conventional and Microwave Heating. *Jurnal Teknologi*, 68(3), 33-37. Retrieved from <http://www.jurnalteknologi.utm.my/index.php/jurnalteknologi/article/view/2926>
- Abate, R. S. (2011). A Tale of Two Carbon Sinks: Can Forest Carbon Management Serve as a Framework to Implement Ocean Iron Fertilization as a Climate Change Treaty Compliance Mechanism? *Seattle J. Environmental Law*, 1, 1-19. Retrieved from <http://commons.law.famu.edu/cgi/viewcontent.cgi?article=1004&context=faculty-research>
- Abate, R. S. (2013). *Ocean Iron Fertilization Science, Law, and Uncertainty*.
- Abate, R. S. (2016). Ocean Iron Fertilization and Indigenous Peoples' Right to Food: Leveraging International and Domestic Law Protections to Enhance Access to Salmon in the Pacific Northwest. *UCLA Journal of International Law & Foreign Affairs*, 45, 45-85. Retrieved from <https://commons.law.famu.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1203&context=faculty-research>
- Abate, R. S., & Greenlee, A. B. (2010). Sowing Seeds Uncertain: Ocean Iron Fertilization, Climate Change, and the International Environmental Law Framework. *Pace Environmental Law Review*, 27, 555-623. Retrieved from <https://www.mendeley.com/research/sowing-seeds-uncertain-ocean-iron-fertilization-climate-change-international-environmental-law-frame/>
- Abbas, F., Hammad, H. M., Fahad, S., Cerdà, A., Rizwan, M., Farhad, W., . . . Bakhat, H. F. (2017). Agroforestry: a sustainable environmental practice for carbon sequestration under the climate change scenarios—a review. *Environmental Science and Pollution Research*, 24(12), 11177-11191. doi:10.1007/s11356-017-8687-0
- Abbasi, M. K., & Anwar, A. A. (2015). Ameliorating Effects of Biochar Derived from Poultry Manure and White Clover Residues on Soil Nutrient Status and Plant growth Promotion - Greenhouse Experiments. *Plos One*, 10(6), e0131592. doi:10.1371/journal.pone.0131592.t006

- Abbruzzini, T. F. (2015). *The role of biochar on greenhouse gas offsets, improvement of soil attributes and nutrient use efficiency in tropical soils*. (Doctorate). Escola Superior de Agricultura Luiz de Queiroz, Retrieved from <http://www.teses.usp.br/teses/disponiveis/11/11140/tde-30092015-115437/en.php>
- Abbruzzini, T. F., Davies, C. A., Toledo, F. H., & Cerri, C. E. P. (2019). Dynamic biochar effects on nitrogen use efficiency, crop yield and soil nitrous oxide emissions during a tropical wheat-growing season. *Journal of Environmental Management*, 252, 109638. doi:<https://doi.org/10.1016/j.jenvman.2019.109638>
- Abd, A. A., Naji, S. Z., Hashim, A. S., & Othman, M. R. (2020). Carbon dioxide removal through Physical Adsorption using Carbonaceous and non-Carbonaceous Adsorbents: A review. *Journal of Environmental Chemical Engineering*, 104142. doi:<https://doi.org/10.1016/j.jece.2020.104142>
- Abdalla, K., Chivenge, P., Ciais, P., & Chaplot, V. (2016). No-tillage lessens soil CO₂ emissions the most under arid and sandy soil conditions: results from a meta-analysis. *Biogeosciences*, 13(12), 3619-3633. doi:[10.5194/bg-13-3619-2016](https://doi.org/10.5194/bg-13-3619-2016)
- Abdalla, M., Hastings, A., Helmy, M., Prescher, A., Osborne, B., Lanigan, G., . . . Jones, M. B. (2014). Assessing the combined use of reduced tillage and cover crops for mitigating greenhouse gas emissions from arable ecosystem. *Geoderma*, 223-225, 9-20. doi:<https://doi.org/10.1016/j.geoderma.2014.01.030>
- Abdel-Fattah, T. M., Mahmoud, M. E., Ahmed, S. B., Huff, M. D., Lee, J. W., & Kumar, S. (2014). Biochar from woody biomass for removing metal contaminants and carbon sequestration. *Journal of Industrial and Engineering Chemistry*, 22, 103-109. doi:[10.1016/j.jiec.2014.06.030](https://doi.org/10.1016/j.jiec.2014.06.030)
- Abdelhafez, A. A., & Li, J. (2016). Removal of Pb(II) from aqueous solution by using biochars derived from sugar cane bagasse and orange peel. *Journal of the Taiwan Institute of Chemical Engineers*, 61, 367 - 375. doi:[10.1016/j.jtice.2016.01.005](https://doi.org/10.1016/j.jtice.2016.01.005)
- Abdelhafez, A. A., Li, J., & Abbas, M. H. H. (2014). Feasibility of biochar manufactured from organic wastes on the stabilization of heavy metals in a metal smelter contaminated soil. *Chemosphere*, 117, 66 - 71. doi:[10.1016/j.chemosphere.2014.05.086](https://doi.org/10.1016/j.chemosphere.2014.05.086)
- Abdelkareem, M. A., Lootah, M. A., Sayed, E. T., Wilberforce, T., Alawadhi, H., Yousef, B. A. A., & Olabi, A. G. (2021). Fuel cells for carbon capture applications. *Science of The Total Environment*, 769, 144243. doi:<https://doi.org/10.1016/j.scitotenv.2020.144243>
- Abdulla, A., Hanna, R., Schell, K. R., Babacan, O., & Victor, D. G. (2020). Explaining successful and failed investments in U.S. carbon capture and storage using empirical and expert assessments. *Environmental Research Letters*, 16(1), 014036. doi:[10.1088/1748-9326/abd19e](https://doi.org/10.1088/1748-9326/abd19e)
- Abdullah, H., Mediaswanti, K. A., & Wu, H. W. (2010). Biochar as a Fuel: 2. Significant Differences in Fuel Quality and Ash Properties of Biochars from Various Biomass Components of Mallee Trees. *Energy & Fuels*, 24, 1972-1979.
- Abdullah, H., Mourant, D., Li, C. Z., & Wu, H. W. (2010). Bioslurry as a Fuel. 3. Fuel and Rheological Properties of Bioslurry Prepared from the Bio-oil and Biochar of Mallee Biomass Fast Pyrolysis. *Energy & Fuels*, 24, 5669-5676. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/ef1008117>
- Abdullah, H., & Wu, H. (2011). Bioslurry as a Fuel. 4. Preparation of Bioslurry Fuels from Biochar and the Bio-oil-Rich Fractions after Bio-oil/Biodiesel Extraction. *Energy Fuels*, 25(4), 1759-1771. doi:[10.1021/ef101535e](https://doi.org/10.1021/ef101535e)
- Abdullah, Nurhayati, e. a. (2014). Characterization of Banana (Musaspp.) Pseudo-Stem and Fruit-Bunch-Stem as a Potential Renewable Energy Resource. *International Journal of Biological, Veterinary, Agricultural and Food Engineering*, 8(8), 815-819. Retrieved from <http://www.waset.org/publications/9998963>

- Abel, S. (2013). Impact of biochar and hydrochar addition on water retention and water repellency of sandy soil. *Geoderma*, 202–203, 183–191. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0016706113000803>
- Abewa, A., Yitaferu, B., G.Selassie, Y., & Amare, T. (2014). The Role of Biochar on Acid Soil Reclamation and Yield of Teff (*Eragrostis tef* [Zucc] Trotter) in Northwestern Ethiopia. *Journal of Agricultural Science*, 6(1), 1-12. Retrieved from <http://www.ccsenet.org/journal/index.php/jas/article/view/31299/18976>
- Abioye, A. M., & Ani, F. N. (2014). *The Characteristics of Oil Palm Shell Biochar and Activated Carbon Produced via Microwave Heating*. Retrieved from <http://akademibaru.com/wvcarmaea/docu/050.pdf>
- Abioye, A. M., & Ani, F. N. (2014). The Characteristics of Oil Palm Shell Biochar and Activated Carbon Produced via Microwave Heating. *Applied Mechanics and Materials*, 695, 12 - 15. doi:10.4028/www.scientific.net/AMM.695.12
- Abit, S. M., et al. (2012). Influence of feedstock and pyrolysis temperature of biochar amendments on transport of *Escherichia coli* in saturated and unsaturated soil. *Environmental Science and Technology*, 46(15), 8097–8105. doi:10.1021/es300797z
- Abit, S. M., et al. (2013). Transport of *Escherichia coli*, *Salmonella typhimurium*, and Microspheres in Biochar-Amended Soils with Different Textures. *Journal of Environmental Quality*, 43, 371-378. Retrieved from <https://pubag.nal.usda.gov/pubag/downloadPDF.xhtml?id=58653&content=PDF>
- Abiven, S., Andreoli, R., & Andreoli, R. (2010). Charcoal does not change the decomposition rate of mixed litters in a mineral cambisol: a controlled conditions study. *Biology and Fertility in Soils*, 47(1), 111-114. Retrieved from <http://link.springer.com/article/10.1007/s00374-010-0489-1>
- Abiven, S., Hund, A., Martinsen, V., & Cornelissen, G. (2015). Biochar amendment increases maize root surface areas and branching: a shovelingomics study in Zambia. *Plant and Soil*, 395(1), 45-55. doi:10.1007/s11104-015-2533-2
- Abiven, S., Schmidt, M. W. I., & Lehmann, J. (2014). Biochar by design. *Nature Geoscience*, 7, 326-327. doi:10.1038/ngeo2154
- Abo, K., Sugimatsu, K., Hori, M., Yoshida, G., Shimabukuro, H., Yagi, H., . . . Tarutani, K. (2018). Quantifying the Fate of Captured Carbon: From Seagrass Meadows to the Deep Sea. In T. Kuwae & M. Hori (Eds.), *Blue Carbon in Shallow Coastal Ecosystems: Carbon Dynamics, Policy, and Implementation* (pp. 251-271). Singapore: Springer Singapore.
- Abolins, J. (2018). Ecological Limits to Sustainable Use of Wood Fuels. In W. Leal Filho, D. M. Pociovălișteanu, P. R. Borges de Brito, & I. Borges de Lima (Eds.), *Towards a Sustainable Bioeconomy: Principles, Challenges and Perspectives* (pp. 483-495). Cham: Springer International Publishing.
- Abotalib, M., Zhao, F., & Claren, A. (2016). Deployment of a Geographical Information System Life Cycle Assessment Integrated Framework for Exploring the Opportunities and Challenges of Enhanced Oil Recovery Using Industrial CO₂ Supply in the United States. *ACS Sustainable Chemistry & Engineering*, 4(9), 4743-4751. doi:10.1021/acssuschemeng.6b00957
- Abouelnaga, M. (2021). *Carbon Dioxide Removal: Pathways and Policy Needs*. Retrieved from <https://www.c2es.org/document/carbon-dioxide-removal-pathways-and-policy-needs/>
- Abraham, E. R., Law, C. S., Boyd, P. W., Lavender, S. J., Maldonado, M. T., & Bowie, A. R. (2000). Importance of stirring in the development of an iron-fertilized phytoplankton bloom. *Nature*, 407(6805), 727-730. Retrieved from <http://dx.doi.org/10.1038/35037555>
- Ábrego, J., et al. (2015). *Phytotoxicity of Sewage Sludge Biochars Prepared at Different Pyrolysis Conditions*. Paper presented at the 23rd European Biomass Conference and Exhibition. https://citarea.cita-aragon.es/citarea/bitstream/10532/2979/1/2015_156.pdf

- Abrishamkesh, S., Gorji, M., Asadi, H., Bagheri-Marandi, G. H., & Pourbabae, A. A. (2015). Effects of rice husk biochar application on the properties of alkaline soil and lentil growth. *Plant, Soil and Environment*, 61(11), 475 - 482. doi:10.17221/117/2015-pse
- Abt, K. L., Abt, R. C., & Galik, C. S. (2012). Effect of Bioenergy Demands and Supply Response on Markets, Carbon, and Land Use. *Forest Science*, 58(5), 523-539. Retrieved from <http://www.ssrc.ufl.edu/CFEOR/LogIn/log%20in%20docs/recent%20research/Effect%20of%20Bioenergy%20Demand....pdf>
- Abubakar, R., et al. . (2015). Influence of Oil Palm Empty Fruit Bunch Biochar on Floodwater pH and Yield Components of Rice Cultivated on Acid Sulphate Soil under Rice Intensification Practices. *Plant Production Science*, 18(4), 491 - 500. doi:10.1626/pps.18.491
- Abubakar, Z., & Ani, F. N. (2014). Microwave-assisted pyrolysis of oil palm shell biomass using an overhead stirrer. *Jurnal Mekanikal*, 96, 162-172. Retrieved from http://jurnalmekanikal.fkm.utm.my/UserFiles/file/issue%2036/2_MICROWAVE-ASSISTED_PYROLYSIS_OF_OIL_PALM_SHELL BIOMASS.pdf
- Abujabbehah, I. S., Bound, S. A., Doyle, R., & Bowman, J. P. (2016). Effects of biochar and compost amendments on soil physico-chemical properties and the total community within a temperate agricultural soil. *Applied Soil Ecology*, 98, 243 - 253. doi:10.1016/j.apsoil.2015.10.021
- Abukari, A. (2014). *Effect of rice husk biochar on maize productivity in the Guinea Savannah Zone of Ghana*. Kwame Nkrumah University of Science and Technology, Retrieved from <http://ir.knust.edu.gh/handle/123456789/6595>
- Abunowara, M., & Elgarni, M. (2013). Carbon Dioxide Capture from Flue Gases by Solid Sorbents. *Energy Procedia*, 37, 16-24. doi:<http://dx.doi.org/10.1016/j.egypro.2013.05.080>
- Aburas, H., & Demirbas, A. (2015). Evaluation of beech for production of bio-char, bio-oil and gaseous materials. *Process Safety and Environmental Protection*, 94, 29 - 36. doi:10.1016/j.psep.2014.12.004
- Academies, S. (2018). Emissionen rückgängig machen oder die Sonneneinstrahlung beeinflussen: Ist «Geoengineering» sinnvoll, überhaupt machbar und, wenn ja, zu welchem Preis? *Fact Sheets*, 13(4), 1-8. Retrieved from <http://www.akademien-schweiz.ch/en/index/Publikationen/Swiss-Academies-Factsheets.html>
- Achten, W. M. J., et al. (2010). Jatropha integrated agroforestry systems - biodiesel pathways toward sustainable rural development. In C. Poterio & C. Ferra (Eds.), *Jatropha Curcas as a Premier Biofuel: Cost, Growing and Management* (pp. 85-102): Nova Science Publishers.
- Achterberg, E. P., Moore, C. M., Henson, S. A., Steigenberger, S., Stohl, A., Eckhardt, S., . . . Ryan-Keogh, T. J. (2013). Natural iron fertilization by the Eyjafjallajökull volcanic eruption. *Geophysical Research Letters*, 40(5), 921-926. doi:10.1002/grl.50221
- Ack, B. (2020). Ocean-Based Carbon Dioxide Removal: Air Miners.
- Ack, B. (2020). Rethinking the ocean-climate crisis: Why negative emissions and ecosystem life support are urgently needed. *The Economist: World Ocean Initiative*. Retrieved from <https://www.woi.economist.com/rethinking-the-ocean-climate-crisis-why-negative-emissions-and-ecosystem-life-support-are-urgently-needed/>
- Acosta, L. A., Enano Jr, N. H., Magcale-Macandog, D. B., Engay, K. G., Herrera, M. N. Q., Nicopior, O. B. S., . . . Lucht, W. (2013). How sustainable is bioenergy production in the Philippines? A conjoint analysis of knowledge and opinions of people with different typologies. *Applied Energy*, 102, 241-253. doi:<http://dx.doi.org/10.1016/j.apenergy.2012.09.063>
- Acosta, L. A., Eugenio, E. A., Enano Jr, N. H., Magcale-Macandog, D. B., Vega, B. A.,

- Macandog, P. B. M., . . . Lucht, W. (2014). Sustainability trade-offs in bioenergy development in the Philippines: An application of conjoint analysis. *Biomass and Bioenergy*, 64, 20-41. doi:<http://dx.doi.org/10.1016/j.biombioe.2014.03.015>
- Adams, E. E., & Caldeira, K. (2008). Ocean Storage of CO₂. *Elements*, 4, 319-324. Retrieved from https://people.ucsc.edu/~mdmccar/migrated/ocea213/readings/15_GeoEngineer_C_sequestration/adams_2008_Elements_CALDERIA_Ocean_CO2_Storeage.pdf
- Adams, E. E., & Caldeira, K. (2009). Carbon Sequestration via Direct Injection into the Ocean. In J. H. Steele (Ed.), *Encyclopedia of Ocean Sciences (Second Edition)* (pp. 495-501). Oxford: Academic Press.
- Adams, J. M. M., Ross, A. B., Anastasakis, K., Hodgson, E. M., Gallagher, J. A., Jones, J. M., & Donnison, I. S. (2011). Seasonal variation in the chemical composition of the bioenergy feedstock *Laminaria digitata* for thermochemical conversion. *Bioresource Technology*, 102(1), 226-234. doi:<https://doi.org/10.1016/j.biortech.2010.06.152>
- Adams, M., et al. . (2012). The Effect of Biochar on Native and Invasive Prairie Plant Species. *Invasive Plant Science and Management*, 6(2), 197-207. doi:10.1614/ipsm-d-12-00058.1
- Adams, M. A., & Pfautsch, S. (2018). Grand Challenges: Forests and Global Change. *Frontiers in Forests and Global Change*, 1(1). doi:10.3389/ffgc.2018.00001
- Adámez-Rubio, I., Abad, A., Gayán, P., de Diego, L. F., García-Labiano, F., & Adámez, J. (2013). Performance of CLOU process in the combustion of different types of coal with CO₂ capture. *International Journal of Greenhouse Gas Control*, 12, 430-440. doi:<https://doi.org/10.1016/j.ijggc.2012.11.025>
- Adámez-Rubio, I., Pérez-Astray, A., Abad, A., Gayán, P., De Diego, L. F., Adámez, J. J. M., & Change, A. S. f. G. (2019). Chemical looping with oxygen uncoupling: an advanced biomass combustion technology to avoid CO₂ emissions. 24(7), 1293-1306. doi:10.1007/s11027-019-9840-5
- Adebayo, A. R., Kandil, M. E., Okasha, T. M., & Sanni, M. L. (2017). Measurements of electrical resistivity, NMR pore size and distribution, and x-ray CT-scan for performance evaluation of CO₂ injection in carbonate rocks: A pilot study. *International Journal of Greenhouse Gas Control*, 63, 1-11. doi:<https://doi.org/10.1016/j.ijggc.2017.04.016>
- Adegboye, M. O. (2013). *Continuous Segregation and Removal of Biochar from Bubbling Fluidized Bed*. University of Western Ontario,
- Adejumo, A. V., & Adejumo, O. O. (2018). Sustainable Development: Implications for Energy Policy in Nigeria. In W. Leal Filho, D. M. Pociovalisteanu, P. R. Borges de Brito, & I. Borges de Lima (Eds.), *Towards a Sustainable Bioeconomy: Principles, Challenges and Perspectives* (pp. 395-433). Cham: Springer International Publishing.
- Adejumo, S. A., Owolabi, M. O., & Odesola, I. F. (2016). Agro-physiologic effects of compost and biochar produced at different temperatures on growth, photosynthetic pigment and micronutrients uptake of maize crop. *African Journal of Agricultural Research*, 11(8), 661 - 673. doi:10.5897/ajar2015.9895
- Adeyemo, A. O., et al. (2015). Removal of Cadmium(II) from Aqueous Solutions by Pinecone Biochar. *Research Journal of Chemical and Environmental Sciences*, 2(2), 98-102. Retrieved from <http://www.aelsindia.com/rjcesapril2014/15.pdf>
- Adhiya, J., & Chisholm, S. W. (2001). *Is Ocean Fertilization a Good Carbon Sequestration Option?* Retrieved from <https://energy.mit.edu/wp-content/uploads/2001/09/MIT-LFEE-02-001.pdf>
- Adil, S., et al. (2014). Adsorption of Heavy Metals by Bio-Chars Produced from Pyrolysis of Paper Mulberry from Simulated Industrial Wastewater. *The Nucleus*, 51(4), 323. Retrieved from http://www.thenucleuspak.org.pk/nucleus/AdminArea/Accepted_papers/%5B5%5D%20MS-1037%20Author%20proof%20after%20plg%20rep.pdf
- Adlen, E., & Hepburn, C. (2020). Five ways to turn CO₂ from pollution to a valuable product. *The*

- Conversation*. Retrieved from <https://theconversation.com/five-ways-to-turn-co2-from-pollution-to-a-valuable-product-129499>
- Adler, P. R., Del Gross, S. J., & Parton, W. J. (2007). Life-cycle assessment of net greenhouse-gas flux for bioenergy cropping systems. *Ecological Applications*, 17(3), 675-691. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1890/05-2018/abstract>
- Admin, I. E. D. B. (2020). Oxford Net Zero launches to tackle global carbon emissions. *Indian EducationDiary*. Retrieved from <https://indiaeducationdiary.in/oxford-net-zero-launches-to-tackle-global-carbon-emissions/>
- Adnan, M. A., Azis, M. M., Quddus, M. R., & Hossain, M. M. (2018). Integrated liquid fuel based chemical looping combustion – parametric study for efficient power generation and CO₂ capture. *Applied Energy*, 228, 2398-2406. doi:<https://doi.org/10.1016/j.apenergy.2018.07.072>
- Adrados, A., De Marco, I., Lopez-Urionabarrenechea, A., Solar, J., & Caballero, B. (2015). Avoiding tar formation in biocrude production from waste biomass. *Biomass and Bioenergy*, 74, 172 - 179. doi:[10.1016/j.biombioe.2015.01.021](https://doi.org/10.1016/j.biombioe.2015.01.021)
- Aertsens, J., De Nocker, L., & Gobin, A. (2013). Valuing the carbon sequestration potential for European agriculture. *Land Use Policy*, 31(Supplement C), 584-594. doi:<https://doi.org/10.1016/j.landusepol.2012.09.003>
- Agarwal, A., & Parsons, J. (2011). Commercial Structures for Integrated CCS-EOR Projects. *Energy Procedia*, 4, 5786-5793. doi:<https://doi.org/10.1016/j.egypro.2011.02.575>
- Agaton, C. B. (2021). Application of real options in carbon capture and storage literature: Valuation techniques and research hotspots. *Science of The Total Environment*, 148683. doi:<https://doi.org/10.1016/j.scitotenv.2021.148683>
- Agawin, N. S. R., Hale, M. S., Rivkin, R. B., Matthews, P., & Li, W. K. W. (2006). Microbial response to a mesoscale iron enrichment in the NE Subarctic Pacific: Bacterial community composition. *Deep Sea Research Part II: Topical Studies in Oceanography*, 53(20–22), 2248-2267. doi:<http://dx.doi.org/10.1016/j.dsrr2.2006.05.040>
- Agblevor, F. A., Mante, N., Beis, S., Kim, S., & Tarrant, R. (2009). Biocrude oils from the fast pyrolysis of poultry litter and hardwood. *Waste Management*, 30, 298 - 307. Retrieved from http://ac.els-cdn.com/S0956053X09003961/1-s2.0-S0956053X09003961-main.pdf?_tid=f5951e54-e9d0-11e6-b655-00000aacb360&acdnat=1486099616_22d4b9142a33ac6325d6655bc4a8b110
- Agboola, K., & Moses, S. A. (2015). Effect of biochar and cowdung on nodulation, growth and yield of soybean (*Glycine max* L. Merrill). *International Journal of Agriculture and Biosciences*, 4(4), 154-160. Retrieved from <https://www.cabdirect.org/cabdirect/FullTextPDF/20153359382.pdf>
- Agdestein, M. (2020). Ocean-based negative emissions technology research receives prestigious funding. *Norwegian SciTech News*. Retrieved from <https://norwegianscitechnews.com/notes/ocean-based-negative-emissions-technology-research-receives-prestigious-funding/>
- Agee, E., Orton, A., & Rogers, J. (2013). CO₂ Snow Deposition in Antarctica to Curtail Anthropogenic Global Warming. *Journal of Applied Meteorology and Climatology*, 52(2), 281-288. doi:[10.1175/jamc-d-12-0110.1](https://doi.org/10.1175/jamc-d-12-0110.1)
- Agee, E. M., & Orton, A. (2016). An Initial Laboratory Prototype Experiment for Sequestration of Atmospheric CO₂. *Journal of Applied Meteorology and Climatology*, 55(8), 1763-1770. doi:[10.1175/jamc-d-16-0135.1](https://doi.org/10.1175/jamc-d-16-0135.1)
- Agegnehu, G., Bass, A. M., Nelson, P. N., & Bird, M. I. (2016). Benefits of biochar, compost and biochar-compost for soil quality, maize yield and greenhouse gas emissions in a tropical agricultural soil. *Science of The Total Environment*, 543, 295 - 306. doi:[10.1016/j.scitotenv.2015.11.054](https://doi.org/10.1016/j.scitotenv.2015.11.054)

- Agegnehu, G., Bass, A. M., Nelson, P. N., Muirhead, B., Wright, G., & Bird, M. I. (2015). Biochar and biochar-compost as soil amendments: Effects on peanut yield, soil properties and greenhouse gas emissions in tropical North Queensland, Australia. *Agriculture, Ecosystems & Environment*, 213, 72 - 85. doi:10.1016/j.agee.2015.07.027
- Agegnehu, G., Bird, M., Nelson, P., & Bass, A. (2014). The Ameliorating effects of biochar and compost on soil quality and plant growth on a Ferralsol. *Soil Research*, 53(1), 1-12. Retrieved from https://www.researchgate.net/publication/272094413_The_ameliorating_effects_of_biochar_and_compost_on_soil_quality_and_plant_growth_on_a_Ferralsol
- Agegnehu, G., Nelson, P. N., & Bird, M. I. (2016). Crop yield, plant nutrient uptake and soil physicochemical properties under organic soil amendments and nitrogen fertilization on Nitisols. *Soil and Tillage Research*, 160, 1 - 13. doi:10.1016/j.still.2016.02.003
- Agency, I. E. (2011). *Combining Bioenergy with CCS Reporting and Accounting for Negative Emissions under UNFCCC and the Kyoto Protocol*. Retrieved from https://www.iea.org/publications/freepublications/publication/bioenergy_ccs.pdf
- Agency, I. E. (2020). *Direct Air Capture*. Retrieved from <https://www.iea.org/reports/direct-air-capture>
- Agency, O. I. E. (2015). *Storing CO₂ through Enhanced Oil Recovery*. Retrieved from https://www.iea.org/publications/insights/insightpublications/CO2EOR_3Nov2015.pdf
- Aggarwal, A. (2021). 'Carbon' in forest carbon projects: Evidence from India. *Climate and Development*, 1-10. doi:10.1080/17565529.2021.1956873
- Agnihotri, A., Rai, S., & Warhadpande, N. (2017). Carbon Dioxide Management—Aluminium Industry Perspective. In M. Goel & M. Sudhakar (Eds.), *Carbon Utilization: Applications for the Energy Industry* (pp. 217-229). Singapore: Springer Singapore.
- Agostini, F., Gregory, A. S., & Richter, G. M. (2015). Carbon Sequestration by Perennial Energy Crops: Is the Jury Still Out? *BioEnergy Research*, 8, 1057-1080. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4732603/pdf/12155_2014_Article_9571.pdf
- Agrafioti, E., et al. (2013). Biochar Production by Sewage Sludge Pyrolysis. *Journal of Analytical and Applied Pyrolysis*, 101, 72-78. Retrieved from http://ac.els-cdn.com/S0165237013000454/1-s2.0-S0165237013000454-main.pdf?_tid=bf887e86-e9d1-11e6-a3e5-00000aab0f02&acdnat=1486099955_78575e6a5dd7bcf4a4fe99e8b2acd471
- Agriculture, U. S. D. o. (2021). *90-Day Progress Report on Climate-Smart Agriculture and Forestry*. Retrieved from <https://www.usda.gov/sites/default/files/documents/climate-smart-ag-forestry-strategy-90-day-progress-report.pdf>
- Agruilar-Amuchastegui, N., et al. (2021). *Forest Carbon Credits: Separating the "good" from the merely "good enough"*. Retrieved from https://wwf.panda.org/discover/knowledge_hub/all_publications/?1415966/Forest-Carbon-Credits-Separating-the-good-from-the-merely-good-enough
- Agustini, D., Mangrich, A. S., Bergamini, M. F., & Marcolino-Junior, L. H. (2015). Sensitive voltammetric determination of lead released from ceramic dishes by using of bismuth nanostructures anchored on biochar. *Talanta*, 142, 221 - 227. doi:10.1016/j.talanta.2015.04.052
- Ahmad, F. M. (2017). Bipartisan Support Grows for Carbon Capture. *Breaking Energy*. Retrieved from Bipartisan Support Grows for Carbon Capture
- Ahmad, M., et al. (2012). Effects of Pyrolysis Temperature on Soybean Stover- and Peanut Shell-derived Biochar Properties and TCE Adsorption in Water. *Bioresource Technology*, 118, 536-544. Retrieved from http://ac.els-cdn.com/S0960852412007869/1-s2.0-S0960852412007869-main.pdf?_tid=a0c0aca2-e9d2-11e6-b3ee-00000aacb35d&acdnat=1486100333_edc061075459285ba7a758d2261c97f8
- Ahmad, M., et al. . (2012). Effects of soil dilution and amendments (mussel shell, cow bone, and

- biochar) on Pb availability and phytotoxicity in military shooting range soil. *Ecotoxicology and Environmental Safety*, 79, 225-231. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0147651312000073>
- Ahmad, M., et al. . (2013). Modeling adsorption kinetics of trichloroethylene onto biochars derived from soybean stover and peanut shell wastes. *Environmental Science and Pollution Research*, 20(12), 8364-8373. Retrieved from http://download.springer.com/static/pdf/254/art%253A10.1007%252Fs11356-013-1676-z.pdf?originUrl=http%3A%2F%2Flink.springer.com%2Farticle%2F10.1007%2Fs11356-013-1676-z&token2=exp=1486140637~acl=%2Fstatic%2Fpdf%2F254%2Fart%25253A10.1007%25252Fs11356-013-1676-z.pdf%3ForiginUrl%3Dhttp%253A%252F%252Flink.springer.com%252Farticle%252F10.1007%25252Fs11356-013-1676-z*~hmac=c6b56c6c3f61c2c077a54c4d66ad955eea549e7d292529c229cf4137b089a47d
- Ahmad, M., et al. . (2013). Production and use of biochar from buffalo-weed (*Ambrosia trifida L.*) for trichloroethylene removal from water. *Journal of Chemical Technology and Biotechnology*, 89(1), 150-157. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/jctb.4157/pdf>
- Ahmad, M., et al. . (2014). Speciation and phytoavailability of lead and antimony in a small arms range soil amended with mussel shell, cow bone and biochar: EXAFS spectroscopy and chemical extractions. *Chemosphere*, 95, 433-441. Retrieved from https://www.researchgate.net/profile/Yong_Sik_Ok/publication/258251761_Speciation_and_phytoavailability_of_lead_and_antimony_in_a_small_arms_range_soil_amended_with_mussel_shell_cow_bone_and_biochar_EXAFS_spectroscopy_and_chemical_extractions/links/00b7d527bf5b8283f9000000.pdf?origin=publication_list
- Ahmad, M., et al. (2015). Effect of Sowing Depths, Nitrogen Placement Methods and Biochar on Quantitative and Qualitative Attributes of Sugar Beet and its Weeds. *Pakistan Journal of Weed Science Research*, 21(2), 181-194. Retrieved from <http://eds.a.ebscohost.com/eds/pdfviewer/pdfviewer?sid=f21d132c-6d2a-413c-b550-f433e30b9e20%40sessionmgr4007&vid=1&hid=4111>
- Ahmad, M., et al. (2016). Biochar-induced changes in soil properties affected immobilization/ mobilization of metals/metalloids in contaminated soils. *Journal of Soils and Sediments*, 17(3), 717-730. doi:10.1007/s11368-015-1339-4
- Ahmad, M., et al. . (2016). Impact of soybean stover- and pine needle-derived biochars on Pb and As mobility, microbial community, and carbon stability in a contaminated agricultural soil. *Journal of Environmental Management*, 166, 131 - 139. doi:10.1016/j.jenvman.2015.10.006
- Ahmad, M., et al. (2016). Lead and copper immobilization in a shooting range soil using soybean stover- and pine needle-derived biochars: Chemical, microbial and spectroscopic assessments. *Journal of Hazardous Materials*, 301, 179 - 186. doi:10.1016/j.jhazmat.2015.08.029
- Ahmad, M., Rajapaksha, A. U., Lim, J. E., Zhang, M., Bolan, N., Mohan, D., . . . Ok, Y. S. (2014). Biochar as a sorbent for contaminant management in soil and water: A review. *Chemosphere*, 99, 19-33. doi:<http://dx.doi.org/10.1016/j.chemosphere.2013.10.071>
- Ahmad, M. T., Asghar, H. N., Saleem, M., Khan, M. Y., & Zahir, Z. A. (2015). Synergistic Effect of Rhizobia and Biochar on Growth and Physiology of Maize. *Agronomy Journal*, 107(6), 2327. doi:10.2134/agronj15.0212
- Ahmadi, M. A., Pouladi, B., & Barghi, T. (2016). Numerical modeling of CO₂ injection scenarios in petroleum reservoirs: Application to CO₂ sequestration and EOR. *Journal of Natural*

- Gas Science and Engineering*, 30, 38-49. doi:<https://doi.org/10.1016/j.jngse.2016.01.038>
- Åhman, M., Skjærseth, J. B., & Eikeland, P. O. (2018). Demonstrating climate mitigation technologies: An early assessment of the NER 300 programme. *Energy Policy*, 117, 100-107. doi:<https://doi.org/10.1016/j.enpol.2018.02.032>
- Ahmed, H. P., & Schoenau, J. (2013). *Canola Yield and Nutrient Uptake as Affected by Biochar Addition to a Brown Chernozem*.
- Ahmed, H. P., & Schoenau, J. J. (2015). Effects of Biochar on Yield, Nutrient Recovery, and Soil Properties in a Canola (*Brassica napus L*)-Wheat (*Triticum aestivum L*) Rotation Grown under Controlled Environmental Conditions. *BioEnergy Research*, 8(3), 1183-1196. doi:10.1007/s12155-014-9574-x
- Ahmed, M. B., Zhou, J. L., Ngo, H. H., & Guo, W. (2015). Adsorptive removal of antibiotics from water and wastewater: Progress and challenges. *Science of The Total Environment*, 532, 112 - 126. doi:10.1016/j.scitotenv.2015.05.130
- Ahmed, M. B., Zhou, J. L., Ngo, H. H., & Guo, W. (2016). Insight into biochar properties and its cost analysis. *Biomass and Bioenergy*, 84, 76 - 86. doi:10.1016/j.biombioe.2015.11.002
- Ahmed, N. (2014). World Bank and UN carbon offset scheme 'complicit' in genocidal land grabs - NGOs. *The Guardian*. Retrieved from <https://www.theguardian.com/environment/earth-insight/2014/jul/03/world-bank-un-redd-genocide-land-carbon-grab-sengwer-kenya>
- Ahmed, N., Cheung, W. W. L., Thompson, S., & Glaser, M. (2017). Solutions to blue carbon emissions: Shrimp cultivation, mangrove deforestation and climate change in coastal Bangladesh. *Marine Policy*, 82, 68-75. doi:<https://doi.org/10.1016/j.marpol.2017.05.007>
- Ahmed, N., & Glaser, M. (2016). Coastal aquaculture, mangrove deforestation and blue carbon emissions: Is REDD+ a solution? *Marine Policy*, 66, 58-66. doi:<https://doi.org/10.1016/j.marpol.2016.01.011>
- Ahmed, R. E., & Wiheeb, A. D. (2019). Enhancement of carbon dioxide absorption into aqueous potassium carbonate by adding amino acid salts. *Materials Today: Proceedings*. doi:<https://doi.org/10.1016/j.matpr.2019.09.198>
- Ahmeda, S., et al. . (2012). The potential role of biochar in combating climate change in Scotland: an analysis of feedstocks, life cycle assessment and spatial dimensions. *Journal of Environmental Planning and Management*, 55(4), 487-505. doi:10.1080/09640568.2011.608890
- Ahrends, A., Hollingsworth, P. M., Beckschäfer, P., Chen, H., Zomer, R. J., Zhang, L., . . . Xu, J. (2017). China's fight to halt tree cover loss. *Proceedings of the Royal Society B: Biological Sciences*, 284(1854). doi:10.1098/rspb.2016.2559
- Ahtikoski, A., et al. (2008). Economic viability of utilizing biomass energy from young stands—The case of Finland. *Biomass & Bioenergy*, 32(11), 988-996. Retrieved from https://www.researchgate.net/publication/222972274_Economic_viability_of_utilizing_biomass_energy_from_young_stands-The_case_of_Finland
- Aines, R. D. (2019). Atmospheric Carbon Extraction Scope, Available Technologies. In V. Ramanathan (Ed.), *Bending the Curve: Climate Change Solutions* (pp. 1-43).
- Aines, R. D. (2019). Atmospheric Carbon Extraction: Scope, Available Technologies, and Challenges. In V. Ramanathan (Ed.), *Bending the Curve* (pp. 714-756).
- Aitken, D. (2014). *Assessment of the sustainability of bioenergy production from algal feedstock*. The University of Edinburgh, Retrieved from <https://www.era.lib.ed.ac.uk/handle/1842/8961>
- Aizawa, M., et al. (2007, Sept. 29 2007-Oct. 4 2007). *Seaweed Bioethanol Production in Japan - The Ocean Sunrise Project*. Paper presented at the OCEANS 2007.
- Ajayi, A. E., Holthusen, D., & Horn, R. (2016). Changes in microstructural behaviour and hydraulic functions of biochar amended soils. *Soil and Tillage Research*, 155, 166 - 175.

- doi:10.1016/j.still.2015.08.007
- Ajayi, A. E., & Horn, R. (2016). Modification of chemical and hydrophysical properties of two texturally differentiated soils due to varying magnitudes of added biochar. *Soil and Tillage Research*, 164, 34-44. doi:10.1016/j.still.2016.01.011
- Akash, A. R., Rao, A. B., & Chandel, M. K. (2017). Relevance of Carbon Capture & Sequestration in India's Energy Mix to Achieve the Reduction in Emission Intensity by 2030 as per INDCs. *Energy Procedia*, 114, 7492-7503. doi:<https://doi.org/10.1016/j.egypro.2017.03.1882>
- Akça, M. O., & Namlı, A. (2014). Effects of poultry litter biochar on soil enzyme activities and tomato, pepper and lettuce plants growth. *Eurasian Journal of Soil Science*, 4(3), 161-168. Retrieved from <http://dergipark.ulakbim.gov.tr/ejss/article/view/5000130429/5000119473>
- Akerboom, S., Waldmann, S., Mukherjee, A., Agaton, C., Sanders, M., & Kramer, G. J. (2021). Different This Time? The Prospects of CCS in the Netherlands in the 2020s. *Frontiers in Energy Research*, 9(193). doi:10.3389/fenrg.2021.644796
- Akgul, O., Mac Dowell, N., Papageorgiou, L. G., & Shah, N. (2014). A mixed integer nonlinear programming (MINLP) supply chain optimisation framework for carbon negative electricity generation using biomass to energy with CCS (BECCS) in the UK. *International Journal of Greenhouse Gas Control*, 28, 189-202. doi:<http://dx.doi.org/10.1016/j.ijggc.2014.06.017>
- Akhand, A., Chanda, A., Das, S., Hazra, S., & Kuwae, T. (2018). CO₂ Fluxes in Mangrove Ecosystems. In T. Kuwae & M. Hori (Eds.), *Blue Carbon in Shallow Coastal Ecosystems: Carbon Dynamics, Policy, and Implementation* (pp. 185-221). Singapore: Springer Singapore.
- Akhtar, S., et al. . (2015). Interactive effect of biochar and plant growth-promoting bacterial endophytes on ameliorating salinity stress in maize. *Functional Plant Biology: Plant Function & Evolutionary Biology*, 42(8), 770-781. Retrieved from http://www.publish.csiro.au/view/journals/dsp_journals_pip_abstract_scholar1.cfm?nid=102&pip=FP15054
- Akhtar, S. S., et al. (2014). Biochar enhances yield and quality of tomato under reduced irrigation. *Agricultural Water Management*, 138, 37–44. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0378377414000626>
- Akhtar, S. S. (2015). *Biochar Ameliorate Drought and Salt Stress in Plants*. University of Copenhagen, Retrieved from <http://www.forskningsdatabasen.dk/en/catalog/2280082965>
- Akhtar, S. S., Andersen, M. N., & Liu, F. (2015). Biochar Mitigates Salinity Stress in Potato. *Journal of Agronomy and Crop Science*, 201(5), 368-378. doi:10.1111/jac.12132
- Akhtar, S. S., Andersen, M. N., & Liu, F. (2015). Residual effects of biochar on improving growth, physiology and yield of wheat under salt stress. *Agricultural Water Management*, 158, 61 - 68. doi:10.1016/j.agwat.2015.04.010
- Akhter, A., Hage-Ahmed, K., Soja, G., & Steinkellner, S. (2015). Compost and biochar alter mycorrhization, tomato root exudation, and development of *Fusarium oxysporum* f. sp. *lycopersici*. *Frontiers in Plant Science*, 6, 1-13. doi:10.3389/fpls.2015.00529
- Akhter, P., Farkhondehfal, M. A., Hernández, S., Hussain, M., Fina, A., Saracco, G., . . . Russo, N. (2016). Environmental issues regarding CO₂ and recent strategies for alternative fuels through photocatalytic reduction with titania-based materials. *Journal of Environmental Chemical Engineering*, 4(4, Part A), 3934-3953. doi:<http://dx.doi.org/10.1016/j.jece.2016.09.004>
- Akom, M., et al. . (2015). Effect of Biochar and Inorganic Fertilizer in Yam (*Dioscorea rotundata* Poir) Production in a Forest Agroecological Zone. *Journal of Agricultural Science*, 7(3),

211-222. doi:10.5539/jas.v7n3p211

- Al Shra'ah, A. Q. (2014). *Low temperature microwave materials for renewable fuels and chemicals pyrolysis of lignocellulosic*. Memorial University of Newfoundland, Retrieved from <http://research.library.mun.ca/6289/1/MSc%20Thesis.pdf>
- Alagukannan, G. (2016). Biochar – an Effective Tool to Abate Climate Change and Ensure Sustainable Agriculture. *Indian Journal of Applied Research*, 5(9), 383-385. Retrieved from <http://worldwidejournals.in/ojs/index.php/ijar/article/view/5/5>
- Alam, F., Date, A., Rasjidin, R., Mobin, S., Moria, H., & Baqui, A. (2012). Biofuel from Algae- Is It a Viable Alternative? *Procedia Engineering*, 49, 221-227. doi:<https://doi.org/10.1016/j.proeng.2012.10.131>
- Alam, F., Mobin, S., & Chowdhury, H. (2015). Third Generation Biofuel from Algae. *Procedia Engineering*, 105, 763-768. doi:<https://doi.org/10.1016/j.proeng.2015.05.068>
- Alam, M. B., Pulkki, R., & Shahi, C. (2012). Woody biomass availability for bioenergy production using forest depletion spatial data in northwestern Ontario. *Canadian Journal of Forest Research*, 42. doi:[10.1139/x2012-011](https://doi.org/10.1139/x2012-011)
- Alamin, A. H., & Kaewsichan, L. (2016). Adsorption of Pb(II) Ions from Aqueous Solution in Fixed Bed Column by Mixture of Clay plus Bamboo Biochar. *Walailak Journal of Science and Technology*, 13(11), 949-963. Retrieved from <http://wjst.wu.ac.th/index.php/wjst/article/view/1847/631>
- Alamooti, A. M., & Malekabadi, F. K. (2018). Chapter One - An Introduction to Enhanced Oil Recovery. In A. Bahadori (Ed.), *Fundamentals of Enhanced Oil and Gas Recovery from Conventional and Unconventional Reservoirs* (pp. 1-40): Gulf Professional Publishing.
- Al-Ansari, T., Korre, A., Nie, Z., & Shah, N. (2016). Integration of Biomass Gasification and CO₂ Capture in the LCA Model for the Energy, Water and Food Nexus. In K. Zdravko & B. Miloš (Eds.), *Computer Aided Chemical Engineering* (Vol. Volume 38, pp. 2085-2090): Elsevier.
- Alaswad, A., Dassisti, M., Prescott, T., & Olabi, A. G. (2015). Technologies and developments of third generation biofuel production. *Renewable and Sustainable Energy Reviews*, 51, 1446-1460. doi:<https://doi.org/10.1016/j.rser.2015.07.058>
- Alatiq, A., Aljedani, W., Abussaud, A., Algarni, O., Pilorgé, H., & Wilcox, J. (2021). Assessment of the carbon abatement and removal opportunities of the Arabian Gulf Countries. *Clean Energy*, 5(2), 340-353. doi:[10.1093/ce/zkab015](https://doi.org/10.1093/ce/zkab015)
- Al-Audah, O., & El-Dweik, M. (2015). *Biomass for Bioenergy and Biochar Applications*. Paper presented at the WM2015 Conference, Phoenix, AZ.
- Albanito, F., Hastings, A., Fitton, N., Richards, M., Martin, M., Mac Dowell, N., . . . Smith, P. (2019). Mitigation potential and environmental impact of centralized versus distributed BECCS with domestic biomass production in Great Britain. *GCB-Bioenergy*, 11(10). doi:[10.1111/gcbb.12630](https://doi.org/10.1111/gcbb.12630)
- Albertovna, V. A., et al. (2015). Research Journal of Pharmaceutical, Biological and Chemical Sciences. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*, 5(2), 1712-1719. Retrieved from [https://www.researchgate.net/profile/Anita_Goswami-Giri2/publication/262726143_Bioinformatics_Overview_of_lantana_camara_an_Environmental_Weed/links/57927fbf08aec89db785e842/Bioinformatics-Overview-of-lantana-camara-an-Environmental-Weed.pdf](https://www.researchgate.net/profile/Anita_Goswami-Giri2/publication/262726143_Bioinformatics_Overview_of_lantana_camara_an_Environmental_Weed/)
- Albrecht, A., & Kandji, S. T. (2003). Carbon sequestration in tropical agroforestry systems. *Agriculture, Ecosystems & Environment*, 99(1), 15-27. doi:[https://doi.org/10.1016/S0167-8809\(03\)00138-5](https://doi.org/10.1016/S0167-8809(03)00138-5)
- Albright, R., Caldeira, L., Hosfelt, J., Kwiatkowski, L., Maclaren, J. K., Mason, B. M., . . . Caldeira, K. (2016). Reversal of ocean acidification enhances net coral reef calcification.

- Nature*, 531(7594), 362-365. doi:10.1038/nature17155
- Alburquerque, J. A., et al. . (2015). Plant growth responses to biochar amendment of Mediterranean soils deficient in iron and phosphorus. *Journal of Plant Nutrition and Soil Science*, 178(4), 567 - 575. doi:10.1002/jpln.201400653
- Alburquerque, J. A., et al. (2016). Slow pyrolysis of relevant biomasses in the Mediterranean basin. Part 2. Char characterisation for carbon sequestration and agricultural uses. *Journal of Cleaner Production*, 120, 191–197. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0959652614011238>
- Alburquerque, J. A., Sánchez-Monedero, M. A., Roig, A., & Cayuela, M. L. (2014). High concentrations of polycyclic aromatic hydrocarbons (naphthalene, phenanthrene and pyrene) failed to explain biochar's capacity to reduce soil nitrous oxide emissions. *Environmental Pollution*, 196, 72 - 77. doi:10.1016/j.envpol.2014.09.014
- Alcalde, J., Flude, S., Wilkinson, M., Johnson, G., Edlmann, K., Bond, C. E., . . . Haszeldine, R. S. (2018). Estimating geological CO₂ storage security to deliver on climate mitigation. *Nature Communications*, 9(1), 2201. doi:10.1038/s41467-018-04423-1
- Alcalde, J., Smith, P., Haszeldine, R. S., & Bond, C. E. (2018). The potential for implementation of Negative Emission Technologies in Scotland. *International Journal of Greenhouse Gas Control*, 76, 85-91. doi:<https://doi.org/10.1016/j.ijggc.2018.06.021>
- Alcantar, S. (2015). *The effects of biochar on crop growth and carbon content, soil carbon and soil microbial biomass carbon intake*. Paper presented at the UNG Annual Research Conference. <http://digitalcommons.northgeorgia.edu/ngresearchconf/2015/Dahlonega/5/>
- Aldrich, E. L., & Koerner, C. (2011). Assessment of Carbon Capture and Sequestration Liability Regimes. *The Electricity Journal*, 24(7), 35-48. doi:<https://doi.org/10.1016/j.tej.2011.07.001>
- Ale, S., Femeena, P. V., Mehan, S., & Cibin, R. (2019). Chapter 10 - Environmental impacts of bioenergy crop production and benefits of multifunctional bioenergy systems. In J. C. Magalhães Pires & A. L. D. Cunha Gonçalves (Eds.), *Bioenergy with Carbon Capture and Storage* (pp. 195-217): Academic Press.
- Alexander, G., Mercedes Maroto-Valer, M., & Gafarova-Aksoy, P. (2007). Evaluation of reaction variables in the dissolution of serpentine for mineral carbonation. *Fuel*, 86(1), 273-281. doi:<https://doi.org/10.1016/j.fuel.2006.04.034>
- Alfredsson, H. A., et al. (2008). CO₂ sequestration in basaltic rock at the Hellisheiði site in SW Iceland: stratigraphy and chemical composition of the rocks at the injection site. *Mineralogical Magazine*, 72(1), 1-5. Retrieved from https://www.or.is/sites/or.is/files/co2_sequestration_in_basaltic_rock_at_the_hellisheiði_site_in_sw_iceland_stratigraphy_and_chemical_composition_of_the_rocks_at_the_injection_site.pdf
- Alfredsson, H. A., Wolff-Boenisch, D., & Stefánsson, A. (2011). CO₂ sequestration in basaltic rocks in Iceland: Development of a piston-type downhole sampler for CO₂ rich fluids and tracers. *Energy Procedia*, 4, 3510-3517. doi:<https://doi.org/10.1016/j.egypro.2011.02.278>
- Alho, C., Auccaise, R., Maia, C., Novotny, E., & Lelis, R. (2015). Using solid state ¹³C NMR to study pyrolysis final temperature effects on biochar stability. In.
- Alho, C. F. B. V., et al. (2012). Biochar and soil nitrous oxide emissions: Science Note. *Pesquisa Agropecuária Brasileira*, 47(5), 722-725. Retrieved from <https://seer.sct.embrapa.br/index.php/pab/article/viewFile/10030/6921>
- Alho, C. F. B. V., et al. (2013). Using Solid-State ¹³C NMR to Study Pyrolysis Final Temperature Effects on Biochar Stability. In J. Xu, et al. (Ed.), *Functions of Natural Organic Matter in Changing Environment* (pp. 1007-1011).
- Ali, A. A. M., Othman, M. R., Shirai, Y., & Hassan, M. A. (2014). Sustainable and integrated palm oil biorefinery concept with value-addition of biomass and zero emission system. *Journal of Cleaner Production*, 91, 96-99. doi:10.1016/j.jclepro.2014.12.030

- Ali Beg, A. (2021). Artificial Photosynthesis for extracting Atmospheric Carbon and produce Hydrogen fuel. *The Indian Wire*. Retrieved from <https://www.theindianwire.com/science/artificial-photosynthesis-for-extracting-atmospheric-carbon-and-produce-hydrogen-fuel-308318/>
- Ali, K., et al. (2015). Influence of Organic and Inorganic Amendments on Weeds Desnity and Chemical Composition. *Pakistan Journal of Weed Science Research*, 21(1), 47-57. Retrieved from <http://www.wssp.org.pk/vol-21-1-2015/5.%20PJWSR-05-2015.pdf>
- Ali, K., et al. . (2015). Integrated Use of Biochar: A Tool for Improving Soil and Wheat Quality of Degraded Soil Under Wheat-Maize Cropping Pattern. *Pakistan Journal of Botany*, 47(1), 233-240. Retrieved from [http://www.pakbs.org/pjbot/PDFs/47\(1\)/32.pdf](http://www.pakbs.org/pjbot/PDFs/47(1)/32.pdf)
- Ali, K., Arif, M., Jan, M. T., YASEEN, T., WAQAS, M., & Munsif, F. (2015). Biochar: A Novel Tool to Enhance Wheat Productivity and Soil Fertility on Sustainable Basis Under Wheat-Maize-Wheat Cropping Pattern. *Pakistan Journal of Botany*, 47(3), 1023-1031. Retrieved from [http://www.pakbs.org/pjbot/PDFs/47\(3\)/27.pdf](http://www.pakbs.org/pjbot/PDFs/47(3)/27.pdf)
- Ali, M. (2015). *Enhancing oil extraction processes for flaxseed and microalgae*. University of Glasgow, Retrieved from <http://theses.gla.ac.uk/6970/>
- Ali, M., Ahmed, O. H., & Primus, W. C. (2015). Coapplication of Chicken Litter Biochar and Urea Only to Improve Nutrients Use Efficiency and Yield of *Oryza sativa* L. Cultivation on a Tropical Acid Soil. *The Scientific World Journal*, 1-12. Retrieved from <http://downloads.hindawi.com/journals/tswj/2015/943853.pdf>
- Ali, M., Saleem, M., Khan, Z., & Watson, I. A. (2019). 16 - The use of crop residues for biofuel production. In D. Verma, E. Fortunati, S. Jain, & X. Zhang (Eds.), *Biomass, Biopolymer-Based Materials, and Bioenergy* (pp. 369-395): Woodhead Publishing.
- Ali, M. A., Kim, P. J., & Inubushi, K. (2015). Mitigating yield-scaled greenhouse gas emissions through combined application of soil amendments: A comparative study between temperate and subtropical rice paddy soils. *Science of The Total Environment*, 529, 140 - 148. doi:10.1016/j.scitotenv.2015.04.090
- Ali, U., Akram, M., Font-Palma, C., Ingham, D. B., & Pourkashanian, M. (2017). Part-load performance of direct-firing and co-firing of coal and biomass in a power generation system integrated with a CO₂ capture and compression system. *Fuel*. doi:<https://doi.org/10.1016/j.fuel.2017.09.023>
- Ali, U., Font-Palma, C., Akram, M., Agbonghae, E. O., Ingham, D. B., & Pourkashanian, M. (2017). Comparative potential of natural gas, coal and biomass fired power plant with post - combustion CO₂ capture and compression. *International Journal of Greenhouse Gas Control*, 63, 184-193. doi:<https://doi.org/10.1016/j.ijggc.2017.05.022>
- Alidoust, E., Afyuni, M., Hajabbasi, M. A., & Mosaddeghi, M. R. (2018). Soil carbon sequestration potential as affected by soil physical and climatic factors under different land uses in a semiarid region. *CATENA*, 171, 62-71. doi:<https://doi.org/10.1016/j.catena.2018.07.005>
- Alie, C., Backham, L., Croiset, E., & Douglas, P. L. (2005). Simulation of CO₂ capture using MEA scrubbing: a flowsheet decomposition method. *Energy Conversion and Management*, 46(3), 475-487. doi:<https://doi.org/10.1016/j.enconman.2004.03.003>
- Alisson, E. (2020). Study confirms contribution of bioenergy to climate change mitigation. *Phys.org*. Retrieved from <https://phys.org/news/2020-11-contribution-bioenergy-climate-mitigation.html>
- Allaire, S. E. (2014). Le biochar dans les milieux poreux : une solution miracle en environnement? (Biochar in porous media: a panacea environment?). *Vecteur Environnement (Vector Environment)*(September), 58-67. Retrieved from http://www.researchgate.net/publication/260713425_Le_biochar_dans_les_milieux_poreux__une_solution_miracle_en_environn

ement

- Allaire, S. E., et al. (2015). *Analyse des propriétés de biochars*. Retrieved from Québec: http://www.biochar-international.org/sites/default/files/Analyse_comparative_biochar_format.pdf
- Allaire, S. E., et al. (2015). Carbon dynamics in a biochar-amended loamy soil under switchgrass. *Canadian Journal of Soil Science*, 95(1), 1 - 13. doi:10.4141/cjss-2014-042
- Allaire, S. E., Baril, B., Vanasse, A., Lange, S. F., Mackay, J., & Smith, D. L. (2014). Carbon dynamic under switchgrass produced in a loamy soil amended with biochar. *Canadian Journal of Soil Science*, 95(1), 1-13. doi:10.4141/cjss-2014-042
- Allaire, S. E. E., Lange, S. F., Auclair, I. K., Quinche, M., & L., G. (2015). *Report: Analyses of biochar properties*. Retrieved from http://www.biochar-international.org/sites/default/files/Analyse_comparative-biochar-ENG.pdf
- Allam, R., Martin, S., Forrest, B., Fetvedt, J., Lu, X., Freed, D., . . . Manning, J. (2017). Demonstration of the Allam Cycle: An Update on the Development Status of a High Efficiency Supercritical Carbon Dioxide Power Process Employing Full Carbon Capture. *Energy Procedia*, 114, 5948-5966. doi:<https://doi.org/10.1016/j.egypro.2017.03.1731>
- Allen, E., Wall, D. M., Herrmann, C., Xia, A., & Murphy, J. D. (2015). What is the gross energy yield of third generation gaseous biofuel sourced from seaweed? *Energy*, 81(Supplement C), 352-360. doi:<https://doi.org/10.1016/j.energy.2014.12.048>
- Allen, J. M., et al. . (2014). The influences of poultry litter biochar and water source on radish growth and nutrition. *Discovery: The Student Journal of Dale Bumpers College of Agricultural, Food and Life Sciences*, 15, 4-11. Retrieved from <http://arkansasagnews.uark.edu/Discovery2014.pdf.pdf#page=5>
- Allen, J. M. (2015). *Effect of enhanced biochar on green house gas emission and paddy rice yield from loamy sand soil after first year trial in Thai Nguyen, Viet Nam*. University of Arkansas, Retrieved from <http://scholarworks.uark.edu/csesuht/9/>
- Allen, J. M. (2015). *The Effects of Poultry Litter Biochar and Water Source on Radish Growth and Nutrition*. University of Arkansas, Retrieved from <http://scholarworks.uark.edu/csesuht/9/>
- Allen, M. (2021). Welcome to CarbonTakeBack.org. Retrieved from <https://carbontakeback.org/>
- Allen, M. R., Frame, D. J., & Mason, C. F. (2009). The case for mandatory sequestration. *Nature Geoscience*, 2(12), 813-814. doi:10.1038/ngeo709
- Aller, D. (2012). *The Potential of Biochar produced from Eichhornia crassipes and Prosopis juliflora to Enhance Soil Water Holding Capacity of Drylands Soils*. The University of Edinburgh, Retrieved from <http://hdl.handle.net/1842/6333>
- Aller-Rojas, O., Moreno, B., Aponte, H., & Zavala, J. (2020). Carbon storage estimation of *Lessonia trabeculata* kelp beds in Southern Peru: an analysis from the San Juan de Marcona region. *Carbon Management*, 11(5), 525-532. doi:10.1080/17583004.2020.1808765
- Allesina, G., Pedrazzi, S., La Cava, E., Orlandi, M., Hanuskova, M., Fontanesi, C., & Tartarini, P. (2014). *Energy-Based Assessment of Optimal Operating Parameters for Coupled Biochar and Syngas Production in Stratified Downdraft Gasifiers*. Paper presented at the The 15th International Heat Transfer ConferenceProceedings of the 15th International Heat Transfer Conference, Kyoto, JapanConnecticut. http://www.dl.begellhouse.com/references/ihc15_50fa9dc1199c5e33_2714425e43f2da0e.html
- Alling, V., et al. . (2014). The role of biochar in retaining nutrients in amended tropical soils. *Journal of Plant Nutrition and Soil Science*, 177(5), 671 - 680. doi:10.1002/jpln.201400109
- Allinson, K., Burt, D., Campbell, L., Constable, L., Crombie, M., Lee, A., . . . Solsbey, L. (2017). Best Practice for Transitioning from Carbon Dioxide (CO₂) Enhanced Oil Recovery EOR

- to CO₂ Storage. *Energy Procedia*, 114, 6950-6956. doi:<https://doi.org/10.1016/j.egypro.2017.03.1837>
- Alliston, S. (2019). The trouble with indiscriminate tree-planting in Africa. *Mail & Guardian*. Retrieved from <https://mg.co.za/article/2019-10-31-00-the-trouble-with-indiscriminate-tree-planting-in-africa>
- Allsopp, M., et al. (2007). A scientific critique of oceanic iron fertilization as a climate change mitigation strategy. Retrieved from http://www.climos.com/imo/Other/Other_greenpeace_iron_fert_critiq_Sep2007.pdf
- Almaroai, Y. A., et al. (2014). Effects of biochar, cow bone, and eggshell on Pb availability to maize in contaminated soil irrigated with saline water. *Environmental Earth Sciences*, 71(3), 1289-1296. Retrieved from <http://link.springer.com/article/10.1007/s12665-013-2533-6>
- AlMazrouei, M., Asad, O., Zahra, M. A., Mezher, T., & Tsai, I. T. (2017). CO₂-Enhanced Oil Recovery System Optimization for Contract-based versus Integrated Operations. *Energy Procedia*, 105, 4357-4362. doi:<https://doi.org/10.1016/j.egypro.2017.03.927>
- Almedia, J., Achten, W. M. J., et al., Duarte, M. P., Medes, B., & Muys, B. (2011). Benchmarking the environmental performance of the Jatropha biodiesel system through a generic life cycle assessment. *Environmental Science and Technology*, 45, 5447-5453. Retrieved from <http://dx.doi.org/10.1021/es200257m>
- AlNouss, A., McKay, G., & Al-Ansari, T. (2021). Utilisation of Carbon Dioxide and Gasified Biomass for the Generation of Value Added Products. In M. Türkay & R. Gani (Eds.), *Computer Aided Chemical Engineering* (Vol. 50, pp. 1567-1572): Elsevier.
- Alotaibi, K., & Schoenau, J. (2016). Application of Two Bioenergy Byproducts with Contrasting Carbon Availability to a Prairie Soil: Three-Year Crop Response and Changes in Soil Biological and Chemical Properties. *Agronomy*, 6(1), 13. doi:[10.3390/agronomy6010013](https://doi.org/10.3390/agronomy6010013)
- Alper, K., Tekin, K., & Karagöz, S. (2014). Pyrolysis of agricultural residues for bio-oil production. *Clean Technologies and Environmental Policy*, 17(1), 211-223. Retrieved from <http://link.springer.com/article/10.1007/s10098-014-0778-8>
- Alpert, S. B., Spencer, D. F., & Hidy, G. (1992). Biospheric options for mitigating atmospheric carbon dioxide levels. *Energy Conversion and Management*, 33(5), 729-736. doi:[https://doi.org/10.1016/0196-8904\(92\)90078-B](https://doi.org/10.1016/0196-8904(92)90078-B)
- Al-Qayim, K., Nimmo, W., & Pourkashanian, M. (2015). Comparative techno-economic assessment of biomass and coal with CCS technologies in a pulverized combustion power plant in the United Kingdom. *International Journal of Greenhouse Gas Control*, 43, 82-92. doi:<https://doi.org/10.1016/j.ijggc.2015.10.013>
- Alter, L. (2021). Bill Gates's climate fixes don't add up. *Corporate Knights*. Retrieved from <https://www.corporateknights.com/channels/climate-and-carbon/bill-gatess-climate-fixes-dont-add-up-16197980/>
- Alvarado, V., & Manrique, E. (2010). Enhanced Oil Recovery: An Update Review. *Energies*, 3(9), 1529. Retrieved from <http://www.mdpi.com/1996-1073/3/9/1529>
- Alvarado-Morales, M., Boldrin, A., Karakashev, D. B., Holdt, S. L., Angelidaki, I., & Astrup, T. (2013). Life cycle assessment of biofuel production from brown seaweed in Nordic conditions. *Bioresource Technology*, 129(Supplement C), 92-99. doi:<https://doi.org/10.1016/j.biortech.2012.11.029>
- Alvarez, J. M., Pasian, C., Lal, R., López Núñez, R., & Fernández Martínez, M. (2016). Biochar and vermicompost as peat replacement for ornamental-plant production. *European Biochar Research Network*. Retrieved from http://digital.csic.es/bitstream/10261/129002/1/Poster_biochar_2015_Rafael.pdf
- Alvum-Toll, K., Karlsson, T., & Ström, H. (2011). *Biochar as soil amendment: A comparison between plant materials for biochar production from three regions in Kenya*. (Degree

- project in Biology Agriculture Programme – Soil and Plant Sciences). Swedish University of Agricultural Sciences, Uppsala, Sweden. Retrieved from http://stud.epsilon.slu.se/2572/1/alvum_toll_k_etal_110509.pdf
- Al-Wabel, M., Elfaki, J., Usman, A., Hussain, Q., & Ok, Y. S. (2019). Performance of dry water- and porous carbon-based sorbents for carbon dioxide capture. *Environmental Research*, 174, 69-79. doi:<https://doi.org/10.1016/j.envres.2019.04.020>
- Al-Wabel, M. I., et al. (2013). Pyrolysis temperature induced changes in characteristics and chemical composition of biochar produced from *conocarpus* wastes. *Bioresource Technology*, 131, 374-379.
- Al-Wabel, M. I., Usman, A. R. A., El-Naggar, A. H., Aly, A. A., Ibrahim, H. M., Elmaghraby, S., & Al-Omran, A. (2014). *Conocarpus* biochar as a soil amendment for reducing heavy metal availability and uptake by maize plants. *Saudi Journal of Biological Sciences*, 22(4), 503-511. doi:[10.1016/j.sjbs.2014.12.003](https://doi.org/10.1016/j.sjbs.2014.12.003)
- Al-Zahrani, H. S. M., et al. (2015). Potential Use of Biochar Derived from Cotton Stalks for Heavy Metals Removal from Wastewater. In.
- Amador, G., et al. (2020). *Transition Book: Priorities for Administrative Action on Carbon Removal in 2021+*. Retrieved from <https://t.co/NAOTos1THt>
- Amador, G., et al. (2020). *Zero, Then Negative: The Congressional Blueprint for Scaling Carbon Removal*. Retrieved from <https://static1.squarespace.com/static/5b9362d89d5abb8c51d474f8/t/609c3255bf02607c0d3b9591/1620853036140/Carbon180+ZeroThenNegative.pdf>
- Amador, G. (2021). The FY22 President's Budget, as told by Carbon180. Retrieved from <https://carbon180.medium.com/the-fy22-presidents-budget-as-told-by-carbon180-90d503e524>
- Amann, T., & Hartmann, J. (2019). Ideas and perspectives: Synergies from co-deployment of negative emission technologies. *Biogeosciences*, 16(15), 2949-2960. doi:[10.5194/bg-16-2949-2019](https://doi.org/10.5194/bg-16-2949-2019)
- Amann, T., Hartmann, J., Struyf, E., de Oliveira Garcia, W., Fischer, E. K., Janssens, I., . . . Schoelynck, J. (2020). Enhanced Weathering and related element fluxes – a cropland mesocosm approach. *Biogeosciences*, 17(1), 103-119. doi:[10.5194/bg-17-103-2020](https://doi.org/10.5194/bg-17-103-2020)
- Amaro, H. M., Macedo, Â. C., & Malcata, F. X. (2012). Microalgae: An alternative as sustainable source of biofuels? *Energy*, 44(1), 158-166. doi:<https://doi.org/10.1016/j.energy.2012.05.006>
- Ambrose, J. (2018). National Grid calls for carbon capture project funding by next year. *The Telegraph*. Retrieved from <https://www.telegraph.co.uk/business/2018/03/09/national-grid-calls-carbon-capture-project-funding-next-year/>
- Ambrose, J. (2019). UK must kick-start carbon capture or risk spiralling climate change costs. *The Telegraph*, (April 25). Retrieved from <https://www.telegraph.co.uk/business/2019/04/25/uk-must-kick-start-carbon-capture-risk-spiralling-climate-change/>
- Ambrose, J. (2020). Ecotricity founder to grow diamonds 'made entirely from the sky'. *The Guardian*. Retrieved from <https://www.theguardian.com/environment/2020/oct/30/ecotricity-founder-to-grow-diamonds-made-entirely-from-the-sky>
- Ambrose, J. (2020). UK electricity grid's carbon emissions could turn negative by 2033, says National Grid. *The Guardian*. Retrieved from Carbon emissions from Britain's electricity system could turn negative by as early as 2033 if the UK uses carbon capture technology alongside more renewable energy to reach its climate targets, according to a report from National Grid.
- Ameloot, N., et al. (2012). Short-term CO₂ and N₂O emissions and microbial properties of biochar amended sandy loam soils. *Soil Biology & Biochemistry*, 57, 401-410. Retrieved from <http://www.sciencedirect.com/science/article/pii/S003807171200404X>
- Ameloot, N., et al. (2013). Biochar amendment to soils with contrasting organic matter level:

- effects on N mineralization and biological soil properties. *Global Change Biology Bioenergy*, 7(1), 135-144. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/gcbb.12119/abstract>
- Ameloot, N., et al. (2013). Interactions between biochar stability and soil organisms: review and research needs. *European Journal of Soil Science*, 64(4), 379–390. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/ejss.12064/full>
- Ameloot, N., et al. (2014). C mineralization and microbial activity in four biochar field experiments several years after incorporation. *Soil Biology and Biochemistry*, 78, 195 - 203. doi:10.1016/j.soilbio.2014.08.004
- Ameloot, N., et al. (2016). Biochar-induced N₂O emission reductions after field incorporation in a loam soil. *Geoderma*, 267, 10 - 16. doi:10.1016/j.geoderma.2015.12.016
- Amigun, B., Musango, J., & Brent, A. (2011). Community perspectives on the introduction of biodiesel production in the Eastern Cape Province of South Africa. *Energy*, 36(5), 2502-2508. Retrieved from https://www.researchgate.net/publication/238001279_Community_perspectives_on_the_introduction_of_biodiesel_production_in_the_Eastern_Cape_Province_of_South_Africa
- Amini, S. (2014). *Restoring Native Grassland Function in Urban Environment: Implications for Soil-Plant Relations*. University of Alberta, Retrieved from https://era.library.ualberta.ca/public/view/item/uuid:602643c4-4a90-4d20-98c0-03ee27b31cc1/DS1/Amini_Seyedeharezoo_Fall%202013.pdf
- Amini, S., Ghadiri, H., Chen, C., & Marschner, P. (2015). Salt-affected soils, reclamation, carbon dynamics, and biochar: a review. *Journal of Soils and Sediments*, 16(3), 939-953. doi:10.1007/s11368-015-1293-1
- Aminu, M. D. (2018). *Carbon Dioxide Storage in the UK Southern North Sea Experimental and Numerical Analysis*. (Ph.D.). Cranfield University, Retrieved from https://www.academia.edu/38495657/Carbon_Dioxide_Storage_in_the_UK_Southern_North_Sea_Experimental_and_Numerical_Analysis_Clean.pdf
- Aminu, M. D., Nabavi, S. A., Rochelle, C. A., & Manovic, V. (2017). A review of developments in carbon dioxide storage. *Applied Energy*, 208, 1389-1419. doi:<https://doi.org/10.1016/j.apenergy.2017.09.015>
- Ammar Imran, M. (2014). Integration of Biochar with Organic and Inorganic Sources of Phosphorous for Improving Maize Productivity. *Journal of Environment and Earth Science*, 4(11), 1-7. Retrieved from <http://www.iiste.org/Journals/index.php/JEES/article/view/13984/14006>
- Amonette, J. (2012). *Federación Nacional de Cultivadores de Palma de Aceite Centro de Información y Documentación Palmero, Colombia (National Federation of Oil Palm Growers Center for Information and Documentation Palmero, Colombia)*. Paper presented at the Conferencia Internacional Sobre Palma de Aceite y Expopalma 2012 (Palma International Conference on Oil and Expopalma 2012). <http://www.sidalc.net/cgi-bin/wxis.exe/?IsisScript=FDPALMA.xis&method=post&formato=2&cantidad=1&expresion=mfn=014649>
- Amonette, J., & Joseph, S. (2009). Characteristics of Biochar - Micro-chemical Properties. In J. Lehmann & S. Joseph (Eds.), *Biochar for Environmental Management: Science and Technology* (pp. pp. 33-52.). London, UK: Earthscan.
- Amonette, J. E., Blanco-Canqui, H., Hassebrook, C., Laird, D. A., Lal, R., Lehmann, J., & Page-Dumroese, D. (2021). Integrated biochar research: A roadmap. *Journal of Soil and Water Conservation*, 76(1), 24A-29A. doi:10.2489/jswc.2021.1115A
- Amonette, J. E., Hu, Y., Schleketewey, N. J., Humphrys, D. R., Dai, S. S., Shaff, Z. W., . . . Arey, B. W. (2011). Survey of the chemical properties of a suite of biochars.

- Amorim, M. J. B., Novais, S., Römbke, J., & Soares, A. M. V. M. (2008). Avoidance test with enchytraeus albidus (enchytraeidae): Effects of Different Exposure Time and Soil Properties. *Environmental Pollution*, 155(1), 112-116. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0269749107005295>
- Amos, R. (2017). Bioenergy Carbon Capture and Storage in Global Climate Policy: Examining the Issues. *Carbon & Climate Law Review*, 10(4). doi:10.21552/cclr/2016/4/5
- Ampelli, C., Centi, G., Passalacqua, R., & Perathoner, S. (2010). Synthesis of solar fuels by a novel photoelectrocatalytic approach. *Energy Environ. Sci.*, 3, 292.
- Ampomah, W., Balch, R., Cather, M., Rose-Coss, D., Dai, Z., Heath, J., . . . Mozley, P. (2016). Evaluation of CO₂ Storage Mechanisms in CO₂ Enhanced Oil Recovery Sites: Application to Morrow Sandstone Reservoir. *Energy & Fuels*, 30(10), 8545-8555. doi:10.1021/acs.energyfuels.6b01888
- Ampomah, W., Balch, R., Will, R., Cather, M., Gunda, D., & Dai, Z. (2017). Co-optimization of CO₂-EOR and Storage Processes under Geological Uncertainty. *Energy Procedia*, 114, 6928-6941. doi:<https://doi.org/10.1016/j.egypro.2017.03.1835>
- Amundson, R., & Biardeau, L. (2018). Opinion: Soil carbon sequestration is an elusive climate mitigation tool. 115(46), 11652-11656. doi:10.1073/pnas.1815901115 %J Proceedings of the National Academy of Sciences
- An, C., & Huang, G. (2015). Environmental concern on biochar: capture, then what? *Environmental Earth Sciences*, 74(12), 7861-7863. doi:10.1007/s12665-015-4741-8
- An, S.-I., Shin, J., Yeh, S.-W., Son, S.-W., Kug, J.-S., Min, S.-K., & Kim, H.-J. Global cooling hiatus driven by an AMOC overshoot in a carbon dioxide removal scenario. *Earth's Future*, n/a(n/a), e2021EF002165. doi:<https://doi.org/10.1029/2021EF002165>
- Analytics, C. Why negative CO₂ emission technologies should not be classified as Geoengineering. Retrieved from http://climateanalytics.org/files/why_net_is_not_geoengineering.pdf
- Ananthaswamy, A. (2018). Fix acid oceans by dumping alkali in them? Forget it. *New Scientist*. Retrieved from <https://www.newscientist.com/article/dn21294-fix-acid-oceans-by-dumping-alkali-in-them-forget-it/>
- Anastasakis, K., & Ross, A. B. (2015). Hydrothermal liquefaction of four brown macro-algae commonly found on the UK coasts: An energetic analysis of the process and comparison with bio-chemical conversion methods. *Fuel*, 139, 546 - 553. doi:10.1016/j.fuel.2014.09.006
- Anawar, H. M., Farjana, A., Solaiman, Z. M., & Strezov, V. (2015). Biochar: An Emerging Panacea for Remediation of Soil Contaminants from Mining, Industry and Sewage Wastes. *Pedosphere*, 25(5), 654 - 665. doi:10.1016/s1002-0160(15)30046-1
- Anbar, A., et al. (2016). Addressing the Anthropocene. *Environmental Chemistry*, 13(5), 777-783.
- Anchondo, C., & Klump, E. (2020). Petra Nova is closed: What it means for carbon capture. *E&E News*. Retrieved from <https://www.eenews.net/stories/1063714297>
- Anda, M., Shamshuddin, J., & Fauziah, C. I. (2013). Increasing negative charge and nutrient contents of a highly weathered soil using basalt and rice husk to promote cocoa growth under field conditions. *Soil and Tillage Research*, 132(Supplement C), 1-11. doi:<https://doi.org/10.1016/j.still.2013.04.005>
- Anda, M., Shamshuddin, J., & Fauziah, C. I. (2015). Improving chemical properties of a highly weathered soil using finely ground basalt rocks. *CATENA*, 124, 147-161. Retrieved from <https://www.infona.pl/resource/bwmeta1.element.elsevier-bbc7cf8c-dd2b-360a-8824-ef7fd4950907>
- Anderegg, W. R. L., Trugman, A. T., Badgley, G., Anderson, C. M., Bartuska, A., Ciais, P., . . . Randerson, J. T. (2020). Climate-driven risks to the climate mitigation potential of

- forests. *Science*, 368(6497), eaaz7005. doi:10.1126/science.aaz7005
- Andersen, M. (2017). *Opportunities and Risks of Seaweed Biofuels in Aviation*. Retrieved from http://network.bellona.org/content/uploads/sites/3/2017/03/OPPORTUNITIES-AND-RISKS-OF-SEAWEED-BIOFUELS-IN-AVIATION-web_print.pdf
- Anderson, A. (2019). Can Trees, Oceans and Giant Carbon Sucking Machines Save Us from Climate Catastrophe? Retrieved from <https://blog.ucsusa.org/angela-anderson/can-trees-oceans-and-giant-carbon-sucking-machines-save-us-from-climate-catastrophe>
- Anderson, C., Schirmer, J., & Abjorensen, N. (2012). Exploring CCS community acceptance and public participation from a human and social capital perspective. *Mitigation and Adaptation Strategies for Global Change*, 17(6), 687-706. doi:10.1007/s11027-011-9312-z
- Anderson, C. G. (2014). *Effects of biosolids-derived pharmaceuticals on microbial communities and nitrogen processes in soil*. University of California, Davis, Retrieved from <http://gradworks.umi.com/15/60/1560063.html>
- Anderson, C. M., DeFries, R. S., Litterman, R., Matson, P. A., Nepstad, D. C., Pacala, S., . . . Field, C. B. (2019). Natural climate solutions are not enough. *363*(6430), 933-934. doi:10.1126/science.aaw2741 %J Science
- Anderson, C. M., Field, C. B., & Mach, K. J. (2017). Forest offsets partner climate-change mitigation with conservation. *Frontiers in Ecology and the Environment*, 15(7), 359-365. doi:10.1002/fee.1515
- Anderson, C. R., et al. . (2011). Biochar induced soil microbial community change: Implications for biogeochemical cycling of carbon, nitrogen and phosphorus. *Pedobiologia*, 54(5-6), 309-320. doi:10.1016/j.pedobi.2011.07.005
- Anderson, C. R., Hamonts, K., Clough, T. J., & Condron, L. M. (2014). Biochar does not affect soil N-transformations or microbial community structure under ruminant urine patches but does alter relative proportions of nitrogen cycling bacteria. *Agriculture, Ecosystems & Environment*, 191, 63-72. doi:<http://dx.doi.org/10.1016/j.agee.2014.02.021>
- Anderson, D. (2021). Lululemon, LanzaTech are reshaping carbon waste into fabric. *Green Biz*. Retrieved from https://www.greenbiz.com/article/lululemon-lanzatech-are-reshaping-carbon-waste-fabric?utm_source=newsletter&utm_medium=email&utm_campaign=greenbuzz&utm_content=2021-07-26&mkt_tok=MjExLU5KWS0xNjUAAAf-gelwtuAjG-DLYSsbCA4wRQyD394B-zjZ08FQiqc0ESChmktBKDgPtkeyQblsggO932QYC2nTbHDYm8rwxTMFQyotq1ffPs-seSQJsonPXpRZna4
- Anderson, J. (2010). *CCS and Community Engagement*. Retrieved from https://wriorg.s3.amazonaws.com/s3fs-public/pdf/ccs_and_community_engagement.pdf?_ga=2.67475606.609284369.1555298562-1151941182.1555298562
- Anderson, K. (2015). Duality in climate science. *Nature Geoscience*, 8(12), 898-900. doi:10.1038/ngeo2559
- Anderson, K., & Peters, G. (2016). The trouble with negative emissions. *Science*, 354(6309), 182-183. Retrieved from <http://science.sciencemag.org/content/354/6309/182>
- Anderson, M. (2019). A (Very) Close Look at Carbon Capture and Storage. *IEEE Spectrum*, (July 16). Retrieved from <https://spectrum.ieee.org/energywise/energy/environment/a-very-close-look-at-carbon-capture-and-storage>
- Anderson, N., et al. (2013). A Comparison of Producer Gas, Biochar, and Activated Carbon from Two Distributed Scale Thermochemical Conversion Systems Used to Process Forest Biomass. *Energies*, 6(1), 164-183. Retrieved from <http://www.mdpi.com/1996-1073/6/1/164>
- Anderson, P. (2019). *Recognition of Biochar & Energy (BC&E) as a Separate Negative Emission Technology (NET) for Improving Integrated Assessment Modeling (IAM)*.

- Retrieved from <https://woodgas.energy/wp-content/uploads/2020/12/Recognition-of-Biochar-and-Energy-as-a-Separate-NET.pdf>
- Anderson, P. (2020). *Climate Intervention with Biochar*. Retrieved from
- Anderson-Teixeira, K. J., Masters, M. D., Black, C. K., Zeri, M., Hussain, M. Z., Bernacchi, C. J., & DeLucia, E. H. (2013). Altered Belowground Carbon Cycling Following Land-Use Change to Perennial Bioenergy Crops. *Ecosystems*, 16(3), 508-520. doi:10.1007/s10021-012-9628-x
- Andersson, K., Lawrence, D., Zavaleta, J., & Guariguata, M. R. (2016). More Trees, More Poverty? The Socioeconomic Effects of Tree Plantations in Chile, 2001–2011. *Environmental Management*, 57(1), 123-136. doi:10.1007/s00267-015-0594-x
- Andersson, R., Stripple, H., Gustafsson, T., & Ljungkrantz, C. (2019). Carbonation as a method to improve climate performance for cement based material. *Cement and Concrete Research*, 124, 105819. doi:<https://doi.org/10.1016/j.cemconres.2019.105819>
- Andert, J., & Mumme, J. (2015). Impact of pyrolysis and hydrothermal biochar on gas-emitting activity of soil microorganisms and bacterial and archaeal community composition. *Applied Soil Ecology*, 96, 225 - 239. doi:10.1016/j.apsoil.2015.08.019
- Ando, K. (2020). US startup's carbon capture concrete wins Mitsubishi's backing. *Nikkei Asian Review*. Retrieved from <https://asia.nikkei.com/Spotlight/Environment/US-startup-s-carbon-capture-concrete-wins-Mitsubishi-s-backing>
- Ando, K. (2020). US startup's carbon capture concrete wins Mitsubishi's backing. *Nikkei Asia*. Retrieved from <https://asia.nikkei.com/Spotlight/Environment/US-startup-s-carbon-capture-concrete-wins-Mitsubishi-s-backing>
- Andre, M. (2020). Norway starts work on carbon storage program — says it's "absolutely necessary. *ZME Science*. Retrieved from <https://www.zmescience.com/science/news-science/ccs-norway-22072021/>
- Andreani, M., et al. (2009). Experimental study of carbon sequestration reactions controlled by the percolation of CO₂-rich brine through peridotites. *Environmental Science & Technology*, 43, 1226-1231.
- Andreev, N., et al. (2012). *A concept for a sustainable sanitation chain based on the semi-centralised production of Terra Preta for Moldova*. Paper presented at the 4th International Dry Toilet Conference. http://www.drytoilet.org/dt2012/full_papers/4/Nadejda_Andreev.pdf
- Andrenelli, M. C., Maienza, A., Genesio, L., Miglietta, F., Pellegrini, S., Vaccari, F. P., & Vignozzi, N. (2016). Field application of pelletized biochar: Short term effect on the hydrological properties of a silty clay loam soil. *Agricultural Water Management*, 163, 190 - 196. doi:10.1016/j.agwat.2015.09.017
- Andresen, B., Norheim, A., Strand, J., Ulleberg, O., Vik, A., & Waernhus, I. (2014). BioZEG - pilot plant demonstration of high efficiency carbon negative energy production. In T. Dixon, H. Herzog, & S. Twinning (Eds.), *12th International Conference on Greenhouse Gas Control Technologies, Ghgt-12* (Vol. 63, pp. 279-285). Amsterdam: Elsevier Science Bv.
- Andresen, J. (2021). *Direct Air Capture: The Upscaling of Sustainable Technologies*. (Bachelor). University of Twente, Retrieved from <http://essay.utwente.nl/87713/>
- Andrews, M. G., & Taylor, L. L. (2019). Combating Climate Change Through Enhanced Weathering of Agricultural Soils. *Elements*, 15(4), 253-258. doi:10.2138/gselements.15.4.253 %J Elements
- Andrews, R. G. (2018). The Alluring Dream of Carbon Capature. *Earther*. Retrieved from <https://earther.com/the-alluring-dream-of-carbon-capture-1826830310>
- Anegbe, B., et al. (2015). Fractionation of lead-acid battery soil amended with Biochar. *Bayero Journal of Pure and Applied Sciences*, 7(2), 36-43. Retrieved from file:///C:/Users/

Gateway/Downloads/111300-307644-1-PB.pdf

- Anex, R. P., Lynd, L. R., Laser, M. S., Heggenstaller, A. H., & Liebman, M. (2007). Potential for Enhanced Nutrient Cycling through Coupling of Agricultural and Bioenergy Systems All rights reserved. No part of this periodical may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage and retrieval system, without permission in writing from the publisher. Permission for printing and for reprinting the material contained herein has been obtained by the publisher. *Crop Science*, 47(4), 1327-1335. doi:10.2135/cropsci2006.06.0406
- Anggono, R. C. W. (2015). *Pengaruh Dosis Biochar Terhadap Kalium Tanah pada Sistem Pertanian Organik (Dose Effect of Potassium Against Soil Biochar in Organic Farming Systems)*. Univesitas Kristen (Christian University), Retrieved from <http://repository.uksw.edu/handle/123456789/6248?mode=full>
- Angin, D. (2012). Effect of Pyrolysis Temperature and Heating Rate on Biochar Obtained from Pyrolysis of Safflower Seed Press Cake. *Bioresource Technology*, 128, 593-597. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0960852412016598>
- Angın, D., Altintig, E., & Köse, T. E. (2013). Influence of process parameters on the surface and chemical properties of activated carbon obtained from biochar by chemical activation. *Bioresource Technology*, 148, 542-549. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0960852413014223>
- Angin, D., Köse, T. E., & Selengil, U. (2013). Production and characterization of activated carbon prepared from safflower seed cake biochar and its ability to absorb reactive dyestuff. *Applied Surface Science*, 280, 705-710. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0169433213009732>
- Angst, T. E., et al. (2013). Biochar Diminishes Nitrous Oxide and Nitrate Leaching from Diverse Nutrient Sources. *Journal of Environmental Quality*, 42(3), 672-682. Retrieved from <https://dl.sciencesocieties.org/publications/jeq/abstracts/42/3/672>
- Angst, T. E., Six, J., Reay, D. S., & Sohi, S. P. (2014). Impact of pine chip biochar on trace greenhouse gas emissions and soil nutrient dynamics in an annual ryegrass system in California. *Agriculture, Ecosystems & Environment*, 191, 17-26. doi:<http://dx.doi.org/10.1016/j.agee.2014.03.009>
- Angst, T. E., & Sohi, S. P. (2012). Establishing release dynamics for plant nutrients from biochar. *Global Change Biology Bioenergy*, 5(2), 221-226. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/gcbb.12023/full>
- Anjum, R., Krakat, N., Toufiq Reza, M., & Klocke, M. (2014). Assessment of mutagenic potential of pyrolysis biochars by Ames Salmonella/mammalian-microsomal mutagenicity test. *Ecotoxicology and Environmental Safety*, 107, 306 - 312. doi:10.1016/j.ecoenv.2014.06.005
- Anschau, A., et al. (2013). Agrofuels and water in Argentina. In J. F. Dellemand & P. W. Gerbens-Leenes (Eds.), *Bioenergy and Water* (pp. 77-88): European Commission.
- Anstey, A., et al. (2016). Oxidative acid treatment and characterization of new biocarbon from sustainable Miscanthus biomass. *Science of The Total Environment*, 550, 241 - 247. doi:10.1016/j.scitotenv.2016.01.015
- Antal, J., Michael Jerry , Mochidzuk, K., & Paredes, L. S. (2003). Flash Carbonization of Biomass. *Industrial Engineering and Chemistry Research*, 42(16), 3690-3699. Retrieved from http://www.hnei.hawaii.edu/flash_carb_biomass.pdf
- Antal, M. J., et al. (2000). Attainment of the Theoretical Yield of Carbon from Biomass. *Industrial and Engineering Chemistry Research*, 39(11), 4024-4031. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/ie000511u>
- Anthonia, Eseyin, E., Kieran, & Ekpenyong, I. (2015). Advances in Low Temperature Biomass

- Pyrolysis: A Brief Review. *Journal of Biofuels*, 6(1), 44. doi:10.5958/0976-4763.2015.00007.0
- Anthonsen, K. L., Aagaard, P., Bergmo, P. E. S., Erlström, M., Fareide, J. I., Gislason, S. R., . . . Snæbjörnsdóttir, S. Ó. (2013). CO₂ Storage Potential in the Nordic Region. *Energy Procedia*, 37, 5080-5092. doi:<https://doi.org/10.1016/j.egypro.2013.06.421>
- Anthony, E. J. (2010). Chemical-looping combustion systems and technology for carbon dioxide (CO₂) capture in power plants A2 - Maroto-Valer, M. Mercedes. In *Developments and Innovation in Carbon Dioxide (CO₂) Capture and Storage Technology* (Vol. 1, pp. 358-379): Woodhead Publishing.
- Anthony, R. (2014). *Carbon storage in orchards*. Bangor University, Retrieved from <http://ethos.bl.uk/OrderDetails.do?uin=uk.bl.ethos.610906>
- Antonini, C., Treyer, K., Streb, A., van der Spek, M., Bauer, C., & Mazzotti, M. (2020). Hydrogen production from natural gas and biomethane with carbon capture and storage – A techno-environmental analysis. *Sustainable Energy & Fuels*, 4(6), 2967-2986. doi:10.1039/D0SE00222D
- Antonius, S., Dewi, T. K., & Osaki, M. (2015). The Synergy of Biochar, Compost and Biofertilizer for Development of Sustainable Agriculture. *KnE Life Sciences*, 2(1), 677. doi:10.18502/kls.v2i1.247
- Antwerp, U. o. (2020). Coastal enhanced silicate weathering: Investigating the potential for CO₂ drawdown in coastal environments. Retrieved from <https://coastalesw.com/>
- Anupam, K., Swaroop, V., Deepika, Lal, P. S., & Bist, V. (2015). Turning Leucaena leucocephala bark to biochar for soil application via statistical modelling and optimization technique. *Ecological Engineering*, 82, 26 - 39. doi:10.1016/j.ecoleng.2015.04.078
- Anyanwu, J.-T., Wang, Y., & Yang, R. T. (2020). Amine-Grafted Silica Gels for CO₂ Capture Including Direct Air Capture. *Industrial & Engineering Chemistry Research*, 59(15), 7072-7079. doi:10.1021/acs.iecr.9b05228
- Anyanwu, J.-T., Wang, Y., & Yang, R. T. (2021). CO₂ Capture (Including Direct Air Capture) and Natural Gas Desulfurization of Amine-grafted Hierarchical Bimodal Silica. *Chemical Engineering Journal*, 131561. doi:<https://doi.org/10.1016/j.cej.2021.131561>
- Anyika, C., Abdul Majid, Z., Ibrahim, Z., Zakaria, M. P., & Yahya, A. (2014). The impact of biochars on sorption and biodegradation of polycyclic aromatic hydrocarbons in soils—a review. *Environmental Science and Pollution Research*, 22(5), 3314-3341. doi:10.1007/s11356-014-3719-5
- Aon, M., et al. (2015). Low temperature produced citrus peel and green waste biochar improved maize growth and nutrient uptake, and chemical properties of calcareous soil. *Pakistan Journal of Agricultural Sciences*, 52(3), 627-636. Retrieved from <http://www.pakjas.com.pk/papers%5C2461.pdf>
- AP. (2019). North Dakota officials considering carbon dioxide pipeline. *Washington Times*. Retrieved from <https://www.washingtontimes.com/news/2019/dec/19/north-dakota-officials-considering-carbon-dioxide/>
- AP. (2020). Wyoming Carbon Capture Project Advances to Next Stage. *US News & World Report*. Retrieved from <https://www.usnews.com/news/best-states/wyoming/articles/2020-11-09/wyoming-carbon-capture-project-advances-to-next-stage>
- Appunn, K. (2021). The carbon balancing act: Emission reduction and removal in the bid for net-zero *Clean Energy Wire*. Retrieved from <https://www.cleanenergywire.org/news/carbon-balancing-act-emission-reduction-and-removal-bid-net-zero>
- Appunn, K. (2021). German industry urges new debate on carbon capture, storage and utilisation. *Clean Energy Wire*. Retrieved from <https://www.cleanenergywire.org/news/german-industry-urges-new-debate-carbon-capture-storage-and-utilisation>
- Arabesque. (2021). Carbon dioxide removal mustn't become get-out-of-jail-free cards for

- corporate polluters. *Eco-Business*. Retrieved from <https://www.eco-business.com/opinion/carbon-dioxide-removal-mustnt-become-get-out-of-jail-free-cards-for-corporate-polluters/>
- Arachchige, U. (2019). Amines' effect on CO₂ removal efficiency. *International Journal of Research*, 6(3), 725-729. Retrieved from <https://journals.pen2print.org/index.php/ijr/article/view/17312/16907>
- Arachchige, U. S. P. R. (2012). Optimization of post combustion carbon capture processsolvent selection. *International Journal of Energy and Environment*, 3(6), 861-870. Retrieved from <http://www.IJEE.IEEFoundation.org>
- Aradóttir, E. S. P., Sonnenthal, E. L., Björnsson, G., & Jónsson, H. (2012). Multidimensional reactive transport modeling of CO₂ mineral sequestration in basalts at the Hellisheiði geothermal field, Iceland. *International Journal of Greenhouse Gas Control*, 9, 24-40. doi:<https://doi.org/10.1016/j.ijggc.2012.02.006>
- Aradóttir, E. S. P., Sonnenthal, E. L., & Jónsson, H. (2012). Development and evaluation of a thermodynamic dataset for phases of interest in CO₂ mineral sequestration in basaltic rocks. *Chemical Geology*, 304-305, 26-38. doi:<https://doi.org/10.1016/j.chemgeo.2012.01.031>
- Aragonès, M. P., et al. (2020). *Europe needs a definition of Carbon Dioxide Removal*. Retrieved from <https://bit.ly/30aO4R4>
- Aragonès, M. P., & Wang, F. (2021). New EU climate law delivers innovative policy framework to advance carbon removal and avoid moral hazard. Retrieved from <https://www.climateworks.org/blog/innovative-european-union-climate-law/>
- Aramaki, T., Nojiri, Y., & Imai, K. (2009). Behavior of particulate materials during iron fertilization experiments in the Western Subarctic Pacific (SEEDS and SEEDS II). *Deep Sea Research Part II: Topical Studies in Oceanography*, 56(26), 2875-2888. doi:<https://doi.org/10.1016/j.dsr2.2009.07.005>
- Arasto, A., Onarheim, K., Tsupari, E., & Karki, J. (2014). Bio-CCS: feasibility comparison of large scale carbon-negative solutions. In T. Dixon, H. Herzog, & S. Twinning (Eds.), *12th International Conference on Greenhouse Gas Control Technologies, Ghgt-12* (Vol. 63, pp. 6756-6769). Amsterdam: Elsevier Science Bv.
- Arasto, A., Onarheim, K., Tsupari, E., & Kärki, J. (2014). Bio-CCS: Feasibility comparison of large scale carbon-negative solutions. *Energy Procedia*, 63, 6756-6769. doi:<http://dx.doi.org/10.1016/j.egypro.2014.11.711>
- Arasto, A., Tsupari, E., Karki, J., Sormunen, R., Korpinen, T., & Hujanen, S. (2014). Feasibility of significant CO₂ emission reductions in thermal power plants - comparison of biomass and CCS. In T. Dixon, H. Herzog, & S. Twinning (Eds.), *12th International Conference on Greenhouse Gas Control Technologies, Ghgt-12* (Vol. 63, pp. 6745-6755). Amsterdam: Elsevier Science Bv.
- Arastoopour, H., Gidaspow, D., & Lyczkowski, R. W. (2022). Application of Multiphase Transport to CO₂ Capture. In *Transport Phenomena in Multiphase Systems* (pp. 177-196). Cham: Springer International Publishing.
- Araujo, O. D. F., de Medeiros, J. L., & Alves, R. M. B. (2014). *CO₂ Utilization: A Process Systems Engineering Vision*. Rijeka: Intech Europe.
- Arbestain, M. C., et al. (2015). *SSSA Special Publication Agricultural and Environmental Applications of Biochar: Advances and Barriers Research and Application of Biochar in New Zealand*: Soil Science Society of America, Inc.
- Arce Ferrufino, G. L. A., Okamoto, S., Dos Santos, J. C., de Carvalho, J. A., Avila, I., Romero Luna, C. M., & Gomes Soares Neto, T. (2018). CO₂ sequestration by pH-swing mineral carbonation based on HCl/NH₄OH system using iron-rich lizardite 1T. *Journal of CO₂ Utilization*, 24, 164-173. doi:<https://doi.org/10.1016/j.jcou.2018.01.001>

- Archontoulis, S. V., Huber, I., Miguez, F. E., Thorburn, P. J., Rogovska, N., & Laird, D. A. (2015). A model for mechanistic and system assessments of biochar effects on soils and crops and trade-offs. *GCB Bioenergy*, 8(6), 1028-1045. doi:10.1111/gcbb.12314
- Ardiansyah, A., Arif, C., & Wijaya, K. (2016). Nitrogen Uptake of Sir Paddy Feild Compared to Conventional Field. *Jurnal Teknologi*, 78(1-2). doi:10.11113/jt.v78.7259
- Ardiwinata, A. N., & Harsanti, E. S. (2016). The role and use of activated carbon in the agriculture sector to control insecticide residues. In *Biochar for future food security: learning from experiences and identifying research priorities*.
- Arehart, J. H., Nelson, W. S., & Srubar, W. V. (2020). On the theoretical carbon storage and carbon sequestration potential of hempcrete. *Journal of Cleaner Production*, 266, 121846. doi:<https://doi.org/10.1016/j.jclepro.2020.121846>
- Arenas, F., & Vas-Pinto, F. (2014). Marine algae as carbon sinks and allies to combat global warming. In L. Pereira & J. M. Neto (Eds.), *Marine algae: biodiversity, taxonomy, environmental assessment and biotechnology* (pp. 178-193).
- Aresta, M. (2010). Indirect Utilization of Carbon Dioxide: Utilization of Terrestrial and Aquatic Biomass. In *Carbon Dioxide as Chemical Feedstock*.
- Aresta, M. (2019). Perspective Look on CCU Large-Scale Exploitation. In M. Aresta, I. Karimi, & S. Kawi (Eds.), *An Economy Based on Carbon Dioxide and Water: Potential of Large Scale Carbon Dioxide Utilization* (pp. 431-436). Retrieved from https://link.springer.com/chapter/10.1007/978-3-030-15868-2_13
- Aresta, M., & Dibenedetto, A. (2007). Utilisation of CO₂ as a chemical feedstock: opportunities and challenges. *Dalton Transactions*(28), 2975-2992. doi:10.1039/b700658f
- Aresta, M., & Dibenedetto, A. (2019). Chapter 9 - Beyond fractionation in the utilization of microalgal components. In J. C. Magalhães Pires & A. L. D. Cunha Gonçalves (Eds.), *Bioenergy with Carbon Capture and Storage* (pp. 173-193): Academic Press.
- Aresta, M., Dibenedetto, A., & Angelini, A. (2013). The changing paradigm in CO₂ utilization. *Journal of CO₂ Utilization*, 3-4(Supplement C), 65-73. doi:<https://doi.org/10.1016/j.jcou.2013.08.001>
- Aresta, M., Dibenedetto, A., & Barberio, G. (2005). Utilization of macro-algae for enhanced CO₂ fixation and biofuels production: Development of a computing software for an LCA study. *Fuel Processing Technology*, 86, 1679-1693. Retrieved from <http://moritz.botany.ut.ee/~olli/b/Aresta05.pdf>
- Aresta, M., & Nocito, F. (2019). Large Scale Utilization of Carbon Dioxide: From Its Reaction with Energy Rich Chemicals to (Co)-processing with Water to Afford Energy Rich Products. Opportunities and Barriers. In M. Aresta, I. Karimi, & S. Kawi (Eds.), *An Economy Based on Carbon Dioxide and Water: Potential of Large Scale Carbon Dioxide Utilization* (pp. 1-33). Retrieved from https://link.springer.com/content/pdf/10.1007%2F978-3-030-15868-2_1.pdf
- Arevalo, J., Ochieng, R., Mola-Yudego, B., & Gritten, D. (2014). Understanding bioenergy conflicts: Case of a jatropha project in Kenya's Tana Delta. *Land Use Policy*, 41, 138-148. doi:<http://dx.doi.org/10.1016/j.landusepol.2014.05.002>
- Arif, M., et al. (2012). Effect of biochar, FYM and nitrogen on weeds and maize phenology. *Pakistan Journal of Weed Science Research*, 18(4), 475-484. Retrieved from https://www.researchgate.net/publication/280132996_Effect_of_biochar_FYM_and_nitrogen_on_weeds_and_maize_phenology
- Arif, M., Ali, A., Umair, M., Munsif, F., Ali, K., Inamullah, . . . Ayub, G. (2012). Effect of biochar FYM and mineral nitrogen alone and in combination on yield and yield components of maize. *Sarhad J. Agric.*, 28(2), 191-195. Retrieved from http://www.aup.edu.pk/sj_pdf/EFFECT%20OF%20BIOCHAR,%20FYM%20AND%20MINERAL%20NITROGEN%20-35-2012.pdf

- Arif, M., Ali, K., Jan, M. T., Shah, Z., Jones, D. L., & Quilliam, R. S. (2016). Integration of biochar with animal manure and nitrogen for improving maize yields and soil properties in calcareous semi-arid agroecosystems. *Field Crops Research*, 195, 28-35. doi:<http://dx.doi.org/10.1016/j.fcr.2016.05.011>
- Arif, M., Jalal, F., Jan, M. T., Muhammad, D., & Quilliam, R. S. (2014). Incorporation of Biochar and Legumes into the Summer Gap: Improving Productivity of Cereal-Based Cropping Systems in Pakistan. *Agroecology and Sustainable Food Systems*, 39, 391-398. doi:[10.1080/21683565.2014.996696](https://doi.org/10.1080/21683565.2014.996696)
- Ariffin, M. A., et al. . (2014). Potential of Oil Palm Empty Fruit Bunch (EFB) Biochar from Gasification Process. *Australian Journal of Basic and Applied Sciences*, 8(19), 149-153. Retrieved from <http://ajbasweb.com/old/ajbas/2014/Special%202012/149-152.pdf>
- Ariza-Montobbio, P., et al. (2010). The political ecology of Jatropha plantations for biodiesel in Tamil Nadu, India. *The Journal of Peasant Studies*, 37(4), 875-897. Retrieved from <http://www.tandfonline.com/doi/pdf/10.1080/03066150.2010.512462>
- Arlt, W. (2003). Engineering Solutions for Limiting the Increase of Atmospheric Carbon Dioxide. *Chemical Engineering & Technology*, 26(12), 1217-1224. doi:[10.1002/ceat.200306130](https://doi.org/10.1002/ceat.200306130)
- Armeni, C., & Redgwell, C. (2015). *International legal and regulatory issues of climate geoengineering governance: rethinking the approach*. Retrieved from <http://www.geoengineering-governance-research.org/perch/resources/workingpaper21armeniredgwelltheinternationalcontextrevise-.pdf>
- Armstrong, K., Bachmann, M., Bardow, A., Cao, X. E., Cassiola, F., Cummings, C., . . . Whiston, K. (2021). Life cycle and upscaling: general discussion. *Faraday Discussions*, 230(0), 308-330. doi:[10.1039/D1FD90047A](https://doi.org/10.1039/D1FD90047A)
- Armstrong, K., Barbarino, S., Cao, X. E., Cassiola, F., Catlow, R. A., Claeys, M., . . . Wolf, M. (2021). Thermal catalytic conversion: general discussion. *Faraday Discussions*, 230(0), 124-151. doi:[10.1039/D1FD90045E](https://doi.org/10.1039/D1FD90045E)
- Armstrong, K., Bardow, A., Cao, X. E., Cassiola, F., Fischer, N., Hills, C., . . . Whiston, K. (2021). Accelerated mineralisation: general discussion. *Faraday Discussions*, 230(0), 213-226. doi:[10.1039/D1FD90046C](https://doi.org/10.1039/D1FD90046C)
- Armstrong, K., & Styring, P. (2015). Assessing the Potential of Utilization and Storage Strategies for Post-Combustion CO₂ Emissions Reduction. *Frontiers in Energy Research*, 3(8). doi:[10.3389/fenrg.2015.00008](https://doi.org/10.3389/fenrg.2015.00008)
- Armstrong, M., Shi, X., Shan, B., Lackner, K., & Mu, B. (2019). Rapid CO₂ capture from ambient air by sorbent-containing porous electrospun fibers made with the solvothermal polymer additive removal technique. *AIChE Journal*, 65(1), 214-220. doi:<https://doi.org/10.1002/aic.16418>
- Arnette, A. N. (2017). Renewable energy and carbon capture and sequestration for a reduced carbon energy plan: An optimization model. *Renewable and Sustainable Energy Reviews*, 70, 254-265. doi:<https://doi.org/10.1016/j.rser.2016.11.218>
- Arning, K., Offermann-van Heek, J., Linzenich, A., Kaetelhoen, A., Sternberg, A., Bardow, A., & Zieflle, M. (2019). Same or different? Insights on public perception and acceptance of carbon capture and storage or utilization in Germany. *Energy Policy*, 125, 235-249. doi:<https://doi.org/10.1016/j.enpol.2018.10.039>
- Arora, V. K., & Montenegro, A. (2011). Small temperature benefits provided by realistic afforestation efforts. *Nature Geoscience*, 4, 514. doi:[10.1038/ngeo1182](https://doi.org/10.1038/ngeo1182)
<https://www.nature.com/articles/ngeo1182#supplementary-information>
- Arstad, B., Spjelkavik, A., Andreassen, K. A., Lind, A., Prostak, J., & Blom, R. (2013). Studies of Ca-based high temperature sorbents for CO₂ capture. *Energy Procedia*, 37, 9-15. doi:<http://dx.doi.org/10.1016/j.egypro.2013.05.079>
- Arthur, E., Tuller, M., Moldrup, P., & de Jonge, L. W. (2015). Effects of biochar and manure

- amendments on water vapor sorption in a sandy loam soil. *Geoderma*, 243-244, 175 - 182. doi:10.1016/j.geoderma.2015.01.001
- Arthur, M. J. R., Wenqiao, Y., Michael, D. B., Donghai, W., & Ajay, K. (2015). Characterization of biochar from rice hulls and wood chips produced in a top-lit updraft biomass gasifier. *2015 ASABE Annual International Meeting*, 1. doi:10.13031/aim.20152187923
- Artiola, J. F., Rasmussen, C., & Freitas, R. (2012). Effects of a Biochar-Amended Alkaline Soil on the Growth of Romaine Lettuce and Bermudagrass. *Soil Science*, 177(9), 561–570. doi:10.1097/SS.0b013e31826ba908
- Artyszak, A. (2018). Effect of Silicon Fertilization on Crop Yield Quantity and Quality—A Literature Review in Europe. *Plants*, 7(3), 54. Retrieved from <https://www.mdpi.com/2223-7747/7/3/54>
- Arvidson, R. S., Mackenzie, F. T., & Guidry, M. (2006). MAGic: A Phanerozoic Model for the Geochemical Cycling of Major Rock-Forming Components. *American Journal of Science*, 306(3), 135-190. doi:10.2475/ajs.306.3.135
- Asai, H., et al. (2009). Biochar Amendment Techniques for Upland Rice Production in Northern Laos. *Field Crops Research*, 111(1-2), 81-84. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0378429008002141>
- Asai, T., Akiyama, Y., & Dodo, S. (2017). Development of a State-of-the-Art Dry Low NOx Gas Turbine Combustor for IGCC with CCS. In Y. Yun (Ed.), *Recent Advances in Carbon Capture and Storage* (pp. Ch. 01). Rijeka: InTech.
- Asamoah, A., Antwi-Boasiako, C., & Frimpong-Mensah, K. (2015). *Amending Sandy Soils with Composite Materials for Improved Conditions and Crop Productivity—a probable exploit*. Paper presented at the The 4th IBI Biochar Congress, Beijing, China. www.researchgate.net/profile/Akwasi_Asamoah/publication/261409709_The_Amending_Sandy_Soils_with_Composite_Materials_for_Improved_Conditions_and_Crop_Productivity_a_probable_exploit/links/0a85e5343a6848107000000.pdf
- Asayama, S., & Hulme, M. (2019). Engineering climate debt: temperature overshoot and peak-shaving as risky subprime mortgage lending. *Climate Policy*, 19(8), 937-946. doi:10.1080/14693062.2019.1623165
- Asayama, S., & Ishii, A. (2013). Exploring Media Representation of Carbon Capture and Storage: An Analysis of Japanese Newspaper Coverage in 1990-2010. *Energy Procedia*, 37, 7403-7409. doi:<http://dx.doi.org/10.1016/j.egypro.2013.06.682>
- Ascough, P. L., Bird, M. I., Brock, F., Higham, T. F. G., Meredith, W., & Snape, C. E. (2009). Hydropyrolysis as a New Tool for Radiocarbon Pre-Treatment and the Quantification of Black Carbon. *Quaternary Geochronology*, 4(2), 140-147. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1871101408000538>
- Ascough, P. L., Bird, M. I., Wormald, P., Snape, C. E., & Apperley, D. (2008). Influence of production variables and starting material on charcoal stable isotopic and molecular characteristics. *Geochimica Et Cosmochimica Acta*, 72(24), 6090-6102. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0016703708006005>
- Ascough, P. L., Sturrock, C. J., & Bird, M. I. (2010). Investigation of growth responses in saprophytic fungi to charred biomass. *Isotopes in Environmental and Health Studies*, 46(1), 64-77. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/20229385>
- Ashok, J., et al. (2019). Catalytic CO₂ Conversion to Added-Value Energy Rich C1 Products. In M. Aresta, I. Karimi, & S. Kawi (Eds.), *An Economy Based on Carbon Dioxide and Water: Potential of Large Scale Carbon Dioxide Utilization* (pp. 155-210). Retrieved from https://link.springer.com/chapter/10.1007/978-3-030-15868-2_5
- Ashraf, U., Kanu, A. S., Mo, Z., Hussain, S., Anjum, S. A., Khan, I., . . . Tang, X. (2015). Lead toxicity in rice: effects, mechanisms, and mitigation strategies—a mini review.

Environmental Science and Pollution Research, 22(23), 18318 - 18332. doi:10.1007/s11356-015-5463-x

- Ashworth, A. J. (2015). *Enhancing the Sustainability of Integrated Biofuel Feedstock Production Systems*. (Ph.D.). University of Tennessee, Retrieved from http://trace.tennessee.edu/utk_graddiss/3320/
- Ashworth, A. J., Keyser, P. D., Allen, F. L., Sadaka, S. S., & Sharara, M. A. (2015). Use of Biochar in Switchgrass Production. *Center for Native Grasslands Management*. Retrieved from www.researchgate.net/profile/Sammy_Sadaka/publication/268512530_USE_OF_BIOCHAR_IN_SWITCHGRASS_PRODUCTION/links/546df4c90cf2bc99c21504c3.pdf
- Ashworth, A. J., Keyser, P. D., Allen, F. L., Tyler, D. D., Taylor, A. M., & West, C. P. (2015). Displacing Inorganic Nitrogen in Lignocellulosic Feedstock Production Systems. *Agronomy Journal*, 108(1), 109-116. doi:10.2134/agronj15.0033
- Ashworth, A. J., Sadaka, S. S., Allen, F. L., Sharara, M. A., & Keyser, P. D. (2014). Influence of Pyrolysis Temperature and Production Conditions on Switchgrass Biochar for Use as a Soil Amendment. *BioResources*, 9(4), 7622-7635. Retrieved from http://ojs.cnr.ncsu.edu/index.php/BioRes/article/view/BioRes_09_4_7622_Ashworth_Pyrolysis_Temperature_Switchgrass/3151
- Ashworth, P., Bradbury, J., Wade, S., Ynke Feenstra, C. F. J., Greenberg, S., Hund, G., & Mikunda, T. (2012). What's in store: Lessons from implementing CCS. *International Journal of Greenhouse Gas Control*, 9, 402-409. doi:<https://doi.org/10.1016/j.ijggc.2012.04.012>
- Ashworth, P., Pisarski, A., & Thambimuthu, K. (2009). Public acceptance of carbon dioxide capture and storage in a proposed demonstration area. *Proceedings of the Institution of Mechanical Engineers, Part A: Journal of Power and Energy*, 223(3), 299-304. doi:10.1243/09576509jpe622
- Ashworth, P., Sun, Y., Ferguson, M., Witt, K., & She, S. (2019). Comparing how the public perceive CCS across Australia and China. *International Journal of Greenhouse Gas Control*, 86, 125-133. doi:<https://doi.org/10.1016/j.ijggc.2019.04.008>
- Ashworth, P., Wade, S., Reiner, D., & Liang, X. (2015). Developments in public communications on CCS. *International Journal of Greenhouse Gas Control*, 40(Supplement C), 449-458. doi:<https://doi.org/10.1016/j.ijggc.2015.06.002>
- Asibor, J. O., Clough, P. T., Nabavi, S. A., & Manovic, V. (2021). Assessment of optimal conditions for the performance of greenhouse gas removal methods. *Journal of Environmental Management*, 294, 113039. doi:<https://doi.org/10.1016/j.jenvman.2021.113039>
- Asiedu-Boateng, P., Legros, R., & Patience, G. S. (2016). Attrition resistance of calcium oxide–copper oxide–cement sorbents for post-combustion carbon dioxide capture. *Advanced Powder Technology*, 27(2), 786-795. doi:<https://doi.org/10.1016/j.apt.2016.03.007>
- Asif, M., et al. (2014). Yield and Nutrient Composition of Biochar Produced from Different Feedstocks at Varying Pyrolytic Temperatures. *Pakistan Journal of Agricultural Sciences*, 51(1), 75-82. Retrieved from <http://pakjas.com.pk/papers%5C2245.pdf>
- Åslund, I. (2012). *Effects of applying biochar to soils from Embu, Kenya – Effects on crop residue decomposition and soil fertility under varying soil moisture levels*. SLU, Swedish University of Agricultural Sciences, Uppsala. Retrieved from http://stud.epsilon.slu.se/4008/1/aslund_i_120327.pdf
- Ason, B., et al. (2015). Comparative Growth Response of Maize on Amended Sediment from the Odaw River and Cultivated Soil. In.
- Aspelund, A. (2010). Gas purification, compression and liquefaction processes and technology for carbon dioxide (CO₂) transport A2 - Maroto-Valer, M. Mercedes. In *Developments*

- and Innovation in Carbon Dioxide (CO₂) Capture and Storage Technology* (Vol. 1, pp. 383-407): Woodhead Publishing.
- Assen, A. H., Belmabkhout, Y., Adil, K., Lachehab, A., Hassoune, H., & Aggarwal, H. (2021). Advances on CO₂ storage. Synthetic porous solids, mineralization and alternative solutions. *Chemical Engineering Journal*, 129569. doi:<https://doi.org/10.1016/j.cej.2021.129569>
- Assmy, P., et al. (2005). Plankton rain in the Southern Ocean: The European Iron Fertilization Experiment EIFEX. *Ausgewählte Forschungsthemen*, 2, 38-39. Retrieved from <https://epic.awi.de/id/eprint/15162/>
- Assmy, P., Cisewski, B., Henjes, J., Klaas, C., Montresor, M., & Smetacek, V. (2014). Response of the protozooplankton assemblage during the European Iron Fertilization Experiment (EIFEX) in the Antarctic circumpolar current. *Journal of Plankton Research*, 36(5), 1175-1189. doi:10.1093/plankt/fbu068
- Assmy, P., Henjes, J., Klaas, C., & Smetacek, V. (2007). Mechanisms determining species dominance in a phytoplankton bloom induced by the iron fertilization experiment EisenEx in the Southern Ocean. *Deep Sea Research Part I: Oceanographic Research Papers*, 54(3), 340-362. doi:<http://dx.doi.org/10.1016/j.dsr.2006.12.005>
- Association, W. B. (2016). *Global Biomass Potential Towards 2035*. Retrieved from http://www.worldbioenergy.org/sites/default/files/WBA%20Factsheet%20-%20Biomass%20potential_160303_Toprint.pdf
- Asuming-Brempong, S., & Nyalemegbe, K. K. (2014). The use of earthworms and biochar to mitigate increase in nitrous oxide production - A minireview. *Global Advanced Research Journal of Agricultural Science*, 3(2), 35-41. Retrieved from <http://garj.org/garjas/pdf/2014/February/Asuming-Brempong%20and%20Nyalemegbe.pdf>
- Ataeian, M., Liu, Y., Canon-Rubio, K. A., Nightingale, M., Strous, M., & Vadlamani, A. (2019). Direct capture and conversion of CO₂ from air by growing a cyanobacterial consortium at pH up to 11.2. *116(7)*, 1604-1611. doi:10.1002/bit.26974
- Atta-Obeng, E., Dawson-Andoh, B., Felton, E., Dahle, G. J. W., & Valorization, B. (2018). Carbon Dioxide Capture Using Amine Functionalized Hydrothermal Carbons from Technical Lignin. doi:10.1007/s12649-018-0281-2
- Atucha, A. (2015). Effect of Biochar Amendments on Peach Replant Disease. *HortScience*, 50(6), 863-868. Retrieved from <http://hortsci.ashpublications.org/content/50/6/863.short>
- Augustenborg, C. A., et al. (2012). Biochar and Earthworm Effects on Soil Nitrous Oxide and Carbon Dioxide Emissions. *Journal of Environmental Quality*, 41(4), 1203-1209. doi:10.2134/jeq2011.0119
- Augustini, D. (2014). *Nanoestruturas de bismuto suportadas em biochar para determinação de ions chumbo por voltametria de redissolução adsorptiva (Nanostructures of bismuth supported on biochar to determine lead ions by adsorptive stripping voltammetry)*. Universidade Federal do Paraná (Federal University of Paraná), Retrieved from <http://dspace.c3sl.ufpr.br:8080/dspace/handle/1884/36601>
- Aulakh, M. S., Rennie, D. A., & Paul, E. A. (1984). Gaseous Nitrogen Losses from Soils Under Zero-Till as Compared with Conventional-Till Management Systems. *Journal of Environmental Quality*, 13, 130-136. Retrieved from https://www.researchgate.net/publication/250105619_Gaseous_Nitrogen_Losses_from_Soils_Under_Zero-Till_as_Compared_with_Conventional-Till_Management_Systems1
- Aumont, O., & Bopp, L. (2006). Globalizing results from ocean in situ iron fertilization studies. *Global Biogeochemical Cycles*, 20(2), 1-15. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1029/2005GB002591/epdf>
- Aure, J., Strand, Å. Å., Erga, S. R., & Strohmeier, T. (2007). Primary production enhancement by artificial upwelling in a western Norwegian fjord. *Marine Ecology Progress Series*,

- 352, 39-52. Retrieved from <https://www.int-res.com/abstracts/meps/v352/p39-52/>
- Aurich, J.-T., Thomas, F. S., & Fortunat, J. (2020). Hysteresis of the Earth system under positive and negative CO₂ emissions. *Environmental Research Letters*. Retrieved from <http://iopscience.iop.org/article/10.1088/1748-9326/abc4af>
- Austin, M. M. K., & Converse, B. A. (2021). In search of weakened resolve: Does climate-engineering awareness decrease individuals' commitment to mitigation? *Journal of Environmental Psychology*, 101690. doi:<https://doi.org/10.1016/j.jenvp.2021.101690>
- Australia, G. (2014). *Biochar and Energy From Trees Project: Background, results and future opportunities for landscape restoration from the strategic establishment of mixed native species plantations in Habitat 141°*. Retrieved from <http://www.greeningaustralia.org.au/uploads/knowledge-portal/biochar-energy-from-trees.pdf>
- Averett, N. (2016). Healthy Ground, Healthy Atmosphere: Recarbonizing the Earth's Soils. *Environmental Health Perspectives*, 124(2). doi:10.1289/ehp.124-A30
- Aviso, K. B., Belmonte, B. A., Benjamin, M. F. D., Arogo, J. I. A., Coronel, A. L. O., Janairo, C. M. J., . . . Tan, R. R. (2019). Synthesis of optimal and near-optimal biochar-based Carbon Management Networks with P-graph. *Journal of Cleaner Production*, 214, 893-901. doi:<https://doi.org/10.1016/j.jclepro.2019.01.002>
- Aviso, K. B., Janairo, J. I. B., Promentilla, M. A. B., & Tan, R. R. (2019). Prediction of CO₂ storage site integrity with rough set-based machine learning. *Clean Technologies and Environmental Policy*, 21(8), 1655-1664. doi:10.1007/s10098-019-01732-x
- Aviso, K. B., Lee, J.-Y., Ubando, A. T., & Tan, R. R. (2021). Fuzzy optimization model for enhanced weathering networks using industrial waste. *Clean Technologies and Environmental Policy*. doi:10.1007/s10098-021-02053-8
- Awad, Y. M., et al. (2011). Effects of polyacrylamide, biopolymer, and biochar on decomposition of soil organic matter and plant residues as determined by ¹⁴C and enzyme activities. *European Journal of Soil Biology*, 48, 1-10. doi:10.1016/j.ejsobi.2011.09.005
- Awadallah-F, A., & Al-Muhtaseb, S. A. (2013). Carbon dioxide sequestration and methane removal from exhaust gases using resorcinol-formaldehyde activated carbon xerogel. *Adsorption*, 19(5), 967-977. doi:10.1007/s10450-013-9508-5
- Awan, A. R., Teigland, R., & Kleppe, J. (2008). A Survey of North Sea Enhanced-Oil-Recovery Projects Initiated During the Years 1975 to 2005. *SPE Reservoir Evaluation and Engineering*, 11(3), 497-512.
- Awasthi, M. K., Wang, M., Chen, H., Wang, Q., Zhao, J., Ren, X., . . . Zhang, Z. (2017). Heterogeneity of biochar amendment to improve the carbon and nitrogen sequestration through reduce the greenhouse gases emissions during sewage sludge composting. *Bioresource Technology*, 224, 428-438. doi:<https://doi.org/10.1016/j.biortech.2016.11.014>
- Awasthi, M. K., Wang, Q., Huang, H., Li, R., Shen, F., Lahori, A. H., . . . Zhang, Z. (2016). Effect of biochar amendment on greenhouse gas emission and bio-availability of heavy metals during sewage sludge co-composting. *Journal of Cleaner Production*, 135, 829-835. doi:<https://doi.org/10.1016/j.jclepro.2016.07.008>
- Awasthi, M. K., Wang, Q., Ren, X., Zhao, J., Huang, H., Awasthi, S. K., . . . Zhang, Z. (2016). Role of biochar amendment in mitigation of nitrogen loss and greenhouse gas emission during sewage sludge composting. *Bioresource Technology*, 219, 270-280. doi:<http://dx.doi.org/10.1016/j.biortech.2016.07.128>
- Aycaguer, A.-C., Lev-On, M., & Winer, A. M. (2001). Reducing Carbon Dioxide Emissions with Enhanced Oil Recovery Projects: A Life Cycle Assessment Approach. *Energy & Fuels*, 15(2), 303-308. doi:10.1021/ef000258a
- Ayhan. (2020). Climate change: Removing CO₂ could spark big rise in food prices. Retrieved from <https://trading-u.com/climate-change-removing-co2-could-spark-big-rise-in-food-prices/>

- Ayre, J. (2017). Soils May Release Much Higher Levels Of Carbon Dioxide With Continued Temperature Rise Than Previously Thought. Retrieved from <https://cleantechnica.com/2017/03/13/soils-may-release-much-higher-levels-carbon-dioxide-continued-temperature-rise-previously-thought/>
- Aysu, T. (2014). The Effect of Boron Minerals on Pyrolysis of Common Reed (*< i>Phragmites australis</i>*) for Producing Bio-oils. *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects*, 36(22), 2511 - 2518. doi:10.1080/15567036.2014.948648
- Aysu, T. (2014). Production and Characterization of Bio-Chars and Bio-Oils Formed by Pyrolysis of Persian Hogweed (*Heracleum persicum* Desf.) in A Fixed-Bed Reactor. *Lifescience Global*, 2(4). Retrieved from <http://www.lifescienceglobal.com/pms/index.php/JASCM/article/view/1518/0>
- Aysu, T. (2015). Catalytic pyrolysis of *Alcea pallida* stems in a fixed-bed reactor for production of liquid bio-fuels. *Bioresource Technology*, 191, 253 - 262. doi:10.1016/j.biortech.2015.05.037
- Aysu, T. (2015). Catalytic pyrolysis of *Eremurus spectabilis* for bio-oil production in a fixed-bed reactor: Effects of pyrolysis parameters on product yields and character. *Fuel Processing Technology*, 129, 24 - 38. doi:10.1016/j.fuproc.2014.08.014
- Aysu, T., et al. (2016). Bio-oil production via catalytic pyrolysis of *Anchusa azurea*: Effects of operating conditions on product yields and chromatographic characterization. *Bioresource Technology*, 205, 7 - 14. doi:10.1016/j.biortech.2016.01.015
- Aysu, T., & Bengü, A. S. (2014). Bio-Oil Production from *Cirsium yildizianum* through Pyrolysis in a Fixed-Bed Reactor. *Lifescience Global*, 3(3). Retrieved from <http://lifescienceglobal.com/pms/index.php/JASCM/article/view/2323>
- Aysu, T., & Durak, H. (2014). Catalytic pyrolysis of liquorice (*Glycyrrhiza glabra* L.) in a fixed-bed reactor: Effects of pyrolysis parameters on product yields and character. *Journal of Analytical and Applied Pyrolysis*, 111, 156-172. doi:10.1016/j.jaat.2014.11.017
- Aysu, T., & Sanna, A. (2015). Nannochloropsis algae pyrolysis with ceria-based catalysts for production of high-quality bio-oils. *Bioresource Technology*, 194, 108 - 116. doi:10.1016/j.biortech.2015.07.027
- Ayub, S. A. (2020). Potential for CO₂ Mineral Carbonation in the Paleogene Segamat Basalt of Malaysia. *Minerals*, 10(12), 1-14. doi:<http://dx.doi.org/10.3390/min10121045>
- Azadi, M., Edraki, M., Farhang, F., & Ahn, J. (2019). Opportunities for Mineral Carbonation in Australia's Mining Industry. *Sustainability*, 11(5), 1250. Retrieved from <https://www.mdpi.com/2071-1050/11/5/1250>
- Azar, C. (2011). Biomass for energy: a dream come true... or a nightmare? *Wiley Interdisciplinary Reviews: Climate Change*, 2(3), 309-323. doi:10.1002/wcc.109
- Azar, C., Johansson, D. J. A., & Mattsson, N. (2013). Meeting global temperature targets-the role of bioenergy with carbon capture and storage. *Environmental Research Letters*, 8(3), 1-8. doi:10.1088/1748-9326/8/3/034004
- Azar, C., Lindgren, K., Larson, E., & Möllersten, K. (2006). Carbon Capture and Storage From Fossil Fuels and Biomass – Costs and Potential Role in Stabilizing the Atmosphere. *Climatic Change*, 74(1), 47-79. doi:10.1007/s10584-005-3484-7
- Azar, C., Lindgren, K., Obersteiner, M., Riahi, K., van Vuuren, D. P., den Elzen, K., . . . Larson, E. D. (2010). The feasibility of low CO₂ concentration targets and the role of bio-energy with carbon capture and storage (BECCS). *Climatic Change*, 100(1), 195-202. doi:10.1007/s10584-010-9832-7
- Azarabadi, H., & Lackner, K. S. (2019). A sorbent-focused techno-economic analysis of direct air capture. *Applied Energy*, 250, 959-975. doi:<https://doi.org/10.1016/j.apenergy.2019.04.012>
- Azarabadi, H., & Lackner, K. S. (2020). Postcombustion Capture or Direct Air Capture in

- Decarbonizing US Natural Gas Power? *Environmental Science & Technology*, 54(8), 5102-5111. doi:10.1021/acs.est.0c00161
- Azargohar, R., & Dalai, A. K. (2006). Biochar as a precursor of activated carbon. *Applied Biochemistry and Biotechnology*, 131, 762-773.
- Azargohar, R., & Dalai, A. K. (2008). Steam and KOH Activation of Biochar: Experimental and Modeling Studies. *Microporous and Mesoporous Materials*, 110(2-3)(2-3), 413-421. Retrieved from <http://www.sciencedirect.com/science/article/pii/S138718110700385X>
- Azargohar, R., & Dalai, A. K. (2011). The direct oxidation of hydrogen sulphide over activated carbons prepared from lignite coal and biochar. *The Canadian Journal of Chemical Engineering*, 89(4), 844-853. doi:10.1002/cjce.20430
- Azasi, V. D., Offei, F., Kemausuor, F., & Akpalu, L. (2020). Bioenergy from crop residues: A regional analysis for heat and electricity applications in Ghana. *Biomass and Bioenergy*, 140, 105640. doi:<https://doi.org/10.1016/j.biombioe.2020.105640>
- Azdarpour, A., Afkhami Karaei, M., Hamidi, H., Mohammadian, E., & Honarvar, B. (2018). CO₂ sequestration through direct aqueous mineral carbonation of red gypsum. *Petroleum*, 4(4), 398-407. doi:<https://doi.org/10.1016/j.petlm.2017.10.002>
- Azdarpour, A., Asadullah, M., Junin, R., Manan, M., Hamidi, H., & Daud, A. R. M. (2014). Carbon Dioxide Mineral Carbonation Through pH-swing Process: A Review. *Energy Procedia*, 61, 2783-2786. doi:<https://doi.org/10.1016/j.egypro.2014.12.311>
- Azdarpour, A., Asadullah, M., Mohammadian, E., Hamidi, H., Junin, R., & Karaei, M. A. (2015). A review on carbon dioxide mineral carbonation through pH-swing process. *Chemical Engineering Journal*, 279, 615-630. doi:<https://doi.org/10.1016/j.cej.2015.05.064>
- Azduwin, K., et al. (2014). *Pyrolysis of Palm pressed fibre (PPF) Towards Maximizing Bio-oil Yield in a Fixed-bed reactor*. Retrieved from <http://akademiarbaru.com/wvcarmeia/docu/073.pdf>
- Azduwin, K., Zarina, Z., Ridzuan, M. J. M., & Ahmad, A. A. (2016). Pyrolysis of Rice Straw by Using Microwave Irradiation with Quartz Glass Reactor. *Key Engineering Materials*, 673, 203 - 212. doi:10.4028/www.scientific.net/KEM.673.203
- Azevedo, I., Bataille, C., Bistline, J., Clarke, L., & Davis, S. (2021). Net-Zero Emissions Energy Systems: What We Know and Do Not Know. *Energy and Climate Change*, 100049. doi:<https://doi.org/10.1016/j.egycc.2021.100049>
- Aziz, N. S. b. A., Nor, M. A. b. M., Manaf, S. F. b. A., & Hamzah, F. (2015). Suitability of Biochar Produced from Biomass Waste as Soil Amendment. *Procedia - Social and Behavioral Sciences*, 195, 2457 - 2465. doi:10.1016/j.sbspro.2015.06.288
- Azizi, N., et al. . (2013). Catalytic Combustion of Waste Palm Trunk Derived Biochar and Biomass. *Applied Mechanics and Materials*, 315, 1007-1011. Retrieved from <https://www.scientific.net/AMM.315.1007>
- Azizi, P., & Glaser, B. (2006). Organic Iron-fertilizers from Hornbeam-leaves, Outer Rice-husks and Charcoal. *Journal of Applied Sciences*, 6, 673-677.
- AZoCleantech. (2019). New Approach to Capture Carbon Dioxide in Power Plant Exhaust and Enable Safe Disposal. Retrieved from <https://www.azocleantech.com/news.aspx?newsID=26513>
- Azzolina, N. A., Hamling, J. A., Peck, W. D., Gorecki, C. D., Nakles, D. V., & Melzer, L. S. (2017). A Life Cycle Analysis of Incremental Oil Produced via CO₂ EOR. *Energy Procedia*, 114, 6588-6596. doi:<https://doi.org/10.1016/j.egypro.2017.03.1800>
- Azzolina, N. A., Nakles, D. V., Gorecki, C. D., Peck, W. D., Ayash, S. C., Melzer, L. S., & Chatterjee, S. (2015). CO₂ storage associated with CO₂ enhanced oil recovery: A statistical analysis of historical operations. *International Journal of Greenhouse Gas Control*, 37, 384-397. doi:<https://doi.org/10.1016/j.ijggc.2015.03.037>
- Azzolina, N. A., Peck, W. D., Hamling, J. A., Gorecki, C. D., Ayash, S. C., Doll, T. E., . . . Melzer,

- L. S. (2016). How green is my oil? A detailed look at greenhouse gas accounting for CO₂-enhanced oil recovery (CO₂-EOR) sites. *International Journal of Greenhouse Gas Control*, 51, 369-379. doi:<https://doi.org/10.1016/j.ijggc.2016.06.008>
- Baah-Acheamfour, M., et al. (2017). The potential of agroforestry to reduce atmospheric greenhouse gases in Canada: Insight from pairwise comparisons with traditional agriculture, data gaps and future research. *The Forestry Chronicle*, 93(2), 180-189. Retrieved from https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwim5bi1-4blAhUIJDQIHQNyChgQgAMoAHoECAYQAg&url=http%3A%2F%2Fscholar.google.com%2Fscholar_url%3Furl%3Dhttp%3A%2F%2Fpubs.cif-ifc.org%2Fdoi%2Fpdf%2F10.5558%2Ftfc2017-024%26hl%3Den%26sa%3DX%26scisig%3DAAGBfm2rIKPIW196ZeY2DdXpSnIToasIKA%26nossI%3D1%26oi%3Dscholarr&usg=AOvVaw2QK1clOtlcvIObQ2hQ59w3
- Baah-Acheamfour, M., Carlyle, C. N., Bork, E. W., & Chang, S. X. (2014). Trees increase soil carbon and its stability in three agroforestry systems in central Alberta, Canada. *Forest Ecology and Management*, 328, 131-139. doi:<https://doi.org/10.1016/j.foreco.2014.05.031>
- Babar, M., Azmi Bustam, M., Shah Maulud, A., Ali, A., Mukhtar, A., & Ullah, S. (2019). Enhanced Cryogenic Packed Bed with Optimal CO₂ removal from Natural gas; A Joint Computational and Experimental Approach. *Cryogenics*, 103010. doi:<https://doi.org/10.1016/j.cryogenics.2019.103010>
- Babin, A., Vaneeckhaute, C., & Iliuta, M. C. (2021). Potential and challenges of bioenergy with carbon capture and storage as a carbon-negative energy source: A review. *Biomass and Bioenergy*, 146, 105968. doi:<https://doi.org/10.1016/j.biombioe.2021.105968>
- Babonneau, F., Bahn, O., Haurie, A., & Vielle, M. (2020). An Oligopoly Game of CDR Strategy Deployment in a Steady-State Net-Zero Emission Climate Regime. *Environmental Modeling & Assessment*. doi:[10.1007/s10666-020-09734-6](https://doi.org/10.1007/s10666-020-09734-6)
- Bacchi, U. (2017). Don't ignore carbon stored in soil in climate change fight: Fiji President. *Reuters*. Retrieved from <http://www.reuters.com/article/us-climatechange-soil-idUSKBN16S1XD>
- Baccini, A., Goetz, S. J., Walker, W. S., Laporte, N. T., Sun, M., Sulla-Menashe, D., . . . Houghton, R. A. (2012). Estimated carbon dioxide emissions from tropical deforestation improved by carbon-density maps. *Nature Climate Change*, 2(3), 182-185. doi:<http://www.nature.com/nclimate/journal/v2/n3/abs/nclimate1354.html#supplementary-information>
- Bach, L. T., & Boyd, P. W. (2021). Seeking natural analogs to fast-forward the assessment of marine CO₂ removal. *Proceedings of the National Academy of Sciences*, 118(40), e2106147118. doi:[10.1073/pnas.2106147118](https://doi.org/10.1073/pnas.2106147118)
- Bach, L. T., Gill, S. J., Rickaby, R. E. M., Gore, S., & Renforth, P. (2019). CO₂ Removal With Enhanced Weathering and Ocean Alkalinity Enhancement: Potential Risks and Co-benefits for Marine Pelagic Ecosystems. *Frontiers in Climate*, 1(7). doi:[10.3389/fclim.2019.00007](https://doi.org/10.3389/fclim.2019.00007)
- Bach, L. T., Tamsitt, V., Gower, J., Hurd, C. L., Raven, J. A., & Boyd, P. W. (2021). Testing the climate intervention potential of ocean afforestation using the Great Atlantic Sargassum Belt. *Nature Communications*, 12(1), 2556. doi:[10.1038/s41467-021-22837-2](https://doi.org/10.1038/s41467-021-22837-2)
- Bach, M., Wilske, B., & Bai, M. (2015). Biochar strategies as measures for climate protection. In. Bach, M., Wilske, B., & Breuer, L. (2016). Current economic obstacles to biochar use in agriculture and climate change mitigation. *Carbon Management*, 7(3-4), 183-190. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/17583004.2016.1213608>
- Bachmann, H. J., et al. (2016). Toward the Standardization of Biochar Analysis: The COST

- Action TD1107 Interlaboratory Comparison. *Journal of Agricultural and Food Chemistry*, 64(2), 513-527. doi:10.1021/acs.jafc.5b05055
- Bachmann, M., Kätelhön, A., Winter, B., Meys, R., Müller, L. J., & Bardow, A. (2021). Renewable carbon feedstock for polymers: environmental benefits from synergistic use of biomass and CO₂. *Faraday Discussions*, 230(0), 227-246. doi:10.1039/D0FD00134A
- Bachu, S. (2000). Sequestration of CO₂ in geological media: criteria and approach for site selection in response to climate change. *Energy Conversion and Management*, 41(9), 953-970. doi:10.1016/s0196-8904(99)00149-1
- Bachu, S., et al. (2007). CO₂ storage capacity estimation: Methodology and gaps. *International Journal of Greenhouse Gas Control*, 1, 430-443. Retrieved from https://www.researchgate.net/profile/Stefan_Bachu/publication/223952456_CO2_storage_capacity_estimation_Methodology_and_gaps/links/00b7d52c5bb308c143000000/CO2-storage-capacity-estimation-Methodology-and-gaps.pdf
- Bachu, S. (2008). CO₂ storage in geological media: Role, means, status and barriers to deployment. *Progress in Energy and Combustion Science*, 34(2), 254-273. doi:<https://doi.org/10.1016/j.pecs.2007.10.001>
- Bachu, S., Gunter, W. D., & Perkins, E. H. (1994). Aquifer disposal of CO₂: Hydrodynamic and mineral trapping. *Energy Conversion and Management*, 35(4), 269-279. doi:[http://dx.doi.org/10.1016/0196-8904\(94\)90060-4](http://dx.doi.org/10.1016/0196-8904(94)90060-4)
- Bachu, S., Shaw, J. C., & Pearson, R. M. (2004). *Estimation of Oil Recovery and CO₂ Storage Capacity in CO₂ EOR Incorporating the Effect of Underlying Aquifers*. Paper presented at the SPE/DOE Symposium on Improved Oil Recovery. <https://www.onepetro.org/conference-paper/SPE-89340-MS>
- Baciocchi, R., & Costa, G. (2021). CO₂ Utilization and Long-Term Storage in Useful Mineral Products by Carbonation of Alkaline Feedstocks. *Frontiers in Energy Research*, 9(207). doi:10.3389/fenrg.2021.592600
- Baciocchi, R., Storti, G., & Mazzotti, M. (2006). Process design and energy requirements for the capture of carbon dioxide from air. *Chemical Engineering and Processing: Process Intensification*, 45(12), 1047-1058. doi:<https://doi.org/10.1016/j.cep.2006.03.015>
- Bäckstrand, K., Meadowcroft, J., & Oppenheimer, M. (2011). The politics and policy of carbon capture and storage: Framing an emergent technology. *Global Environmental Change*, 21(2), 275-281. doi:<http://dx.doi.org/10.1016/j.gloenvcha.2011.03.008>
- Badgley, G., et al. (2021). Systematic over-crediting of forest offsets. Retrieved from <https://carbonplan.org/research/forest-offsets-explainer>
- Badr, E. A., Ibrahim, O. M., Tawfik, M. M., & Bahr, A. A. (2015). Management strategy for improving the productivity of wheat in newly reclaimed sandy soil. *International Journal of ChemTech Research*, 8(4), 1439-1445. Retrieved from [http://sphinxsai.com/2015/ch_vol8_no4/1/\(1438-1445\)V8N4.pdf](http://sphinxsai.com/2015/ch_vol8_no4/1/(1438-1445)V8N4.pdf)
- Bae, H., Park, J.-S., Senthilkumar, S. T., Hwang, S. M., & Kim, Y. (2019). Hybrid seawater desalination-carbon capture using modified seawater battery system. *Journal of Power Sources*, 410-411, 99-105. doi:<https://doi.org/10.1016/j.jpowsour.2018.11.009>
- Baek, Y.-S., Lee, J.-Y., Park, S.-K., & Bae, S. (2014). The Characteristics of the Biochar with the Synthetic Food Waste and Wood Waste for Soil Contaminated with Heavy Metals. *Journal of Soil and Groundwater Environment*, 19(1), 1 - 7. doi:10.7857/jsge.2014.19.1.001
- Baena-Moreno, F. M., Rodríguez-Galán, M., Vega, F., Alonso-Fariñas, B., Vilches Arenas, L. F., & Navarrete, B. (2019). Carbon capture and utilization technologies: a literature review and recent advances. *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects*, 41(12), 1403-1433. doi:10.1080/15567036.2018.1548518

- Baena-Moreno, F. M., Rodriguez-Galan, M., Vega, F., Vilches, L. F., & Navarrete, B. (2019). Review: recent advances in biogas purifying technologies. *International Journal of Green Energy*, 16(5), 401-412. doi:10.1080/15435075.2019.1572610
- Baethke, K. A. (2015). *Mine restoration of a native grassland plant community in the British Columbia interior: The use of biochar, hydroseeding and raking*. (MSc.). Thompson Rivers University, Retrieved from http://www.tru.ca/_shared/assets/Baethke_thesis34899.pdf
- Baghel, R. S., Reddy, C. R. K., & Jha, B. (2014). Characterization of agarophytic seaweeds from the biorefinery context. *Bioresource Technology*, 159(Supplement C), 280-285. doi:<https://doi.org/10.1016/j.biortech.2014.02.083>
- Bahamon, D., Anlu, W., Builes, S., Khaleel, M., & Vega, L. F. (2021). Effect of Amine Functionalization of MOF Adsorbents for Enhanced CO₂ Capture and Separation: A Molecular Simulation Study. *Frontiers in Chemistry*, 8(1228). doi:10.3389/fchem.2020.574622
- Bai, M., et al. (2013). Degradation kinetics of biochar from pyrolysis and hydrothermal carbonization in temperate soils. *Plant and Soil*, 372(1), 375-387. Retrieved from <http://link.springer.com/article/10.1007/s11104-013-1745-6>
- Bai, S. H., et al. . (2015). Soil and foliar nutrient and nitrogen isotope composition ($\delta^{15}\text{N}$) at 5 years after poultry litter and green waste biochar amendment in a macadamia orchard. *Environmental Science and Pollution Research*, 22(5), 3803-3809. doi:10.1007/s11356-014-3649-2
- Bai, S. H., et al. (2015). Wood biochar increases nitrogen retention in field settings mainly through abiotic processes. *Soil Biology and Biochemistry*, 90, 232 - 240. doi:10.1016/j.soilbio.2015.08.007
- Bai, X., Huang, Y., Ren, W., Coyne, M., Jacinthe, P.-A., Tao, B., . . . Matocha, C. (2019). Responses of soil carbon sequestration to climate-smart agriculture practices: A meta-analysis. *Global Change Biology*, 25(8), 2591-2606. doi:10.1111/gcb.14658
- Baiamonte, G., Pasquale, C. D., Marsala, V., Cimò, G., Alonzo, G., Crescimanno, G., & Conte, P. (2014). Structure alteration of a sandy-clay soil by biochar amendments. *Journal of Soils and Sediments*, 15(4), 816-824. doi:10.1007/s11368-014-0960-y
- Baig, S. A., Zhu, J., Muhammad, N., Sheng, T., & Xu, X. (2014). Effect of synthesis methods on magnetic Kans grass biochar for enhanced As(III, V) adsorption from aqueous solutions. *Biomass and Bioenergy*, 71, 299 - 310. doi:10.1016/j.biombioe.2014.09.027
- Baik, E., et al. (2020). *An Action Plan for Carbon Capture and Storage in California: Opportunities, Challenges, and Solutions*. Retrieved from <https://cdrlaw.org/resources/an-action-plan-for-carbon-capture-and-storage-in-california-opportunities-challenges-and-solutions/>
- Baik, E., Sanchez, D. L., Turner, P. A., Mach, K. J., Field, C. B., & Benson, S. M. (2018). Geospatial analysis of near-term potential for carbon-negative bioenergy in the United States. *Proceedings of the National Academy of Sciences*, 115(13), 3290-3295. doi:10.1073/pnas.1720338115
- Bailey, V. L., Fansler, S. J., Smith, J. L., & Bolton, H. J. (2010). Reconciling apparent variability in effects of biochar amendment on soil enzyme activities by assay optimization. *Soil Biology and Biochemistry*, 43(2), 296-301. doi:10.1016/j.soilbio.2010.10.014
- Bailis, R., & Kavlak, G. (2013). Environmental Implications of Jatropha Biofuel from a Silvi-Pastoral Production System in Central-West Brazil. *Environmental Science & Technology*, 47(14), 8042-8050. doi:10.1021/es303954g
- Bain, R. L., Overend, R. P., & Craig, K. R. (1998). Biomass-fired power generation. *Fuel Processing Technology*, 54, 1-16. Retrieved from https://www.academia.edu/22318148/Biomass-fired_power_generation?auto=download

- Bajamundi, C. J. E., Koponen, J., Ruuskanen, V., Elfving, J., Kosonen, A., Kauppinen, J., & Ahola, J. (2019). Capturing CO₂ from air: Technical performance and process control improvement. *Journal of CO₂ Utilization*, 30, 232-239. doi:<https://doi.org/10.1016/j.jcou.2019.02.002>
- Bajón Fernández, Y., Soares, A., Villa, R., Vale, P., & Cartmell, E. (2014). Carbon capture and biogas enhancement by carbon dioxide enrichment of anaerobic digesters treating sewage sludge or food waste. *Bioresource Technology*, 159, 1-7. doi:<https://doi.org/10.1016/j.biortech.2014.02.010>
- Bajracharya, S., et al. (2019). Bioelectrochemical Syntheses. In M. Aresta, I. Karimi, & S. Kawi (Eds.), *An Economy Based on Carbon Dioxide and Water: Potential of Large Scale Carbon Dioxide Utilization* (pp. 327-358). Retrieved from https://link.springer.com/chapter/10.1007/978-3-030-15868-2_9
- Baker, J. M., Ochsner, T. E., Venterea, R. T., & Griffis, T. J. (2007). Tillage and soil carbon sequestration—What do we really know? *Agriculture, Ecosystems & Environment*, 118(1–4), 1-5. doi:<http://dx.doi.org/10.1016/j.agee.2006.05.014>
- Baker, S. E., et al. . (2020). *Getting to Neutral. Options for Negative Carbon Emissions in California*. Retrieved from https://www-gs.llnl.gov/content/assets/docs/energy/Getting_to_Neutral.pdf
- Bakhtary, H., et al. (2020). #NDCsWeWant: Enhancing forest targets and measures in Nationally Determined Contributions (NDCs). Retrieved from <https://wwf.panda.org/?1113391/forest-ndcs>
- Bakker, D. C. E., Bozec, Y., Nightingale, P. D., Goldson, L., Messias, M.-J., de Baar, H. J. W., . . . Watson, A. J. (2005). Iron and mixing affect biological carbon uptake in SOIREE and EisenEx, two Southern Ocean iron fertilisation experiments. *Deep Sea Research Part I: Oceanographic Research Papers*, 52(6), 1001-1019. doi:<http://dx.doi.org/10.1016/j.dsr.2004.11.015>
- Bakker, D. C. E., Watson, A. J., & Law, C. S. (2001). Southern Ocean iron enrichment promotes inorganic carbon drawdown. *Deep Sea Research Part II: Topical Studies in Oceanography*, 48(11), 2483-2507. doi:[https://doi.org/10.1016/S0967-0645\(01\)00005-4](https://doi.org/10.1016/S0967-0645(01)00005-4)
- Bakonyi, P., Peter, J., Koter, S., Mateos, R., Kumar, G., Koók, L., . . . Pant, D. (2020). Possibilities for the biologically-assisted utilization of CO₂-rich gaseous waste streams generated during membrane technological separation of biohydrogen. *Journal of CO₂ Utilization*, 36, 231-243. doi:<https://doi.org/10.1016/j.jcou.2019.11.008>
- Bakry, B. A., Ibrahim, O. M., Eid, A. R., & Badr, E. A. (2014). Effect of Humic Acid, Mycorrhiza Inoculation, and Biochar on Yield and Water Use Efficiency of Flax under Newly Reclaimed Sandy Soil. *Agricultural Sciences*, 05(14), 1427 - 1432. doi:[10.4236/as.2014.514153](https://doi.org/10.4236/as.2014.514153)
- Bakshi, S. (2011). *Biogeochemistry of the immobilization of Cu (II) by the addition of biochar in soil*. University of Florida, Gainesville. Retrieved from <http://lqma.ifas.ufl.edu/CWR6252/RP/Santanu.pdf>
- Bakshi, S., He, Z. L., & Harris, W. G. (2014). Biochar Amendment Affects Leaching Potential of Copper and Nutrient Release Behavior in Contaminated Sandy Soils. *Journal of Environment Quality*, 43(6), 1894. doi:[10.2134/jeq2014.05.0213](https://doi.org/10.2134/jeq2014.05.0213)
- Bala, G., Caldeira, K., Mirin, A., Wickett, M., Delire, C., & Phillips, T. J. (2006). Biogeophysical effects of CO₂ fertilization on global climate. *Tellus*, 58B, 620-627. Retrieved from <http://adsabs.harvard.edu/full/2006TellB..58..620B>
- Bala, G., Caldeira, K., Wickett, M., Phillips, T. J., Lobell, D. B., Delire, C., & Mirin, A. (2007). Combined climate and carbon-cycle effects of large-scale deforestation. *Proceedings of the National Academy of Sciences*, 104(16), 6550-6555. doi:[10.1073/pnas.0608998104](https://doi.org/10.1073/pnas.0608998104)
- Balagurumurthy, B., et al. . (2014). *Effect of temperature and pressure on the hydrolysis of*

- cotton residue*. Paper presented at the 7th International Symposium on Feedstock Recycling of Polymeric Materials. http://www.fsrj.org/act/7_nenkai/16-7-ISFR/symposium%20abstract/Contributory%20talks/CT%2029_Bhavya.pdf
- Balagurumurthy, B., et al. (2015). Value addition to rice straw through pyrolysis in hydrogen and nitrogen environments. *Bioresource Technology*, 188, 273-279. doi:10.1016/j.biortech.2015.01.027
- Balan, V., Bals, B., Chundawat, S. P. S., Marshall, D., & Dale, B. E. (2009). Lignocellulosic Biomass Pretreatment Using AFEX. In J. R. Mielenz (Ed.), *Biofuels: Methods and Protocols* (pp. 61-77). Totowa, NJ: Humana Press.
- Baldocchi, D., & Penuelas, J. (2018). The Physics and Ecology of Mining Carbon Dioxide from the Atmosphere by Ecosystems. *Global Change Biology*, 24(4), 1191-1197. doi:doi:10.1111/gcb.14559
- Baldocchi, D., & Penuelas, J. (2019). The physics and ecology of mining carbon dioxide from the atmosphere by ecosystems. 25(4), 1191-1197. doi:10.1111/gcb.14559
- Baldock, J. A., & Smernik, R. J. (2002). Chemical Composition and Bioavailability of Thermally, Altered *pinus resinosa* (red pine) Wood. *Organic Geochemistry*, 33(9), 1093-1109.
- Bałdyga, J., Henczka, M., & Sokolnicka, K. (2010). Utilization of carbon dioxide by chemically accelerated mineral carbonation. *Materials Letters*, 64(6), 702-704. doi:<https://doi.org/10.1016/j.matlet.2009.12.043>
- Bali, S., Sakwa-Novak, M. A., & Jones, C. W. (2015). Potassium incorporated alumina based CO₂ capture sorbents: Comparison with supported amine sorbents under ultra-dilute capture conditions. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 486, 78-85. doi:<http://dx.doi.org/10.1016/j.colsurfa.2015.09.020>
- Balicki, A., & Kotowicz, J. (2017). Analysis of efficiency of 'zero-emission' oxy-type ultra-supercritical power unit based on high-temperature membranes. *International Journal of Greenhouse Gas Control*, 12(2), 188-206. Retrieved from <http://www.inderscience.com/info/inarticle.php?artid=84513>
- Balota, E. L., Colozzi Filho, A., Andrade, D. S., & Dick, R. P. (2004). Long-term tillage and crop rotation effects on microbial biomass and C and N mineralization in a Brazilian Oxisol. *Soil and Tillage Research*, 77(2), 137-145. doi:<https://doi.org/10.1016/j.still.2003.12.003>
- Balsamo, R. A., Kelly, W. J., Satrio, J. A., Ruiz-Felix, M. N., Fetterman, M., Wynn, R., & Hagel, K. (2014). Utilization of grasses for potential biofuel production and phytoremediation of heavy metal contaminated soils. *International Journal of Phytoremediation*, 17(5), 448-455. doi:10.1080/15226514.2014.922918
- Baltrénaitė, E., Baltrénas, P., Lietuvninkas, A., Baltrénaitė, E., Baltrénas, P., & Lietuvninkas, A. (2016). *The Sustainable Role of the Tree in Environmental Protection TechnologiesTree in Earth's Terrestrial Ecosystems*. Cham: Springer International Publishing.
- Baltrénas, P., Baltrénaitė, E., & Spudulis, E. (2015). Biochar from Pine and Birch Morphology and Pore Structure Change by Treatment in Biofilter. *Water, Air, & Soil Pollution*, 226(3), 1-14. doi:10.1007/s11270-015-2295-8
- Baltz, T. (2020). Wyoming, Utility Clash Over Coal-Boosting, Climate Fighting Tech. *Bloomberg Law*. Retrieved from <https://news.bloomberglaw.com/environment-and-energy/wyoming-utility-clash-over-coal-boosting-climate-fighting-tech>
- Bamdad, H., Hawboldt, K., & MacQuarrie, S. (2018). Nitrogen Functionalized Biochar as a Renewable Adsorbent for Efficient CO₂ Removal. *Energy & Fuels*, 32(11), 11742-11748. doi:10.1021/acs.energyfuels.8b03056
- Bamminger, C., Marschner, B., & Jüschke, E. (2013). An incubation study on the stability and biological effects of pyrogenic and hydrothermal biochar in two soils. *European Journal of Soil Science*, 65(1), 72-82. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/ejss.12074/full>

- Bamminger, C., Poll, C., Högy, P., Kandeler, E., & Marhan, S. (2015). The role of biochar and elevated soil temperature in affecting microbial abundance and growth of Brassica napus in an agroecosystem. In.
- Bamminger, C., Poll, C., Sixt, C., Högy, P., Wüst, D., Kandeler, E., & Marhan, S. (2016). Short-term response of soil microorganisms to biochar addition in a temperate agroecosystem under soil warming. *Agriculture, Ecosystems & Environment*, 233, 308-317. doi:<https://doi.org/10.1016/j.agee.2016.09.016>
- Bandara, T., et al. . (2014). ROLE OF WOODY BIOCHAR ON SOIL MICROBIAL ACTIVITIES, ORGANIC FRACTION AND HEAVY METAL IMMOBILIZATION IN SERPENTNE SOIL. *DRIVING RESEARCH TOWARDS ECONOMY: OPPORTUNITIES AND CHALLENGES*. Retrieved from http://www.researchgate.net/profile/Tharanga_Bandara2/publication/276954702_ROLE_OF_WOODY_BIOCHAR_ON_SOIL_MICROBIAL_ACTIVITIES_ORGANIC_FRACTION_AND_HEAVY_METAL_IMMOBILIZATION_IN_SERPENTNE_SOIL/links/555c8ee408ae86c06b5d3913.pdf
- Bandara, T., et al. . (2015). Role of fungal-bacterial co-inoculation and woody biochar on soil enzyme activity and heavy metal immobilization in serpentine soil. *Selected Works of Nishanta Rajakaruna*. Retrieved from http://works.bepress.com/nishanta_rajakaruna/44/
- Bandara, T., et al. (2015). Role of woody biochar and fungal-bacterial co-inoculation on enzyme activity and metal immobilization in serpentine soil. *Journal of Soils and Sediments*, 17(3), 665-673. doi:10.1007/s11368-015-1243-y
- Bandaraa, T., et al. (2015). Role of biochar as a bioamendment to reduce heavy metals translocation into Zea mays plants. In.
- Bandilla, K. W. (2020). 31 - Carbon Capture and Storage. In T. M. Letcher (Ed.), *Future Energy (Third Edition)* (pp. 669-692): Elsevier.
- Bandyopadhyay, A. (2017). Aqueous NH₃ in CO₂ Capture from Coal-Fired Thermal Power Plant Flue Gas: N-Fertilizer Production Potential and GHG Emission Mitigation. In M. Goel & M. Sudhakar (Eds.), *Carbon Utilization: Applications for the Energy Industry* (pp. 269-297). Singapore: Springer Singapore.
- Bandza, A. J., & Vaijhala, S. P. (2010). *Long-Term Risks and Short-Term Regulations: Modeling the Transition from Enhanced Oil Recovery to Geologic Carbon Sequestration*. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1272668
- Banerjee, A., Schelly, C. L., & Halvorsen, K. E. (2018). Constructing a Sustainable Bioeconomy: Multi-scalar Perceptions of Sustainability. In W. Leal Filho, D. M. Pociovălișteanu, P. R. Borges de Brito, & I. Borges de Lima (Eds.), *Towards a Sustainable Bioeconomy: Principles, Challenges and Perspectives* (pp. 355-374). Cham: Springer International Publishing.
- Banja, M., & Dellemand, J. F. (2013). Bioenergy & water: Doing the right thing ? A literature review. In J. F. Dellemand & P. W. Gerbens-Leenes (Eds.), *Bioenergy and Water* (pp. 243-289): European Commission.
- Bank, D. (2019). How negative can carbontech entrepreneurs go? *Impact Alpha*, (April 3). Retrieved from <https://impactalpha.com/how-negative-can-carbontech-entrepreneurs-go/>
- Banks, M. K., & Schultz, K. E. (2005). Comparison of Plants for Germination Toxicity Tests in Petroleum-contaminated Soils. *Water Air and Soil Pollution*, 167(1-4), 211-219. Retrieved from <https://link.springer.com/article/10.1007/s11270-005-8553-4>
- Banowetz, G. M., Griffith, S. M., & El-Nashaar, H. M. (2009). Mineral Content of Grasses Grown for Seed in Low Rainfall Areas of the Pacific Northwest and Analysis of Ash from Gasification of Bluegrass (*Poa pratensis* L.) Straw. *Energy & Fuels*, 23, 502-506. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/ef800490w>
- Bansode, R., et al. . (2014). Biochars From Solid Organic Municipal Wastes For Soil Quality Enhancement. In.

- Bapat, H. D., & Manahan, S. E. (1998). Chemchar gasification of hazardous wastes and mixed wastes on a biochar matrix. *American Chemical Society*, 215. Retrieved from <http://www.biochar-international.org/node/915>
- Barbarossa, V., Vanga, G., Viscardi, R., & Gattia, D. M. (2014). CO₂ as Carbon Source for Fuel Synthesis. *Energy Procedia*, 45, 1325-1329. doi:<https://doi.org/10.1016/j.egypro.2014.01.138>
- Barber, R. T. (2007). Picoplankton Do Some Heavy Lifting. *Science*, 315(5813), 777-778. doi:[10.1126/science.1137438](https://doi.org/10.1126/science.1137438)
- Barber, R. T., & Hiscock, M. R. (2006). A rising tide lifts all phytoplankton: Growth response of other phytoplankton taxa in diatom-dominated blooms. *Global Biogeochemical Cycles*, 20(4), n/a-n/a. doi:[10.1029/2006GB002726](https://doi.org/10.1029/2006GB002726)
- Bargmann, I., et al. (2013). Hydrochar and Biochar Effects on Germination of Spring Barley. *Journal of Agronomy and Crop Science*, 199(5), 360-373. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/jac.12024/abstract>
- Barkakaty, B. (2017). Emerging Materials for Lowering Atmospheric Carbon. *Environmental Technology & Innovation*, 7, 30-43. Retrieved from http://ac.els-cdn.com/S2352186416301705/1-s2.0-S2352186416301705-main.pdf?_tid=853c11c2-df25-11e6-8e8e-00000aab0f02&acdnat=1484926472_41c02836988f5927e3a59b7b04f78b2b
- Barlow, J., Sims, R. C., & Quinn, J. C. (2016). Techno-economic and life-cycle assessment of an attached growth algal biorefinery. *Bioresource Technology*, 220, 360-368. doi:<https://doi.org/10.1016/j.biortech.2016.08.091>
- Barnard, M. (2016). Soil Carbon Capture: Great Loamy Hope Or Bandaid? *Clean Technica*. Retrieved from <https://cleantechnica.com/2016/12/17/soil-carbon-capture-great-loamy-hope-bandaid/>
- Barnard, M. (2018). Nori: Fighting Global Warming With blockchain. Retrieved from <https://cleantechnica.com/2018/04/19/nori-fighting-global-warming-with-blockchain/>
- Barnard, M. (2019). Air Carbon Capture's Scale Problem: 11 Astrodomes For A Ton Of CO₂. *Clean Technica*, (March 11).
- Barnard, M. (2019). Carbon Capture's Global Investment Would Have Been Better Spent On Wind & Solar. *Clean Technica*, (April 13). Retrieved from <https://cleantechnica.com/2019/04/21/carbon-captures-global-investment-would-have-been-better-spent-on-wind-solar/>
- Barnard, M. (2019). Chevron's Fig Leaf Part 1: Carbon Engineering Burns Natural Gas To Capture Carbon From The Air. *Clean Technica*. Retrieved from <https://cleantechnica.com/2019/04/12/chevrons-fig-leaf-part-1-carbon-engineering-burns-natural-gas-to-capture-carbon-from-the-air/>
- Barnard, M. (2019). Chevron's Fig Leaf Part 2: Carbon Engineering Burns Gas For 0.5 Tons Of CO₂ For Each Ton Captured. *Clean Technica*. Retrieved from <https://cleantechnica.com/2019/04/13/chevrons-fig-leaf-part-2-carbon-engineering-burns-gas-for-0-5-ton-of-co2-for-each-ton-captured/>
- Barnard, M. (2019). Chevron's Fig Leaf Part 3: Carbon Engineering's Scale & Power Problems. *Clean Technica*. Retrieved from <https://cleantechnica.com/2019/04/14/chevrons-fig-leaf-part-3-carbon-engineerings-scale-power-problems/>
- Barnard, M. (2019). Chevron's Fig Leaf Part 4: Carbon Engineering's Only Market Is Pumping More Oil. *Clean Technica*. Retrieved from <https://cleantechnica.com/2019/04/19/chevrons-fig-leaf-part-4-carbon-engineerings-only-market-is-pumping-more-oil/>
- Barnard, M. (2019). Chevron's Fig Leaf Part 5: Who Is Behind Carbon Engineering, & What Do Experts Say? *Clean Technica*. Retrieved from <https://cleantechnica.com/2019/04/20/chevrons-fig-leaf-part-5-who-is-behind-carbon-engineering-what-do-experts-say/>

- Barnard, M. (2019). Chevron's Fig Leaf Part 6: Carbon Engineering's Air-To-Fuel Plan Is Even Worse. *Clean Technica*. Retrieved from <https://cleantechnica.com/2019/04/26/chevrons-fig-leaf-part-6-carbon-engineerings-air-to-fuel-plan-is-even-worse/>
- Barnard, M. (2019). Farming Carbon Capture Has Potential, But Is Not A Magic Bullet. *Clean Technica*. Retrieved from <https://cleantechnica.com/2019/05/22/farming-carbon-capture-has-potential-but-is-not-a-magic-bullet/>
- Barnard, M. (2019). "That Was Quick" Category: Carbon Engineering Partners With Occidental To Pump More Oil. *Clean Technica*. Retrieved from <https://cleantechnica.com/2019/05/23/that-was-quick-category-carbon-engineering-partners-with-occidental-to-pump-more-oil/>
- Barnes, R. T., Gallagher, M. E., Masiello, C. A., Liu, Z., & Dugan, B. (2014). Biochar-Induced Changes in Soil Hydraulic Conductivity and Dissolved Nutrient Fluxes Constrained by Laboratory Experiments. *Plos One*, 9(9), e108340. doi:10.1371/journal.pone.0108340.s001
- Barneto, A. G., Carmona, J. A., & Blanco, M. J. D. (2010). Effect of the Previous Composting on Volatiles Production during Biomass Pyrolysis. *Journal of Physical Chemistry*, 114(11), 3756–3763. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/jp903994p>
- Baronti, S., et al. (2010). The Biochar Option to Improve Plant Yields: First Results From Some Field and Pot Experiments in Italy. *Italian Journal of Agronomy*, 5(1), 3-11. Retrieved from <http://www.agronomy.it/index.php/agro/article/view/ija.2010.3/10>
- Baronti, S., et al. . (2014). Impact of biochar application on plant water relations in *Vitis vinifera* (L.). *European Journal of Agronomy*, 53, 38–44. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1161030113001536>
- Barrasso, J. (2019). Cut Carbon Through Innovation, Not Regulation. *New York Times*. Retrieved from <https://www.nytimes.com/2018/12/18/opinion/climate-carbon-tax-innovation.html>
- Barrow, C. J. (2011). Biochar: Potential for countering land degradation and for improving agriculture. *Applied Geography*, 34, 21-28. doi:10.1016/j.apgeog.2011.09.008
- Barry, A. N., Starkenburg, S. R., & Sayre, R. T. (2015). Strategies for Optimizing Algal Biology for Enhanced Biomass Production. *Frontiers in Energy Research*, 3(1). doi:10.3389/fenrg.2015.00001
- Barry, J. P., et al. (2004). Effects of Direct Ocean CO₂ Injection on Deep-Sea Meiofauna. *Journal of Oceanography*, 60, 759-766. Retrieved from <https://link.springer.com/content/pdf/10.1007/s10872-004-5768-8.pdf>
- Bartzas, G., & Kominitsas, K. (2015). Life cycle assessment of ferronickel production in Greece. *Resources, Conservation and Recycling*, 105, 113 - 122. doi:10.1016/j.resconrec.2015.10.016
- Barus, J. (2015). *EFEKTIVITAS DOLOMIT DAN BIOCHAR SEKAM TERHADAP PRODUKTIVITAS DUA VUB PADI RAWA (EFFECTIVENESS OF DOLOMITE AND HUSK OF BIOCHAR TO RICE PRODUCTIVITY OF TWO VUB IN SWAMP LAND)*. Paper presented at the Prosiding Seminar Nasional Lahan Suboptimal (Proceedings of the National Seminar on Land Suboptimal). [http://pur-plso.unsri.ac.id/userfiles/5_Junita%20B-semnas%20LSO%20Palembang2015\(1\).pdf](http://pur-plso.unsri.ac.id/userfiles/5_Junita%20B-semnas%20LSO%20Palembang2015(1).pdf)
- Barzagli, F., Giorgi, C., Mani, F., & Peruzzini, M. (2020). Screening Study of Different Amine-Based Solutions as Sorbents for Direct CO₂ Capture from Air. *ACS Sustainable Chemistry & Engineering*, 8(37), 14013-14021. doi:10.1021/acssuschemeng.0c03800
- Barzagli, F., & Mani, F. (2021). Direct CO₂ air capture with aqueous 2-(ethylamino)ethanol and 2-(2-aminoethoxy)ethanol: ¹³C NMR speciation of the absorbed solutions and study of the sorbent regeneration improved by a transition metal oxide catalyst. *Inorganica Chimica Acta*, 518, 120256. doi:<https://doi.org/10.1016/j.ica.2021.120256>

- Basile, A., Iulianelli, A., Gallucci, F., & Morrone, P. (2010). Advanced membrane separation processes and technology for carbon dioxide (CO₂) capture in power plants A2 - Maroto-Valer, M. Mercedes. In *Developments and Innovation in Carbon Dioxide (CO₂) Capture and Storage Technology* (Vol. 1, pp. 203-242): Woodhead Publishing.
- Basiron, Y. (2007). Palm oil production through sustainable plantations. *European Journal of Lipid Science and Technology*, 109(4), 289-295. doi:10.1002/ejlt.200600223
- Baskaran, L., Jager, H., Schweizer, P., & Srinivasan, R. (2010). Progress toward Evaluating the Sustainability of Switchgrass as a Bioenergy Crop using the SWAT Model. *Transactions of the ASABE*, 53(5), 1547-1557. Retrieved from <http://web.ornl.gov/~zij/mypubs/Biofuels/Baskaran10.pdf>
- Basnet, M. (2015). Application of ferric enriched biochar to capture N and P from greywater. *Metropolia Ammattikorkeakoulu (Helsinki Metropolia University of Applied Sciences)*. Retrieved from <http://publicationstheses.allseasonsnews.xyz/handle/10024/88083>
- Bass, A. M., Bird, M. I., Kay, G., & Muirhead, B. (2016). Soil properties, greenhouse gas emissions and crop yield under compost, biochar and co-composted biochar in two tropical agronomic systems. *Science of The Total Environment*, 550, 459-470. doi:<http://dx.doi.org/10.1016/j.scitotenv.2016.01.143>
- Bass, D. (2020). Inside Microsoft's Mission to Go Carbon Negative. *Financial Post*. Retrieved from <https://business.financialpost.com/pmn/business-pmn/inside-microsofts-mission-to-go-carbon-negative>
- Basso, A. S. (2012). *Effect of fast pyrolysis biochar on physical and chemical properties of a sandy soil*. (Master of Science). IOWA STATE UNIVERSITY,
- Basso, A. S., Miguez, F. E., Laird, D. A., Horton, R., & Westgate, M. (2012). Assessing potential of biochar for increasing water-holding capacity of sandy soils. *GCB Bioenergy*, 5(2), 132-143. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/gcbb.12026/abstract>
- Basta, N. T., Busalacchi, D. M., Hundal, L. S., Kumar, K., Dick, R. P., Lanno, R. P., . . . Granato, T. C. (2015). Restoring Ecosystem Function in Degraded Urban Soil Using Biosolids, Biosolids Blend, and Compost. *Journal of Environment Quality*, 45(1), 74-83. doi:10.2134/jeq2015.01.0009
- Bastida, F., Hernández, T., & García, C. (2018). Chapter 8 - Soil Erosion and C Losses: Strategies for Building Soil Carbon. In C. Garcia, P. Nannipieri, & T. Hernandez (Eds.), *The Future of Soil Carbon* (pp. 215-238): Academic Press.
- Bastin, J.-F., et al. (2020). Erratum for the Report: "The global tree restoration potential" by J.-F. Bastin, Y. Finegold, C. Garcia, D. Mollicone, M. Rezende, D. Routh, C. M. Zohner, T. W. Crowther and for the Technical Response "Response to Comments on 'The global tree restoration potential'" by J.-F. Bastin, Y. Finegold, C. Garcia, N. Gellie, A. Lowe, D. Mollicone, M. Rezende, D. Routh, M. Sacande, B. Sparrow, C. M. Zohner, T. W. Crowther. *Nature*, 368(6494). Retrieved from <https://science.sciencemag.org/content/368/6494/eabc8905>
- Bastin, J.-F., Finegold, Y., Garcia, C., Mollicone, D., Rezende, M., Routh, D., . . . Crowther, T. W. (2019). Forest restoration: Transformative trees—Response. *Science*, 366(6463), 317-317. doi:10.1126/science.aaz2148
- Bastin, J.-F., Finegold, Y., Garcia, C., Mollicone, D., Rezende, M., Routh, D., . . . Crowther, T. W. (2019). The global tree restoration potential. *Science*, 365(6448), 76-79. doi:10.1126/science.aax0848
- Bastin, J.-F., Finegold, Y., Garcia, C., Mollicone, D., Rezende, M., Routh, D., . . . Crowther, T. W. (2019). Response to Comment on "The global tree restoration potential". 366(6469), eaaz0493. doi:10.1126/science.aaz0493 %J Science
- Bastos, A. C. e. a. (2014). Potential risk of biochar-amended soil to aquatic systems: an evaluation based on aquatic bioassays. *Ecotoxicology*, 23(9), 1784 - 1793. doi:10.1007/

s10646-014-1344-1

- Basu, P. (2013). Chapter 5 - Pyrolysis. In P. Basu (Ed.), *Biomass Gasification, Pyrolysis and Torrefaction (Second Edition)* (pp. 147-176). Boston: Academic Press.
- Basu, S., Roy, A. S., Mohanty, K., & Ghoshal, A. K. (2014). CO₂ biofixation and carbonic anhydrase activity in *Scenedesmus obliquus* SA1 cultivated in large scale open system. *Bioresource Technology*, 164, 323-330. doi:<https://doi.org/10.1016/j.biortech.2014.05.017>
- Bataille, C., & Lee, C. (2021). Going negative. Why Canada and the world need carbon dioxide removal, and how to make it happen. Retrieved from <https://climatechoices.ca/going-negative/>
- Batch, R., & McPherson, B. (2017). *Integrating Enhanced Oil Recovery and Carbon Capture and Storage Projects: A Case Study at Farnsworth Field, Texas*. Paper presented at the SPE Western Regional Meeting. <https://www.onepetro.org/download/conference-paper/SPE-180408-MS?id=conference-paper%2FSPE-180408-MS>
- Batel, S., Devine-Wright, P., & Tangeland, T. (2013). Social acceptance of low carbon energy and associated infrastructures: A critical discussion. *Energy Policy*, 58, 1-5. doi:<https://doi.org/10.1016/j.enpol.2013.03.018>
- Bates, A. (2010). *The Biochar Solution: Carbon Farming and Climate Change*. Gabriola Island, BC: New Society Publishers.
- Bates, A. (2021). The Great Pause Week 49: BiCRS Without Borders. Retrieved from <https://coldesign.medium.com/the-great-pause-week-49-bikers-without-borders-12d7971c5bf1>
- Bates, A., & Draper, K. (2018). *Using Fire to Cool the Earth*.
- Bates, E. D., Mayton, R. D., Ntai, I., & Davis, J. H. (2002). CO₂ Capture by a Task Specific Ionic Liquid. *J. Am. Chem. Soc.*, 124, 926-927. Retrieved from <https://pubs.acs.org/doi/10.1021/ja017593d>
- Batidzirai, B., Smeets, E. M. W., & Faaij, A. P. C. (2012). Harmonising bioenergy resource potentials—Methodological lessons from review of state of the art bioenergy potential assessments. *Renewable and Sustainable Energy Reviews*, 16(9), 6598-6630. doi:<http://dx.doi.org/10.1016/j.rser.2012.09.002>
- Batista, A. P., et al. (2015). Combining urban wastewater treatment with biohydrogen production--an integrated microalgae-based approach. *Bioresource Technolnology*, 184, 230-235.
- Batjes, N. H. (1998). Mitigation of atmospheric CO₂ concentrations by increased carbon sequestration in the soil. *Biology and Fertility of Soils*, 27(3), 230-235. doi:<10.1007/s003740050425>
- Batool, A., Taj, S., Rashid, A., Khalid, A., Qadeer, S., Saleem, A. R., & Ghufran, M. A. (2015). Potential of soil amendments (Biochar and Gypsum) in increasing water use efficiency of *Abelmoschus esculentus* L. Moench. *Frontiers in Plant Science*, 6, 1-13. doi:<10.3389/fpls.2015.00733>
- Batres, M., Wang, F. M., Buck, H., Kapila, R., Kosar, U., Licker, R., . . . Suarez, V. (2021). Environmental and climate justice and technological carbon removal. *The Electricity Journal*, 34(7), 107002. doi:<https://doi.org/10.1016/j.tej.2021.107002>
- Batten, S. D., & Gower, J. F. R. (2014). Did the iron fertilization near Haida Gwaii in 2012 affect the pelagic lower trophic level ecosystem? *Journal of Plankton Research*, 36(4), 925-932. doi:<10.1093/plankt/fbu049>
- Battersby, A. (2021). Fossil fuels going nowhere fast, but carbon capture roll-out too slow, says DNV *Upstream Energy Explored*. Retrieved from <https://www.upstreamonline.com/energy-transition/fossil-fuels-going-nowhere-fast-but-carbon-capture-roll-out-too-slow-says-dnv/2-1-1060437>
- Battersby, A. (2021). Pertamina drives forward with ambitious Indonesia CCUS project plans

- Retrieved from <https://www.upstreamonline.com/energy-transition/pertamina-drives-forward-with-ambitious-indonesia-ccus-project-plans/2-1-1032284>
- Bauen, A., et al. (2009). *Bioenergy - a sustainable and reliable energy source - a review of status and prospects*. Retrieved from https://www.researchgate.net/publication/46722642_Bioenergy_-_a_sustainable_and_reliable_energy_source_-_a_review_of_status_and_prospects
- Bauer, N., Klein, D., Humpenöder, F., Kriegler, E., Luderer, G., Popp, A., & Strefler, J. (2020). Bio-energy and CO₂ emission reductions: an integrated land-use and energy sector perspective. *Climatic Change*. doi:10.1007/s10584-020-02895-z
- Bauman, S. J., Costa, M. T., Fong, M. B., House, B. M., Perez, E. M., Tan, M. H., . . . Franks, P. J. S. (2014). Augmenting the Biological Pump: The Shortcomings of Geoengineered Upwelling. *Oceanography*, 27(3), 17-23. Retrieved from https://tos.org/oceanography/assets/docs/27-3_bauman.pdf
- Baveye, P. C. (2007). Soils and runaway global warming: Terra incognita. *Journal of Soil and Water Conservation*, 62, 139A-143A. Retrieved from <http://www.jswconline.org/content/62/6/139A.extract>
- Baveye, P. C. (2014). The Characterization of Pyrolysed Biomass Added to Soils Needs to Encompass Its Physical And Mechanical Properties. *Soil Science Society of America Journal*, 78(6), 2112. doi:10.2136/sssaj2014.09.03541
- Baveye, P. C., Berthelin, J., Tessier, D., & Lemaire, G. (2018). The “4 per 1000” initiative: A credibility issue for the soil science community? *Geoderma*, 309, 118-123. doi:<https://doi.org/10.1016/j.geoderma.2017.05.005>
- Bayabil, H. (2015). *Hydrological And Erosion Processes In The Ethiopian Highlands*. Cornell University, Retrieved from <https://ecommons.cornell.edu/handle/1813/40930>
- Bayabil, H. K., et al. (2013). *Hydraulic properties of clay soils as affected by biochar and charcoal amendments*. Paper presented at the Rainwater management for resilient livelihoods in Ethiopia: Proceedings of the Nile Basin Development Challenge science meeting.
- Bayabil, H. K., et al. . (2015). Assessing the potential of biochar and charcoal to improve soil hydraulic properties in the humid Ethiopian Highlands: The Anjeni watershed. *Geoderma*, 243-244, 115 - 123. doi:10.1016/j.geoderma.2014.12.015
- Bayan, M. R. (2014). *Elemental Composition of Biochar from Various Biomass Feedstocks*. Lincoln University in Missouri, Retrieved from http://kpfu.ru/portal/docs/F1227238402/Biochar_Elemental_Composition_Poster_NABS_MA.pdf
- Bayan, M. R., Valeyeva, A. A., & B.R., G. (2014). Adsorption of Methylene Blue by Biochar Produced through Torrefaction and Slow Pyrolysis from Switchgrass. In.
- Baysal, M., & Yürüm, Y. (2016). Characterization of bio-oils and bio-char obtained from the pyrolysis of a mixture of Lolium perenne, Festuca ovina, Festuca rubra and Poa pratensis grasses. *Biofuels*, 7(2), 1 - 16. doi:10.1080/17597269.2015.1123983
- Bayu, D., Tadesse, M., & Amsalu, N. (2016). Effect of biochar on soil properties and lead (Pb) availability in a military camp in South West Ethiopia. *African Journal of Environmental Science and Technology*, 10(3), 77 - 85. doi:10.5897/ajest2015.2014
- Beal, C. M., Archibald, I., Huntley, M. E., Greene, C. H., & Johnson, Z. I. (2018). Integrating Algae with Bioenergy Carbon Capture and Storage (ABECCS) Increases Sustainability. *Earth's Future*, 6(3), 524-542. doi:10.1002/2017EF000704
- Beal, C. M., Gerber, L. N., Sills, D. L., Huntley, M. E., Machesky, S. C., Walsh, M. J., . . . Greene, C. H. (2015). Algal biofuel production for fuels and feed in a 100-ha facility: A comprehensive techno-economic analysis and life cycle assessment. *Algal Research*, 10, 266-279. doi:<https://doi.org/10.1016/j.algal.2015.04.017>
- Béarat, H., McKelvy, M. J., Chizmeshya, A. V. G., Gormley, D., Nunez, R., Carpenter, R. W., . . .

- Wolf, G. H. (2006). Carbon Sequestration via Aqueous Olivine Mineral Carbonation: Role of Passivating Layer Formation. *Environmental Science & Technology*, 40(15), 4802-4808. doi:10.1021/es0523340
- Beasley, E., et al. (2019). *Guide to Including Nature in Nationally Determined Contributions*. Retrieved from https://www.conservation.org/docs/default-source/publication-pdfs/guide-to-including-nature-in-ndcs.pdf?sfvrsn=99aecda2_2&fbclid=IwAR3zTPxl2rw5pUKuPscqLVVQDhNCk4WvDNnP8mMelcA4Ky2idlu55o9eCNE
- Beauchemin, S., Clemente, J. S., MacKinnon, T., Tisch, B., Lastra, R., Smith, D., & Kwong, J. (2014). Metal Leaching in Mine Tailings: Short-Term Impact of Biochar and Wood Ash Amendments. *Journal of Environment Quality*, 44(1), 275-285. doi:10.2134/jeq2014.04.0195
- Becattini, V., Gabrielli, P., & Mazzotti, M. (2021). Role of Carbon Capture, Storage, and Utilization to Enable a Net-Zero-CO₂-Emissions Aviation Sector. *Industrial & Engineering Chemistry Research*. doi:10.1021/acs.iecr.0c05392
- Beccari Barreto, B., Caserini, S., Dolci, G., & Grosso, M. (2019). Carbon dioxide submarine storage in glass containers: Life Cycle Assessment and cost analysis of four case studies in the cement sector. *Mitigation and Adaptation Strategies for Global Change*. doi:10.1007/s11027-019-09853-w
- Bech, N., Larsen, M. B., Jensen, P. A., & Dam-Johansen, K. (2009). Modelling Solid-convective Flash Pyrolysis of Straw and Wood in the Pyrolysis Centrifuge Reactor. *Biomass & Bioenergy*, 33(6-7), 999-1011. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0961953409000725>
- Beck, B., & Gale, J. (2009). Improving the global carbon capture and storage educational capacity. In J. Gale, H. Herzog, & J. Braitsch (Eds.), *Greenhouse Gas Control Technologies* 9 (Vol. 1, pp. 4727-4733). Amsterdam: Elsevier Science Bv.
- Beck, D. A., Johnson, G. R., & Spolek, G. A. (2011). Amending greenroof soil with biochar to affect runoff water quantity and quality. *Environmental Pollution*, 159(8-9), 2111-2118. doi:10.1016/j.envpol.2011.01.022
- Beck, L., et al. (2021). A Round-up of Carbon Capture Projects Around The World. Retrieved from <https://www.catf.us/2021/03/carbon-capture-projects-around-the-world/>
- Beck, L., & Shaheen, T. (2021). U.S. Senators introduce a crucial bill to support carbon capture. Retrieved from <https://www.catf.us/2021/03/u-s-senators-introduce-a-crucial-bill-to-support-carbon-capture/>
- Beck, S., & Mahony, M. (2018). The politics of anticipation: the IPCC and the negative emissions technologies experience. *Global Sustainability*, 1, e8. doi:10.1017/sus.2018.7
- Beck, S., & Oomen, J. (2021). Imagining the corridor of climate mitigation – What is at stake in IPCC's politics of anticipation? *Environmental Science & Policy*, 123, 169-178. doi:<https://doi.org/10.1016/j.envsci.2021.05.011>
- Becker, R., Dorgerloh, U., Helmis, M., Mumme, J., Diakité, M., & Nehls, I. (2013). Hydrothermally carbonized plant materials: patterns of volatile organic compounds. *Bioresource Technology*, 130, 621-628. Retrieved from <http://dx.doi.org/10.1016/j.biortech.2012.12.102>
- Beckford, F. B. (2015). *Advancing an integrated food energy system (IFES) in Haiti: Applying resiliency and sustainability models in ecologically degraded environments*. PRESCOTT COLLEGE, Retrieved from <http://gradworks.umi.com/37/06/3706257.html>
- Bednar, J., Obersteiner, M., Baklanov, A., Thomson, M., Wagner, F., Geden, O., . . . Hall, J. W. (2021). Operationalizing the net-negative carbon economy. *Nature*, 596, 377-383. doi:10.1038/s41586-021-03723-9
- Bednar, J., Obersteiner, M., & Wagner, F. (2019). On the financial viability of negative emissions.

- Nature Communications*, 10(1), 1783. doi:10.1038/s41467-019-09782-x
- Bedussi, F., Zaccheo, P., & Crippa, L. (2015). Pattern of pore water nutrients in planted and non-planted soilless substrates as affected by the addition of biochars from wood gasification. *Biology and Fertility of Soils*, 51(5), 625-635. doi:10.1007/s00374-015-1011-6
- Beeharry, R. P. (2000). Carbon balance of sugarcane bioenergy systems. *Biomass & Bioenergy*, 20, 361-370. Retrieved from <https://www.scribd.com/document/111878881/Carbon-Balance-of-Sugarcane-Bioenergy-Systems>
- Beer, L. L., Boyd, E. S., Peters, J. W., & Posewitz, M. C. (2009). Engineering algae for biohydrogen and biofuel production. *Current Opinion in Biotechnology*, 20(3), 264-271. doi:<https://doi.org/10.1016/j.copbio.2009.06.002>
- Beerling, D. (2018). Guest post: How 'enhanced weathering' could slow climate change and boost crop yields. *CarbonBrief*. Retrieved from <https://www.carbonbrief.org/guest-post-how-enhanced-weathering-could-slow-climate-change-and-boost-crop-yields>
- Beerling, D. (2019). Can plants help us avoid a climate catastrophe? *OUPblog*, (May 9). Retrieved from <https://blog.oup.com/2019/05/plants-help-avoid-climate-catastrophe/>
- Beerling, D. J. (2017). Enhanced rock weathering: biological climate change mitigation with co-benefits for food security? *Biology Letters*, 13(4), 1-4. Retrieved from <http://rsbl.royalsocietypublishing.org/content/roybiolett/13/4/20170149.full.pdf>
- Beerling, D. J., et al. (2018). Farming with crops and rocks to address global climate, food and soil security. *Nature Plants*, 4, 138-147. doi:10.1038/s41477-018-0108-y
- Beerling, D. J. (2019). Can plants help us avoid seeding a human-made climate catastrophe? *PLANTS, PEOPLE, PLANET*, 1(4), 310-314. doi:10.1002/ppp3.10066
- Beerling, D. J., Kantzias, E. P., Lomas, M. R., Wade, P., Eufrasio, R. M., Renforth, P., . . . Banwart, S. A. (2020). Potential for large-scale CO₂ removal via enhanced rock weathering with croplands. *Nature*, 583(7815), 242-248. doi:10.1038/s41586-020-2448-9
- Beesley, L., et al. . (2014). Assessing the influence of compost and biochar amendments on the mobility and toxicity of metals and arsenic in a naturally contaminated mine soil. *Environmental Pollution*, 186, 195–202. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0269749113006155>
- Beesley, L., & Marmiroli, M. (2010). The immobilisation and retention of soluble arsenic, cadmium and zinc by biochar. *Environmental Pollution*, 159(2), 474-480. doi:10.1016/j.envpol.2010.10.016
- Beesley, L., Moreno-Jimenez, E., & Gomez-Eyles, J. L. (2010). Effects of biochar and greenwaste compost amendments on mobility, bioavailability and toxicity of inorganic and organic contaminants in a multi-element polluted soil. *Environmental Pollution*, 158(6), 2282-2287. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0269749110000643>
- Beesley, L., Moreno-Jiménez, E., Gomez-Eyles, J. L., Harris, E., Robinson, B., & Sizmur, T. (2011). A review of biochars' potential role in the remediation, revegetation and restoration of contaminated soils. *Environmental Pollution*, 159(12), 3269-3282. doi:<http://dx.doi.org/10.1016/j.envpol.2011.07.023>
- Beesleym, L., et al. (2013). Biochar addition to an arsenic contaminated soil increases arsenic concentrations in the pore water but reduces uptake to tomato plants (*Solanum lycopersicum* L.). *Science of The Total Environment*, 454–455, 598–603. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/23583727>
- Begaye, G., Meixner, T., & Chorover, J. (2015). *Changes in DOM Quantity and Quality in a Southern Rockies Forested Catchment*. Paper presented at the Natural Ground Water Association. <https://ngwa.confex.com/ngwa/2016hwqsw/webprogram/Paper10768.html>
- Behera, B., Acharya, A., Gargey, I. A., Aly, N., & Balasubramanian, P. (2018). Bioprocess

- engineering principles of microalgal cultivation for sustainable biofuel production. *Bioresource Technology Reports*. doi:<https://doi.org/10.1016/j.biteb.2018.08.001>
- Behnke, G. D., & Villamil, M. B. (2019). Cover crop rotations affect greenhouse gas emissions and crop production in Illinois, USA. *Field Crops Research*, 241, 107580. doi:<https://doi.org/10.1016/j.fcr.2019.107580>
- Behnke, G. D., Zuber, S. M., Pittelkow, C. M., Nafziger, E. D., & Villamil, M. B. (2018). Long-term crop rotation and tillage effects on soil greenhouse gas emissions and crop production in Illinois, USA. *Agriculture, Ecosystems & Environment*, 261, 62-70. doi:<https://doi.org/10.1016/j.agee.2018.03.007>
- Behrenfeld, M. J., Bale, A. J., Kolber, Z. S., Aiken, J., & Falkowski, P. G. (1996). Confirmation of iron limitation of phytoplankton photosynthesis in the equatorial Pacific Ocean. *Nature*, 383(6600), 508-511. Retrieved from <http://dx.doi.org/10.1038/383508a0>
- Behrenfeld, M. J., Gaube, P., Della Penna, A., O'Malley, R. T., Burt, W. J., Hu, Y., . . . Doney, S. C. (2019). Global satellite-observed daily vertical migrations of ocean animals. *Nature*, 576(7786), 257-261. doi:10.1038/s41586-019-1796-9
- Behrens, R., et al. . (2015). Mineralogical transformations set slow weathering rates in low-porosity metamorphic bedrock on mountain slopes in a tropical climate. *Chemical Geology*, 411, 283-298. Retrieved from <http://gfzpublic.gfz-potsdam.de/pubman/item/escidoc:1263966>
- Beiyuan, J., Tsang, D. C. W., Yip, A. C. K., Zhang, W., Ok, Y. S., & Li, X.-D. (2016). Risk mitigation by waste-based permeable reactive barriers for groundwater pollution control at e-waste recycling sites. *Environmental Geochemistry and Health*, 39(1), 75-88. doi:10.1007/s10653-016-9808-2
- Bekele, A., Roy, J. L., & Young, M. A. (2015). Use of biochar and oxidized lignite for reconstructing functioning agronomic topsoil: effects on soil properties in a greenhouse study. *Canadian Journal of Soil Science*, 95(3), 269-285. doi:10.4141/cjss-2014-008
- Belaia, M. (2019). Optimal Climate Strategy with Mitigation, Carbon Removal, and Solar Geoengineering. *arXiv.org*. Retrieved from <https://arxiv.org/abs/1903.02043>
- BELAIA, M., MORENO-CRUZ, J. B., & KEITH, D. W. OPTIMAL CLIMATE POLICY IN 3D: MITIGATION, CARBON REMOVAL, AND SOLAR GEOENGINEERING. *Climate Change Economics*, 0(0), 2150008. doi:10.1142/s2010007821500081
- Belcher, C. M., & Masek, O. (2013). 16. Biochar and Carbon Sequestration. In *Fire Phenomena and the Earth System: An Interdisciplinary Guide to Fire Science*.
- Belinec, A. S., Bankina, T. A., Rizhija, A. Y., & Buchkina, N. P. (2014). The Use of the Protective Properties of Biochar for Optimising the Activity of the Soil Microorganisms, and Observations of Changes in the Soil Properties When Simulating the Pesticides' Behaviour in it. In *Mathematical Modeling in Plant Protection*.
- Bell, S., Barriocanal, C., Terrer, C., & Rosell-Melé, A. (2020). Management opportunities for soil carbon sequestration following agricultural land abandonment. *Environmental Science & Policy*, 108, 104-111. doi:<https://doi.org/10.1016/j.envsci.2020.03.018>
- Bellamy, P. H., Loveland, P. J., Bradley, R. I., Lark, R. M., & Kirk, G. J. D. (2005). Carbon losses from all soils across England and Wales 1978–2003. *Nature*, 437(7056), 245-248. doi:10.1038/nature04038
- Bellamy, R. (2018). Governing BECCS: “Slippery Slope” or “Uphill Struggle”? In M. Fridahl (Ed.), *Bioenergy with carbon capture and storage: From global potentials to domestic realities* (pp. 45-55).
- Bellamy, R. (2018). Incentivize negative emissions responsibly. *Nature Energy*, 3(7), 532-534. doi:10.1038/s41560-018-0156-6
- Bellamy, R. (2020). The case for carbon dioxide removal. *Manchester University*. Retrieved from <https://www.manchester.ac.uk/research/beacons/covid-catalysts/energy/carbon-dioxide-removal/>

removal-covid/

- Bellamy, R. (2020). Negative Emissions Technologies. In *International Encyclopedia of Geography* (pp. 1-6).
- Bellamy, R., Fridahl, M., Lezaun, J., Palmer, J., Rodriguez, E., Lefvert, A., . . . Haikola, S. (2021). Incentivising bioenergy with carbon capture and storage (BECCS) responsibly: Comparing stakeholder policy preferences in the United Kingdom and Sweden. *Environmental Science & Policy*, 116, 47-55. doi:<https://doi.org/10.1016/j.envsci.2020.09.022>
- Bellamy, R., & Geden, O. (2019). Govern CO₂ removal from the ground up. *Nature Geoscience*. doi:[10.1038/s41561-019-0475-7](https://doi.org/10.1038/s41561-019-0475-7)
- Bellamy, R., & Healey, P. (2018). 'Slippery slope' or 'uphill struggle'? Broadening out expert scenarios of climate engineering research and development. *Environmental Science & Policy*, 83, 1-10. doi:<https://doi.org/10.1016/j.envsci.2018.01.021>
- Bellamy, R., & Lezaun, J. (2015). Crafting a public for geoengineering. *Public Understanding of Science*, 26(4), 402-417. doi:[10.1177/0963662515600965](https://doi.org/10.1177/0963662515600965)
- Bellamy, R., Lezaun, J., & Palmer, J. (2019). Perceptions of bioenergy with carbon capture and storage in different policy scenarios. *Nature Communications*, 10(1), 743. doi:[10.1038/s41467-019-10859-5](https://doi.org/10.1038/s41467-019-10859-5)
- Bellamy, R., & Osaka, S. (2019). Unnatural climate solutions? *Nature Climate Change*. doi:[10.1038/s41558-019-0661-z](https://doi.org/10.1038/s41558-019-0661-z)
- Bellassen, V., & Luyssaert, S. (2014). Carbon sequestration: Managing forests in uncertain times. *Nature*, 506, 153-155. Retrieved from <https://www.nature.com/news/carbon-sequestration-managing-forests-in-uncertain-times-1.14687>
- Bellona. (2020). Takeaways on defining Real and Credible Carbon Dioxide Removal. Retrieved from <https://bellona.org/news/carbon-dioxide-removal/2020-11-takeaways-on-defining-real-and-credible-carbon-dioxide-removal>
- Belmonte, B. A., Aviso, K. B., Benjamin, M. F. D., & Tan, R. R. (2021). A fuzzy optimization model for planning integrated terrestrial carbon management networks. *Clean Technologies and Environmental Policy*. doi:[10.1007/s10098-021-02119-7](https://doi.org/10.1007/s10098-021-02119-7)
- Belmonte, B. A., Benjamin, M. F. D., & Tan, R. R. (2018). Bi-objective optimization of biochar-based carbon management networks. *Journal of Cleaner Production*, 188, 911-920. doi:<https://doi.org/10.1016/j.jclepro.2018.04.023>
- Belmonte, B. A., Benjamin, M. F. D., & Tan, R. R. (2019). Optimization-based decision support methodology for the synthesis of negative-emissions biochar systems. *Sustainable Production and Consumption*, 19, 105-116. doi:<https://doi.org/10.1016/j.spc.2019.03.008>
- Belshe, E. F., Sanjuan, J., Leiva-Dueñas, C., Piñeiro-Juncal, N., Serrano, O., Lavery, P., & Mateo, M. A. (2019). Modeling Organic Carbon Accumulation Rates and Residence Times in Coastal Vegetated Ecosystems. *Journal of Geophysical Research: Biogeosciences*, 124(11), 3652-3671. doi:[10.1029/2019jg005233](https://doi.org/10.1029/2019jg005233)
- Belyaeva, O. N., & Haynes, R. J. (2011). Comparison of the effects of conventional organic amendments and biochar on the chemical, physical and microbial properties of coal fly ash as a plant growth medium. *Environmental Earth Sciences*, 66(7), 1987-1997. doi:[10.1007/s12665-011-1424-y](https://doi.org/10.1007/s12665-011-1424-y)
- Ben Ghacham, A., Cecchi, E., Pasquier, L.-C., Blais, J.-F., & Mercier, G. (2015). CO₂ sequestration using waste concrete and anorthosite tailings by direct mineral carbonation in gas-solid-liquid and gas-solid routes. *Journal of Environmental Management*, 163, 70-77. doi:<https://doi.org/10.1016/j.jenvman.2015.08.005>
- Benanti, G., Saunders, M., Tobin, B., & Osborne, B. (2014). Contrasting impacts of afforestation on nitrous oxide and methane emissions. *Agricultural and Forest Meteorology*, 198-199(Supplement C), 82-93. doi:<https://doi.org/10.1016/j.agrformet.2014.07.014>

- Benavente, V., Calabuig, E., & Fullana, A. (2014). Upgrading of moist agro-industrial wastes by hydrothermal carbonization. *Journal of Analytical and Applied Pyrolysis*, 113, 89-98. doi:10.1016/j.jaat.2014.11.004
- Benbi, D. K. (2013). Greenhouse Gas Emissions from Agricultural Soils: Sources and Mitigation Potential. *Journal of Crop Improvement*, 27(6), 752-772. doi:10.1080/15427528.2013.845054
- Benbi, D. K., & Yadav, S. K. (2015). Decomposition and Carbon Sequestration Potential of Different Rice Residue-Derived By-Products and Farmyard Manure in a Sandy Loam Soil. *Communications in Soil Science and Plant Analysis*, 46(17), 2201-2211. doi:10.1080/00103624.2015.1069322
- Benemann, J. R. (1992). Plenary lecture: The use of iron and other trace element fertilizers in mitigating global warming. *Journal of Plant Nutrition*, 15(10), 2277-2313. doi:10.1080/01904169209364474
- Benemann, J. R. (1997). CO₂ mitigation with microalgae systems. *Energy Conversion and Management*, 38, S475-S479. doi:[https://doi.org/10.1016/S0196-8904\(96\)00313-5](https://doi.org/10.1016/S0196-8904(96)00313-5)
- Benemann, J. R. (2003). *Biofixation of CO₂ and Greenhouse Gas Abatement with Microalgae - Technology Roadmap*. Retrieved from <https://moritz.botany.ut.ee/~olli/b/RepBenemann03.pdf>
- Benemann, J. r., & Oswald, W. J. (1994). *Systems and economic analysis of microalge ponds for conversion of CO₂ to biomass*. Retrieved from <https://www.osti.gov/servlets/purl/493389>
- Beneski, V. M. (2013). *EVALUATION OF BIOCHAR FOR REDUCTION OF NITROGEN COMPOUNDS IN STORMWATER REMEDIATION SYSTEMS*. University of Delaware, Retrieved from http://udspace.udel.edu/bitstream/handle/19716/12813/Valentina_Beneski_thesis.pdf?sequence=1
- Benítez, P. C., McCallum, I., Obersteiner, M., & Yamagata, Y. (2007). Global potential for carbon sequestration: Geographical distribution, country risk and policy implications. *Ecological Economics*, 60(3), 572-583. doi:<http://dx.doi.org/10.1016/j.ecolecon.2005.12.015>
- Benítez, P. C., & Obersteiner, M. (2006). Site identification for carbon sequestration in Latin America: A grid-based economic approach. *Forest Policy and Economics*, 8(6), 636-651. doi:<https://doi.org/10.1016/j.forepol.2004.12.003>
- Bennett, R., Clifford, S., Anderson, K., & Puxty, G. (2017). Carbon Capture Powered by Solar Energy. *Energy Procedia*, 114, 1-6. doi:<https://doi.org/10.1016/j.egypro.2017.03.1139>
- Bennett, S. J., Schroeder, D. J., & McCoy, S. T. (2014). Towards a Framework for Discussing and Assessing CO₂ Utilisation in a Climate Context. *Energy Procedia*, 63, 7976-7992. doi:<https://doi.org/10.1016/j.egypro.2014.11.835>
- Benson, E. E., Kubiak, C. P., Sathrum, A. J., & Smieja, J. M. (2009). Electrocatalytic and homogeneous approaches to conversion of CO₂ to liquid fuels. *Chem. Soc. Rev.*, 38, 89. Retrieved from <https://pubmed.ncbi.nlm.nih.gov/19088968/>
- Benson, S. M. (2005). Chapter 1 - Overview of Geologic Storage of CO₂ A2 - Thomas, David C. In *Carbon Dioxide Capture for Storage in Deep Geologic Formations* (pp. 665-672). Amsterdam: Elsevier Science.
- Benson, S. M., & Deutch, J. (2018). Advancing Enhanced Oil Recovery as a Sequestration Asset. *Joule*, 2(8), 1386-1389. doi:<https://doi.org/10.1016/j.joule.2018.07.026>
- Benson, T. (2019). Carbon capture could become a big business, but should it? *Inverse*. Retrieved from <https://www.inverse.com/article/60819-carbon-capture-profitable-cost-climate>
- Bera T. J., Purakayastha T., & K., Patra A. (2015). Spectral, Chemical and Physical Characterisation of Mustard Stalk Biochar as Affected by Temperature. *Clay Research*, 33(1), 36-45. Retrieved from <https://www.researchgate.net/publication/>

- 287620701_Spectral_chemical_and_physical_characterisation_of_mustard_stalk_biochar_as_affected_by_temperature
- Berazneva, J. (2015). *Reconciling Food, Energy, And Environmental Outcomes: Three Essays On The Economics Of Biomass Management In Western Kenya*. Cornell University, Retrieved from <https://ecommons.cornell.edu/handle/1813/40936>
- Berchin, I. I., da Silva, S. A., Bocquillon, P., Fornasari, V. H., Ribeiro, L. P. C., Ribeiro, J. M. P., & de Andrade Guerra, J. B. S. O. (2018). Contributions of Public Policies to Greening Sugarcane Ethanol Production in Brazil. In W. Leal Filho, D. M. Pociovălișteanu, P. R. Borges de Brito, & I. Borges de Lima (Eds.), *Towards a Sustainable Bioeconomy: Principles, Challenges and Perspectives* (pp. 375-393). Cham: Springer International Publishing.
- Berek, A. K. (2014). Exploring the potential roles of biochars on land degradation mitigation. *Journal of Degraded and Mining Lands Management*, 1(3), 149-158. Retrieved from <http://jdmlm.ub.ac.id/index.php/jdmlm/article/view/64>
- Berek, A. K., & Hue, N. V. (2015). IMPROVING NUTRIENT RETENTION OF HIGHLY WEATHERED TROPICAL SOILS WITH BIOCHARS. In.
- Berg, G. M., Mills, M. M., Long, M. C., Bellerby, R., Strass, V., Savoye, N., . . . Arrigo, K. R. (2011). Variation in particulate C and N isotope composition following iron fertilization in two successive phytoplankton communities in the Southern Ocean. *Global Biogeochemical Cycles*, 25(3), 1-16. doi:10.1029/2010GB003824
- Berg, T., et al. (2017). *CCC Indicators to Track Progress in Developing Greenhouse Gas Removal Options*. Retrieved from <https://www.theccc.org.uk/wp-content/uploads/2017/06/CCC-indicators-to-track-progress-in-developing-GHG-removal-options-Ecofys.pdf>
- Berg, T. D. A. (2016). *On the deployment of Bio-CCS in the EU: Barriers and policy requirements for a 2°C pathway*. Retrieved from <https://dspace.library.uu.nl/handle/1874/350752>
- Berge, N. D., et al. (2013). 8. Environmental Applications of Hydrothermal Carbonization Technology: Biochar Production, Carbon Sequestration, and Waste Conversion. In *Sustainable Carbon Materials from Hydrothermal Processes*.
- Berger, A. H., Wang, Y., Bhowm, A. S., Castrogiovanni, A., Kielb, R., & Balepin, V. (2017). Thermodynamic Analysis of Post-combustion Inertial CO₂ Extraction System. *Energy Procedia*, 114, 7-16. doi:<https://doi.org/10.1016/j.egypro.2017.03.1140>
- Berger, J. J. (2017). Taking Climate-Friendly Farming To Scale. *Huffington Post*. Retrieved from https://www.huffingtonpost.com/entry/taking-climate-friendly-farming-to-scale_us_5a065850e4b0ee8ec369418d
- Berger, M. (2019). Transforming the greenhouse gas carbon dioxide into graphene. *Nano Werk*. Retrieved from <https://www.nanowerk.com/spotlight/spotid=54125.php>
- Berger, M., Radu, D., Fonteneau, R., Deschuyteneer, T., Detienne, G., & Ernst, D. (2020). The role of power-to-gas and carbon capture technologies in cross-sector decarbonisation strategies. *Electric Power Systems Research*, 180, 106039. doi:<https://doi.org/10.1016/j.epsr.2019.106039>
- Bergier, I., et al. . (2015). Pyrolysis Dynamics of Biomass Residues in Hot-Stage. *BioResources*. Retrieved from http://152.1.0.246/index.php/BioRes/article/view/BioRes_10_4_7604_Bergier_Pyrolysis_Dynamics_Biomass_Residues
- Berglund, I., DeLuca, T. H., & Zackrisson, O. (2004). Activated carbon amendments to soils alters nitrification rates in Scots pine forests. *Soil Biology & Biochemistry*, 36(12), 2067-2073. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0038071704002561>
- Bergman R, & H, G. (2014). *Life-cycle inventory analysis of bio-products from a modular*

- advanced biomass pyrolysis system.* Paper presented at the Proceedings, Society of Wood Science and Technology 57th International Convention. June 23-27, 2014., Zvolen, Slovakia. June 23-27, 2014.
- Bergman, R., Zhang, H., Englund, K., Windell, K., & Gu, H. (2016, 03/2016). *Estimating GHG Emissions from the Manufacturing of Field-Applied Biochar Pellets.* Paper presented at the Society of Wood Science and Technology 59th International Convention.
- Bergmo, P. E. S., Polak, S., Aagaard, P., Frykman, P., Haugen, H. A., & Bjørnsen, D. (2013). Evaluation of CO₂ Storage Potential in Skagerrak. *Energy Procedia*, 37, 4863-4871. doi:<https://doi.org/10.1016/j.egypro.2013.06.396>
- Bergstrom, J. C., & Ty, D. (2017). Economics of Carbon Capture and Storage. In Y. Yun (Ed.), *Recent Advances in Carbon Capture and Storage* (pp. Ch. 11). Rijeka: InTech.
- Beringer, T., Lucht, W., & Schaphoff, S. (2011). Bioenergy production potential of global biomass plantations under environmental and agricultural constraints. *GCB Bioenergy*, 3(4), 299-312. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/j.1757-1707.2010.01088.x/abstract>
- Berkeley Rausser, C. o. N. R. (2021). Researchers outline strategy for biomass carbon capture in Europe [Press release]. Retrieved from <https://nature.berkeley.edu/news/2021/05/study-identifies-strategy-biomass-carbon-capture-europe>
- Berkshire Hathaway, B. W. (2017). Battelle Completes 15-Year CO₂ Storage Project at Mountaineer Power Plant [Press release]
- Bernacchi, C. (2013). Impact of land use change due to bioenergy on regional hydrology. In J. F. Dellemand & P. W. Gerbens-Leenes (Eds.), *Bioenergy and Water* (pp. 159-172): European Commission.
- Bernal, B., Murray, L. T., Pearson, T. R. H. J. C. B., & Management. (2018). Global carbon dioxide removal rates from forest landscape restoration activities. 13(1), 22. doi:[10.1186/s13021-018-0110-8](https://doi.org/10.1186/s13021-018-0110-8)
- Bernal, M. P., et al. (2015). Benefits and constraints in the soil use of digestate and a composting strategy for adding value. In.
- Berndes, G. (2008). Future Biomass Energy Supply: The Consumptive Water Use Perspective. *International Journal of Water Resources Development*, 24(2), 235-245. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/07900620701723489>
- Berndes, G. (2008). *Water demand for global bioenergy production: trends, risks and opportunities.* Retrieved from http://www.wbgu.de/fileadmin/user_upload/wbgu.de/templates/dateien/veroeffentlichungen/hauptgutachten/jg2008/wbgu_jg2008_ex02.pdf
- Berndes, G., et al. (2013). Bioenergy & Water, Challenges & opportunities. In J. F. Dellemand & P. W. Gerbens-Leenes (Eds.), *Bioenergy and Water* (pp. 49-60): European Commission.
- Berndes, G., et al. (2014). *Forest biomass, carbon neutrality and climate change mitigation.* Retrieved from https://www.efi.int/sites/default/files/files/publication-bank/2018/ThinkForest_carbon_neutrality_2016_0.pdf
- Berndes, G., Ahlgren, S., Borjesson, P., & Cowie, A. L. (2013). Bioenergy and land use change-state of the art. *Wiley Interdisciplinary Reviews-Energy and Environment*, 2(3), 282-303. doi:[10.1002/wene.41](https://doi.org/10.1002/wene.41)
- Berndes, G., Hoogwijk, M., & van den Broek, R. (2003). The contribution of biomass in the future global energy supply: a review of 17 studies. *Biomass and Bioenergy*, 25(1), 1-28. doi:[http://dx.doi.org/10.1016/S0961-9534\(02\)00185-X](http://dx.doi.org/10.1016/S0961-9534(02)00185-X)
- Berner, R. A. (1997). The Rise of Plants and Their Effect on Weathering and Atmospheric CO₂. 276(5312), 544-546. doi:[10.1126/science.276.5312.544](https://doi.org/10.1126/science.276.5312.544) %J Science
- Bernier, P., & Paré, D. (2013). Using ecosystem CO₂ measurements to estimate the timing and magnitude of greenhouse gas mitigation potential of forest bioenergy. *GCB Bioenergy*, 5(1), 67-72. doi:[doi:10.1111/j.1757-1707.2012.01197.x](https://doi.org/10.1111/j.1757-1707.2012.01197.x)

- Berstad, D., Anantharaman, R., Blom, R., Jordal, K., & Arstad, B. (2014). NGCC post-combustion CO₂ capture with Ca/carbonate looping: Efficiency dependency on sorbent properties, capture unit performance and process configuration. *International Journal of Greenhouse Gas Control*, 24(Supplement C), 43-53. doi:<https://doi.org/10.1016/j.ijggc.2014.02.015>
- Berstad, D., Anantharaman, R., & Jordal, K. (2012). Post-combustion CO₂ capture from a natural gas combined cycle by CaO/CaCO₃ looping. *International Journal of Greenhouse Gas Control*, 11(Supplement C), 25-33. doi:<https://doi.org/10.1016/j.ijggc.2012.07.021>
- Berthrong, S. T., Jobbágy, E. G., & Jackson, R. B. (2009). A global meta-analysis of soil exchangeable cations, pH, carbon, and nitrogen with afforestation. *Ecological Applications*, 19(8), 2228-2241. doi:[10.1890/08-1730.1](https://doi.org/10.1890/08-1730.1)
- Berthrong, S. T., Jobbágy, E. G., & Jackson, R. B. (2009). A global meta-analysis of soil exchangeable cations, pH, carbon, and nitrogen with afforestation. *Ecological Applications*, 19(8), 2228-2241. doi:<https://doi.org/10.1890/08-1730.1>
- Bertram, C. (2010). Ocean iron fertilization in the context of the Kyoto protocol and the post-Kyoto process. *Energy Policy*, 38(2), 1130-1139. doi:<http://dx.doi.org/10.1016/j.enpol.2009.10.065>
- Bertram, C. (2011). *The Potential of Ocean Iron Fertilization as an Option for Mitigating Climate Change*.
- Bertram, C., & Merk, C. (2020). Public Perceptions of Ocean-Based Carbon Dioxide Removal: The Nature-Engineering Divide? *Frontiers in Climate*, 2(31). doi:[10.3389/fclim.2020.594194](https://doi.org/10.3389/fclim.2020.594194)
- Berwyn, B. (2020). Can Planting a Trillion Trees Stop Climate Change? Scientists Say it's a Lot More Complicated. *Inside Climate News*. Retrieved from <https://insideclimateneWS.org/news/26052020/trillion-trees-climate-change>
- Bess-Ouko, C. (2014). *Development of a LCA Screening Tool: Assessment of Biochar in the Removal of Organic Carbon in SAGD Produced Water*. University of Calgary,
- Betts, A. R., et al. (2013). Rates and mechanisms of Zn²⁺ adsorption on a meat and bonemeal biochar. *Environmental Science and Technology*, 47(24), 14350-14357. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/es4032198>
- Betts, R. A. (2000). Offset of the potential carbon sink from boreal forestation by decreases in surface albedo. *Nature*, 408(6809), 187-190. Retrieved from <http://dx.doi.org/10.1038/35041545>
- Betts, R. A. (2011). Afforestation cools more or less. *Natural Geoscience*, 4, 504-505.
- Betts, R. A., Falloon, P. D., Goldewijk, K. K., & Ramankutty, N. (2007). Biogeophysical effects of land use on climate: Model simulations of radiative forcing and large-scale temperature change. *Agricultural and Forest Meteorology*, 142(2–4), 216-233. doi:<http://dx.doi.org/10.1016/j.agrformet.2006.08.021>
- Beuttler, C., Charles, L., & Wurzbacher, J. (2019). The Role of Direct Air Capture in Mitigation of Anthropogenic Greenhouse Gas Emissions. *Frontiers in Climate*, 1(10). doi:[10.3389/fclim.2019.00010](https://doi.org/10.3389/fclim.2019.00010)
- Bever, F. (2021). Maine Startup Aims To Pull Carbon Out Of The Atmosphere By Growing — And Then Sinking — Kelp Farms *wbur Earthwhile*. Retrieved from <https://amp.wbur.org/earthwhile/2021/02/16/maine-startup-carbon-kelp>
- Bhaduri, D., Saha, A., Desai, D., & Meena, H. N. (2016). Restoration of carbon and microbial activity in salt-induced soil by application of peanut shell biochar during short-term incubation study. *Chemosphere*, 148, 86 - 98. doi:[10.1016/j.chemosphere.2015.12.130](https://doi.org/10.1016/j.chemosphere.2015.12.130)
- Bhandari, B. (2020). Gaming carbon dioxide removal with young climate leaders. *C2G*. Retrieved from <https://www.c2g2.net/gaming-carbon-dioxide-removal-with-young->

climate-leaders/

- Bhandari, P. N., Kumar, A., Bellmer, D. D., & Huhnke, R. L. (2014). Synthesis and evaluation of biochar-derived catalysts for removal of toluene (model tar) from biomass-generated producer gas. *Renewable Energy*, 66, 346–353.
- Bhandari, P. N., Kumar, A., & Huhnke, R. L. (2013). Simultaneous removal of toluene (model tar), NH₃, and H₂S, from biomass-generated producer gas using biochar-based and mixed-metal oxide catalysts. *Energy Fuels*, 28(3), 1918-1925. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/ef4016872>
- Bharathiraja, B., Chakravarthy, M., Ranjith Kumar, R., Yogendran, D., Yuvaraj, D., Jayamuthunagai, J., . . . Palani, S. (2015). Aquatic biomass (algae) as a future feed stock for bio-refineries: A review on cultivation, processing and products. *Renewable and Sustainable Energy Reviews*, 47, 634-653. doi:<https://doi.org/10.1016/j.rser.2015.03.047>
- Bhardwaj, R., van Ommen, J. R., Nugteren, H. W., & Geerlings, H. (2016). Accelerating Natural CO₂ Mineralization in a Fluidized Bed. *Industrial & Engineering Chemistry Research*, 55(11), 2946-2951. doi:[10.1021/acs.iecr.5b04925](https://doi.org/10.1021/acs.iecr.5b04925)
- Bhaskaran, A., & Nair, N. V. (2014). Challenges and opportunities in sugarcane cultivation under climate change scenario. *Journal of Sugarcane Research: Society for Sugarcane Research and Development*, 4(1), 1-18. Retrieved from <https://www.scribd.com/document/251915135/Challenges-and-opportunities-in-sugarcane-cultivation-under-climate-change-scenario>
- Bhasker Nair, P. N. S., Tan, R. R., & Foo, D. C. Y. (2021). A Generic Algebraic Targeting Approach for Integration of Renewable Energy Sources, CO₂ Capture and Storage and Negative Emission Technologies in Carbon-Constrained Energy Planning. *Energy*, 121280. doi:<https://doi.org/10.1016/j.energy.2021.121280>
- Bhattacharjya, S., Chandra, R., Pareek, N., & Raverkar, K. P. (2015). Biochar and crop residue application to soil: effect on soil biochemical properties, nutrient availability and yield of rice (*Oryza sativa* L.) and wheat (*Triticum aestivum* L.). *Archives of Agronomy and Soil Science*, 62(8), 1 - 14. doi:[10.1080/03650340.2015.1118760](https://doi.org/10.1080/03650340.2015.1118760)
- Bhattacharjya, S., Chandra, R., Sharma, M. P., Sharma, S. K., & Agnihotri, R. (2015). Biochar and Crop Residue Amendments on Soil Microbial and Biochemical Properties. *Archives of Agronomy and Soil Science*, 62(8), 1095-1108. doi:[10.1007/s40011-015-0669-8](https://doi.org/10.1007/s40011-015-0669-8)
- Bhattacharya, I., et al. . (2014). Biochar. In *Carbon Capture and Storage*.
- Bhattacharya, I., et al. (2014). Role of Biochar for CCS. In *ASCE (American Society of Civil Engineers)*.
- Bhattacharya, I., et al. (2015). Biochar. In *Carbon Capture and Storage*.
- Bhattacharyya, P., & Barman, D. (2018). Chapter 21 - Crop Residue Management and Greenhouse Gases Emissions in Tropical Rice Lands. In M. Á. Muñoz & R. Zornoza (Eds.), *Soil Management and Climate Change* (pp. 323-335): Academic Press.
- Bhattacharyya, S. S., Leite, F. F. G. D., Adeyemi, M. A., Sarker, A. J., Cambareri, S., Faverin, C., . . . Parra-Saldivar, R. (2021). A Paradigm Shift to CO₂ Sequestration to Manage Global Warming – With the Emphasis on Developing Countries. *Science of The Total Environment*, 148169. doi:<https://doi.org/10.1016/j.scitotenv.2021.148169>
- Bhattacharyya, T., Wani, S. P., Pal, D. K., & Sahrawat, K. L. (2017). Soil as Source and Sink for Atmospheric CO₂. In M. Goel & M. Sudhakar (Eds.), *Carbon Utilization: Applications for the Energy Industry* (pp. 61-68). Singapore: Springer Singapore.
- Bhattarai, B., et al. . (2015). Effect of Biochar from Different Origin on Physio-Chemical Properties of Soil and Yield of Garden Pea (*Pisum sativum* L.) at Paklihawa, Rupandehi, Nepal. *World Journal of Agricultural Research*, 3(4), 129-138. Retrieved from <http://www.sciepub.com/portal/downloads?doi=10.12691/wjar-3-4-3&filename=wjar-3-4-3.pdf>

- Bhatti, S. M. (2014). *Arsenic irrigated vegetables : risk assessment for South Asian horticulture*. (Doctor of Philosophy in Soil Science). Retrieved from <http://mro.massey.ac.nz/handle/10179/5445>
- Bhave, A., Taylor, R. H. S., Fennell, P., Livingston, W. R., Shah, N., Dowell, N. M., . . . Akroyd, J. (2017). Screening and techno-economic assessment of biomass-based power generation with CCS technologies to meet 2050 CO₂ targets. *Applied Energy*, 190, 481-489. doi:<https://doi.org/10.1016/j.apenergy.2016.12.120>
- Bhogal, A., Nicholson, F. A., & Chambers, B. J. (2009). Organic carbon additions: effects on soil bio-physical and physico-chemical properties. *European Journal of Soil Science*, 60(2), 276-286. doi:[10.1111/j.1365-2389.2008.01105.x](https://doi.org/10.1111/j.1365-2389.2008.01105.x)
- Bhola, V., et al. (2014). Overview of the potential of microalgae for CO₂ sequestration. *International Journal of Environmental Science and Technology*, 11, 2103-2118. Retrieved from <https://link.springer.com/article/10.1007%2Fs13762-013-0487-6>
- Biagini, E., Barontini, F., & Tognotti, L. (2014). Gasification of agricultural residues in a demonstrative plant: Corn cobs. *Bioresource Technology*, 173, 110 - 116. doi:[10.1016/j.biortech.2014.09.086](https://doi.org/10.1016/j.biortech.2014.09.086)
- Bian, R., et al. (2013). Biochar soil amendment as a solution to prevent Cd-tainted rice from China: Results from a cross-site field experiment. *Ecological Engineering*, 58, 378–383. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0925857413002826>
- Bian, R., et al. (2014). Effect of Municipal Biowaste Biochar on Greenhouse Gas Emissions and Metal Bioaccumulation in a Slightly Acidic Clay Rice Paddy. In *Biowaste biochar for rice soil*.
- Bian, R., et al. . (2014). A three-year experiment confirms continuous immobilization of cadmium and lead in contaminated paddy field with biochar amendment. *Journal of Hazardous Materials*, 272, 121-128. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/24685528>
- Bian, R., et al. (2016). Cd immobilization in a contaminated rice paddy by inorganic stabilizers of calcium hydroxide and silicon slag and by organic stabilizer of biochar. *Environmental Science and Pollution Research*, 23(10), 10028-10036. doi:[10.1007/s11356-016-6214-3](https://doi.org/10.1007/s11356-016-6214-3)
- Biao, L., et al. (2014). Burning and adsorption characteristics of char obtained from pyrolysis of cotton stalk and rapeseed straw. *Transactions of the Chinese Society of Agricultural Engineering*, 30(10), 193-200. Retrieved from http://www.tcsae.org/nygcxbn/ch/reader/view_abstract.aspx?file_no=20141024&flag=1
- Bide, T. P., Styles, M. T., & Naden, J. (2014). An assessment of global resources of rocks as suitable raw materials for carbon capture and storage by mineralisation. *Applied Earth Science*, 123(3), 179-195. doi:[10.1179/1743275814Y.0000000057](https://doi.org/10.1179/1743275814Y.0000000057)
- Biederman, L. A., & Harpole, W. S. (2011). *Biochar and Managed Perennial Ecosystems*. IOWA STATE UNIVERSITY, Retrieved from http://lib.dr.iastate.edu/farms_reports/136
- Biederman, L. A., & Harpole, W. S. (2013). Biochar and its effects on plant productivity and nutrient cycling: a meta-analysis. *GCB Energy*, 5(2), 202-214. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/gcbb.12037/abstract>
- Bielicki, J. M., & Stephens, J. C. (2008). *Public Perception of Carbon Capture and Storage Technology*. Retrieved from http://www.belfercenter.org/sites/default/files/files/publication/CCS_Public_Perception_Workshop_Report.pdf
- Biello, D. (2009). Pulling CO₂ from the Air: Promising Idea, Big Price Tag. *Yale Environment 360*. Retrieved from http://e360.yale.edu/features/pulling_co2_from_the_air_promising_idea_big_price_tag
- Biello, D. (2010). CO₂ Capture and Storage Gains a Growing Foothold. *Yale Environment 360*. Retrieved from http://e360.yale.edu/features/co2_capture_and_storage_gains_a_growing_foothold
- Biello, D. (2010). Reverse Combustion: Can CO₂ Be Turned Back into Fuel? [Video]. *Yale*

- Environment 360*. Retrieved from <https://www.scientificamerican.com/article/turning-carbon-dioxide-back-into-fuel/>
- Biello, D. (2011). Using CO₂ to Make Fuel: A Long Shot for Green Energy. *Yale Environment 360*. Retrieved from http://e360.yale.edu/features/using_co2_to_make_fuel_a_long_shot_for_green_energy
- Biello, D. (2013). 400 PPM: Can Artificial Trees Help Pull CO₂ from the Air? *Scientific American*. Retrieved from <https://www.scientificamerican.com/article/prospects-for-direct-air-capture-of-carbon-dioxide/>
- Biello, D. (2013). How to Win the War on Coal. *Scientific American*. Retrieved from <https://www.scientificamerican.com/article/how-to-win-the-war-on-coal-carbon-capture-and-storage/>
- Biello, D. (2015). An Unusual Tech Bet Could Slow Climate Change. *Scientific American*. Retrieved from <https://www.scientificamerican.com/article/an-unusual-tech-bet-could-slow-climate-change/>
- Biello, D. (2016). Carbon Capture May Be Too Expensive to Combat Climate Change. *Scientific American*. Retrieved from <https://www.scientificamerican.com/article/carbon-capture-may-be-too-expensive-to-combat-climate-change/>
- Biello, D. (2016). Iron rules. In *The Unnatural World* (pp. 11-38).
- Biello, D. (2016). The Long Thaw. In *The Unnatural World* (pp. 201-232).
- Biello, D. (2017). How Far Can Technology Go to Stave Off Climate Change? *Yale Environment 360*. Retrieved from http://e360.yale.edu/features/how_far_can_technology_go_to_stave_off_climate_change
- Biello, D., & Saltzberg, E. (2016). Restoring the Carbon Balance- Session 1: The Imperative (Video). Retrieved from <https://vimeo.com/195856479>
- Bin, L. Y. (2015). *Preparation of Biochar with Palm Oil Mill Sludge by Using Microwave for Copper Removal*. Universiti Tunku Abdul Rahman, Retrieved from http://eprints.utar.edu.my/1756/1/Preparation_of_Biochar_with_Palm_Oil_Mill_Sludge_by_using_Microwave_for_Copper_Removal.pdf
- Bin Wang, H. H. S., Manuel T. Lerdau. (2016). A global synthesis of greenhouse gases budget change resulted from ozone pollution. *Environmental Research Letters*. doi:10.1088/1748-9326/aa7885
- Bingyuan, L., et al. (2014). 微波辐射对生物质热解过程的影响 (Effects of microwave irradiation on pyrolysis processes of biomass). *Chinese Journal of Environmental Engineering*, 9(1), 413-418. Retrieved from http://www.cjee.ac.cn/teepc_en/ch/reader/create_pdf.aspx?file_no=20150168&flag=&journal_id=teepc_en&year_id=2015
- Biniek, K., et al. (2020). Driving CO₂ emissions to zero (and beyond) with carbon capture, use, and storage. *McKinsey Quarterly*.
- Birat, J. P. (2010). Carbon dioxide (CO₂) capture and storage technology in the iron and steel industry A2 - Maroto-Valer, M. Mercedes. In *Developments and Innovation in Carbon Dioxide (CO₂) Capture and Storage Technology* (Vol. 1, pp. 492-521): Woodhead Publishing.
- Bird, D. N. (2011). *Using a Life Cycle Assessment Approach to Estimate the Net Greenhouse Gas Emissions of Bioenergy*. Retrieved from <https://www.ieabioenergy.com/wp-content/uploads/2013/10/Using-a-LCA-approach-to-estimate-the-net-GHG-emissions-of-bioenergy.pdf>
- Bird, D. N., Pena, N., Frieden, D., & Zanchi, G. (2012). Zero, one, or in between: evaluation of alternative national and entity-level accounting for bioenergy. *GCB Bioenergy*, 4(5), 576-587. doi:10.1111/j.1757-1707.2011.01137.x
- Bird, M. I., et al. . (2010). Algal biochar – production and properties. *Bioresource Technology*,

- 102(2), 1886-1891. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/20797850>
- Bird, M. I., et al. . (2014). The Pyrogenic Carbon Cycle. *Annual Review of Earth and Planetary Sciences*, 43, 9.1-9.26. Retrieved from <http://www.annualreviews.org/doi/abs/10.1146/annurev-earth-060614-105038>
- Bird, M. I., & Ascough, P. L. (2010). Isotopes in pyrogenic carbon: A review. *Organic Geochemistry*, 42(12), 1529-1539. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0146638010002305>
- Bird, M. I., Ascough, P. L., Young, I. M., Wood, C. V., & C., S. A. (2008). X-ray microtomographic imaging of charcoal. *Journal of Archaeological Science*, 35(10), 2698-2706.
- Bird, M. I., & Cali, J. A. (1998). A Million-year Record of Fire in Sub-saharan Africa. *Nature*, 394(6695), 767-769. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0146638010002305>
- Bird, M. I., Charville-Mort, P. D. J., Ascough, P. L., Wood, R., Higham, T., & Apperley, D. (2010). Assessment of oxygen plasma ashing as a pre-treatment for radiocarbon dating. *Quaternary Geochronology*, 5(4), 435-442. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1871101409001381>
- Bird, M. I., Moyo, C., Veenendaal, E. M., Lloyd, J., & Frost, P. (1999). Stability of elemental carbon in a savanna soil. *Global Biogeochemical Cycles*, 13(4), 923-932. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1029/1999GB900067/abstract>
- Bird, M. I., et al. , & s. (2011). Algal biochar: effects and applications. *Global Change Biology: Bioenergy*, 4(1), 61-69. doi:10.1111/j.1757-1707.2011.01109
- Bird, M. I., Wurster, C. M., de Paula Silva, P. H., Bass, A. M., & de Nys, R. (2011). Algal biochar – production and properties. *Bioresource Technology*, 102(2), 1886-1891. doi:<https://doi.org/10.1016/j.biortech.2010.07.106>
- Birzer, C., Medwell, P., MacFarlane, G., Read, M., Wilkey, J., Higgins, M., & West, T. (2014). A Biochar-producing, Dung-burning Cookstove for Humanitarian Purposes. *Procedia Engineering*, 78, 243 - 249. doi:10.1016/j.proeng.2014.07.063
- Birzer, C. H., Medwell, P. R., & Kalt, P. A. M. (2014). *Humanitarian technology research group: Developments at the University of Adelaide*. Paper presented at the 2014 IEEE Global Humanitarian Technology Conference (GHTC)IEEE Global Humanitarian Technology Conference (GHTC 2014), San Jose, CA, USA. http://ieeexplore.ieee.org/xpl/articleDetails.jsp?tp=&arnumber=6970327&url=http%3A%2F%2Fieeexplore.ieee.org%2Fxpls%2Fabs_all.jsp%3Farnumber%3D6970327
- Bis, Z., Kobyłecki, R., Ścisłowska, M., & Zarzycki, R. (2018). Biochar – Potential tool to combat climate change and drought. *Ecohydrology & Hydrobiology*, 18(4), 441-453. doi:<https://doi.org/10.1016/j.ecohyd.2018.11.005>
- Bishaw, B., et al. (2013). *Famer's Strategies for Adapting to and Mitigating Climate Variability and Change through Agroforestry in Ethiopia and Kenya*. Retrieved from <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=2ahUKEwjb-quG6vnkAhUO7J4KHWlrA4cQFjABegQIARAC&url=https%3A%2F%2Fpdfs.semanticscience.org%2F56ca%2Ff539f7cdeba98a373b947d54e6e2f2b10a9.pdf&usg=AOvVaw34T1DuDZIMVfarZWPaXpMw>
- Bishnoi, S. (2017). Carbon Emissions and Their Mitigation in the Cement Sector. In M. Goel & M. Sudhakar (Eds.), *Carbon Utilization: Applications for the Energy Industry* (pp. 257-268). Singapore: Springer Singapore.
- Bistline, J. E. T., & Blanford, G. J. (2021). Impact of carbon dioxide removal technologies on deep decarbonization of the electric power sector. *Nature Communications*, 12(1), 3732. doi:10.1038/s41467-021-23554-6
- Bistline, J. E. T., & Blanford, G. J. (2021). The Role of the Power Sector in Net-Zero Energy

- Systems. *Energy and Climate Change*, 100045. doi:<https://doi.org/10.1016/j.egycc.2021.100045>
- Biswas, B., Singh, R., Kumar, J., Khan, A. A., Krishna, B. B., & Bhaskar, T. (2016). Slow pyrolysis of prot, alkali and dealkaline lignins for production of chemicals. *Bioresource Technology*. doi:10.1016/j.biortech.2016.01.131
- Bjerregaard, P. P. (2011). *The social shaping of technology: a case study of biochar in Denmark*. (MBA). Copenhagen Business School, Copenhagen. Retrieved from http://studenttheses.cbs.dk/bitstream/handle/10417/1766/peter_poul_bjerregaard.pdf?sequence=1
- Black, R., et al. (2021). *TAKING STOCK: A global assessment of net zero targets*. Retrieved from https://ca1-eci.edcdn.com/reports/ECIU-Oxford_Taking_Stock.pdf?mtime=20210323005817&focal=none
- Blackwell, P., et al. . (2009). Biochar application to soil. In *Biochar for environmental management: Science and Technology* (pp. 207-226).
- Blackwell, P., et al. . (2010). Effect of banded biochar on dryland wheat production and fertiliser use in south-western Australia: an agronomic and economic perspective. *Australian Journal of Soil Research*, 48, 531-545.
- Blackwell, P., et al. (2015). Influences of Biochar and Biochar-Mineral Complex on Mycorrhizal Colonisation and Nutrition of Wheat and Sorghum. *Pedosphere*, 25(5), 686 - 695. doi:10.1016/s1002-0160(15)30049-7
- Blackwell, P., Riethmüller, G., & Collins, M. (2009). Biochar Application to Soil. In J. Lehmann & S. Joseph (Eds.), *Biochar for Environmental Management: Science and Technology* (pp. 207-226). London, UK: Earthscan.
- Blain, S., Queguiner, B., Armand, L., Belviso, S., Bomblet, B., Bopp, L., . . . Wagener, T. (2007). Effect of natural iron fertilization on carbon sequestration in the Southern Ocean. *Nature*, 446(7139), 1070-1074. doi:http://www.nature.com/nature/journal/v446/n7139/supplinfo/nature05700_S1.html
- Blain, S., Quéguiner, B., & Trull, T. (2008). The natural iron fertilization experiment KEOPS (KErguelen Ocean and Plateau compared Study): An overview. *Deep Sea Research Part II: Topical Studies in Oceanography*, 55(5), 559-565. doi:<https://doi.org/10.1016/j.dsret.2008.01.002>
- Blain, S., Sarthou, G., & Laan, P. (2008). Distribution of dissolved iron during the natural iron-fertilization experiment KEOPS (Kerguelen Plateau, Southern Ocean). *Deep Sea Research Part II: Topical Studies in Oceanography*, 55(5-7), 594-605. doi:<http://dx.doi.org/10.1016/j.dsret.2007.12.028>
- Blakeslee, T. R. (2009). Biochar: The Key to Carbon-Negative Biofuels. In.
- Blanc, A. (2014). Propriétés physico-chimiques d'un sol amendé en biochar (Physical and chemical properties of soil biochar amended). In.
- Blanco, J. A. (2018). Chapter 16 - Managing Forest Soils for Carbon Sequestration: Insights From Modeling Forests Around the Globe A2 - Muñoz, María Ángeles. In R. Zornoza (Ed.), *Soil Management and Climate Change* (pp. 237-252): Academic Press.
- Blanco-Canqui, H., & Lal, R. (2009). Corn Stover Removal for Expanded Uses Reduces Soil Fertility and Structural Stability. *Soil Science Society of America Journal*, 73(2), 418-426. Retrieved from <https://dl.sciencesocieties.org/publications/ssaj/abstracts/73/2/418>
- Blanke, M. M. (2014). *Possible Implications of the New PAS 2050-1 Hort Carbon Footprint Standard (March 2011) for Orchard Management*.
- Blaufelder, C., et al. (2021). *A blueprint for scaling voluntary carbon markets to meet the climate challenge* Retrieved from <https://www.mckinsey.com/~/media/McKinsey/Business%20Functions/Sustainability/Our%20Insights/A%20blueprint%20for%20scaling%20voluntary%20carbon%20markets%20to%20meet>

- %20the%20climate%20challenge/A-blueprint-for-scaling-voluntary-carbon-markets-to-meet-the-climate-challenge.pdf?shouldIndex=false
- Bledsoe, P. (2017). How Trump can help save coal—with China's help. *Politico*. Retrieved from <http://www.politico.com/agenda/story/2017/04/trump-china-clean-coal-000401>
- Block, I. (2018). Artificial mountain made of soil could soak up pollution in Turin. *Dezeen*. Retrieved from https://www.dezeen.com/2018/10/25/sponge-mountain-angelo-renna-absorb-pollution-climate-change/amp/?__twitter_impression=true
- Blum, W. E. H., Lair, G. J., & Schiefer, J. (2015). Persistence of soil organic matter and soil structure. *Agrokémia és Talajtan*, 64(2), 383 - 390. doi:10.1556/0088.2015.64.2.6
- Board, C. A. R. (2028). *Carbon Capture and Sequestration (CCS) Protocol*. Retrieved from https://ww2.arb.ca.gov/sites/default/files/2020-03/CCS_Protocol_Under_LCFS_8-13-18_ada.pdf
- Board, J. (2021). Carbon capture technology an important pillar for Southeast Asia to tackle climate change, say experts. *CNA Insider*. Retrieved from <https://www.channelnewsasia.com/news/sustainability/climate-change-carbon-capture-technology-southeast-asia-15133220>
- Boateng, A. A. (2007). Characterization and thermal conversion of charcoal derived from fluidized-bed fast pyrolysis oil production of switchgrass. *Industrial & Engineering Chemistry Research*, 46(26), 8857-8862. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/ie0710541>
- Boateng, A. A., et al. (2015). Biochar production technology. In *Biochar for Environmental Management: Science and Technology and Implementation*.
- Boateng, A. A., Goldberg, N. M., Hicks, K. B., Devine, T. E., Lima, I. M., & McMurtrey, J. E. (2010). Sustainable Production of Bioenergy and Biochar from the Straw of High-Biomass Soybean Lines via Fast Pyrolysis. *Environmental Progress & Sustainable Energy*, 29(2), 175-183. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/ep.10446/abstract>
- Bobicki, E. R., Liu, Q., Xu, Z., & Zeng, H. (2012). Carbon capture and storage using alkaline industrial wastes. *Progress in Energy and Combustion Science*, 38(2), 302-320. doi:<http://dx.doi.org/10.1016/j.pecs.2011.11.002>
- Bock, B., et al. (2003). *Economic Evaluation of CO₂ Storage and Sink Enhancement Options*. Retrieved from <http://www.brbock.com/RefFiles/40937R04.pdf>
- Bock, E. M., Coleman, B., & Easton, Z. M. (2015). Effect of Biochar on Nitrate Removal in a Pilot-Scale Denitrifying Bioreactor. *Journal of Environment Quality*, 45(3), 762-771. doi:10.2134/jeq2015.04.0179
- Bodénan, F., Bourgeois, F., Petiot, C., Augé, T., Bonfils, B., Julcour-Lebigue, C., . . . Chiquet, P. (2014). Ex situ mineral carbonation for CO₂ mitigation: Evaluation of mining waste resources, aqueous carbonation processability and life cycle assessment (Carmex project). *Minerals Engineering*, 59(Supplement C), 52-63. doi:<https://doi.org/10.1016/j.mineng.2014.01.011>
- Boersma, M. (2015). *Management of pasture soils: biochar stability, carbon storage potential and its effect on production and quality*. Paper presented at the Proceedings of the XXIII International Grassland Congress. <http://ecite.utas.edu.au/102161>
- Boetjer, S. (2015). *Rootbound: Exploring Production in Seattle's Urban Forest*. University of Washington, Retrieved from <https://dlib.lib.washington.edu/researchworks/handle/1773/33626>
- Boettcher, M. (2020). Coming to GRIPs With NETs Discourse: Implications of Discursive Structures for Emerging Governance of Negative Emissions Technologies in the UK. *Frontiers in Climate*, 2(20). doi:10.3389/fclim.2020.595685
- Boettcher, M., Brent, K., Buck, H. J., Low, S., McLaren, D., & Mengis, N. (2021). Navigating

- Potential Hype and Opportunity in Governing Marine Carbon Removal. *Frontiers in Climate*, 3(47). doi:10.3389/fclim.2021.664456
- Bogaerts, A., & Snoeckx, R. (2019). Plasma-Based CO₂ Conversion. In M. Aresta, I. Karimi, & S. Kawi (Eds.), *An Economy Based on Carbon Dioxide and Water: Potential of Large Scale Carbon Dioxide Utilization* (pp. 287-325). Retrieved from https://link.springer.com/chapter/10.1007/978-3-030-15868-2_8
- Bohlin, F., Vinterbäck, J., Wisniewski, J., & Wisniewski, J. (1998). Solid biofuels for carbon dioxide mitigation. *Biomass and Bioenergy*, 15(4), 277-281. doi:[https://doi.org/10.1016/S0961-9534\(98\)00035-X](https://doi.org/10.1016/S0961-9534(98)00035-X)
- Boisvert, W. (2014). Harmonic Destruction: How Greens Justify Bioenergy's Assault on Nature. Retrieved from <https://thebreakthrough.org/index.php/journal/past-issues/issue-4/harmonic-destruction>
- Bol, D. (2021). SNP told to draw up delivery plans for climate emergency strategy. *The Herald*. Retrieved from <https://www.heraldscotland.com/news/19148107.snp-told-draw-delivery-plans-climate-emergency-strategy/>
- Bolan, N. S., Kunhikrishnan, A., Choppala, G. K., Thangarajan, R., & Chung, J. W. (2012). Stabilization of carbon in composts and biochars in relation to carbon sequestration and soil fertility. *Science of The Total Environment*, 424, 264-270. doi:<https://doi.org/10.1016/j.scitotenv.2012.02.061>
- Boland, H. (2020). Technology which 'sucks' excess CO₂ from the air could hurt UK's green ambitions. *Yahoo News*. Retrieved from <https://sg.news.yahoo.com/backing-technology-sucks-excess-co2-132707460.html>
- Bolinder, M. A., Crotty, F., Elsen, A., Frac, M., Kismányoky, T., Lipiec, J., . . . Kätterer, T. (2020). The effect of crop residues, cover crops, manures and nitrogen fertilization on soil organic carbon changes in agroecosystems: a synthesis of reviews. *Mitigation and Adaptation Strategies for Global Change*, 25(6), 929-952. doi:10.1007/s11027-020-09916-3
- Bollen, J., & Aalbers, R. (2017). *Biomass-Energy with Carbon Capture and Storage Should Be Used Immediately*. Retrieved from <https://www.cpb.nl/sites/default/files/omnidownload/CPB-Policy-Brief-2017-02-Biomass-energy-with-carbon-capture-and-storage-should-be-used-immediately-met-omslag.pdf>
- Bollini, P., Didas, S. A., & Jones, C. W. (2011). Amine-oxide hybrid materials for acid gas separations *Journal of Materials Chemistry* 21, 15100-15120. Retrieved from <https://pubs.rsc.org/en/content/articlelanding/2011/jm/c1jm12522b#ldivAbstract>
- Bolster, C., & Streubel, J. (2015). Know Your Community - Biochar: Agronomic and Environmental Uses. In.
- Bomgardner, M. M. (2020). 45Q, the tax credit that's luring US companies to capture CO₂. *C&EN*, 98(8). Retrieved from <https://cen.acs.org/environment/greenhouse-gases/45Q-tax-credit-s-luring/98/i8>
- Bonan, G. B. (2008). Forests and Climate Change: Forcings, Feedbacks, and the Climate Benefits of Forests. *Science*, 320(5882), 1444-1449. doi:10.1126/science.1155121
- Bonaventura, D., Chacartegui, R., Valverde, J. M., Becerra, J. A., Ortiz, C., & Lizana, J. (2017). Dry carbonate process for CO₂ capture and storage: Integration with solar thermal power. *Renewable and Sustainable Energy Reviews*. doi:<https://doi.org/10.1016/j.rser.2017.06.061>
- Bond, W. J., Stevens, N., Midgley, G. F., & Lehmann, C. E. R. (2019). The Trouble with Trees: Afforestation Plans for Africa. *Trends in Ecology & Evolution*, 34(11), 963-965. doi:<https://doi.org/10.1016/j.tree.2019.08.003>
- Bondeau, A., et al. (2007). Modelling the role of agriculture for the 20th century global terrestrial carbon balance. *Global Change Biology*, 13, 679-706. Retrieved from <http://>

- onlinelibrary.wiley.com/doi/10.1111/j.1365-2486.2006.01305.x/abstract
- Bond-Lamberty, B., Bailey, V. L., Chen, M., Gough, C. M., & Vargas, R. (2018). Globally rising soil heterotrophic respiration over recent decades. *Nature*, 560(7716), 80-83. doi:10.1038/s41586-018-0358-x
- Bonnet, J. F., & Lorne, D. (2013). Water Impact of French biofuels development at the 2030 horizon. In J. F. Dellemard & P. W. Gerbens-Leenes (Eds.), *Bioenergy and Water* (pp. 117-142): European Commission.
- Bonsch, M., et al. (2014). Trade-offs between land and water requirements for large-scale bioenergy production. *GCB Bioenergy*, 8(1), 11-24. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/gcbb.12226/abstract?systemMessage=WOL+Usage+report+download+page+will+be+unavailable+on+Friday+27th+January+2017+at+23%3A00+GMT%2F+18%3A00+EST%2F+07%3A00+SGT%28Saturday+28th+Jan+for+SGT%29+for+up+to+2+hours+due+to+essential+server+maintenance.+Apologies+for+the+inconvenience.>
- Bontchev, R., Kim, H. S., & Belcher, R. W. (2016).
- Bony, S., Bellon, G., Klocke, D., Sherwood, S., Fermepin, S., & Denvil, S. (2013). Robust direct effect of carbon dioxide on tropical circulation and regional precipitation. *Nature Geoscience*, 6, 447. doi:10.1038/ngeo1799
<https://www.nature.com/articles/ngeo1799#supplementary-information>
- Boomsma, C., ter Mors, E., Jack, C., Broecks, K., Buzoianu, C., Cismaru, D. M., . . . Werker, J. (2020). Community compensation in the context of Carbon Capture and Storage: Current debates and practices. *International Journal of Greenhouse Gas Control*, 101, 103128. doi:<https://doi.org/10.1016/j.ijggc.2020.103128>
- Booth, M. (2014) Trees, Trash, and Toxics: How Biomass Energy Has Become the New Coal. In, (pp. 1-81): Partnership for Policy Integrity.
- Booth, M. (2019). The Great Biomass Boondoggle. *New York Review of Books*. Retrieved from <https://www.nybooks.com/daily/2019/10/14/the-great-biomass-boondoggle/>
- Booth, M. (2021). Biomass energy: The dangerous carbon shell game putting forests and climate at risk. Retrieved from <https://www.ewg.org/news-insights/news/biomass-energy-dangerous-carbon-shell-game-putting-forests-and-climate-risk>
- Booth, M., & Mitchell, B. (2020). *Paper Tiger: Why the EU's RED II biomass sustainability criteria fail forests and the climate*. Retrieved from <https://www.pfpi.net/paper-tiger-report-shows-new-eu-biomass-rules-greenlight-increased-forest-destruction>
- Booth, M. S. (2018). Not carbon neutral: Assessing the net emissions impact of residues burned for bioenergy. *Environmental Research Letters*, 13(3), 035001. Retrieved from <http://stacks.iop.org/1748-9326/13/i=3/a=035001>
- Boot-Handford, M. E., Abanades, J. C., Anthony, E. J., Blunt, M. J., Brandani, S., Mac Dowell, N., . . . Fennell, P. S. (2014). Carbon capture and storage update. *Energy & Environmental Science*, 7(1), 130-189. doi:10.1039/C3EE42350F
- Borah P., e. a. (2020). Biochar: A New Environmental Paradigm in Management of Agricultural Soils and Mitigation of GHG Emission. In J. Singh, et al. (Ed.), *Biochar Applications in Agriculture and Environment Management* (pp. 223-258).
- Borchard, N., et al. (2012). Physical activation of biochar and its meaning for soil fertility and nutrient leaching – a greenhouse experiment. *Soil Use and Management*, 28(2), 177-184. doi:10.1111/j.1475-2743.2012.00407.x
- Borchard, N., et al. (2014). Application of biochars to sandy and silty soil failed to increase maize yield under common agricultural practice. *Soil and Tillage Research*, 144, 184-194. doi:10.1016/j.still.2014.07.016
- Borchert, C., Borgen, B., & Storslee, N. (2014). United States Patent No.

- Boretti, A. (2013). Renewable hydrogen to recycle CO₂ to methanol. *International Journal of Hydrogen Energy*, 38(4), 1806-1812. doi:<https://doi.org/10.1016/j.ijhydene.2012.11.097>
- Borges, Y. A. (2015). *Application of multivariate techniques in infrared spectra for determination of total levels of carbon, oxygen and hydrogen in samples of biomass and biochar (translated from Portuguese language)*. Universidade Federal de Goiás (Goiás Federal University), Retrieved from <http://repositorio.bc.ufg.br/tede/handle/tede/4932>
- Börjesson, M., Athanassiadis, D., Lundmark, R., & Ahlgren, E. O. (2015). Bioenergy futures in Sweden – system effects of CO₂ reduction and fossil fuel phase-out policies. *GCB Bioenergy*, 7(5), 1118-1135. doi:10.1111/gcbb.12225
- Börjesson, P. (2009). Good or bad bioethanol from a greenhouse gas perspective – What determines this? *Applied Energy*, 86(5), 589-594. Retrieved from https://www.researchgate.net/publication/222674290_Good_or_bad_bioethanol_from_a_greenhouse_gas_perspective_-What_determines_this
- Börjesson, P., Gustavsson, L., Christersson, L., & Linder, S. (1997). Future production and utilisation of biomass in Sweden: Potentials and CO₂ mitigation. *Biomass and Bioenergy*, 13(6), 399-412. doi:[http://dx.doi.org/10.1016/S0961-9534\(97\)00039-1](http://dx.doi.org/10.1016/S0961-9534(97)00039-1)
- Bornemann, L. C., Kookana, R. S., & Welp, G. (2007). Differential sorption behaviour of aromatic hydrocarbons on charcoals prepared at different temperatures from grass and wood. *Chemosphere*, 67(5), 1033-1042. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0045653506013919>
- Borocz, M., Herczeg, B., Horvath, B., & Fogarassy, C. (2016). Evaluation of biochar lifecycle processes and related lifecycle assessments. *Hungarian Agricultural Engineering*(29), 60- 64. doi:10.17676/hae.2016.29.60
- Borras, S. M., Fig, D., & Suárez, S. M. (2011). The politics of agrofuels and mega-land and water deals: insights from the ProCana case, Mozambique. *Review of African Political Economy*, 38(128), 215-234. doi:10.1080/03056244.2011.582758
- Borsari, B. (2014). *A Preliminary Study of the Effect of Biochar from Maple (Acer spp.) on Root Growth of Selected Agronomic CropsS*. Paper presented at the ISHS Acta Horticulturae 1013, NGWA Summit. https://www.researchgate.net/publication/263161995_A_Preliminary_Study_of_the_Effect_of_Biochar_from_Maple_Acer_spp_on_Root_Growth_of_Selected_Agronomic_Crops
- Bos, M. J., Kersten, S. R. A., & Brilman, D. W. F. (2020). Wind power to methanol: Renewable methanol production using electricity, electrolysis of water and CO₂ air capture. *Applied Energy*, 264, 114672. doi:<https://doi.org/10.1016/j.apenergy.2020.114672>
- Bossio, D. A., Cook-Patton, S. C., Ellis, P. W., Fargione, J., Sanderman, J., Smith, P., . . . Griscom, B. W. (2020). The role of soil carbon in natural climate solutions. *Nature Sustainability*. doi:10.1038/s41893-020-0491-z
- Boucher, J. F., Tremblay, P., Gaboury, S., & Villeneuve, C. (2012). Can boreal afforestation help offset incompressible GHG emissions from Canadian industries? *Process Safety and Environmental Protection*, 90(6), 459-466. doi:<http://dx.doi.org/10.1016/j.psep.2012.10.011>
- Boucher, O., et al. (2014). Rethinking climate engineering categorization in the context of climate change mitigation and adaptation. *WIREs Climate Change*, 5, 23-35. Retrieved from <https://onlinelibrary.wiley.com/doi/epdf/10.1002/wcc.261>
- Boucher, O., & Folberth, G. A. (2010). New Directions: Atmospheric methane removal as a way to mitigate climate change? *Atmospheric Environment*, 44(27), 3343-3345. doi:<http://dx.doi.org/10.1016/j.atmosenv.2010.04.032>
- Boucher, O., Lowe, J. A., & Jones, C. D. (2009). Implications of delayed actions in addressing carbon dioxide emission reduction in the context of geo-engineering. *Climatic Change*,

92(3), 261-273. doi:10.1007/s10584-008-9489-7

- Bouillon, R.-C., Miller, W. L., Levasseur, M., Scarratt, M., Merzouk, A., Michaud, S., & Ziolkowski, L. (2006). The effect of mesoscale iron enrichment on the marine photochemistry of dimethylsulfide in the NE subarctic Pacific. *Deep Sea Research Part II: Topical Studies in Oceanography*, 53(20–22), 2384-2397. doi:<http://dx.doi.org/10.1016/j.dsrr.2006.05.024>
- Bound, S., Eyles, A., Oliver, G., Paterson, S., Direen, J., Corkrey, R., . . . Close, D. (2015). *Soil amendment with biochar: growth, physiology and fruit yield and quality of young 'Fuji' trees*. Paper presented at the Refereed Conference Paper: eCite. <http://ecite.utas.edu.au/103194>
- Bouraoui, F. (2013). EU Legislative tools to protect water resources. In J. F. Dellemand & P. W. Gerbens-Leenes (Eds.), *Bioenergy and Water* (pp. 201-210): European Commission.
- Bourke, J., et al. (2003). Do All Carbonized Charcoals Have the Same Chemical Structure? A Model of the Chemical Structure of Carbonized Charcoal. *Industrial and Engineering Chemistry Research*, 46(18), 5954–5967. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/ie070415u>
- Bourne, D., Fatima, T., van Meurs, P., & Muntean, A. (2014). Is adding charcoal to soil a good method for CO₂ sequestration? – Modeling a spatially homogeneous soil. *Applied Mathematical Modelling*, 38(9), 2463-2475. doi:<https://doi.org/10.1016/j.apm.2013.10.064>
- Bourzac, K. (2017). Copper nanoparticles could help recycle CO₂ into fuel. *Chemical Engineering News*, 95, 7. Retrieved from <http://cen.acs.org/articles/95/i38/Copper-nanoparticles-help-recycle-CO2.html>
- Boutsika, L. G., Karapanagioti, H. K., & Manariotis, I. D. (2013). Aqueous Mercury Sorption by Biochar from Malt Spent Rootlets. *Water, Air, & Soil Pollution*, 225, 1-10. Retrieved from <https://link.springer.com/article/10.1007/s11270-013-1805-9>
- Bouzalakos, S., & Mercedes, M. (2010). Overview of carbon dioxide (CO₂) capture and storage technology A2 - Maroto-Valer, M. Mercedes. In *Developments and Innovation in Carbon Dioxide (CO₂) Capture and Storage Technology* (Vol. 1, pp. 1-24): Woodhead Publishing.
- Bowden-Green, B., & Briens, L. (2016). An investigation of drum granulation of biochar powder. *Powder Technology*, 288, 249 - 254. doi:10.1016/j.powtec.2015.10.046
- Bowden-Green, B. H. M. (2016). *Granulation of Biochar for Soil Amendment*. The University of Western Ontario, Retrieved from <http://ir.lib.uwo.ca/etd/3475/>
- Bowie, A. R. (2016). *Position Analysis: Ocean Fertilisation*. Retrieved from http://acecrc.org.au/wp-content/uploads/2016/07/ACE106_Position-Analysis_Ocean-Fert_April-2016_WEB.pdf
- Bowie, A. R., Maldonado, M. T., Frew, R. D., Croot, P. L., Achterberg, E. P., Mantoura, R. F. C., . . . Boyd, P. W. (2001). The fate of added iron during a mesoscale fertilisation experiment in the Southern Ocean. *Deep Sea Research Part II: Topical Studies in Oceanography*, 48(11–12), 2703-2743. doi:[http://dx.doi.org/10.1016/S0967-0645\(01\)00015-7](http://dx.doi.org/10.1016/S0967-0645(01)00015-7)
- Boyd, A. (2017). Communicating about Climate Change and Carbon Capture and Storage. *Oxford Research Encyclopedias*. Retrieved from http://climatescience.oxfordre.com/view/10.1093/acrefore/9780190228620.001.0001/acrefore-9780190228620-e-444#.WRw_w-qsJQ4.facebook
- Boyd, A. D. (2015). Connections between community and emerging technology: Support for enhanced oil recovery in the Weyburn, Saskatchewan area. *International Journal of Greenhouse Gas Control*, 32, 81-89. doi:<https://doi.org/10.1016/j.ijggc.2014.11.005>
- Boyd, P. (2004). Ironing Out Algal Issues in the Southern Ocean. *Science*, 304(5669), 396-397.

doi:10.1126/science.1092677

- Boyd, P., & Vivian, C. (2019). Should we fertilize oceans or seed clouds? No one knows. *Nature*, 570(June 11), 155-156. Retrieved from <https://www.nature.com/articles/d41586-019-01790-7>
- Boyd, P. W. (2008). Implications of large-scale iron fertilization of the oceans. *Marine Ecology Progress Series*, 364, 213-218. Retrieved from <http://www.int-res.com/abstracts/meps/v364/p213-218/>
- Boyd, P. W. (2013). Ocean Fertilization for Sequestration of Carbon Dioxide from the Atmosphere. In T. Lenton & N. Vaughan (Eds.), *Geoengineering Responses to Climate Change: Selected Entries from the Encyclopedia of Sustainability Science and Technology* (pp. 53-72). New York, NY: Springer New York.
- Boyd, P. W., & Bressac, M. (2016). Developing a test-bed for robust research governance of geoengineering: the contribution of ocean iron biogeochemistry. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, 374(2081). doi:10.1098/rsta.2015.0299
- Boyd, P. W., Claustre, H., Levy, M., Siegel, D. A., & Weber, T. (2019). Multi-faceted particle pumps drive carbon sequestration in the ocean. *Nature*, 568(7752), 327-335. doi:10.1038/s41586-019-1098-2
- Boyd, P. W., & Ellwood, M. J. (2010). The biogeochemical cycle of iron in the ocean. *Nature Geoscience*, 3, 675-682. Retrieved from <http://www.nature.com/ngeo/journal/v3/n10/full/ngeo964.html>
- Boyd, P. W., Ellwood, M. J., Tagliabue, A., & Twining, B. S. (2017). Biotic and abiotic retention, recycling and remineralization of metals in the ocean. *Nature Geoscience*, 10, 167. doi:10.1038/ngeo2876
<https://www.nature.com/articles/ngeo2876#supplementary-information>
- Boyd, P. W., Jickells, T., Law, C. S., Blain, S., Boyle, E. A., Buesseler, K. O., . . . Watson, A. J. (2007). Mesoscale Iron Enrichment Experiments 1993-2005: Synthesis and Future Directions. *Science*, 315(5812), 612-617. doi:10.1126/science.1131669
- Boyd, P. W., & Law, C. S. (2001). The Southern Ocean Iron RElease Experiment (SOIREE)—introduction and summary. *Deep Sea Research Part II: Topical Studies in Oceanography*, 48(11), 2425-2438. doi:[https://doi.org/10.1016/S0967-0645\(01\)00002-9](https://doi.org/10.1016/S0967-0645(01)00002-9)
- Boyd, P. W., Law, C. S., Hutchins, D. A., Abraham, E. R., Croot, P. L., Ellwood, M., . . . Wilhelm, S. W. (2005). FeCycle: Attempting an iron biogeochemical budget from a mesoscale SF6 tracer experiment in unperturbed low iron waters. *Global Biogeochemical Cycles*, 19(4), 1-13. doi:10.1029/2005GB002494
- Boyd, P. W., Law, C. S., Wong, C. S., Nojiri, Y., Tsuda, A., Levasseur, M., . . . Yoshimura, T. (2004). The decline and fate of an iron-induced subarctic phytoplankton bloom. *Nature*, 428(6982), 549-553. doi:http://www.nature.com/nature/journal/v428/n6982/supplinfo/nature02437_S1.html
- Boyd, P. W., Strzepek, R., Takeda, S., Jackson, G., Wong, C. S., McKay, R. M., . . . Ramaiah, N. (2005). The evolution and termination of an iron-induced mesoscale bloom in the northeast subarctic Pacific. *Limnology and Oceanography*, 50(6), 1872-1886. doi:10.4319/lo.2005.50.6.1872
- Boyd, P. W., & Vivian, C. M. G. (2019). *High level review of a wide range of proposed marine geoengineering techniques*. Retrieved from https://www.academia.edu/38535715/GESAMP_Report_High_Level_Review_of_a_Wide_Range_of_Proposed_Marine_Geoengineering_Techniques
- Boyd, P. W., Watson, A. J., Law, C. S., Abraham, E. R., Trull, T., Murdoch, R., . . . Zeldis, J. (2000). A mesoscale phytoplankton bloom in the polar Southern Ocean stimulated by iron fertilization. *Nature*, 407(6805), 695-702. Retrieved from <http://dx.doi.org/>

10.1038/35037500

- Boye, M., Nishioka, J., Croot, P. L., Laan, P., Timmermans, K. R., & de Baar, H. J. W. (2005). Major deviations of iron complexation during 22 days of a mesoscale iron enrichment in the open Southern Ocean. *Marine Chemistry*, 96(3), 257-271. doi:<https://doi.org/10.1016/j.marchem.2005.02.002>
- Boyle, D. (2020). Scheme backed by Dominic Cummings to ‘suck’ excess carbon dioxide from the air and bury it underground gets £100m from the Treasury. *Daily Mail*, (July 2). Retrieved from <https://www.dailymail.co.uk/news/article-8485601/Dominic-Cummings-authorises-100m-suck-CO2-sky.html>
- Boyles, J. K. L., & Orge, R. F. (2016). Performance of the Continuous-Type Rice Hull Carbonizer as Heat Source in Food Product Processing. *OIDA International Journal of Sustainable Development*, 08(11), 25-34. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2709112
- Boysen, L. R. (2017). *Potentials, Consequences and Trade-Offs of Terrestrial Carbon Dioxide Removal: Strategies for climate engineering and their limitations*. (M.Sc., Meteorologie). Humboldt-Universität zu Berlin, Retrieved from <http://edoc.hu-berlin.de/dissertationen/boysen-lena-2017-01-17/PDF/boysen.pdf>
- Boysen, L. R., Lucht, W., & Gerten, D. (2017). Trade-offs for food production, nature conservation and climate limit the terrestrial carbon dioxide removal potential. *Global Change Biology*, 23(10), 4303-4317. doi:[doi:10.1111/gcb.13745](https://doi.org/10.1111/gcb.13745)
- Boysen, L. R., Lucht, W., Gerten, D., & Heck, V. (2016). Impacts devalue the potential of large-scale terrestrial CO₂ removal through biomass plantations. *Environmental Research Letters*, 11(9), 1-11. Retrieved from <http://iopscience.iop.org/article/10.1088/1748-9326/11/9/095010/pdf>
- Boysen, L. R., Lucht, W., Gerten, D., Heck, V., Lenton, T. M., & Schellnhuber, H. J. (2017). The limits to global-warming mitigation by terrestrial carbon removal. *Earth's Future*, 5(5), 463-474. doi:[10.1002/2016EF000469](https://doi.org/10.1002/2016EF000469)
- Bozec, Y., Bakker, D. C. E., Hartmann, C., Thomas, H., Bellerby, R. G. J., Nightingale, P. D., . . . de Baar, H. J. W. (2005). The CO₂ system in a Redfield context during an iron enrichment experiment in the Southern Ocean. *Marine Chemistry*, 95(1), 89-105. doi:<https://doi.org/10.1016/j.marchem.2004.08.004>
- Bozzi, E., Genesio, L., Toscano, P., Pieri, M., & Miglietta, F. (2015). Mimicking biochar-albedo feedback in complex Mediterranean agricultural landscapes. *Environmental Research Letters*, 10(8), 1-10. doi:[10.1088/1748-9326/10/8/084014](https://doi.org/10.1088/1748-9326/10/8/084014)
- Brack, D. (2017). *The Impacts of the Demand for Woody Biomass for Power and Heat on Climate and Forests*. Retrieved from <https://www.chathamhouse.org/sites/files/chathamhouse/publications/research/2017-02-23-impacts-demand-woody-biomass-climate-forests-brack-final.pdf>
- Brack, D. (2017). *Woody Biomass for Power and Heat Impacts on the Global Climate*. Retrieved from <https://www.chathamhouse.org/sites/files/chathamhouse/publications/research/2017-02-23-woody-biomass-global-climate-brack-final2.pdf>
- Brack, D., & King, R. (2020). *Net Zero and Beyond: What Role for Bioenergy with Carbon Capture and Storage?* Retrieved from <https://www.chathamhouse.org/publication/net-zero-and-beyond-what-role-bioenergy-carbon-capture-and-storage>
- Brack, D., & King, R. (2021). Managing Land-based CDR: BECCS, Forests and Carbon Sequestration. *Global Policy*, 12(S1), 45-56. doi:<https://doi.org/10.1111/1758-5899.12827>
- Bradbury, J., Ray, I., Peterson, T., Wade, S., Wong-Parodi, G., & Feldpausch, A. (2009). The Role of Social Factors in Shaping Public Perceptions of CCS: Results of Multi-State Focus Group Interviews in the U.S. *Energy Procedia*, 1(1), 4665-4672. doi:<http://dx.doi.org/10.1016/j.egypro.2009.02.289>

- Bradley, A., Larson, R. A., & Runge, T. (2015). Effect of Wood Biochar in Manure-Applied Sand Columns on Leachate Quality. *Journal of Environment Quality*, 44(6), 1720. doi:10.2134/jeq2015.04.0196
- Bradley, D. (2018). Making magnesite much faster for CO₂ sequestration. *Materials Today*, 21(9), 931-932. doi:<https://doi.org/10.1016/j.mattod.2018.10.009>
- Bradshaw, J., Bachu, S., Bonijoly, D., Burruss, R., Holloway, S., Christensen, N. P., & Mathiassen, O. M. (2007). CO₂ storage capacity estimation: Issues and development of standards. *International Journal of Greenhouse Gas Control*, 1(1), 62-68. doi:[https://doi.org/10.1016/S1750-5836\(07\)00027-8](https://doi.org/10.1016/S1750-5836(07)00027-8)
- Brady, C., Davis, M. E., & Xu, B. (2019). Integration of thermochemical water splitting with CO₂ direct air capture. *Proceedings of the National Academy of Sciences*, 116(50), 25001-25007. doi:10.1073/pnas.1915951116
- Brady, J. (2018). How One Company Pulls Carbon From The Air, Aiming To Avert A Climate Catastrophe. Retrieved from <https://www.npr.org/2018/12/10/673742751/how-1-company-pulls-carbon-from-the-air-aiming-to-avert-a-climate-catastrophe>
- Braida, W. J., Pignatello, J. J., Lu, Y. F., Ravikovitch, P. I., Neimark, A. V., & Xing, B. S. (2003). Sorption hysteresis of benzene in charcoal particles. *Environmental Science & Technology*, 37(2), 409-413. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/es020660z>
- Branca, G., Braimoh, A., Zhao, Y., Ratii, M., & Likoetla, P. (2020). Are there opportunities for climate-smart agriculture? Assessing costs and benefits of sustainability investments and planning policies in Southern Africa. *Journal of Cleaner Production*, 123847. doi:<https://doi.org/10.1016/j.jclepro.2020.123847>
- Branch, O., & Wulfmeyer, V. (2019). Deliberate enhancement of rainfall using desert plantations. *Proceedings of the National Academy of Sciences*, 201904754. doi:10.1073/pnas.1904754116
- Brandani, S. (2012). Carbon Dioxide Capture from Air: A Simple Analysis. *Energy & Environment*, 23(2-3), 319-328. doi:doi:10.1260/0958-305X.23.2-3.319
- Brandão, M., et al. (2013). Key issues and options in accounting for carbon sequestration and temporary storage in life cycle assessment and carbon footprinting. *International Journal of Life Cycle Assessment*, 18, 230-240. Retrieved from <https://link.springer.com/content/pdf/10.1007/s11367-012-0451-6.pdf>
- Brander, M., Ascui, F., Scott, V., & Tett, S. (2021). Carbon accounting for negative emissions technologies. *Climate Policy*, 1-19. doi:10.1080/14693062.2021.1878009
- Brandl, P., Bui, M., Hallett, J. P., & Mac Dowell, N. (2021). Beyond 90% capture: Possible, but at what cost? *International Journal of Greenhouse Gas Control*, 105, 103239. doi:<https://doi.org/10.1016/j.ijggc.2020.103239>
- Brandon, H. C. (2014). *Biochar's fitness as an amendment in bell pepper transplant and field production*. Iowa State University, Retrieved from <http://lib.dr.iastate.edu/etd/14040/>
- Branson, M. C. (2014). A Green Herring: How Current Ocean Fertilization Regulation Distracts from Geoengineering Research. *Santa Clara Law Review*, 54, 163-200. Retrieved from <http://www.lexisnexis.com/hottopics/lnacademic/>
- Brantley, K. (2014). *Short-Term Effects of Poultry Litter or Woodchip Biochar Amendment in a Temperate Zone Agronomic System*. University of Arkansas, Retrieved from <http://gradworks.umi.com/15/70/1570469.html>
- Brantley, K. E. (2014). *Root Biomass and Mycorrhizal Infection in Loam Soil Amended with Poultry Litter Biochar*. Paper presented at the 2014 ASA, CSSA, & SSSA Annual Meeting. <https://dl.sciencesocieties.org/publications/meetings/download/pdf/2014am/87533>
- Brantley, K. E., et al. (2015). Pine Woodchip Biochar Impact on Soil Nutrient Concentrations and

- Corn Yield in a Silt Loam in the Mid-Southern U.S. *Agriculture*, 5(1), 30-47. Retrieved from <http://www.mdpi.com/2077-0472/5/1/30/htm>
- Brantley, K. E., Brye, K. R., Savin, M. C., & Longer, D. E. (2015). Biochar Source and Application Rate Effects on Soil Water Retention Determined Using Wetting Curves. *Open Journal of Soil Science*, 5(1), 1-10. doi:10.4236/ojss.2015.51001
- Brassard, P., et al. (2014). *Biochar Production from the Solid Fraction of Pig Manure as an Environmental Management Solution*. Paper presented at the NABEC 2014 (Northeast Agricultural Biological Engineering Conference). www.researchgate.net/profile/Patrick_Brassard/publication/264930889_Biochar_Production_from_the_Solid_Fraction_of_Pig_Manure_as_an_Environmental_Management_Solution/links/53f5fc3a0cf22be01c3fd4fe.pdf
- Brassard, P., Godbout, S., Palacios, J. H., Jeanne, T., Hogue, R., Dubé, P., . . . Raghavan, V. (2018). Effect of six engineered biochars on GHG emissions from two agricultural soils: A short-term incubation study. *Geoderma*, 327, 73-84. doi:<https://doi.org/10.1016/j.geoderma.2018.04.022>
- Brassard, P., Godbout, S., Pelletier, F., Raghavan, V., & Palacios, J. H. (2018). Pyrolysis of switchgrass in an auger reactor for biochar production: A greenhouse gas and energy impacts assessment. *Biomass and Bioenergy*, 116, 99-105. doi:<https://doi.org/10.1016/j.biombioe.2018.06.007>
- Brassard, P., Godbout, S., & Raghavan, V. (2016). Soil biochar amendment as a climate change mitigation tool: Key parameters and mechanisms involved. *Journal of Environmental Management*, 181(Supplement C), 484-497. doi:<https://doi.org/10.1016/j.jenvman.2016.06.063>
- Braun, C. (2017). Not in My Backyard: CCS Sites and Public Perception of CCS. *Risk Analysis*, 37(12), 2264-2275. doi:doi:10.1111/risa.12793
- Braun, C., Merk, C., Pönitzsch, G., Rehdanz, K., & Schmidt, U. (2018). Public perception of climate engineering and carbon capture and storage in Germany: survey evidence. *Climate Policy*, 18(4), 471-484. doi:10.1080/14693062.2017.1304888
- Growing Climate Solutions Act of 2020, (2020).
- Brazzola, N., Wohland, J., & Patt, A. (2021). Offsetting unabated agricultural emissions with CO₂ removal to achieve ambitious climate targets. *Plos One*, 16(3), e0247887. doi:10.1371/journal.pone.0247887
- Breaks, K., et al. (2020). Examining the Section 45Q Tax Credit. *Drilling Down*. Retrieved from <https://home.kpmg/us/en/home/insights/2020/03/examining-section-45q-tax-credit.html>
- Brech, Y. L., et al. (2014). *The mechanism of biomass pyrolysis revealed by various analytical methods*. Paper presented at the 20th International Symposium on Analytical and Applied Pyrolysis. <http://hal.archives-ouvertes.fr/hal-00992460/>
- Breeze, N. (2018). Can we remove a trillion tons of carbon from the atmosphere? *Ecologist*. Retrieved from <https://theecologist.org/2018/may/03/can-we-remove-trillion-tons-carbon-atmosphere>
- Breeze, N. (2018). Interview with Sir David King: Putting forward the climate restoration agenda. *The Ecologist*. Retrieved from <https://theecologist.org/2018/apr/11/interview-sir-david-king-putting-forward-climate-restoration-agenda>
- Bremer, L. L., & Farley, K. A. (2010). Does plantation forestry restore biodiversity or create green deserts? A synthesis of the effects of land-use transitions on plant species richness. *Biodiversity and Conservation*, 19(14), 3893-3915. doi:10.1007/s10531-010-9936-4
- Brendová, K., et al. (2012). *BIOCHAR PROPERTIES FROM DIFFERENT MATERIALS OF PLANT ORIGIN*. Paper presented at the 4th International Symposium on Trace Elements in the Food Chain, Friends or Foes, Visegrád, Hungary.

- Břendová, K., Tlustoš, P., & Száková, J. (2015). Biochar immobilizes cadmium and zinc and improves phytoextraction potential of willow plants on extremely contaminated soil. *Plant, Soil and Environment*, 61(7), 303 - 308. doi:10.17221/181/2015-pse
- Břendová, K., Tlustoš, P., & Száková, J. (2015). Can Biochar From Contaminated Biomass Be Applied Into Soil for Remediation Purposes? *Water, Air, & Soil Pollution*, 226(6). doi:10.1007/s11270-015-2456-9
- Brennan, A., et al. (2014). Effects of biochar amendment on root traits and contaminant availability of maize plants in a copper and arsenic impacted soil. *Plant and Soil*, 379(1), 351-360. Retrieved from <https://link.springer.com/article/10.1007/s11104-014-2074-0>
- Brennan, A., et al. (2014). Effects of biochar and activated carbon amendment on maize growth and the uptake and measured availability of polycyclic aromatic hydrocarbons (PAHs) and potentially toxic elements (PTEs). *Environmental Pollution*, 193, 79-87. doi:10.1016/j.envpol.2014.06.016
- Brennan, L., & Owende, P. (2010). Biofuels from microalgae—A review of technologies for production, processing, and extractions of biofuels and co-products. *Renewable and Sustainable Energy Reviews*, 14(2), 557-577. doi:<https://doi.org/10.1016/j.rser.2009.10.009>
- Brennan, R. B., Healy, M. G., Fenton, O., & Lanigan, G. J. (2015). The Effect of Chemical Amendments Used for Phosphorus Abatement on Greenhouse Gas and Ammonia Emissions from Dairy Cattle Slurry: Synergies and Pollution Swapping. *Plos One*, 10(6), e0111965. doi:10.1371/journal.pone.0111965.t004
- Brent, G. F., Allen, D. J., Eichler, B. R., Petrie, J. G., Mann, J. P., & Haynes, B. S. (2012). Mineral Carbonation as the Core of an Industrial Symbiosis for Energy-Intensive Minerals Conversion. *Journal of Industrial Ecology*, 16(1), 94-104. doi:10.1111/j.1530-9290.2011.00368.x
- Brent, K., et al. (2018). International law poses problems for negative emissions research. *Nature Climate Change*, 8, 451-453. Retrieved from <https://www.nature.com/articles/s41558-018-0181-2>
- Brent, K. (2020). Marine geoengineering governance and the importance of compatibility with the law of the sea. In J. McDonald, J. McGee, & R. Barnes (Eds.), *Research Handbook on Climate Change, Oceans and Coasts* (pp. 442-461). Retrieved from <https://www.elgaronline.com/view/edcoll/9781788112222/9781788112222.00033.xml>
- Brent, K., McDonald, J., & McGee, J. (2018). Carbon Dioxide Removal Geoengineering. *Australian Law Journal*, 92(10), 830-838.
- Brentner, L. B., Eckelman, M. J., & Zimmerman, J. B. (2011). Combinatorial Life Cycle Assessment to Inform Process Design of Industrial Production of Algal Biodiesel. *Environmental Science & Technology*, 45(16), 7060-7067. doi:10.1021/es2006995
- Brethomé, F. M., Williams, N. J., Seipp, C. A., Kidder, M. K., & Custelcean, R. (2018). Direct air capture of CO₂ via aqueous-phase absorption and crystalline-phase release using concentrated solar power. *Nature Energy*, 3, 553-559. doi:10.1038/s41560-018-0150-z
- Breulmann, M., van Afferden, M., & Fühner, C. (2015). Biochar: Bring on the sewage. *Nature*, 518(7540), 483 - 483. doi:10.1038/518483e
- Breulmann, M., van Afferden, M., Müller, R. A., & Fühner, C. (2015). The Sewchar Concept: An Innovative Tool for a Sustainable Water – Waste – Soil Nexus of Sanitation Systems. In. Breunig, H. M., Amirebrahimi, J., Smith, S., & Scown, C. D. (2019). Role of Digestate and Biochar in Carbon-Negative Bioenergy. *Environmental Science & Technology*, 53(22), 12989-12998. doi:10.1021/acs.est.9b03763
- Brevik, E. C., Cerdà, A., Mataix-Solera, J., Pereg, L., Quinton, J. N., Six, J., & Van Oost, K. (2015). The interdisciplinary nature of <i>SOIL</i>. *SOIL*, 1(1), 117-129. doi:10.5194/soil-1-117-2015

- Brewer, C. E., et al. (2012). Extent of Pyrolysis Impacts on Fast Pyrolysis Biochar Properties. *Journal of Environmental Quality*, 41(4), 1115-1122. doi:10.2134/jeq2011.0118
- Brewer, C. E., et al. (2014). New approaches to measuring biochar density and porosity. *Biomass and Bioenergy*, 66, 176-185. doi:10.1016/j.biombioe.2014.03.059
- Brewer, C. E., Schmidt-Rohr, K., Satrio, J. A., & Brown, R. C. (2009). Characterization of Biochar from Fast Pyrolysis and Gasification Systems. *Environmental Progress & Sustainable Energy*, 28, 386 - 396. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/ep.10378/full>
- Brewer, C. E., Unger, R., Schmidt-Rohr, K., & Brown, R. C. (2011). Criteria to Select Biochars for Field Studies based on Biochar Chemical Properties. *BioEnergy Research*, 4(4), 312-323. doi:10.1007/s12155-011-9133-7
- Breyer, C., et al. (2019). Direct Air Capture of CO₂: A Key Technology for Ambitious Climate Change Mitigation. *Joule*. doi:<https://doi.org/10.1016/j.joule.2019.08.010>
- Breyer, C., Fasihi, M., & Aghahosseini, A. J. M. (2019). Carbon dioxide direct air capture for effective climate change mitigation based on renewable electricity: a new type of energy system sector coupling. *Adaptation Strategies for Global Change*, 1-23. doi:10.1007/s11027-019-9847-y
- Brick, S. (2010). *Biochar: Assessing the Promise and Risks To Guide U.S. Policy*. Retrieved from Washington DC: https://www.nrdc.org/energy/files/biochar_paper.pdf
- Bridges, R. (2014). *Design and characterisation of an 'open source' pyrolyser for biochar production*. Massey University, Retrieved from <http://mro.massey.ac.nz/handle/10179/5864?show=full>
- Bridges, R. P., Paterson, A. H. J., & Jones, J. R. (2013). Design and Characterisation of an 'Open Source' Pyrolyser for Biochar Production. Retrieved from <http://www.conference.net.au/chemeca2013/papers/27038.pdf>
- Bridgwater, A. V., Toft, A. J., & Brammer, J. G. (2002). A techno-economic comparison of power production by biomass fast pyrolysis with gasification and combustion. *Renewable and Sustainable Energy Reviews*, 6(3), 181-246. doi:[https://doi.org/10.1016/S1364-0321\(01\)00010-7](https://doi.org/10.1016/S1364-0321(01)00010-7)
- Brienen, R. J. W., Caldwell, L., Duchesne, L., Voelker, S., Barichivich, J., Baliva, M., . . . Gloor, E. (2020). Forest carbon sink neutralized by pervasive growth-lifespan trade-offs. *Nature Communications*, 11(1), 4241. doi:10.1038/s41467-020-17966-z
- Briggs, N., Dall'Olmo, G., & Claustre, H. (2020). Major role of particle fragmentation in regulating biological sequestration of CO₂ by the oceans. *Science*, 367(6479), 791-793. doi:10.1126/science.aay1790
- Brigham, K. (2019). Bill Gates and Big Oil back this company that's trying to solve climate change by sucking CO₂ out of the air. *CNBC*. Retrieved from <https://www.cnbc.com/2019/06/21/carbon-engineering-co2-capture-backed-by-bill-gates-oil-companies.html>
- Bright, M. (2021). *Surveying the U.S. Federal CCS Policy Landscape in 2021*. Retrieved from <https://www.globalccsinstitute.com/resources/publications-reports-research/surveying-the-u-s-federal-ccs-policy-landscape-in-2021/>
- Bright, R. M., Zhao, K., Jackson, R. B., & Cherubini, F. (2015). Quantifying surface albedo and other direct biogeophysical climate forcings of forestry activities. *Global Change Biology*, 21(9), 3246-3266. doi:10.1111/gcb.12951
- Brilman, D. W. F., & Veneman, R. (2013). Capturing Atmospheric CO₂ Using Supported Amine Sorbents. *Energy Procedia*, 37, 6070-6078. doi:<http://dx.doi.org/10.1016/j.egypro.2013.06.536>
- Bringezu, S., et al. (2009). *Towards Sustainable Production and Use of Resources: Assessing Biofuels*. Retrieved from http://www.unep.org/PDF/Assessing_Biofuels.pdf
- Brockhoff, S. R., et al. (2010). Physical and Mineral-Nutrition Properties of Sand-Based

- Turfgrass Root Zones Amended with Biochar. *Crop Science Society of America*, 102(6), 1627-1631. doi:10.2134/agronj2010.0188
- Broder, S. P., & Haward, M. (2013). *The International Legal Regimes Governing Ocean Iron Fertilization*.
- Brodowski, S., Amelung, W., Haumaier, L., & Zech, W. (2007). Black carbon contribution to stable humus in german arable soils. *Geoderma*, 139(1-2), 220-228. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0016706107000389>
- Brodowski, S., John, B., Flessa, H., & Amelung, W. (2006). Aggregate-occluded black carbon in soil. *European Journal of Soil Science*, 57, 539--546.
- Brodowski, S., Rodionov, A., Haumaier, L., Glaser, B., & Amelung, W. (2005). Revised black carbon assessment using benzene polycarboxylic acids. *Organic Geochemistry*, 36(9), 1299-1310. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0146638005000938>
- Brodowski, S., Amelung, W., Haumaier, L., Abetz, C., & Zech, W. (2005). Morphological and chemical properties of black carbon in physical soil fractions as revealed by scanning electron microscopy and energy-dispersive X-ray spectroscopy. *Geoderma*, 128(1-2), 116-129. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0016706104003301>
- Broecker, W. (2013). Does air capture constitute a viable backstop against a bad CO₂ trip? *Elementa*, 1(9), 1-3. Retrieved from <https://www.elementascience.org/articles/10.12952/journal.elementa.000009/>
- Broecker, W., & Takahashi, F. (1977). Neutralization of fossil fuel CO₂ by marine calcium carbonate. In N. R. Andersen & A. Malahoff (Eds.), *The Fate of Fossil Fuel CO₂ in the Oceans* (pp. 213-241).
- Broecks, K., Jack, C., ter Mors, E., Boomsma, C., & Shackley, S. (2021). How do people perceive carbon capture and storage for industrial processes? Examining factors underlying public opinion in the Netherlands and the United Kingdom. *Energy Research & Social Science*, 81, 102236. doi:<https://doi.org/10.1016/j.erss.2021.102236>
- Broehm, M., Strefler, J., & Bauer, N. (2015). *Techno-Economic Review of Direct Air Capture Systems for Large Scale Mitigation of Atmospheric CO₂*. Retrieved from <https://poseidon01.ssrn.com/delivery.php?ID=447071097117025119014122113126081122033040063036031057022082086090121113018083123029045114020060007100109067003097007085066122122078037060059112030105084017027092107036079030007127086080125017114109085016118099091077095087010084110087065091004008124115&EXT=pdf>
- Brosse, N., et al. (2012). Miscanthus: a fast-growing crop for biofuels and chemicals production. *Biofpr*, 6(5), 580-598. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/bbb.1353/full>
- Brovkin, V., Raddatz, T., Reick, C. H., Claussen, M., & Gayler, V. (2009). Global biogeophysical interactions between forest and climate. *Geophysical Research Letters*, 36(7), 1-5. doi:10.1029/2009GL037543
- Brown, E., & Jacobson, M. (2005). *Cruel Oil: How Palm Oil Harms Health, Rainforest & Wildlife*. Retrieved from <https://cspinet.org/file/5656/download?token=f9iLJfz2>
- Brown, K., et al. (2015). *Biochar and Biological Phosphorus Removal at Shelburne Farms*. Retrieved from http://www.biochar-international.org/sites/default/files/Shelburne_Farms_2015.pdf
- Brown, L. M. (1996). Uptake of carbon dioxide from flue gas by microalgae. *Energy Conversion and Management*, 37(6), 1363-1367. doi:[https://doi.org/10.1016/0196-8904\(95\)00347-9](https://doi.org/10.1016/0196-8904(95)00347-9)
- Brown, L. M., & Zeiler, K. G. (1993). Aquatic biomass and carbon dioxide trapping. *Energy Conversion and Management*, 34(9), 1005-1013. doi:<https://doi.org/>

10.1016/0196-8904(93)90048-F

- Brown, P. (2019). Carbon Capture Is Vital for Planet, Scientists Say. *The Good Men Project*. Retrieved from <https://goodmenproject.com/environment-2/carbon-capture-is-vital-for-planet-scientists-say/>
- Brown, R. (2009). Biochar Production Technology. In *Biochar for Environmental Management: Science and Technology* (pp. 127-146). London, UK: Earthscan.
- Brown, R., et al. (2015). Fundamentals of biochar production. In *Biochar for Environmental Management: Science and Technology and Implementation*.
- Brown, R. A., et al. (2000). Potential Production and Environmental Effects of Switchgrass and Traditional Crops under Current and Greenhouse-Altered Climate in the Central United States: A Simulation Study. *Agriculture Ecosystems & Environment*, 78, 31-47. Retrieved from <http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1159&context=natrespapers>
- Brown, S., Krek, A., & Lees, B. (2012). *Growth of creeping bentgrass (Agrostis palustris) in a sand-based root zone amended with a nutrient loaded biochar*. Retrieved from <http://ptrc.oldscollege.ca/documents/StudentProjectonBiochar.pdf>
- Brown, T. R., Wright, M. M., & Brown, R. C. (2010). Estimating profitability of two biochar production scenarios: slow pyrolysis vs fast pyrolysis. *Biofuels, Bioproducts and Biorefining*, 5(1), 54-68. doi:10.1002/bbb.254
- Brownbridge, G., Azadi, P., Smallbone, A., Bhave, A., Taylor, B., & Kraft, M. (2014). The future viability of algae-derived biodiesel under economic and technical uncertainties. *Bioresource Technology*, 151, 166-173. doi:<https://doi.org/10.1016/j.biortech.2013.10.062>
- Brtnicky, M., Datta, R., Holatko, J., Bielska, L., Gusiatin, Z. M., Kucerik, J., . . . Pecina, V. (2021). A critical review of the possible adverse effects of biochar in the soil environment. *Science of The Total Environment*, 796, 148756. doi:<https://doi.org/10.1016/j.scitotenv.2021.148756>
- Bruckman, V. J., et al. (Ed.) (2017). *Biochar: A Regional Supply Chain Approach in View of Climate Change Mitigation*.
- Bruckman, V. J., Terada, T., Uzun, B. B., Apaydın-Varol, E., & Liu, J. (2015). Biochar for Climate Change Mitigation: Tracing the in-situ Priming Effect on a Forest Site. *Energy Procedia*, 76, 381-387. doi:<http://dx.doi.org/10.1016/j.egypro.2015.07.845>
- Bruges, J. (2009). *The Biochar Debate: Charcoal's Potential to Reverse Climate Change and Build Soil Fertility*. Green Books Ltd.
- Bruhn, A., et al. (2016). Impact of environmental conditions on biomass yield, quality, and bio-mitigation capacity of *Saccharina latissima*. *Aquaculture Environment Interactions*, 8, 619-636. Retrieved from http://orbit.dtu.dk/files/127202460/Publishers_version.pdf
- Bruhn, T., Naims, H., & Olfe-Kräutlein, B. (2016). Separating the debate on CO₂ utilisation from carbon capture and storage. *Environmental Science & Policy*, 60(Supplement C), 38-43. doi:<https://doi.org/10.1016/j.envsci.2016.03.001>
- Bruine de Bruin, W., Mayer, L. A., & Morgan, M. G. (2015). Developing communications about CCS: three lessons learned. *Journal of Risk Research*, 18(6), 699-705. doi:10.1080/13669877.2014.983951
- Bruine de Bruin, W., Rabinovich, L., Weber, K., Babboni, M., Dean, M., & Ignon, L. (2021). Public understanding of climate change terminology. *Climatic Change*, 167(3), 37. doi:10.1007/s10584-021-03183-0
- Brunsting, S., et al. (2011). Communicating CCS: Applying communications theory to public perceptions of carbon capture and storage. *International Journal of Greenhouse Gas Control*, 5(6), 1651-1662. Retrieved from https://www.researchgate.net/publication/236146899_Communicating_CCS_Applying_communications_theory_to_public_percept

ions_of_carbon_capture_and_storage

- Brunsting, S., Best-Waldhober, M. d., Feenstra, C. F. J., & Mikunda, T. (2011). Stakeholder participation practices and onshore CCS: Lessons from the dutch CCS case barendrecht. *Energy Procedia*, 4, 6376-6383. doi:<http://dx.doi.org/10.1016/j.egypro.2011.02.655>
- Brunsting, S., de Best-Waldhober, M., Brouwer, A. S., Riesch, H., & Reiner, D. (2013). Communicating CCS: Effects of Text-only and Text-and-visual Depictions of CO₂ Storage on Risk Perceptions and Attitudes. *Energy Procedia*, 37, 7318-7326. doi:<http://dx.doi.org/10.1016/j.egypro.2013.06.670>
- Brunsting, S., de Best-Waldhober, M., & Terwel, B. W. (2013). 'I Reject your Reality and Substitute my Own!' Why More Knowledge about CO₂ Storage Hardly Improves Public Attitudes. *Energy Procedia*, 37, 7419-7427. doi:<https://doi.org/10.1016/j.egypro.2013.06.684>
- Brunsting, S., Desbarats, J., de Best-Waldhober, M., Duetschke, E., Oltra, C., Upham, P., & Riesch, H. (2011). The Public and CCS: The importance of communication and participation in the context of local realities. *Energy Procedia*, 4, 6241-6247. doi:<http://dx.doi.org/10.1016/j.egypro.2011.02.637>
- Bruton, T., et al. (2009). *A Review of the Potential of Marine Algae as a Source of Biofuel in Ireland*. Retrieved from http://www.fao.org/uploads/media/0902_SEI_-_A_Review_of_the_Potential_of_Marine_Algae.pdf
- Bruun, E., B., et al. (2012). Effects of slow and fast pyrolysis biochar on soil C and N turnover dynamics. *Soil Biology and Biochemistry*, 46, 73-79. doi:<10.1016/j.soilbio.2011.11.019>
- Bruun, E., et al. (2016). Biochar carbon stability and effect on greenhouse gas emissions. In *Biochar in European Soils and Agriculture: Science and Practice*.
- Bruun, E. B., et al. (2010). Influence of fast pyrolysis temperature on biochar labile fraction and short-term carbon loss in a loamy soil. *Biomass and Bioengineering*, 35(3), 1182-1189. doi:<10.1016/j.biombioe.2010.12.008>
- Bruun, E. W., et al. (2011). Application of biochar to soil and N₂O emissions: potential effects of blending fast-pyrolysis biochar with anaerobically digested slurry. *European Journal of Soil Science*, 62(4), 581-589. doi:<10.1111/j.1365-2389.2011.01377.x>
- Bruun, E. W., et al. . (2012). Nitrogen and Carbon Leaching in Repacked Sandy Soil with Added Fine Particulate Biochar. *Soil Science Society of America Journal*, 76(4), 1142-1148. doi:<10.2136/sssaj2011.0101>
- Bruun, E. W., et al. (2014). Biochar amendment to coarse sandy subsoil improves root growth and increases water retention. *Soil Use and Management*, 30(1), 109-118. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/sum.12102/full>
- Bruun, E. W., Muller-Stover, D., Ambus, P., & Hauggaard-Nielsen, H. (2011). Application of biochar to soil and N₂O emissions: potential effects of blending fast-pyrolysis biochar with anaerobically digested slurry. *European Journal of Social Science*, 62(4), 581-589. doi:<10.1111/j.1365-2389.2011.01377.x>
- Bruun, S., & EL-Zehery, T. (2012). Biochar effect on the mineralization of soil organic matter. *Pesquisa Agropecuária Brasileira*, 47, 665-671. doi:<http://dx.doi.org/10.1590/S0100-204X2012000500005>
- Bruun, S., Jensen, E. S., & Jensen, L. S. (2008). Microbial mineralization and assimilation of black carbon: dependency on degree of thermal alteration. *Organic Geochemistry*, 39(7), 839-845. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0146638008001307>
- Bruun, S., & Luxhoi, J. (2008). Is biochar production really carbon-negative? *Environmental Science & Technology*, 42(5), 1388.
- Bryce, E. (2020). Tasmania's 'Super-Kelp' Is Making CO₂ Vanish into the Ocean. Retrieved from

- <https://reasonstobecherful.world/super-kelp-carbon-emissions-climate-change-oceans/#>
- Bryce, E. (2021). Leaving crop residues to rot could be an unexpected boon for climate mitigation. *Anthropocene*.
- Bryngelsson, D. K., & Lindgren, K. (2013). Why large-scale bioenergy production on marginal land is unfeasible: A conceptual partial equilibrium analysis. *Energy Policy*, 55(Supplement C), 454-466. doi:<https://doi.org/10.1016/j.enpol.2012.12.036>
- Bubici, S., et al. (2016). Evaluation of the surface affinity of water in three biochars using fast field cycling NMR relaxometry. *Magnetic Resonance in Chemistry*, 54(5), 365-370. doi:[10.1002/mrc.4391](https://doi.org/10.1002/mrc.4391)
- Bublé, C. (2020). Bipartisan Bill Would Establish Multi-Agency Effort for Carbon Removal. *Government Executive*. Retrieved from <https://www.govexec.com/management/2020/07/bipartisan-bill-would-establish-multi-agency-effort-carbon-removal/167384/>
- Bucheli, T. D., et al. (2014). On the heterogeneity of biochar and consequences for its representative sampling. *Journal of Analytical and Applied Pyrolysis*, 107, 25-30. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0165237014000229>
- Buck, H. J. (2014). *Village Science Meets Global Discourse: The Haida Salmon Restoration Corporation's Ocean Iron Fertilization Experiment*. Retrieved from <http://www.homepages.ed.ac.uk/shs/Climatechange/Geo-politics/Holly%20Buck%20iron%20fert.htm>
- Buck, H. J. (2016). Rapid scale-up of negative emissions technologies: social barriers and social implications. *Climatic Change*, 139(2), 155-167. doi:[10.1007/s10584-016-1770-6](https://doi.org/10.1007/s10584-016-1770-6)
- Buck, H. J. (2018). A Best-Case Scenario for Putting Carbon Back Underground. Retrieved from <https://magazine.sciencefortheppeople.org/geoengineering/best-case-scenario-carbon-underground/>
- Buck, H. J. (2018). The Need for Carbon Removal. *Jacobin*. Retrieved from <https://jacobinmag.com/2018/07/carbon-removal-geoengineering-global-warming>
- Buck, H. J. (2018). The politics of negative emissions technologies and decarbonization in rural communities. *Global Sustainability*, 1-7. Retrieved from <https://www.cambridge.org/core/journals/global-sustainability/collection/the-politics-and-governance-of-negative-emissions-technologies>
- Buck, H. J. (2019). Challenges and Opportunities of Bioenergy With Carbon Capture and Storage (BECCS) for Communities. *Current Sustainable/Renewable Energy Reports*. doi:[10.1007/s40518-019-00139-y](https://doi.org/10.1007/s40518-019-00139-y)
- Buck, H. J. (2019). The desperate race to cool the ocean before it's too late. *MIT Technology Review*. Retrieved from <https://www.technologyreview.com/s/613327/the-desperate-race-to-cool>
- Buck, H. J. (2020). Should carbon removal be treated as waste management? Lessons from the cultural history of waste. *Interface Focus*, 10(5), 20200010. doi:[doi:10.1098/rsfs.2020.0010](https://doi.org/10.1098/rsfs.2020.0010)
- Buck, H. J. (2021). Social science for the next decade of carbon capture and storage. *The Electricity Journal*, 34(7), 107003. doi:<https://doi.org/10.1016/j.tej.2021.107003>
- Buck, H. J., Furhman, J., Morrow, D. R., Sanchez, D. L., & Wang, F. M. (2020). Adaptation and Carbon Removal. *One Earth*, 3(4), 425-435. doi:[10.1016/j.oneear.2020.09.008](https://doi.org/10.1016/j.oneear.2020.09.008)
- Budai, A., Zimmerman, A. R., Cowie, A. L., Webber, J. B. W., Singh, B. P., Glaser, B., . . . Joseph, S. (2013). *Biochar Carbon Stability Test Method: An assessment of methods to determine biochar carbon stability*. Retrieved from http://www.biochar-international.org/sites/default/files/IBI_Report_Biochar_Stability_Test_Method_Final.pdf
- Budania, K., & Yadav, J. (2014). Effects of PGPR blended biochar and different levels of phosphorus on yield and nutrient uptake by chickpea. *Annals of Agri Bio Research*, 19,

- 408-412. Retrieved from <http://www.cabdirect.org/abstracts/20143328845.html>;jsessionid=79D899100F399417CA15181118A7D9AE
- Budi, S. W., & Setyaningsih, L. (2013). Arbuscular Mycorrhizal Fungi and Biochar Improved Early Growth of Neem (*Melia azedarach* Linn.) Seedling Under Greenhouse Conditions. *Manajemen Hutan Tropika Journal of Tropical Forest Management*, 19(2). Retrieved from <http://journal.ipb.ac.id/index.php/jmht/article/view/6965>
- Budinis, S. (2020). *Direct Air Capture: More Efforts Needed*. Retrieved from <https://www.iea.org/reports/direct-air-captur>
- Budinis, S. (2020). Going carbon negative: What are the technology options? Retrieved from <https://www.iea.org/commentaries/going-carbon-negative-what-are-the-technology-options>
- Budinis, S., Dowell, N. M., Krevor, S., Dixon, T., Kemper, J., & Hawkes, A. (2017). Can Carbon Capture and Storage Unlock 'Unburnable Carbon'? *Energy Procedia*, 114, 7504-7515. doi:<https://doi.org/10.1016/j.egypro.2017.03.1883>
- Budinis, S., Krevor, S., Dowell, N. M., Brandon, N., & Hawkes, A. (2018). An assessment of CCS costs, barriers and potential. *Energy Strategy Reviews*, 22, 61-81. doi:<https://doi.org/10.1016/j.esr.2018.08.003>
- Budzianowski, W. M. (2010). Negative Net CO₂ Emissions from Oxy-Decarbonization of Biogas to H-2. *International Journal of Chemical Reactor Engineering*, 8, 31. Retrieved from <Go to ISI>://WOS:000285830700010
- Budzianowski, W. M. (2011). Can 'negative net CO₂ emissions' from decarbonised biogas-to-electricity contribute to solving Poland's carbon capture and sequestration dilemmas? *Energy*, 36(11), 6318-6325. doi:[10.1016/j.energy.2011.09.047](https://doi.org/10.1016/j.energy.2011.09.047)
- Budzianowski, W. M. (2012). Negative carbon intensity of renewable energy technologies involving biomass or carbon dioxide as inputs. *Renewable & Sustainable Energy Reviews*, 16(9), 6507-6521. doi:[10.1016/j.rser.2012.08.016](https://doi.org/10.1016/j.rser.2012.08.016)
- Budzianowski, W. M. (2012). Value-added carbon management technologies for low CO₂ intensive carbon-based energy vectors. *Energy*, 41(1), 280-297. doi:[10.1016/j.energy.2012.03.008](https://doi.org/10.1016/j.energy.2012.03.008)
- Budzianowski, W. M. (2017). Implementing carbon capture, utilisation and storage in the circular economy. *International Journal of Greenhouse Gas Control*, 12(2), 272-296. Retrieved from <http://www.inderscience.com/info/inarticle.php?artid=84510>
- Buechler-Scott, C. (2021). *A Progressive Platform for Carbon Removal: Federal Action Plan*. Retrieved from <https://filesforprogress.org/memos/carbon-removal-guiding-principles.pdf>
- Buechler-Scott, C. (2021). *A Progressive Platform for Carbon Removal: Guiding Principles*. Retrieved from <https://filesforprogress.org/memos/carbon-removal-guiding-principles.pdf>
- Buecker, J., Kloss, S., Wimmer, B., Rempt, F., Zehetner, F., & Soja, G. (2016). Leachate Composition of Temperate Agricultural Soils in Response to Biochar Application. *Water, Air, & Soil Pollution*, 227(2). doi:[10.1007/s11270-016-2745-y](https://doi.org/10.1007/s11270-016-2745-y)
- Buesseler, K. O. (2012). Biogeochemistry: The great iron dump. *Nature*, 487, 305-306. Retrieved from <http://www.nature.com/nature/journal/v487/n7407/full/487305a.html>
- Buesseler, K. O., Andrews, J. E., Pike, S. M., & Charette, M. A. (2004). The Effects of Iron Fertilization on Carbon Sequestration in the Southern Ocean. *Science*, 304(5669), 414-417. Retrieved from <http://science.sciencemag.org/content/304/5669/414>
- Buesseler, K. O., Andrews, J. E., Pike, S. M., Charette, M. A., Goldson, L. E., Brzezinski, M. A., & Lance, V. P. (2005). Particle export during the Southern Ocean Iron Experiment (SOFeX). *Limnology and Oceanography*, 50(1), 311-327.
- Buesseler, K. O., Barber, R. T., Dickson, M.-L., Hiscock, M. R., Moore, C. M., & Sambrotto, R. (2003). The effect of marginal ice-edge dynamics on production and export in the Southern Ocean along 170 degrees W. *Deep-Sea Research Part II-Topical Studies In*

Oceanography, 50(3-4), 579-603.

- Buesseler, K. O., & Boyd, P. W. (2003). Will Ocean Fertilization Work? *Science*, 300(5616), 67-68. doi:10.1126/science.1082959
- Buesseler, K. O., Boyd, P. W., Black, E. E., & Siegel, D. A. (2020). Metrics that matter for assessing the ocean biological carbon pump. *Proceedings of the National Academy of Sciences*, 117(18), 9679-9687. doi:10.1073/pnas.1918114117
- Buesseler, K. O., Doney, S. C., Karl, D. M., Boyd, P. W., Caldeira, K., Chai, F., . . . Watson, A. J. (2008). Ocean Iron Fertilization--Moving Forward in a Sea of Uncertainty. *Science*, 319(5860), 162-162. doi:10.1126/science.1154305
- Buesseler, K. O., Lamborg, C. H., Boyd, P. W., Lam, P. J., Trull, T. W., Bidigare, R. R., . . . Wilson, S. (2007). Revisiting Carbon Flux Through the Ocean's Twilight Zone. *Science*, 316(5824), 567-570. doi:10.1126/science.1137959
- Buhr, K., & Wibeck, V. (2014). Communication approaches for carbon capture and storage: Underlying assumptions of limited versus extensive public engagement. *Energy Research & Social Science*, 3, 5-12. doi:https://doi.org/10.1016/j.erss.2014.05.004
- Bui, M., Adjiman, C. S., Bardow, A., Anthony, E. J., Boston, A., Brown, S., . . . Mac Dowell, N. (2018). Carbon capture and storage (CCS): the way forward. *Energy & Environmental Science*, 11(5), 1062-1176. doi:10.1039/C7EE02342A
- Bui, M., Fajard, M., & Mac Dowell, N. (2017). Bio-Energy with CCS (BECCS) performance evaluation: Efficiency enhancement and emissions reduction. *Applied Energy*, 195, 289-302. doi:https://doi.org/10.1016/j.apenergy.2017.03.063
- Bui, M., Fajard, M., & Mac Dowell, N. (2017). Thermodynamic evaluation of carbon negative power generation: Bio-energy CCS (BECCS). *Energy Procedia*. Retrieved from https://az659834.vo.msecnd.net/eventsairwesteuprod/production-ieaghg-public/e0ee2e3677fa4176b9003102b0b4edff
- Bui, M., Fajard, M., & Mac Dowell, N. (2018). Bio-energy with carbon capture and storage (BECCS): Opportunities for performance improvement. *Fuel*, 213, 164-175. doi:https://doi.org/10.1016/j.fuel.2017.10.100
- Bui, M., Zhang, D., Fajard, M., & Mac Dowell, N. (2021). Delivering carbon negative electricity, heat and hydrogen with BECCS – Comparing the options. *International Journal of Hydrogen Energy*. doi:https://doi.org/10.1016/j.ijhydene.2021.02.042
- Bui, T. (2015). *Cryopreservation, culture recovery and glucose induced programmed cell death in chlorophyte microalgae*. (PhD Thesis). The University of Queensland, Retrieved from http://espace.library.uq.edu.au/view/UQ:345619
- Buijs, W., & de Flart, S. (2017). Direct Air Capture of CO₂ with an Amine Resin: A Molecular Modeling Study of the CO₂ Capturing Process. *Industrial & Engineering Chemistry Research*, 56(43), 12297-12304. doi:10.1021/acs.iecr.7b02613
- Bull, I. D., Betancourt, P. P., & Evershed, R. P. (2001). An Organic Geochemical Investigation of the Practice of Manuring at a Minoan Site on Pseira Island, Crete. *Geoarchaeology: An International Journal*, 16, 223 - 242.
- Bull, L. (2012). *A Field Demonstration for Mobile Torrefaction Technology to Produce Biochar and Evaluate Its Value to North Carolina Farmers*. Retrieved from http://www.ncfarmcenter.org/uploads/Bio-Char-Final-Report-2013.pdf
- Bullard, N. (2021). Stripe, Shopify, and the E-Commerce Approach to Drawing Down Carbon. *Bloomberg Green*. Retrieved from https://www.bloomberg.com/news/articles/2021-06-03/stripe-shopify-and-the-e-commerce-approach-to-drawing-down-carbon
- Buller, L. S., Bergier, I., Ortega, E., Moraes, A., Bayma-Silva, G., & Zanetti, M. R. (2015). Soil improvement and mitigation of greenhouse gas emissions for integrated crop–livestock systems: Case study assessment in the Pantanal savanna highland, Brazil. *Agricultural Systems*, 137, 206-219. doi:https://doi.org/10.1016/j.agsy.2014.11.004

- Bullis, K. (2006). Storing Carbon Dioxide under the Ocean. *MIT Technology Review*. Retrieved from <https://www.technologyreview.com/s/406222/storing-carbon-dioxide-under-the-ocean/>
- Bullis, K. (2014). The Cost of Limiting Climate Change Could Double without Carbon Capture Technology. *MIT Technology Review*. Retrieved from <https://www.technologyreview.com/s/526646/the-cost-of-limiting-climate-change-could-double-without-carbon-capture-technology/>
- Bundschuh, M., Zubrod, J. P., Seitz, F., & Newman, M. C. (2015). Effects of two sorbents applied to mercury-contaminated river sediments on bioaccumulation in and detrital processing by *Hyalella azteca*. *Journal of Soils and Sediments*, 15, 1265-1274. doi:10.1007/s11368-015-1100-z
- Buonocore, J. (2021). Companies are promising to remove carbon — what about frontline communities? *The Hill*. Retrieved from <https://thehill.com/opinion/energy-environment/548049-companies-are-promising-to-remove-carbon-what-about-frontline>
- Burgess, M. (2018). Denmark Leads the Way. *Gasworld*. Retrieved from <https://www.gasworld.com/denmark-leads-the-way-/2016068.article>
- Burgess, M. (2019). SCCS wins European CCUS funding
- By Molly Burgess2 December 2019. *Gasworld*. Retrieved from <https://www.gasworld.com/sccts-wins-funding/2018130.article>
- Burgess, M. (2021). Aker Solutions awarded contract for Brevik carbon capture project. *Gasworld*. Retrieved from <https://www.gasworld.com/aker-awarded-contract-for-brevik-carbon-capture-project/2020310.article>
- Burgess, M. (2021). Chart and Svante to develop integrated carbon capture solutio. *Gasworld*. Retrieved from <https://www.gasworld.com/chart-and-svante-to-develop-integrated-carbon-capture-solution/2020477.article>
- Burgess, P. J., et al. (2019). *Regenerative Agriculture Identifying the impact; enabling the potential*. Retrieved from <https://www.foodandlandusecoalition.org/wp-content/uploads/2019/09/Regenerative-Agriculture-final.pdf>
- Burhenne, L., Giacomin, C., Follett, T., Ritchie, J., McCahill, J. S. J., & Mérida, W. (2017). Characterization of reactive CaCO₃ crystallization in a fluidized bed reactor as a central process of direct air capture. *Journal of Environmental Chemical Engineering*, 5(6), 5968-5977. doi:<https://doi.org/10.1016/j.jece.2017.10.047>
- Burke, J. M., et al. . (2012). The Effect of Source of Biochar on Cotton Seedling Growth and Development. *International Journal of Plant & Soil Science*, 3(8), 995-1008. Retrieved from <http://arkansasagnews.uark.edu/610-15.pdf>
- Burley J., e. a. (2007). C sequestration as a forestry opportunity in a changing climate. In P. H. Freer-Smith, et al. (Ed.), *Forestry and climate change*. (pp. 31-37).
- Burlinghaus, E., et al. (2020). Scaling CCUS: Catalyzing policy and financial innovation. Retrieved from <https://www.atlanticcouncil.org/blogs/energysource/scaling-ccus-catalyzing-policy-and-financial-innovation/>
- Burns, E. (2017). Negative Emissions Primer. Retrieved from <http://www.thirdway.org/primer/negative-emissions-primer>
- Burns, E., & Suarez, V. (2020). Everything you need to know about federal funding for carbon removal. *Medium*. Retrieved from <https://medium.com/@carbon180/everything-you-need-to-know-about-federal-funding-for-carbon-removal-bb2548595b41>
- Burns, W. (2016). *The Paris Agreement and Climate Geoengineering Governance: The Need For a Human-rights Based Component*. Retrieved from <https://www.cigionline.org/publications/paris-agreement-and-climate-geoengineering-governance-need-human-rights-based>

- Burns, W. (2017). Ensuring That We Hear the Voices of the Vulnerable: Toward a Human Rights-Based Approach to Bioenergy and Carbon Capture and Storage. Retrieved from <http://ceassessment.org/ensuring-that-we-hear-the-voices-of-the-vulnerable-toward-a-human-rights-based-approach-to-bioenergy-and-carbon-capture-and-storage-wil-burns/>
- (2020, June 2). *Adding Subtraction to the Climate Toolkit: Discussing Carbon Dioxide Removal with Wil Burns* [Retrieved from <https://www.resourcesmag.org/resources-radio/adding-subtraction-climate-toolkit-discussing-carbon-dioxide-removal-wil-burns/>]
- Burns, W. (2020). The Green New Deal and Carbon Dioxide Removal Approaches. *Energy Central*. Retrieved from <https://energycentral.com/c/ec/green-new-deal-and-carbon-dioxide-removal-approaches>
- Burns, W. (2020). Op-ed: A trillion trees to fight climate change sounds nice. Here's what it misses. *Indianapolis Star*. Retrieved from <https://www.indystar.com/story/opinion/2020/12/20/op-ed-fixing-climate-change-trillion-trees-can-create-problems/3938962001/>
- Burns, W. (2021). Scrubbing the Skies: The Promises, Challenges and Perils of Carbon Dioxide Removal. *Energy Policy Seminar Series: Rutgers Energy Institute*.
- Burns, W. (2021). Seeing the Forest for the Trees?: The Role of Afforestation and Reforestation in Combating Climate Change. *ABA SEER*. Retrieved from https://www.americanbar.org/groups/environment_energy_resources/publications/fr/20210114-seeing-the-forest-for-the-trees/
- Burns, W. (2021). Seeing the Forest for the Trees?: The Role of Afforestation and Reforestation in Combating Climate Change. Retrieved from https://www.americanbar.org/groups/environment_energy_resources/publications/fr/20210114-seeing-the-forest-for-the-trees/
- Burns, W., & Corbett, C. R. (2020). Antacids for the Sea? Artificial Ocean Alkalization and Climate Change. *One Earth*, 3(2), 154-156. doi:10.1016/j.oneear.2020.07.016
- Burns, W., & Nicholson, S. (2017). Bioenergy and carbon capture with storage (BECCS): the prospects and challenges of an emerging climate policy response. *Journal of Environmental Studies and Sciences*. doi:10.1007/s13412-017-0445-6
- Burns, W. C. G. (2017). Human Rights Dimensions of Bioenergy with Carbon Capture and Storage: A framework for Climate Justice in the Realm of Climate Geoengineering. In R. S. Abate (Ed.), *Climate Justice* (pp. 149-172): Environmental Law Institute.
- Burton, E., Beyer, J., Bourcier, W., Mateer, N., & Reed, J. (2013). Carbon Utilization to Meet California's Climate Change Goals. *Energy Procedia*, 37, 6979-6986. doi:<https://doi.org/10.1016/j.egypro.2013.06.631>
- Burud, I., Moni, C., Flo, A., Futsaether, C., Steffens, M., & Rasse, D. P. (2015). Qualitative and quantitative mapping of biochar in a soil profile using hyperspectral imaging. *Soil and Tillage Research*, 155, 523-531. doi:10.1016/j.still.2015.06.020
- Burwood-Taylor, L. (2019). Indigo Launches Carbon Market to Incentivize Farmers to Transition to Regenerative Agriculture. *Agfunder News*. Retrieved from <https://agfundernews.com/indigo-ag-to-incentivize-regenerative-agriculture-with-carbon-sequestration-market.html>
- Busari, M. A., Kukal, S. S., Kaur, A., Bhatt, R., & Dulazi, A. A. (2015). Conservation tillage impacts on soil, crop and the environment. *International Soil and Water Conservation Research*, 3(2), 119-129. doi:<https://doi.org/10.1016/j.iswcr.2015.05.002>
- Busch, D., et al. (2013). Genotoxic and phytotoxic risk assessment of fresh and treated hydrochar from hydrothermal carbonization compared to biochar from pyrolysis. *Ecotoxicology and Environmental Safety*, 97, 59-66. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0147651313003011>
- Busch, D., & Glase, B. r. (2015). Stability of co-composted hydrochar and biochar under field conditions in a temperate soil. *Soil Use and Management*, 31(2), 251-258. doi:10.1111/sum.12180
- Busch, J., Engelmann, J., Cook-Patton, S. C., Griscom, B. W., Kroeger, T., Possingham, H., &

- Shyamsundar, P. (2019). Potential for low-cost carbon dioxide removal through tropical reforestation. *Nature Climate Change*, 9(6), 463-466. doi:10.1038/s41558-019-0485-x
- Bushnaf, K. M., et al. (2011). Effect of biochar on the fate of volatile petroleum hydrocarbons in an aerobic sandy soil. *Journal of Contaminant Hydrology*, 126(3-4), 208-215. doi:10.1016/j.jconhyd.2011.08.008
- Bushnaf, K. M. M. (2014). *The effects of biochar or activated carbon amendments on the fate of volatile petroleum hydrocarbons in an aerobic sandy soil*. Newcastle University, Retrieved from <https://theses.ncl.ac.uk/dspace/handle/10443/2276>
- Bushuyev, O. S., De Luna, P., Dinh, C. T., Tao, L., Saur, G., van de Lagemaat, J., . . . Sargent, E. H. (2018). What Should We Make with CO₂ and How Can We Make It? *Joule*, 2(5), 825-832. doi:<https://doi.org/10.1016/j.joule.2017.09.003>
- Buss, W., Graham, M. C., Shepherd, J. G., & Mašek, O. (2016). Suitability of marginal biomass-derived biochars for soil amendment. *Science of The Total Environment*, 547, 314 - 322. doi:10.1016/j.scitotenv.2015.11.148
- Buss, W., Jansson, S., Wurzer, C., & Mašek, O. (2019). Synergies between BECCS and Biochar—Maximizing Carbon Sequestration Potential by Recycling Wood Ash. *ACS Sustainable Chemistry & Engineering*. doi:10.1021/acssuschemeng.8b05871
- Buss, W., Kammann, C., & Koyer, H.-W. (2012). Biochar Reduces Copper Toxicity in *Chenopodium quinoa* Willd. in a Sandy Soil. *Journal of Environmental Quality*, 41, 1157 - 1165. doi:10.2134/jeq2011.0022
- Buss, W., & Mašek, O. (2014). Mobile organic compounds in biochar – A potential source of contamination – Phytotoxic effects on cress seed (*Lepidium sativum*) germination. *Journal of Environmental Management*, 137, 111–119.
- Buss, W., Mašek, O., Graham, M., & Wüst, D. (2015). Inherent organic compounds in biochar—Their content, composition and potential toxic effects. *Journal of Environmental Management*, 156, 150-157. doi:10.1016/j.jenvman.2015.03.035
- Busscher, W. J., Novak, J. M., Evans, D. E., Watts, D. W., Niandou, M. A. S., & Ahmedna, M. (2010). Influence of Pecan Biochar on Physical Properties of a Norfolk Loamy Sand. *Soil Science*, 175(1), 10-14. Retrieved from http://ovidsp.tx.ovid.com/sp-3.24.1b/ovidweb.cgi?WebLinkFrameset=1&S=OFEDFPNFDIDDOAGNNCHKFFIBPPPAAA00&returnUrl=ovidweb.cgi%3fMain%2bSearch%2bPage%3d1%26S%3dOFEDFPNFDIDDOAGNNCHKFFIBPPPAAA00&directlink=http%3a%2f%2fovidsp.tx.ovid.com%2fovftpd%2fFPDDNCIBFGNDI00%2ffs047%2fovft%2flive%2fgv024%2f00010694%2f00010694-201001000-00003.pdf&filename=Influence+of+Pecan+Biochar+on+Physical+Properties+of+a+Norfolk+Loamy+Sand.&link_from=S.sh.22%7c1&pdf_key=FPDDNCIBFFGNDI00&pdf_index=/fs047/ovft/live/gv024/00010694/00010694-201001000-00003&D=ovft
- Bussewitz, C. (2021). Exxon posts \$2.7B quarterly profit after unprecedented year. *Star Tribune*. Retrieved from <https://www.startribune.com/exxon-posts-2-7b-quarterly-profit-after-unprecedented-year/600051989/>
- Bussewitz, C. (2021). Insider Q&A: Occidental wants to be Tesla of carbon capture. *AP*. Retrieved from <https://apnews.com/article/environment-climate-change-b2ac9969bf69154ff2a6cd45f33295ad>
- Bustamante, M., Robledo-Abad, C., Harper, R., Mbow, C., Ravindranat, N. H., Sperling, F., . . . Smith, P. (2014). Co-benefits, trade-offs, barriers and policies for greenhouse gas mitigation in the agriculture, forestry and other land use (AFOLU) sector. *Global Change Biology*, 20(10), 3270-3290. doi:doi:10.1111/gcb.12591
- Butenschön, M., Lovato, T., Masina, S., Caserini, S., & Grosso, M. (2021). Alkalinization Scenarios in the Mediterranean Sea for Efficient Removal of Atmospheric CO₂ and the Mitigation of Ocean Acidification. *Frontiers in Climate*, 3(14). doi:10.3389/

fclim.2021.614537

- Butler, R. (2009). How to Save the Amazon Rainforest. Retrieved from http://ecosystemmarketplace.com/pages/article.news.php?component_id=6484&component_version_id=9668&language_id=12
- Butnan, S., Deenik, J. L., Toomsan, B., Antal, M. J., & Vityakon, P. (2015). Biochar characteristics and application rates affecting corn growth and properties of soils contrasting in texture and mineralogy. *Geoderma*, 237-238, 105 - 116. doi:10.1016/j.geoderma.2014.08.010
- Butphu, S., et al. (2015). Impact of biochar application on upland rice production, N use efficiency and greenhouse gas emissions in a rotation system with sugarcane. *Food Security Center*. Retrieved from https://fsc.uni-hohenheim.de/fileadmin/einrichtungen/fsc/FSC_Brief_No.27.pdf
- Butphu, S., et al. (2015). Impact of Biochar Application on Upland Rice Production, N Use Efficiency and Greenhouse Gas Emissions in a Rotation System with Sugarcane. In.
- Button, M., & Weber, K. P. (2013). *Microbial community metabolic profiles in phytoextraction plots and activated carbon/biochar-amended soils contaminated with polychlorinated biphenyls*. Paper presented at the CONFERENCE PAPER. http://www.researchgate.net/profile/Mark_Button2/publication/278407564_Microbial_community_metabolic_profiles_in_phytoextraction_plots_and_activated_carbonbiochar-amended_soils_contaminated_with_polychlorinated_biphenyls/links/55805d3008ae47061e5f2fa7.pdf
- Buylova, A., Fridahl, M., Nasiritousi, N., & Reischl, G. (2021). Cancel (Out) Emissions? The Envisaged Role of Carbon Dioxide Removal Technologies in Long-Term National Climate Strategies. *Frontiers in Climate*, 3(63). doi:10.3389/fclim.2021.675499
- Buyun, W., Cuiping, L., & Hui, L. (2013). Bioleaching of heavy metal from woody biochar using Acidithiobacillus ferrooxidans and activation for adsorption. *Bioresource Technology*, 146, 803-806. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/23978608>
- Buyx, A., & Tait, J. (2011). Ethical Framework for Biofuels. *Science*, 332(6029), 540-541. Retrieved from <http://science.sciencemag.org/content/332/6029/540.full>
- Byrd, J., & Cooperman, E. S. (2018). Investors and stranded asset risk: evidence from shareholder responses to carbon capture and sequestration (CCS) events. *Journal of Sustainable Finance & Investment*, 8(2), 185-202. doi:10.1080/20430795.2017.1418063
- C2G. (2019). *Evidence Brief: Governing Marine Carbon Dioxide Removal and Solar Radiation Modification*. Retrieved from https://www.c2g2.net/wp-content/uploads/c2g_evidencebrief_marine.pdf
- C2G. (2019). *Governing Marine Carbon Dioxide Removal*. Retrieved from https://www.c2g2.net/wp-content/uploads/c2g_policybrief_marine-CDR.pdf
- C2G. (2019). *Policy Brief: Governing Emerging Marine Climate Techniques*. Retrieved from <https://www.c2g2.net/project/policy-brief-governing-emerging-marine-climate-technologies/>
- C2G. (2019). *Policy Brief: Governing Marine Solar Radiation Management*. Retrieved from <https://www.c2g2.net/project/policy-brief-governing-marine-solar-radiation-management/>
- C2G. (2020). Are we going to be at the table when climate-altering approaches are considered? An Interview with Ambassador Elizabeth Thompson (Barbados). Retrieved from <https://www.c2g2.net/c2gtalk-ambassador-liz-thompson/>
- C2G. (2021). *Evidence Brief: Carbon Dioxide Removal and its Governance*. Retrieved from <https://www.c2g2.net/project/evidence-brief-carbon-dioxide-removal-and-its-governance/>
- Cabral, R. P., Bui, M., & Mac Dowell, N. (2019). A synergistic approach for the simultaneous decarbonisation of power and industry via bioenergy with carbon capture and storage (BECCS). *International Journal of Greenhouse Gas Control*, 87, 221-237. doi:<https://doi.org/10.1016/j.ijggc.2019.07.011>

doi.org/10.1016/j.ijggc.2019.05.020

- Cabral, R. P., & Mac Dowell, N. (2017). A novel methodological approach for achieving £/MWh cost reduction of CO₂ capture and storage (CCS) processes. *Applied Energy*, 205, 529-539. doi:<https://doi.org/10.1016/j.apenergy.2017.08.003>
- Cabral, R. P., & Mac Dowell, N. (2020). Chapter 6 Oxy-fuel Combustion Capture Technology. In *Carbon Capture and Storage* (pp. 168-188): The Royal Society of Chemistry.
- Cabrera, A., et al. . (2014). Influence of biochar amendments on the sorption-desorption of aminocyclopyrachlor, bentazone and pyraclostrobin pesticides to an agricultural soil. *Science of The Total Environment*, 470-471, 438-443.
- Cabrera, F. (2015). *La química del suelo en el IRNAS: de la química coloidal a la química ambiental, pasando por Aznalcóllar (Soil chemistry in IRNAS: colloidal chemistry to environmental chemistry, through Aznalcóllar)*. Paper presented at the (IRNAS) Comunicaciones congresos - [Communications Conference]. <http://digital.csic.es/handle/10261/125268>
- Cadham, W., Van Dyk, J. S., Linoj Kumar, J. S., & Saddler, J. N. (2016). Chapter 7 - Challenges and Opportunities for the Conversion Technologies Used to Make Forest Bioenergy. In E. Thiffault, G. Berndes, M. Junginger, J. N. Saddler, & C. T. Smith (Eds.), *Mobilisation of Forest Bioenergy in the Boreal and Temperate Biomes* (pp. 102-126): Academic Press.
- Cage, P. (2018). Kelp and Carbon Sequestration: Exporting Terrestrial GHG Accounting to the Deep Sea. Retrieved from https://ghginstitute.org/2018/09/06/kelp-and-carbon-sequestration-exporting-terrestrial-ghg-accounting-to-the-deep-sea/?utm_source=September+newsletter+2018&utm_campaign=September+Newsletter+2018&utm_medium=email
- Cai, D., Wang, L., Zhang, G., Zhang, X., & Wu, Z. (2013). Controlling Pesticide Loss by Natural Porous Micro/Nano Composites: Straw Ash-Based Biochar and Biosilica. *Acs Applied Materials & Interfaces*, 5(18), 9212-9216. doi:10.1021/am402864r
- Cai, J., et al. . (2016). Effects and optimization of the use of biochar in anaerobic digestion of food wastes. *Waste Management & Resesarch*, 34(5), 409-416. Retrieved from <http://wmr.sagepub.com/content/early/2016/03/04/0734242X16634196.abstract>
- Cai, J., Wang, S., Zeng, R., Luo, M., & Tang, X. (2018). CaO-BASED CHEMICAL LOOPING GASIFICATION OF BIOMASS FOR THE PRODUCTION OF HYDROGEN-ENRICHED GAS AND CO₂ NEGATIVE EMISSIONS: A REVIEW. 19(3-4), 257-302. doi:10.1615/InterJenerCleanEnv.2018025185
- Cai, W.-J. (2010). Estuarine and Coastal Ocean Carbon Paradox: CO₂ Sinks or Sites of Terrestrial Carbon Incineration? *Annual Review of Marine Science*, 3(1), 123-145. doi:10.1146/annurev-marine-120709-142723
- Cai, Y., & Chang, S. X. (2015). Biochar Effects on Soil Fertility and Nutrient Cycling. In *Biochar: Production, Characterization, and Applications*.
- Cairns, E. (2020). Net Zero - Idle Promises? *The Corner*. Retrieved from [http://thecorner.eu/news-the-world/netzero-idle-promises/88714/Cairns](http://thecorner.eu/news-the-world/net-zero-idle-promises/88714/Cairns)
- Calbry-Muzyka, S., & Edwards, C. F. (2014). Thermodynamic Benchmarking of CO₂ Capture Systems: Exergy Analysis Methodology for Adsorption Processes. *Energy Procedia*, 63, 1-17. doi:<http://dx.doi.org/10.1016/j.egypro.2014.11.002>
- Caldecott, B., Lomax, G., & Workman, M. (2015). *Stranded Carbon Assets and Negative Emissions Technologies*. Retrieved from <http://www.interfacecutthefluff.com/wp-content/uploads/2012/09/Stranded-Carbon-Assets-and-NETs-06.02.15.pdf>
- Caldeira, K. (2000). Accelerating carbonate dissolution to sequester carbon dioxide in the ocean: Geochemical implications. *Geophysical Research Letters*, 27(2), 225-228. Retrieved from https://www.researchgate.net/profile/Ken_Caldeira/publication/248813518_Accelerating_carbonate_dissolution_to_sequester_carbon_dioxide_in_the_ocean:_Geochemical_imPLICATIONS/248813518_Accelerating_carbonate_dissolution_to_sequester_carbon_dioxide_in_the_ocean:_Geochemical_imPLICATIONS.pdf

- ocean_Geochemical_implications/links/53cee7ed0cf25dc05cfad6ba.pdf
- Caldeira, K., Herzog, H. J., & Wickett, M. E. (2001). *Predicting and evaluating the effectiveness of ocean carbon sequestration by direct injection*. Paper presented at the First National Conference on Carbon Sequestration. https://www.netl.doe.gov/publications/proceedings/01/carbon_seq/p48.pdf
- Calderón, F. J., Benjamin, J., & Vigil, M. F. (2015). A Comparison of Corn (*Zea mays L.*) Residue and Its Biochar on Soil C and Plant Growth. *Plos One*, 10(4), e0121006. doi:10.1371/journal.pone.0121006.t005
- Calfapietra, C., et al. (2010). Response and potential of agroforestry crops under global change. *Environmental Pollution*, 158, 1095-1104. Retrieved from <http://aspenface.mtu.edu/pdfs/Calfapietra%20Response.pdf>
- Caliandro, R., et al. (2014). Characterization of Plant Biomass Derived Black Carbon (Biochar) as Soil Amendment by X Ray Powder Diffraction. In.
- Callaway, D. (2021). Marine snow, a Croatian plan to store carbon on the bottom of the sea. *Callaway Climate Insights*. Retrieved from <https://www.callawayclimateinsights.com/p/zeus-marine-snow-a-croatian-plan?token=eyJ1c2VyX2lkIjoxMjg1NTM0LCJwb3N0X2lkIjoxMjYxNTI4NCwiXyl6ljBuQTEzliwiaWF0IjoxNjE1Mzk0MzMzLCJleHAiOjE2MTUzOTc5MzMslmlzcyl6lnB1Yi0zMzQyMyIsInN1YiI6InBvc3QtcmVhY3Rpb24ifQ.x4HkxAm4HDvGwnxfBpzgeUtTc3vj832uXAM3Vs4ec04>
- Callow, B., Falcon-Suarez, I., Ahmed, S., & Matter, J. (2018). Assessing the carbon sequestration potential of basalt using X-ray micro-CT and rock mechanics. *International Journal of Greenhouse Gas Control*, 70, 146-156. doi:<https://doi.org/10.1016/j.ijggc.2017.12.008>
- Calma, J. (2020). United makes plans to capture its planet-heating pollution. *The Verge*. Retrieved from <https://www.theverge.com/2020/12/11/22169798/united-airlines-emissions-carbon-capture-climate-change-goal>
- Calvelo Pereira, R., et al. . (2011). Contribution to characterisation of biochar to estimate the labile fraction of carbon. *Organic Geochemistry*, 42(11), 1331-1342. doi:10.1016/j.orggeochem.2011.09.002
- Calvelo Pereira, R., et al. . (2013). Detailed carbon chemistry in charcoals from pre-European Maori gardens of New Zealand as a tool for understanding biochar stability in soils. *European Journal of Soil Science*, 65(1), 83-95. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/ejss.12096/pdf>
- Calvelo Pereira, R., et al. (2015). Assessment of the surface chemistry of wood-derived biochars using wet chemistry, Fourier transform infrared spectroscopy and X-ray photoelectron spectroscopy. *Soil Research*, 53(7), 753. doi:10.1071/sr14194
- Calvelo Pereira, R., Hedley, M., Camps Arbestain, M., Wisnubroto, E., Green, S., Saggar, S., . . . Mahmud, A. F. (2015). Net changes of soil C stocks in two grassland soils 26 months after simulated pasture renovation including biochar addition. *GCB Bioenergy*, 8(3), 600-615. doi:10.1111/gcbb.12271
- Calvelo Pereira, R., Muetzel, S., Arbestain, M. C., Bishop, P., Hina, K., & Hedley, M. (2014). Assessment of the influence of biochar on rumen and silage fermentation: A laboratory-scale experiment. *Animal Feed Science and Technology*, 196, 22-31. doi:10.1016/j.anifeedsci.2014.06.019
- Calvin, K., et al. (2013). Trade-offs of different land and bioenergy policies on the path to achieving climate targets. *Climatic Change*, 123(3-4), 691-703. Retrieved from <https://link.springer.com/article/10.1007%2Fs10584-013-0897-y>
- Calvin, W. H. (2013). Emergency 20-year Drawdown of Excess CO₂ via Push-Pull Ocean Pumps. Retrieved from <https://co2foundation.org/mit-proposal/>
- Calvinho, K. U. D., et al. (2018). Selective CO₂ reduction to C3 and C4 oxyhydrocarbons on

- nickel phosphides at overpotentials as low as 10 mV. *Energy & Environmental Science*. Retrieved from <https://pubs.rsc.org/en/content/articlepdf/2018/ee/c8ee00936h>
- Calvinho, K. U. D., et al. (2018). Using Electrocatalysts To Find New Uses For Captured CO₂. *Science Trends*. Retrieved from <https://sciencetrends.com/using-electrocatalysts-to-find-new-uses-for-captured-co2/>
- Campbell, A., & Doswald, N. (2008). *The impacts of biofuel production on biodiversity: A review of the current literature*. Retrieved from <https://www.cbd.int/agriculture/2011-121/UNEP-WCMC3-sep11-en.pdf>
- Campbell, J. E., Lobell, D. B., Genova, R. C., & Field, C. B. (2008). The Global Potential of Bioenergy on Abandoned Agriculture Lands. *Environmental Science & Technology*, 42(15), 5791-5794. doi:10.1021/es800052w
- Campbell, J. L., Sessions, J., Smith, D., & Trippe, K. (2018). Potential carbon storage in biochar made from logging residue: Basic principles and Southern Oregon case studies. *Plos One*, 13(9), e0203475. doi:10.1371/journal.pone.0203475
- Campbell-Arvai, V., Hart, P. S., Raimi, K. T., & Wolske, K. S. (2017). The influence of learning about carbon dioxide removal (CDR) on support for mitigation policies. *Climatic Change*, 143(3-4), 321-336. doi:10.1007/s10584-017-2005-1
- Campe, J. (2015). Potential of Remineralization as a Global Movement. In T. Goreau, R. Larson, & J. Campe (Eds.), *Geotherapy: Innovative Methods of Soil Fertility Restoration, Carbon Sequestration, and Reversing CO₂ Increase* (pp. 82-110).
- Camps Arbestain, M., Saggar, S., & Leifeld, J. (2014). Environmental benefits and risks of biochar application to soil. *Agriculture, Ecosystems & Environment*, 191, 1-4. doi:<http://dx.doi.org/10.1016/j.agee.2014.04.014>
- Camps, M., & Tomlinson, T. (2015). The Use of Biochar in Composting. Retrieved from http://www.biochar-international.org/sites/default/files/Compost_biochar_IBI_final.pdf
- Camps-Arbestain, M., et al. (2015). A biochar classification system and associated test methods. In *Biochar for Environmental Management: Science and Technology and Implementation*.
- Canada, G. o. (2021). *Canadian budget Part 2: Creating Jobs and Growth Chapter 5: A Healthy Environment for a Healthy Economy* Retrieved from <https://www.budget.gc.ca/2021/report-rapport/p2-en.html?s=03#chap5>
- Canadell, J. G., & Raupach, M. R. (2008). Managing Forests for Climate Change Mitigation. *Science*, 320(5882), 1456-1457. Retrieved from <http://science.sciencemag.org/content/320/5882/1456.full>
- Canadell, J. G., & Schulze, E. D. (2013). Global potential of biospheric carbon management for climate mitigation. *Nature Communications*, 5(5282), 1-12. Retrieved from <http://www.nature.com/articles/ncomms6282>
- Cannavan, F. S., Nakamura, F. M., Germano, M. G., de Souza, L. F., & Tsai, S. M. (2016). Chapter 5 - Next-Generation Sequencing to Elucidate Biochar-Effectuated Microbial Community Dynamics. In *Biochar Application* (pp. 109-132): Elsevier.
- Cannell, M. G. R. (2003). Carbon sequestration and biomass energy offset: theoretical, potential and achievable capacities globally, in Europe and the UK. *Biomass and Bioenergy*, 24(2), 97-116. doi:[https://doi.org/10.1016/S0961-9534\(02\)00103-4](https://doi.org/10.1016/S0961-9534(02)00103-4)
- Canter, C. E., Blowers, P., Handler, R. M., & Shonnard, D. R. (2015). Implications of widespread algal biofuels production on macronutrient fertilizer supplies: Nutrient demand and evaluation of potential alternate nutrient sources. *Applied Energy*, 143, 71-80. doi:<http://dx.doi.org/10.1016/j.apenergy.2014.12.065>
- Cantrell, K. B., et al. (2011). Impact of Pyrolysis Temperature and Manure Source on Physicochemical Characteristics of Biochar. *Bioresource Technology*, 107, 419-428. doi:10.1016/j.biortech.2011.11.084

- Cantrell, K. B., & Martin II, J. (2011). Stochastic state-space temperature regulation of biochar production. Part II: Application to manure processing via pyrolysis. *Journal of the Science of Food and Agriculture*, 92(3), 490-495. doi:10.1002/jsfa.4617
- Cao, C. T. N., Farrell, C., Kristiansen, P. E., & Rayner, J. P. (2014). Biochar makes green roof substrates lighter and improves water supply to plants. *Ecological Engineering*, 71, 368 - 374. doi:10.1016/j.ecoleng.2014.06.017
- Cao, H., Xin, Y., & Yuan, Q. (2016). Prediction of biochar yield from cattle manure pyrolysis via least squares support vector machine intelligent approach. *Bioresource Technology*, 202, 158 - 164. doi:10.1016/j.biortech.2015.12.024
- Cao, L., & Caldeira, K. (2010). Atmospheric carbon dioxide removal: long-term consequences and commitment. *Environmental Research Letters*, 5, 1-6. Retrieved from <http://iopscience.iop.org/article/10.1088/1748-9326/5/2/024011/pdf>
- Cao, M., & Gu, Y. (2013). Oil recovery mechanisms and asphaltene precipitation phenomenon in immiscible and miscible CO₂ flooding processes. *Fuel*, 109, 157-166. doi:<https://doi.org/10.1016/j.fuel.2013.01.018>
- Cao, X., et al. (2011). Simultaneous Immobilization of Lead and Atrazine in Contaminated Soils Using Dairy-Manure Biochar. *Environmental Science & Technology*, 45(11), 4884–4889. doi:10.1021/es103752u
- Cao, X., & Harris, W. (2010). Properties of dairy-manure-derived biochar pertinent to its potential use in remediation. *Bioresource Technology*, 101(14), 5222-5228. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0960852410003639>
- Cao, X., Ma, L., Gao, B., & Harris, W. (2009). Dairy-manure derived biochar effectively sorbs lead and atrazine. *Environmental Science & Technology*, 43(9), 3285-3291. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/es803092k>
- Caporale, A. G., Pigna, M., Sommella, A., & Conte, P. (2014). Effect of pruning-derived biochar on heavy metals removal and water dynamics. *Biology and Fertility of Soils*, 50(8), 1211 - 1222. doi:10.1007/s00374-014-0960-5
- Capron, M. E. (2020). Restoring Pre-Industrial CO₂ Levels While Achieving Sustainable Development Goals. *Energies*, 13(18), 1-30. Retrieved from <https://www.mdpi.com/1996-1073/13/18/4972>
- Capron, M. E., Stewart, J. R., Rowe, R. K., & Ieee. (2013). Secure Seafloor Container CO₂ Storage. In *2013 Oceans - San Diego*. New York: Ieee.
- Caputo, A. C., et al. (2005). Economics of biomass energy utilization in combustion and gasification plants: effects of logistic variables. *Biomass & Bioenergy*, 28, 35-51. Retrieved from <https://eclass.duth.gr/modules/document/file.php/TMC233/%CE%92%CE%B9%CE%B2%CE%BB%CE%B9%CE%BF%CE%B3%CF%81%CE%B1%CF%86%CE%AF%CE%B1/Economics%20of%20biomass%20energy%20utilization%20in%20combustion%20and%20gasification%202005.pdf>
- Carbo, M. C., Smit, R., van der Drift, B., & Jansen, D. (2011). Bio Energy with CCS (BECCS): Large potential for BioSNG at low CO₂ avoidance cost. In J. Gale, C. Hendriks, & W. Turkenberg (Eds.), *10th International Conference on Greenhouse Gas Control Technologies* (Vol. 4, pp. 2950-2954). Amsterdam: Elsevier Science Bv.
- Carbo, M. C., Smit, R., van der Drift, B., & Jansen, D. (2011). Bio energy with CCS (BECCS): Large potential for BioSNG at low CO₂ avoidance cost. *Energy Procedia*, 4, 2950-2954. doi:<https://doi.org/10.1016/j.egypro.2011.02.203>
- Carbon180. (2018). *SUPPORTING INFORMATION. A Review of Global and U.S. Total Available Markets for Carbontech*. Retrieved from https://static1.squarespace.com/static/5b9362d89d5abb8c51d474f8/t/5bfc89204ae237fabfd8df98/1543276832241/MS_Supporting_Info.pdf

- CarbonDirect. (2020). 5 Principles for High-Quality Carbon Removal from Nature-Based Climate Solutions. Retrieved from <https://carbon-direct.com/wp-content/uploads/2021/03/CD-Principles-for-Carbon-Removal.docx.pdf>
- CarbonDirect. (2021). Voluntary Registry Offsets Database. Retrieved from https://carbon-direct.com/wp-content/uploads/2021/04/CD-Commentary-on-Voluntary-Registry-Offsets-Database_April-2021.pdf
- Cardelli, R., & Saviozzi, A. (2015). Il biochar e il suo potere fertilizzante: una opportunità per l'uso ecosostenibile del suolo agrario. (The biochar and its fertilising: an opportunity for the sustainable use of agricultural soil.). *FERTILIZZANTI (FERTILIZERS)*. Retrieved from <https://arpi.unipi.it/handle/11568/354267#.VZIYSfmqqkp>
- Cardinael, R., Chevallier, T., Barthès, B. G., Saby, N. P. A., Parent, T., Dupraz, C., . . . Chenu, C. (2015). Impact of alley cropping agroforestry on stocks, forms and spatial distribution of soil organic carbon — A case study in a Mediterranean context. *Geoderma*, 259-260, 288-299. doi:<https://doi.org/10.1016/j.geoderma.2015.06.015>
- Cardinael, R., Chevallier, T., Cambou, A., Béral, C., Barthès, B. G., Dupraz, C., . . . Chenu, C. (2017). Increased soil organic carbon stocks under agroforestry: A survey of six different sites in France. *Agriculture, Ecosystems & Environment*, 236, 243-255. doi:<https://doi.org/10.1016/j.agee.2016.12.011>
- Carey, D. E., McNamara, P. J., & Zitomer, D. H. (2015). Biochar from Pyrolysis of Biosolids for Nutrient Adsorption and Turfgrass Cultivation. *Water Environment Research*, 87(12), 2098 - 2106. doi:[10.2175/106143015x14362865227391](https://doi.org/10.2175/106143015x14362865227391)
- Carey, T. (2021). Green Sand Beaches Could Erase Carbon Emissions Retrieved from <https://www.freethink.com/articles/green-sand-carbon>
- Carey, T. (2021). Should We Genetically Engineer Carbon-Hungry Trees? Retrieved from <https://www.freethink.com/articles/genetically-modified-trees>
- (2020, April 12). *Climate: 60-Second Science* [Retrieved from https://www.scientificamerican.com/podcast/episode/to-fight-climate-change-grow-a-floating-forest-then-sink-it/?utm_source=newsletter&utm_medium=email&utm_campaign=earth&utm_content=link&utm_term=2021-04-14_top-stories&spMailingID=69968919&spUserID=MTA3NjMxNDQzMjQ4S0&spJobID=2102534225&spReportId=MjEwMjUzNDIyNQS2]
- Carlotti, F., Thibault-Botha, D., Nowaczyk, A., & Lefèvre, D. (2008). Zooplankton community structure, biomass and role in carbon fluxes during the second half of a phytoplankton bloom in the eastern sector of the Kerguelen Shelf (January–February 2005). *Deep Sea Research Part II: Topical Studies in Oceanography*, 55(5), 720-733. doi:<https://doi.org/10.1016/j.dsrr.2007.12.010>
- Carlson, J., Saxena, J., Basta, N., Hundal, L., Busalacchi, D., & Dick, R. P. (2015). Application of organic amendments to restore degraded soil: effects on soil microbial properties. *Environmental Monitoring and Assessment*, 187(3). doi:[10.1007/s10661-015-4293-0](https://doi.org/10.1007/s10661-015-4293-0)
- Carnaje, N. P., Amparado, R. F., Jr., & Malaluan, R. M. (2015). Amending acidic soil with bamboo (*Bambusa blumeana*) biochar: effect on mung bean (*Vigna radiata*) growth rate and yield. *AES Bioflux*, 7(1), 1-10. Retrieved from <http://www.cabdirect.org/abstracts/20153165022.html>
- Carne, N. (2019). Rebuilding forests is a cost-effective way to cut carbon. *Comos*. Retrieved from <https://cosmosmagazine.com/climate/rebuilding-forests-is-a-cost-effective-way-to-cut-carbon>
- Carneiro, M. L. N. M., Pradelle, F., Braga, S. L., Gomes, M. S. P., Martins, A. R. F. A., Turkovics, F., & Pradelle, R. N. C. (2017). Potential of biofuels from algae: Comparison with fossil fuels, ethanol and biodiesel in Europe and Brazil through life cycle assessment (LCA).

- Renewable and Sustainable Energy Reviews*, 73, 632-653. doi:<https://doi.org/10.1016/j.rser.2017.01.152>
- Carnes, M., et al. (2021). *E-fuels versus DACCS*. Retrieved from https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjOlu-Zj6_yAhXDVc0KHf_HCLYQFnoECAQQAQ&url=https%3A%2F%2Fwww.transportenvironment.org%2Fsites%2Fte%2Ffiles%2Fpublications%2F2021_08_TE_study_efuels_DA_CCS.pdf&usg=AOvVaw1ISqTfB9c6PZJLJT0NLwoa
- Carnice, P. A. B. (2014). Attenuation of Amoeba in Biochar-amended Clayey and Sandy Soil. *IAMURE International Journal of Ecology and Conservation*, 11(1). doi:10.7718/ijec.v11i1.807
- Caroko, W., Komarudin, H., Obidzinski, K., & Gunarso, P. (2011). *Policy and institutional frameworks for the development of palm oil-based biodiesel in Indonesia*. Retrieved from http://www.cifor.org/publications/pdf_files/WPapers/WP62Komarudin.pdf
- Carpenter, B., & Nair, A. (2013). *Effect of Biochar on Carrot Production*. Retrieved from http://lib.dr.iastate.edu/cgi/viewcontent.cgi?article=2999&context=farms_reports&sei-redir=1&referer=http%3A%2F%2Fscholar.google.com%2Fscholar_url%3Fhl%3Den%26q%3Dhttp%3A%2F%2Flib.dr.iastate.edu%2Fcgi%2Fviewcontent.cgi%253Farticle%253D2999%2526context%253
- Carpenter, C. (2017). First CO₂-Enhanced-Oil-Recovery Demonstration Project in Saudi Arabia. *Journal of Petroleum Science and Engineering*, 69(7). Retrieved from <https://www.spe.org/en/jpt/jpt-article-detail/?art=3121>
- Carpenter, C. (2017). Integrating Enhanced Oil Recovery and Carbon Capture and Storage: Farnsworth Field. *Journal of Petroleum Science and Engineering*, 69(7). Retrieved from <https://www.spe.org/en/jpt/jpt-article-detail/?art=3120>
- Carr, M., & Rathi, A. (2020). Britain Is Getting Ready to Scale Up Negative-Emissions Technology. *Bloomberg Green*. Retrieved from https://www.bloomberg.com/amp/news/articles/2020-02-07/britain-is-getting-ready-to-scale-up-negative-emissions-technology?__twitter_impression=true
- Carrera, G. V. S. M. (2017). Bio-inspired Systems for Carbon Dioxide Capture, Sequestration and Utilization. In Y. Yung (Ed.), (pp. 117-137).
- Carrier, M., et al. (2012). Production of char from vacuum pyrolysis of South-African sugar cane bagasse and its characterization as activated carbon and biochar. *Journal of Analytical and Applied Pyrolysis*, 96, 24-32. Retrieved from <http://www.sciencedirect.com/science/article/pii/S016523701200037X>
- Carrington, D. (2017). Mineral dust sprinkled in oceans could absorb vast amounts of carbon: study. *The Guardian*. Retrieved from <https://www.theguardian.com/environment/2013/jan/22/mineral-dust-oceans-carbon-geoengineering>
- Carrington, D. (2018). 'Silver bullet' to suck CO₂ from air and halt climate change ruled out. *The Guardian*. Retrieved from https://www.theguardian.com/environment/2018/feb/01/silver-bullet-to-suck-co2-from-air-and-halt-climate-change-ruled-out?CMP=share_btn_fb
- Carrington, D. (2021). Trials to suck carbon dioxide from the air to start across the UK. *The Guardian*. Retrieved from https://www.theguardian.com/environment/2021/may/24/trials-to-suck-carbon-dioxide-from-the-air-to-start-across-the-uk?CMP=Share_iOSApp_Other
- Carroll, R. (2019). The wrong kind of trees: Ireland's afforestation meets resistance. *The Guardian*. Retrieved from <https://www.theguardian.com/world/2019/jul/07/the-wrong-kind-of-trees-irelands-afforestation-meets-resistance>
- Carter, S., et al. (2013). The Impact of Biochar Application on Soil Properties and Plant Growth of Pot Grown Lettuce (*Lactuca sativa*) and Cabbage (*Brassica chinensis*). *Agronomy*, 3(2), 404-418. doi:doi:10.3390/agronomy3020404
- Carter, S., Arts, B., Giller, K. E., Golcher, C. S., Kok, K., de Koning, J., . . . Herold, M. (2018).

- Climate-smart land use requires local solutions, transdisciplinary research, policy coherence and transparency. *Carbon Management*, 9(3), 291-301. doi:10.1080/17583004.2018.1457907
- Carter, S., & Shackley, S. (2012). *Biochar: biomass energy, agriculture and carbon sequestration* (0263-3167). Retrieved from
- Cartier, K. M. S. (2020). Basalts Turn Carbon into Stone for Permanent Storage. Retrieved from <https://eos.org/articles/basalts-turn-carbon-into-stone-for-permanent-storage>
- Carton, W. (2019). "Fixing" Climate Change by Mortgaging the Future: Negative Emissions, Spatiotemporal Fixes, and the Political Economy of Delay. *Antipode*, 51(3), 750-769. doi:10.1111/anti.12532
- Carton, W., Asiyambi, A., Beck, S., Buck, H. J., & Lund, J. F. (2020). Negative emissions and the long history of carbon removal. *WIREs Climate Change*, 11(6), 1-25. doi:10.1002/wcc.671
- Carton, W., & Lund, F. J. (2020). Guest post: Learning from the contentious history of 'carbon removal'. *Carbon Brief*. Retrieved from <https://www.carbonbrief.org/guest-post-learning-from-the-contentious-history-of-carbon-removal>
- Carton, W., Lund, J. F., & Dooley, K. (2021). Undoing Equivalence: Rethinking Carbon Accounting for Just Carbon Removal. *Frontiers in Climate*, 3(30). doi:10.3389/fclim.2021.664130
- Carus, M., et al. (2020). *Renewable Carbon – Key to a Sustainable and Future-Oriented Chemical and Plastic Industry*. Retrieved from <https://renewable-carbon.eu/publications/download-confirmation-page/>?somdn_rrpage=somdn_rrpage&somdn_rrtddid=10246&somdn_rrdkey=MTAyNDY&somdn_rrskey=MTYxNjg1MzgzMg=&somdn_rrpkey=MjE1MA=&somdn_rrukey=MA=&somdn_rrtype=cmVkaXJlY3Q
- Carvalho, M. T. de M., et al. (2015). Growth of aerobic rice in the presence of biochar as soil amendment: short-term effects in a clayey Rhodic Ferralsol in the Brazilian savanna (Cerrado). *ALICE*. Retrieved from <http://www.alice.cnptia.embrapa.br/handle/doc/982760>
- Carvalho, M. T. d. M., et al. . (2014). Biochar increases plant available water in a sandy soil under an aerobic rice cropping system. *Solid Earth Discussions*, 6, 887–917. Retrieved from <http://www.solid-earth-discuss.net/6/887/2014/sed-6-887-2014.pdf>
- Carvalho, R. S., Lombardi, K. C., & Pinheiro, E. G. (2013, 2013//). *Physical Attributes of Soil Evaluated for 9 Months After Application of Biochar in Planting Eucalyptus benthamii*. Paper presented at the Functions of Natural Organic Matter in Changing Environment, Dordrecht.
- Carwardine, J., Hawkins, C., Polglase, P., Possingham, H. P., Reeson, A., Renwick, A. R., . . . Martin, T. G. (2015). Spatial Priorities for Restoring Biodiverse Carbon Forests. *BioScience*, 65(4), 372-382. doi:10.1093/biosci/biv008
- Case, S., McNamara, N., Reay, D. S., Chaplow, J., & Whitaker, J. (2014). *Soil properties and soil greenhouse gas emissions in biochar-amended bioenergy soils incubated under controlled laboratory conditions*. Retrieved from <http://nora.nerc.ac.uk/508167/>
- Case, S., McNamara, N., Reay, D. S., Stott, A., Grant, H., & Whitaker, J. (2015). Chemical analysis of nitrogen transformations in biochar amended soil. *NERC Open Research Archive*. Retrieved from <http://nora.nerc.ac.uk/508166/>
- Case, S. D. C., et al. (2012). The effect of biochar addition on N₂O and CO₂ emissions from a sandy loam soil – The role of soil aeration. *Soil Biology and Biochemistry*, 51, 125-134. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0038071712001277>
- Case, S. D. C. (2013). *Biochar amendment and greenhouse gas emissions from agricultural soils*. The University of Edinburgh, Retrieved from <https://www.era.lib.ed.ac.uk/handle/1842/8049>

- Case, S. D. C., et al. . (2013). Can biochar reduce soil greenhouse gas emissions from a Miscanthus bioenergy crop? *GCB Bioenergy*, 6(1), 76-89.
- Case, S. D. C., et al. (2015). Biochar suppresses N₂O emissions while maintaining N availability in a sandy loam soil. *Soil Biology and Biochemistry*, 81, 178 - 185. doi:10.1016/j.soilbio.2014.11.012
- Case, S. D. C., McNamara, N. P., Reay, D. S., & Whitaker, J. (2012). The effect of biochar addition on N₂O and CO₂ emissions from a sandy loam soil – The role of soil aeration. *Soil Biology and Biochemistry*, 51, 125-134. doi:<https://doi.org/10.1016/j.soilbio.2012.03.017>
- Case, S. D. C., McNamara, N. P., Reay, D. S., & Whitaker, J. (2014). Can biochar reduce soil greenhouse gas emissions from a Miscanthus bioenergy crop? *GCB Bioenergy*, 6(1), 76-89. doi:10.1111/gcbb.12052
- Case, S. D. C., Uno, H., Nakajima, Y., Stoumann Jensen, L., & Akiyama, H. (2017). Bamboo biochar does not affect paddy soil N₂O emissions or source following slurry or mineral fertilizer amendment—a 15N tracer study. *Journal of Plant Nutrition and Soil Science*, 181(1), 90-98. doi:10.1002/jpln.201600477
- Caserini, S., Barreto, B., Lanfredi, C., Cappello, G., Ross Morrey, D., & Grosso, M. (2019). Affordable CO₂ negative emission through hydrogen from biomass, ocean liming, and CO₂ storage. *Mitigation and Adaptation Strategies for Global Change*, 24, 1231-1246. doi:10.1007/s11027-018-9835-7
- Caserini, S., Dolci, G., Azzellino, A., Lanfredi, C., Rigamonti, L., Barreto, B., & Grosso, M. (2017). Evaluation of a new technology for carbon dioxide submarine storage in glass capsules. *International Journal of Greenhouse Gas Control*, 60, 140-155. doi:<https://doi.org/10.1016/j.ijggc.2017.03.007>
- Caserini, S., Pagano, D., Campo, F., Abbà, A., De Marco, S., Righi, D., . . . Grosso, M. (2021). Potential of Maritime Transport for Ocean Liming and Atmospheric CO₂ Removal. *Frontiers in Climate*, 3(22). doi:10.3389/fclim.2021.575900
- Cassar, N., et al. (2007). The Southern Ocean Biological Response to Aeolian Iron Deposition. *Science*, 317(5841), 1067-1070. Retrieved from <http://science.sciencemag.org/content/317/5841/1067>
- Casselman, A. (2007). Special Report: Inspired by Ancient Amazonians, a Plan to Convert Trash into Environmental Treasure. Retrieved from <http://www.scientificamerican.com/article.cfm?id=pyrolysis-terra-preta-could-eliminate-garbage-generate-oil-carbon-sequestration>
- Casson, A. (2000). *The Hesitant boom: Indonesia's oil palm sub-sector in an era of economic crisis and political change*. Bogor, Indonesia: CIFOR.
- Casson, A. (2002). The political economy of Indonesia's oil palm sub-sector. In C. J. P. Colfer & I. Resosudarmo (Eds.), *Which way forward? People, forests and policy making in Indonesia* (pp. 221-245): Resources for the Future.
- Casson, A., Tacconi, L., & Deddy, K. (2007). *Strategies to Reduce Carbon Emissions from the oil palm sector in Indonesia*. Retrieved from
- Castaldi, S., et al. (2011). Impact of biochar application to a Mediterranean wheat crop on soil microbial activity and greenhouse gas fluxes. *Chemosphere*, 85(9), 1464-1471. doi:10.1016/j.chemosphere.2011.08.031
- Castañeda-Gómez, L., Walker, J. K. M., Powell, J. R., Ellsworth, D. S., Pendall, E., & Carrillo, Y. (2020). Impacts of elevated carbon dioxide on carbon gains and losses from soil and associated microbes in a Eucalyptus woodland. *Soil Biology and Biochemistry*, 107734. doi:<https://doi.org/10.1016/j.soilbio.2020.107734>
- Castellini, M., et al. (2014). *Effect of Biochar Application on Hydraulic Conductivity of a Clay Soil*. Paper presented at the 2nd Mediterranean Biochar Symposium. <http://>

- www.researchgate.net/publication/259868036_EFFECT_OF_BIOCHAR_APPLICATION_ON_HYDRAULIC_CONDUCTIVITY_OF_A_CLAY_SOIL
- Castellini, M., et al. (2015). Impact of biochar addition on the physical and hydraulic properties of a clay soil. *Soil and Tillage Research*, 154, 1-13. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0167198715001336>
- Castracani, C., Maienza, A., Grasso, D. A., Genesio, L., Malcevski, A., Miglietta, F., . . . Mori, A. (2015). Biochar–macrofauna interplay: Searching for new bioindicators. *Science of The Total Environment*, 536, 449 - 456. doi:10.1016/j.scitotenv.2015.07.019
- Castree, N. (2020). The Discourse and Reality of Carbon Dioxide Removal: Toward the Responsible Use of Metaphors in Post-normal Times. *Frontiers in Climate*, 2(33). doi:10.3389/fclim.2020.614014
- Caswell, M. (2021). Virgin Atlantic signs MoU with CO2 Direct Air Capture service. *Business Traveller*. Retrieved from <https://www.businesstraveller.com/business-travel/2021/08/22/virgin-atlantic-signs-mou-with-co2-direct-air-capture-service/>
- Catanoso, J. (2017). Carbon sequestration role of savanna soils key to climate goals. *Mongabay*. Retrieved from <https://news.mongabay.com/2017/11/carbon-sequestration-role-of-savanna-soils-key-to-climate-goals/>
- Catanoso, J. (2017). Consensus grows: climate-smart agriculture key to Paris Agreement goals. *Mongabay*. Retrieved from <https://news.mongabay.com/2017/12/consensus-grows-climate-smart-agriculture-key-to-paris-agreement-goals/>
- Catanoso, J. (2019). COP25: Wood pellet CEO claims biomass carbon neutrality, despite science. *Mongabay*. Retrieved from <https://news.mongabay.com/2019/12/cop25-wood-pellet-ceo-claims-biomass-carbon-neutrality-despite-science/>
- Catanoso, J. (2020). Success of Microsoft's 'moonshot' climate pledge hinges on forest conservation. *Mongabay*. Retrieved from <https://news.mongabay.com/2020/02/success-of-microsofts-moonshot-climate-pledge-hinges-on-forest-conservation/>
- Catto, M. L., Tait, C. D., Van Thorre, D. M., & Scalzo, P. J. (2015).
- Cava Barrocal, D. (2016). Cork waste for metal removal from aqueous solution. In. Cavagna, A. J., Fripiat, F., Dehairs, F., Wolf-Gladrow, D., Cisewski, B., Savoye, N., . . . Cardinal, D. (2011). Silicon uptake and supply during a Southern Ocean iron fertilization experiment (EIFEX) tracked by Si isotopes. *Limnology and Oceanography*, 56(1), 147-160. doi:10.4319/lo.2011.56.1.0147
- Cavender-Bares, K. K. (1999). Differential response of equatorial Pacific phytoplankton to iron fertilization. *Limnology & Oceanography*, 44(2), 237-246. Retrieved from https://s3.amazonaws.com/academia.edu.documents/46414166/Differential_response_of_equatorial_Paci20160612-6047-18o8gb9.pdf?AWSAccessKeyId=AKIAIWOWYYGZ2Y53UL3A&Expires=1543621550&Signature=vWA EeSwEBWXgaezyl1w1kWoMigw%3D&response-content-disposition=inline%3B%20filename%3DDifferential_response_of_equatorial_Paci.pdf
- Cayuela, M. L., et al. (2010). Bioenergy by-products as soil amendments? Implications for carbon sequestration and greenhouse gas emissions. *GCB Bioenergy*, 2, 201–213. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/j.1757-1707.2010.01055.x/abstract>
- Cayuela, M. L., et al. (2013). Biochar and denitrification in soils: when, how much and why does biochar reduce N₂O emissions? *Scientific Reports*, 3. Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3635057/>
- Cayuela, M. L., Jeffery, S., & Van Zwieten, L. (2015). The molar H:Corg ratio of biochar is a key factor in mitigating N₂O emissions from soil. *Agriculture, Ecosystems & Environment*, 202, 135 - 138. doi:10.1016/j.agee.2014.12.015

- Cayuela, M. L., van Zwieten, L., Singh, B. P., Jeffery, S., Roig, A., & Sánchez-Monedero, M. A. (2014). Biochar's role in mitigating soil nitrous oxide emissions: A review and meta-analysis. *Agriculture, Ecosystems & Environment*, 191, 5-16. doi:<http://dx.doi.org/10.1016/j.agee.2013.10.009>
- Cebrucean, D., Cebrucean, V., & Ionel, I. (2014). CO₂ Capture and Storage from Fossil Fuel Power Plants. *Energy Procedia*, 63, 18-26. doi:<https://doi.org/10.1016/j.egypro.2014.11.003>
- Cebrucean, D., Cebrucean, V., & Ionel, I. (2017). Modeling and Evaluation of a Coal Power Plant with Biomass Cofiring and CO₂ Capture. In Y. Yung (Ed.), (pp. 31-55).
- Cely, P., et al. (2014). Agronomic properties of biochars from different manure wastes. *Journal of Analytical and Applied Pyrolysis*, 111, 173-182. doi:[10.1016/j.jaat.2014.11.014](https://doi.org/10.1016/j.jaat.2014.11.014)
- Cely, P., et al. (2014). Factors driving carbon mineralization priming effect in a soil amended with different types of biochar. *Solid Earth Discussions*, 6, 849–868. Retrieved from <http://www.solid-earth-discuss.net/6/849/2014/sed-6-849-2014.pdf>
- Cely, P., Tarquis, A. M., Paz-Ferreiro, J., Méndez, A., & Gascó, G. (2014). Factors driving the carbon mineralization priming effect in a sandy loam soil amended with different types of biochar. *Solid Earth*, 5(1), 585-594. doi:[10.5194/se-5-585-2014](https://doi.org/10.5194/se-5-585-2014)
- Centi, G., & Perathoner, S. (2010). Towards solar fuels from water and CO₂. *ChemSusChem*, 3, 195.
- Centofanti, T., McConnell, L. L., Chaney, R. L., Beyer, N. W., Andrade, N. A., Hapeman, C. J., . . . Jackson, D. (2016). Organic amendments for risk mitigation of organochlorine pesticide residues in old orchard soils. *Environmental Pollution*, 210, 182 - 191. doi:[10.1016/j.envpol.2015.11.039](https://doi.org/10.1016/j.envpol.2015.11.039)
- (2021). *Greenhouse Gas Removal: Technological and hybrid solutions* [Retrieved from <https://www.youtube.com/watch?v=FM3KfRO7uEU>]
- Centres, H. A. o. G. R. (2012). Sinking carbon: Researchers publish results of an iron fertilization experiment. *ScienceDaily*. Retrieved from www.sciencedaily.com/releases/2012/07/120718131744.htm
- Cerasoli, S., Yin, J., & Porporato, A. (2021). Cloud cooling effects of afforestation and reforestation at midlatitudes. *Proceedings of the National Academy of Sciences*, 118(33), e2026241118. doi:[10.1073/pnas.2026241118](https://doi.org/10.1073/pnas.2026241118)
- CERES. (2021). *The Role of Natural Climate Solutions in Corporate Climate Commitments: A Brief for Investors*. Retrieved from <https://www.ceres.org/resources/reports/role-natural-climate-solutions-corporate-climate-commitments-brief-investors>
- Cerdeira, W. V., Rittl, T. F., Novotny, E. H., & Pereira Netto, A. D. (2015). High throughput pyrogenic carbon (biochar) characterisation and quantification by liquid chromatography. *Analytical Methods*, 19, 8190-8196. doi:[10.1039/c5ay01242b](https://doi.org/10.1039/c5ay01242b)
- César Izaurralde, R., Rosenberg, N. J., & Lal, R. (2001). Mitigation of climatic change by soil carbon sequestration: Issues of science, monitoring, and degraded lands. In *Advances in Agronomy* (Vol. 70, pp. 1-75): Academic Press.
- Ch'ng, H. Y., et al. . (2014). Improving Phosphorus Availability in an Acid Soil Using Organic Amendments Produced from Agroindustrial Wastes. *The Scientific World Journal*, 1-6. Retrieved from <http://www.hindawi.com/journals/tswj/2014/506356/>
- Chabangu, N., Beck, B., Hicks, N., Viljoen, J., Davids, S., & Cloete, M. (2014). The investigation of CO₂ storage potential in the Algoa basin in South Africa. *Energy Procedia*, 63, 2800-2810. doi:<https://doi.org/10.1016/j.egypro.2014.11.302>
- Chabbi, A., Lehmann, J., Ciais, P., Loescher, H. W., Cotrufo, M. F., Don, A., . . . Rumpel, C. (2017). Aligning agriculture and climate policy. *Nature Climate Change*, 7, 307. doi:[10.1038/nclimate3286](https://doi.org/10.1038/nclimate3286)
- Chadwick, R., Wu, P., Good, P., & Andrews, T. (2012). Asymmetries in tropical rainfall and

- circulation patterns in idealised CO₂ removal experiments. *Climate Dynamics*, 40, 295-316. Retrieved from <http://link.springer.com/article/10.1007%2Fs00382-012-1287-2>
- Chaganti, V. N., & Crohn, D. M. (2015). Evaluating the relative contribution of physiochemical and biological factors in ameliorating a saline–sodic soil amended with composts and biochar and leached with reclaimed water. *Geoderma*, 259-260, 45 - 55. doi:10.1016/j.geoderma.2015.05.005
- Chaganti, V. N., Crohn, D. M., & Šimůnek, J. (2015). Leaching and reclamation of a biochar and compost amended saline–sodic soil with moderate SAR reclaimed water. *Agricultural Water Management*, 158, 255 - 265. doi:10.1016/j.agwat.2015.05.016
- Chagas, T., et al. (2020). *A close look at the quality of REDD+ carbon credits*. Retrieved from <https://www.climatefocus.com/publications/close-look-quality-redd-carbon-credits>
- Chai, Y., et al. . (2011). Effectiveness of Activated Carbon and Biochar in Reducing the Availability of Polychlorinated Dibenzo-p-dioxins/dibenzofurans in Soils. *Environmental Science and Technology*, 46(2), 1035-1043. doi:10.1021/es2029697
- Chaikittisilp, W., Kim, H.-J., & Jones, C. W. (2011). Mesoporous Alumina-Supported Amines as Potential Steam-Stable Adsorbents for Capturing CO₂ from Simulated Flue Gas and Ambient Air. *Energy & Fuels*, 25(11), 5528-5537. doi:10.1021/ef201224v
- Chaisongkroh, N., Chungsiriporn, J., & Bunyakan, C. (2012). Modeling and optimization of ammonia treatment by acidic biochar using response surface methodology. *Songklanakarin J. Sci. Technol*, 34(4), 423-432. Retrieved from <http://rdo.psu.ac.th/sjstweb/journal/34-4/0353-3345-34-4-423-432.pdf>
- Chaiwong, K., Kiatsiroat, T., Vorayos, N., & ThararaxC, h. (2012). Biochar production from freshwater algae by slow pyrolysis. *Maejo international Journal of Science and Technology*, 6(2), 186-195. Retrieved from <http://www.mijst.mju.ac.th/vol6/186-195.pdf>
- Chakravorty, U., Hubert, M.-H., & Nøstbakken, L. (2009). Fuel Versus Food. *Annual Review of Resource Economics*, 1, 645-663. Retrieved from <http://www.annualreviews.org/doi/abs/10.1146/annurev.resource.050708.144200>
- Chalker-Scott, L. (2014). FS147E- Biochar: A Gardener's Primer (Home Garden Series). *Research Exchange: Washington State University*. Retrieved from <http://research.wsulibs.wsu.edu/xmlui/handle/2376/5148>
- Chalmin, A. (2019). Artificial Upwelling: current efforts and anticipated impacts of intermingling the ocean. Retrieved from <http://www.geoengineeringmonitor.org/2019/10/artificial-upwelling-current-efforts-and-anticipated-impacts-of-intermingling-the-ocean/>
- Chalmin, A. (2019). Direct Air Capture: Recent Developments and Future Plans. *Geoengineering Monitor*. Retrieved from <http://www.geoengineeringmonitor.org/2019/07/direct-air-capture-recent-developments-and-future-plans/>
- Chalmin, A. (2020). Carbon Capture and Storage (CCS) in the North Sea Region. *Geoengineering Monitor*. Retrieved from <https://www.geoengineeringmonitor.org/2020/12/carbon-capture-and-storage-ccs-in-the-north-sea-region-quarterly-4-part-1/>
- Chalmin, A. (2020). CO₂ – based synthetic fuels: new R&D cooperation's and production sites. *Geoengineering Monitor*. Retrieved from <http://www.geoengineeringmonitor.org/2020/08/new-in-geoengineering-marine-geoengineering-ccus-hubs-and-synfuels/>
- Chalmin, A. (2020). Marine geoengineering: further offshore trials announced. *Geoengineering Monitor*. Retrieved from <http://www.geoengineeringmonitor.org/2020/08/new-in-geoengineering-marine-geoengineering-ccus-hubs-and-synfuels/>
- Chalmin, A. (2020). Support programmes for CCS & CCUS hubs. *Geoengineering Monitor*. Retrieved from <http://www.geoengineeringmonitor.org/2020/08/new-in-geoengineering-marine-geoengineering-ccus-hubs-and-synfuels/>
- Chambers, A., Lal, R., & Paustian, K. (2016). Soil carbon sequestration potential of US croplands and grasslands: Implementing the 4 per Thousand Initiative. *Journal of Soil*

- and Water Conservation*, 71(3), 68A-74A. Retrieved from <http://www.jswconline.org/content/71/3/68A.full.pdf+html>
- Chami, R., et al. (2019). Nature's Solution to Climate Change. *F&D*, 56(4), 34-38. Retrieved from <https://www.imf.org/external/pubs/ft/fandd/2019/12/natures-solution-to-climate-change-chami.htm>
- (2019, September 19). *The Value of Whales and Every Other Breath* [Retrieved from <https://www.imf.org/en/News/Podcasts/All-Podcasts/2019/09/15/value-of-whales>
- Chan, H. X. M., Yap, E. H., & Ho, J. H. (2013). Overview of Axial Compression Technology for Direct Capture of CO₂. In Q. J. Gao (Ed.), *Advances in Material Science, Mechanical Engineering and Manufacturing* (Vol. 744, pp. 392-395).
- Chan, K. (2019). Squamish company doubling its capacity to suck up carbon dioxide from the air.
- Chan, K. Y., et al. (2007). Agronomic Values of Greenwaste Biochar as a Soil Amendment. *Australian Journal of Soil Research*, 45(8), 629–634. Retrieved from <http://www.publish.csiro.au/paper/SR07109.htm>
- Chan, K. Y., et al. (2008). Using Poultry Litter Biochars as Soil Amendments. *Australian Journal of Soil Research*, 46(5), 437 -444. Retrieved from <http://www.publish.csiro.au/paper/SR08036.htm>
- Chan, K. Y., & Xu, Z. H. (2009). Biochar - Nutrient Properties and their Enhancement. In J. Lehmann & S. Joseph (Eds.), *Biochar for Environmental Management: Science and Technology* (pp. 67-84). London, UK: Earthscan.
- Chandler, D. (2019). MIT engineers develop a new way to remove carbon dioxide from air. *MIT News*. Retrieved from <http://news.mit.edu/2019/mit-engineers-develop-new-way-remove-carbon-dioxide-air-1025>
- Chandler, D. (2021). CCUS “gasphilic” process could double the conversion rate of CO₂ into useful fuels. Retrieved from <https://energypost.eu/ccus-gasphilic-process-could-double-the-conversion-rate-of-co2-into-useful-fuels/>
- Chandrasekaran, S. R., Murali, D., Marley, K. A., Larson, R. A., Doll, K. M., Moser, B. R., . . . Sharma, B. K. (2016). Antioxidants from Slow Pyrolysis Bio-Oil of Birch Wood: Application for Biodiesel and Biobased Lubricants. *ACS Sustainable Chemistry & Engineering*, 4(3), 1414-1421. doi:10.1021/acssuschemeng.5b01302
- Chang, C. D., & Silvestri, A. J. (1977). The conversion of methanol and other O-compounds to hydrocarbons over zeolite catalysts. *Journal of Catalysis*, 47(2), 249-259. Retrieved from <https://www.sciencedirect.com/science/article/abs/pii/0021951777901725>
- Chang, E. E., Pan, S.-Y., Chen, Y.-H., Chu, H.-W., Wang, C.-F., & Chiang, P.-C. (2011). CO₂ sequestration by carbonation of steelmaking slags in an autoclave reactor. *Journal of Hazardous Materials*, 195, 107-114. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0304389411010119>
- Chang, F. M., Wang, Q. B., & Wang, K. J. (2014). Application of Bio-Char from Sewage Sludge Pyrolysis. *Advanced Materials Research*, 1065-1069, 3239 - 3245. doi:10.4028/www.scientific.net/AMR.1065-1069.3239
- Chang, J., Luo, X., Li, M., Wang, Z., & Zheng, H. (2016). Short-term Influences of Peanut-Biochar Addition on Abandoned Orchard Soil Organic N Mineralization in North China. *Polish Journal of Environmental Studies*, 25(1), 67 - 72. doi:10.15244/pjoes/60245
- Chang, M.-S., & Kung, C.-C. (2014). Nonparametric Forecasting for Biochar Utilization in Poyang Lake Eco-Economic Zone in China. *Sustainability*, 6(1), 267-282. Retrieved from <http://www.mdpi.com/2071-1050/6/1/267>
- Chang, M.-S., Wang, W., & Kung, C.-C. (2015). Economic effects of the biochar application on rice supply in Taiwan. *Agricultural Economics (Zemědělská ekonomika)*, 61(6), 284 - 295. doi:10.17221/147/2014-agricecon

- Chang, Y.-M., Tsai, W.-T., & Li, M.-H. (2014). Chemical characterization of char derived from slow pyrolysis of microalgal residue. *Journal of Analytical and Applied Pyrolysis*, 111, 88-93. doi:10.1016/j.jaap.2014.12.004
- Change, M. R. I. o. G. C. a. C. (2019). *Betting on negative emissions*. Retrieved from <https://www.mcc-berlin.net/en/research/policy-briefs/negativeemissions.html>
- Change, M. R. I. o. G. C. a. C. (2021). Cleaning up emissions from our atmosphere. *Policy Brief: Carbon Removal*. Retrieved from <https://www.mcc-berlin.net/en/research/policy-briefs/carbon-removal.html>
- Changxun, G., Zhiyong, P., & Shu'ang, P. (2016). Effect of biochar on the growth of *Poncirus trifoliata* (L.) Raf. seedlings in Gannan acidic red soil. *Soil Science and Plant Nutrition*, 62(2), 194 - 200. doi:10.1080/00380768.2016.1150789
- Chappell, M. A., Mao, J.-D., Ford, L. S., & Price, C. L. (2011). Biochars and soil humic surfactancy.
- Charan, S. N., et al. (2010). Evaluation of Deccan continental flood basalts. *Journal of Applied Geochemistry*, 12(4), 560-565.
- Charette, M. A., & Buesseler, K. O. (2000). Does iron fertilization lead to rapid carbon export in the Southern Ocean? *Geochemistry, Geophysics, Geosystems*, 1(10), 1-7. doi:10.1029/2000GC000069
- Charette, M. A., Gille, S. T., Sanders, R. J., & Zhou, M. (2013). Southern Ocean natural iron fertilization. *Deep Sea Research Part II: Topical Studies in Oceanography*, 90, 1-3. doi:<http://dx.doi.org/10.1016/j.dsrr.2013.04.014>
- Charlson, R. J., et al. (1987). Ocean phytoplankton, atmospheric sulphur, cloud albedo and climate. *Nature*, 326, 655-661. Retrieved from https://www.researchgate.net/profile/Meinrat_Andreae/publication/216027231_Oceanic_Phtoplankton_Atmospheric_Sulfur_Cloud_Albedo_and_Climate/links/58ac5db8a6fdcccd53db8b78f/Oceanic-Phtoplankton-Atmospheric-Sulfur-Cloud-Albedo-and-Climate.pdf
- Charlton, E. (2020). What's the difference between carbon negative and carbon neutral? *World Economic Forum*. Retrieved from <https://www.weforum.org/agenda/2020/03/what-s-the-difference-between-carbon-negative-and-carbon-neutral/>
- Charnley, S., Diaz, D., & Gosnell, H. (2010). Mitigating Climate Change Through Small-Scale Forestry in the USA: Opportunities and Challenges. *Small-scale Forestry*, 9(4), 445-462. doi:10.1007/s11842-010-9135-x
- Chasan, E. (2019). We Already Have the World's Most Efficient Carbon Capture Technology. *Bloomberg Businessweek*. Retrieved from <https://www.bloomberg.com/news/features/2019-08-02/we-already-have-the-world-s-most-efficient-carbon-capture-technology>
- Chathurika, J. A. S., Indraratne, S. P., Dandeniya, W. S., & Kumaragamage, D. (2015). Beneficial Management Practices on Growth and Yield Parameters of Maize (*Zea mays*) and Soil Fertility Improvement. *Tropical Agricultural Research*, 27(1), 59-74. Retrieved from http://www.pgia.ac.lk/files/Annual_congress/journal/v27/Journal-No%201/Papers/6-38%20J.A.S%20Chathurika%20paper%20modified%202015.12.08.pdf
- Chathurika, J. A. S., Indraratne, S. P., Dandeniya, W. S., & Kumaragamage, D. (2015). *Use of Amendments to Improve Soil Properties in Achieving High Yield for Maize (*Zea Maize*)*. Paper presented at the Proceedings Peradeniya University International Research Sessions. <http://www.dlib.pdn.ac.lk/archive/handle/1/4973>
- Chatrchyan, A. M., Erlebacher, R. C., Chaopricha, N. T., Chan, J., Tobin, D., & Allred, S. B. (2017). United States agricultural stakeholder views and decisions on climate change. *Wiley Interdisciplinary Reviews: Climate Change*, 8(5), e469. doi:doi:10.1002/wcc.469
- Chatterjee, S., & Huang, K.-W. (2020). Unrealistic energy and materials requirement for direct air capture in deep mitigation pathways. *Nature Communications*, 11(1), 3287.

doi:10.1038/s41467-020-17203-7

- Chaturvedi, K. R., Sinha, A. S. K., Nair, V. C., & Sharma, T. (2021). Enhanced carbon dioxide sequestration by direct injection of flue gas doped with hydrogen into hydrate reservoir: Possibility of natural gas production. *Energy*, 227, 120521. doi:<https://doi.org/10.1016/j.energy.2021.120521>
- Chaudhry, R., Fischlein, M., Larson, J., Hall, D. M., Peterson, T. R., Wilson, E. J., & Stephens, J. C. (2013). Policy Stakeholders' Perceptions of Carbon Capture and Storage: A Comparison of Four U.S. States. *Journal of Cleaner Production*, 52, 21-32. doi:<https://doi.org/10.1016/j.jclepro.2013.02.002>
- Chaudhry, U. K., et al. (2016). Integration of biochar and chemical fertilizer to enhance quality of soil and wheat crop (*Triticum aestivum L.*). *Journal of Biodiversity and Environmental Sciences*, 9(1), 348-358. doi:[10.7287/peerj.preprints.1631v1](https://doi.org/10.7287/peerj.preprints.1631v1)
- Chauhan, B. S. (2013). Rice Husk Biochar Influences Seedling Emergence of Junglerice (*Echinochloa colona*) and Herbicide Efficacy. *American Journal of Plant Sciences*, 4(7), 1345-1350. Retrieved from http://file.scirp.org/Html/3-2600847_33969.htm
- Chaukura, N., Murimba, E. C., & Gwenzi, W. (2016). Synthesis, characterisation and methyl orange adsorption capacity of ferric oxide–biochar nano-composites derived from pulp and paper sludge. *Applied Water Science*, 1-12. doi:[10.1007/s13201-016-0392-5](https://doi.org/10.1007/s13201-016-0392-5)
- Chausson, A., Turner, B., Seddon, D., Chabaneix, N., Girardin, C. A. J., Kapos, V., . . . Seddon, N. (2020). Mapping the effectiveness of nature-based solutions for climate change adaptation. *Global Change Biology*, 26(11), 6134-6155. doi:<https://doi.org/10.1111/gcb.15310>
- Chavez, A. E. (2018). Using Renewable Portfolio Standards to Accelerate Development of Negative Emissions Technologies *William & Mary Environmental Law & Policy Review*, 43, 1-51.
- Chavez, A. E. (2020). Lessons from Renewable Energy Diffusion for Carbon Removal Development. *Fordam Environmental Law Review*, 46, 46-108.
- Chazdon, R., & Brancalion, P. (2019). Restoring forests as a means to many ends. *Science*, 365(6448), 24-25. doi:[10.1126/science.aax9539](https://doi.org/10.1126/science.aax9539)
- Chazdon, R. L., Broadbent, E. N., Rozendaal, D. M. A., Bongers, F., Zambrano, A. M. A., Aide, T. M., . . . Poorter, L. (2016). Carbon sequestration potential of second-growth forest regeneration in the Latin American tropics. 2(5), e1501639. doi:[10.1126/sciadv.1501639](https://doi.org/10.1126/sciadv.1501639) %J Science Advances
- Cheah, P. M., Hanif, A. H. M., Abd. Wahid, S., & Abdullah, L. C. (2014). Short-term field decomposition of pineapple stump biochar in tropical peat soil. *Malaysian Journal of Soil Science*, 17, 85-97. Retrieved from <http://psasir.upm.edu.my/29441/>
- Cheah, S., Malone, S. C., & Feik, C. J. (2014). Speciation of Sulfur in Biochar Produced from Pyrolysis and Gasification of Oak and Corn Stover. *Environmental Science & Technology*, 48(15), 8474-8480. doi:[10.1021/es500073r](https://doi.org/10.1021/es500073r)
- Cheah, W. Y., Ling, T. C., Juan, J. C., Lee, D.-J., Chang, J.-S., & Show, P. L. (2016). Biorefineries of carbon dioxide: From carbon capture and storage (CCS) to bioenergies production. *Bioresource Technology*, 215, 346-356. doi:<https://doi.org/10.1016/j.biortech.2016.04.019>
- Cheah, W. Y., Show, P. L., Chang, J.-S., Ling, T. C., & Juan, J. C. (2015). Biosequestration of atmospheric CO₂ and flue gas-containing CO₂ by microalgae. *Bioresource Technology*, 184, 190-201. doi:<https://doi.org/10.1016/j.biortech.2014.11.026>
- Chege, P. K. (2014). *Effects of biochar and inorganic fertilizer on french beans (Phaseolus vulgaris L.) performance in nitisols*. Kenyatta University, Retrieved from <http://ir-library.ku.ac.ke/handle/123456789/10813>
- Cheiky, M. (2016).

- Chen, A., Fu, B., Lu, Y., Duan, Z., & Hu, W. (2015). Exogenous organic materials applied to paddy field improving soil microbial biomass C, N and dissolved organic C, N. *Transactions of the Chinese Society of Agricultural Engineering*, 31(21), 160-167. Retrieved from <http://www.ingentaconnect.com/content/tcsae/tcsae/2015/00000031/00000021/art00021>
- Chen, B., & Chen, Z. (2009). Sorption of naphthalene and 1-naphthol by biochars of orange peels with different pyrolytic temperatures. *Chemosphere*, 76(1), 127-133. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0045653509001659>
- Chen, B., Chen, Z., & Lv, S. (2011). A novel magnetic biochar efficiently sorbs organic pollutants and phosphate. *Bioresource Technology*, 102, 716–723.
- Chen, B., & Yuan, M. (2010). Enhanced sorption of polycyclic aromatic hydrocarbons by soil amended with biochar. *Journal of Soils and Sediments*, 11(1), 62-71. Retrieved from <https://link.springer.com/article/10.1007/s11368-010-0266-7>
- Chen, B., Yuan, M., & Qian, L. (2012). Enhanced bioremediation of PAH-contaminated soil by immobilized bacteria with plant residue and biochar as carriers. *Journal of Soils and Sediments*, 12(9), 1350-1359. doi:10.1007/s11368-012-0554-5
- Chen, B. L., Zhou, D. D., & Zhu, L. Z. (2008). Transitional adsorption and partition of nonpolar and polar aromatic contaminants by biochars of pine needles with different pyrolytic temperatures. *Environmental Science & Technology*, 42(14), 5137-5143. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/es8002684>
- Chen, C., Khosrowabadi Kotyk, J. F., & Sheehan, S. W. (2018). Progress toward Commercial Application of Electrochemical Carbon Dioxide Reduction. *Chem*, 4(11), 2571-2586. doi:<https://doi.org/10.1016/j.chempr.2018.08.019>
- Chen, C., & Tavoni, M. (2013). Direct air capture of CO₂ and climate stabilization: A model based assessment. *Climatic Change*, 118(1), 59-72. doi:10.1007/s10584-013-0714-7
- Chen, C., Zhou, W., & Lin, D. (2015). Sorption characteristics of N-nitrosodimethylamine onto biochar from aqueous solution. *Bioresource Technology*, 179, 359 - 366. doi:10.1016/j.biortech.2014.12.059
- Chen, C.-P., Cheng, C.-H., Huang, Y.-H., Chen, C.-T., Lai, C.-M., Menyailo, O. V., . . . Yang, Y.-W. (2014). Converting leguminous green manure into biochar: changes in chemical composition and C and N mineralization. *Geoderma*, 232-234, 581 - 588. doi:10.1016/j.geoderma.2014.06.021
- Chen, C. R., , et al. (2012). Impacts of greenwaste biochar on ammonia volatilisation from bauxite processing residue sand. *Plant and Soil*, 367(1), 301-312. doi:10.1007/s11104-012-1468-0
- Chen, D., Liu, D., Zhang, H., Chen, Y., & Li, Q. (2015). Bamboo pyrolysis using TG-FTIR and a lab-scale reactor: Analysis of pyrolysis behavior, product properties, and carbon and energy yields. *Fuel*, 148, 79 - 86. doi:10.1016/j.fuel.2015.01.092
- Chen, D., Zheng, Z., Fu, K., Zeng, Z., Wang, J., & Lu, M. (2015). Torrefaction of biomass stalk and its effect on the yield and quality of pyrolysis products. *Fuel*, 159, 27 - 32. doi:10.1016/j.fuel.2015.06.078
- Chen, D., Zhou, J., & Zhang, Q. (2014). Effects of heating rate on slow pyrolysis behavior, kinetic parameters and productsproperties of moso bamboo. *Bioresource Technology*, 169, 313-319. doi:10.1016/j.biortech.2014.07.009
- Chen, G., et al. (2014). Co-pyrolysis of corn cob and waste cooking oil in a fixed bed. *Bioresource Technology*, 166, 500-507. doi:10.1016/j.biortech.2014.05.090
- Chen, G., et al. . (2015). Biomass to hydrogen-rich syngas via catalytic steam gasification of bio-oil/biochar slurry. *Bioresource Technology*, 198, 108 - 114. doi:10.1016/j.biortech.2015.09.009
- Chen, G.-j., Peng, C.-y., Fang, J.-y., Dong, Y.-y., Zhu, X.-h., & Cai, H.-m. (2015). Biosorption of

- fluoride from drinking water using spent mushroom compost biochar coated with aluminum hydroxide. *Desalination and Water Treatment*, 57(26), 1 - 11. doi:10.1080/19443994.2015.1049959
- Chen, H., Lin, G., Wang, X., Chen, Y., Liu, Y., Yang, H., & Shao, J. (2016). Physicochemical properties and hygroscopicity of tobacco stem biochar pyrolyzed at different temperatures. *Journal of Renewable and Sustainable Energy*, 8(1), 1-14. doi:10.1063/1.4942784
- Chen, H., Zhai, Y., Xu, B., Xiang, B., Zhu, L., Qiu, L., . . . Zeng, G. (2014). Characterization of bio-oil and biochar from high-temperature pyrolysis of sewage sludge. *Environmental Technology*, 1 - 9. doi:10.1080/09593330.2014.952343
- Chen, H., Zhou, D., Luo, G., Zhang, S., & Chen, J. (2015). Macroalgae for biofuels production: Progress and perspectives. *Renewable and Sustainable Energy Reviews*, 47(Supplement C), 427-437. doi:<https://doi.org/10.1016/j.rser.2015.03.086>
- Chen, J., et al. (2013). Biochar soil amendment increased bacterial but decreased fungal gene abundance with shifts in community structure in a slightly acid rice paddy from Southwest China. *Applied Soil Ecology*, 71, 33-44. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0929139313001340>
- Chen, J., et al. (2013). The Research of Biochar Adsorption on Soil. *Applied Mechanics and Materials*, 448 - 453, 417-424. Retrieved from <https://www.scientific.net/AMM.448-453.417>
- Chen, J., et al. (2015). Consistent increase in abundance and diversity but variable change in community composition of bacteria in topsoil of rice paddy under short term biochar treatment across three sites from South China. *Applied Soil Ecology*, 91, 68 - 79. doi:10.1016/j.apsoil.2015.02.012
- Chen, J., Kim, H., & Yoo, G. (2015). Effects of Biochar Addition on CO₂ and N₂O Emissions following Fertilizer Application to a Cultivated Grassland Soil. *Plos One*, 10(5), 1-17. Retrieved from <http://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0126841&type=printable>
- Chen, J., Li, S., Liang, C., Xu, Q., Li, Y., Qin, H., & Fuhrmann, J. J. (2017). Response of microbial community structure and function to short-term biochar amendment in an intensively managed bamboo (*Phyllostachys praecox*) plantation soil: Effect of particle size and addition rate. *Science of The Total Environment*, 574(Supplement C), 24-33. doi:<https://doi.org/10.1016/j.scitotenv.2016.08.190>
- Chen, J., Liu, C., & Wu, S.-b. (2015). Catalytic Fast Pyrolysis of Alcell Lignin with Nano-NiO. *BioResources*, 11(1), 663-673. Retrieved from http://152.1.0.246/index.php/BioRes/article/view/BioRes_11_1_663_Chen_Catalytic_Fast_Pyrolysis_Alcell
- Chen, J., Zhu, D., & Sun, C. (2007). Effect of Heavy Metals on the Sorption of Hydrophobic Organic Compounds to Wood Charcoal. *Environmental Science & Technology*, 41(7), 2536-2541. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/es062113%2B>
- Chen, L., et al. (2015). Study on pyrolysis behaviors of non-woody lignins with TG-FTIR and Py-GC/MS. *Journal of Analytical and Applied Pyrolysis*, 113, 499-507. doi:10.1016/j.jaap.2015.03.018
- Chen, L., Zheng, H., & Wang, Z. (2013). The Formation of Toxic Compounds during Biochar Production. *Periodical Applied Mechanics and Materials*, 361 - 363, 867-870. Retrieved from <https://www.scientific.net/AMM.361-363.867>
- Chen, L.-F., He, Z.-B., Zhu, X., Du, J., Yang, J.-J., & Li, J. (2016). Impacts of afforestation on plant diversity, soil properties, and soil organic carbon storage in a semi-arid grassland of northwestern China. *CATENA*, 147, 300-307. doi:<https://doi.org/10.1016/j.catena.2016.07.009>
- Chen, P., et al. (2015). Optimization and determination of polycyclic aromatic hydrocarbons in

- biochar-based fertilizers. *Journal of Separation Science*, 38(5), 864-870. doi:10.1002/jssc.201400834
- Chen, P., et al. (2015). Optimization of ultrasonic-assisted extraction for determination of polycyclic aromatic hydrocarbons in biochar-based fertilizer by gas chromatography–mass spectrometry. *Analytical and Bioanalytical Chemistry*, 407(20), 6149 - 6157. doi:10.1007/s00216-015-8790-3
- Chen, R., et al. . (2010). Preparation and rheology of biochar, lignite char and coal slurry fuels. *Fuel*, 90(4), 1689-1695. doi:10.1016/j.fuel.2010.10.041
- Chen, R., Senbayram, M., Blagodatsky, S., Myachina, O., Dittert, K., Lin, X., . . . Kuzyakov, Y. (2014). Soil C and N availability determine the priming effect: microbial N mining and stoichiometric decomposition theories. 20(7), 2356-2367. doi:doi:10.1111/gcb.12475
- Chen, S., Frear, C., Garcia-Perez, M., & et al. (2016). *Advancing Organics Management in Washington State: The Waste to Fuels Technology Partnership*. Retrieved from <https://fortress.wa.gov/ecy/publications/SummaryPages/1607008.html>
- Chen, T., et al. (2014). Influence of pyrolysis temperature on characteristics and heavy metal adsorptive performance of biochar derived from municipal sewage sludge. *Bioresource Technology*, 164, 47-54. doi:10.1016/j.biortech.2014.04.048
- Chen, T., et al. (2015). Adsorption behavior comparison of trivalent and hexavalent chromium on biochar derived from municipal sludge. *Bioresource Technology*, 190, 388 - 394. doi:10.1016/j.biortech.2015.04.115
- Chen, T., et al. (2015). Adsorption of cadmium by biochar derived from municipal sewage sludge: Impact factors and adsorption mechanism. *Chemosphere*, 134, 286 - 293. doi:10.1016/j.chemosphere.2015.04.052
- Chen, T., Cai, J., & Liu, R. (2015). Combustion Kinetics of Biochar from Fast Pyrolysis of Pine Sawdust: Isoconversional Analysis. *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects*, 37(20), 2208 - 2217. doi:10.1080/15567036.2012.684737
- Chen, T., Liu, R., & Scott, N. R. (2016). Characterization of energy carriers obtained from the pyrolysis of white ash, switchgrass and corn stover — Biochar, syngas and bio-oil. *Fuel Processing Technology*, 142, 124 - 134. doi:10.1016/j.fuproc.2015.09.034
- Chen, W., et al. (2015). Impacts of Biochar Input on Mineralization of Native Soil Organic Carbon. *Europe PubMed Central*, 36(6), 2300-2305. Retrieved from <http://europepmc.org/abstract/med/26387339>
- Chen, W., et al. . (2015). *Terra Preta Technologies*. Oregon State University, Retrieved from http://delaneyforestry.com/wp-content/uploads/2015/05/OSU_MBA_thesis_2014_Terra_Preta_Technologies.pdf
- Chen, W. M., et al. (2015). Characterization of Biochar Obtained by Co-Pyrolysis of Waste Newspaper with High-Density Polyethylene. *BioResources*, 10(4), 8253-8267. Retrieved from http://152.1.0.246/index.php/BioRes/article/view/BioRes_10_4_8253_Chen_Biochar_Co_Pyrolysis_Waste_Newspaper
- Chen, X.-W., Wong, J. T.-F., Ng, C. W.-W., & Wong, M.-H. (2015). Feasibility of biochar application on a landfill final cover—a review on balancing ecology and shallow slope stability. *Environmental Science and Pollution Research*, 23(8), 7111-7125. doi:10.1007/s11356-015-5520-5
- Chen, Y., Li, C. W., & Kanan, M. W. (2012). Aqueous CO₂ Reduction at Very Low Overpotential on Oxide-Derived Au Nanoparticles. *Journal of the American Chemical Society*, 134(49), 19969-19972. doi:10.1021/ja309317u
- Chen, Y., Shinogi, Y., & Taira, M. (2010). Influence of biochar use on sugarcane growth, soil parameters, and groundwater quality. *Australian Journal of Soil Research*, 48(7), 526-530. Retrieved from https://www.researchgate.net/publication/262956934_Influence_of_biochar_use_on_sugarcane_growth_soil_parameters_and_gr

oundwater_quality

- Chen, Y., Yang, H., Wang, X., Chen, W., & Chen, H. (2016). Biomass Pyrolytic Polygeneration System: Adaptability for Different Feedstocks. *Energy & Fuels*, 30(1), 414-422. doi:10.1021/acs.energyfuels.5b02332
- Chen, Z., et al. . (2015). Quantification of Chemical States, Dissociation Constants and Contents of Oxygen-containing Groups on the Surface of Biochars Produced at Different Temperatures. *Environmental Science & Technology*, 49(1), 309 - 317. doi:10.1021/es5043468
- Chen, Z., Wang, Y., Xia, D., Jiang, X., Fu, D., Shen, L., . . . Li, Q. B. (2016). Enhanced bioreduction of iron and arsenic in sediment by biochar amendment influencing microbial community composition and dissolved organic matter content and composition. *Journal of Hazardous Materials*, 311, 20 - 29. doi:10.1016/j.jhazmat.2016.02.069
- Chen, Z.-A., Li, Q., Liu, L.-C., Zhang, X., Kuang, L., Jia, L., & Liu, G. (2015). A large national survey of public perceptions of CCS technology in China. *Applied Energy*, 158, 366-377. doi:<https://doi.org/10.1016/j.apenergy.2015.08.046>
- Chen. De, e. a. (2016). Low uptake affinity cultivars with biochar to tackle Cd-tainted rice - A field study over four rice seasons in Hunan, China. *The Science of the Total Environment*, 541, 1489-1498. doi:10.1016/j.scitotenv.2015.10.052
- Chen. Wei-Yin, e. a. (2013). Photochemical and Acoustic Interactions of Biochar with CO₂ and H₂O: Applications in Power Generation and CO₂ Capture. *AIChE Journal*, 60(3), 1054-1065. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/aic.14347/abstract>
- Cheng, C.-H., et al. (2016). Reduction of Diuron Efficacy with Biochar Amendments. *International Journal of Environmental Science and Development*, 7(7), 480 - 485. doi:10.18178/ijesd.2016.7.7.824
- Cheng, C. H., et al. (2006). Oxidation of Black Carbon by Biotic and Abiotic Processes. *Organic Geochemistry*, 37(11), 1477-1488. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0146638006001665>
- Cheng, C. H., et al. (2008). Stability of Black Carbon in Soils Across a Climatic Gradient. *Journal of Geophysical Research (Biogeosciences)*, 113(G2), 1-10.
- Cheng, C. H., & Lehmann, J. (2009). Ageing of black carbon along a temperature gradient. *Chemosphere*, 75, 1021-1027. Retrieved from <http://www.css.cornell.edu/faculty/lehmann/publ/Chemosphere%2075,%20201021-1027,%20202009%20Cheng.pdf>
- Cheng, C. H., Lehmann, J., & Engelhard, M. (2008). Natural Oxidation of Black Carbon in Soils: Changes in Molecular Form and Surface Charge Along a Climosequence. *Geochimica Et Cosmochimica Acta*, 72, 1598-1610.
- Cheng, F., Small, A. A., & Colosi, L. M. (2021). The leveled cost of negative CO₂ emissions from thermochemical conversion of biomass coupled with carbon capture and storage. *Energy Conversion and Management*, 237, 114115. doi:<https://doi.org/10.1016/j.enconman.2021.114115>
- Cheng, H., et al. . (2012). The Deviation on the Determination of Microbial Biomass Carbon in Biochar Amendment Soil with Fumigation Extraction. *Journal of Agricultural Science*, 4(9), 251-255. Retrieved from <http://www.ccsenet.org/journal/index.php/jas/article/view/17830/12945>
- Cheng, H. N., Wartelle, L. H., Klasson, K. T., & Edwards, J. C. (2010). Solid state NMR and ESR studies of activated carbons produced from pecan shells. *Carbon*, 48, 2455-2469.
- Cheng, J., Yang, Z., Ye, Q., Zhou, J., & Cen, K. (2016). Improving CO₂ fixation with microalgae by bubble breakage in raceway ponds with up-down chute baffles. *Bioresource Technology*, 201, 174-181. doi:<https://doi.org/10.1016/j.biortech.2015.11.044>
- Cheng, J.-H., Lu, C.-H., Chen, C.-Y., Ouyang, S., Liao, C.-W., & Shieh, C.-L. (2013). A Study on Regulatory Requirements of CCS Technology Development in Taiwan. *Energy Procedia*,

- 37, 7702-7708. doi:<https://doi.org/10.1016/j.egypro.2013.06.716>
- Cheng, L., Zhang, L., Chen, H., & Gao, C. (2006). Carbon dioxide removal from air by microalgae cultured in a membrane-photobioreactor. *Separation and Purification Technology*, 50(3), 324-329. doi:<https://doi.org/10.1016/j.seppur.2005.12.006>
- Cheng, Q., Huang, Q., Khan, S., Liu, Y., Liao, Z., Li, G., & Ok, Y. S. (2016). Adsorption of Cd by peanut husks and peanut husk biochar from aqueous solutions. *Ecological Engineering*, 87, 240 - 245. doi:[10.1016/j.ecoleng.2015.11.045](https://doi.org/10.1016/j.ecoleng.2015.11.045)
- Cheng, S., Wei, L., Zhao, X., Kadis, E., & Julson, J. (2016). Conversion of Prairie Cordgrass to Hydrocarbon Biofuel over Co-Mo/HZSM-5 Using a Two-Stage Reactor System. *Energy Technology*, 4(6), 706-713. doi:[10.1002/ente.201500452](https://doi.org/10.1002/ente.201500452)
- Cheng, S.-Y., Liu, Y.-Z., & Qi, G.-S. (2020). Experimental study of CO₂ capture enhanced by coal fly ash-synthesized NH₂-MCM-41 coupled with high gravity technology. *Chemical Engineering Journal*, 400, 125946. doi:<https://doi.org/10.1016/j.cej.2020.125946>
- Cheng, X. Y., Lan, Y., Liu, Z. Q., Liu, X. L., Yang, X., Meng, J., & Chen, W. F. (2015). Effect of Biochar on NH₃ Volatilization and N₂O Emission in Brown Soil. *Advanced Materials Research*, 1092-1093, 1229 - 1233. doi:[10.4028/www.scientific.net/AMR.1092-1093.1229](https://doi.org/10.4028/www.scientific.net/AMR.1092-1093.1229)
- Cheng, Y., et al. (2012). Wheat straw and its biochar have contrasting effects on inorganic N retention and N₂O production in a cultivated Black Chernozem. *Biology and Fertility of Soils*, 48(8), 941-946. doi:[10.1007/s00374-012-0687-0](https://doi.org/10.1007/s00374-012-0687-0)
- Cherepy, N. J., Cooper, J. F., Krueger, R., Fiet, K. J., & Jankowski, A. F. (2005). Direct conversion of carbon fuels in a molten carbonate fuel cell. *Journal of the Electrochemical Society*, 152, A80-A87.
- Cherubini, F., et al. (2009). Energy- and greenhouse gas-based LCA of biofuel and bioenergy systems: Key issues, ranges and recommendations. *Resources Conservation and Recycling*, 53(8), 434-437. Retrieved from https://www.researchgate.net/publication/235704280_Energy-_and_greenhouse_gas-based_LCA_of_biofuel_and_bioenergy_systems_Key_issues_ranges_and_recommendations
- Cherubini, F., & Strømman, A. H. (2011). Life cycle assessment of bioenergy systems: State of the art and future challenges. *Bioresource Technology*, 102(2), 437-451. doi:<https://doi.org/10.1016/j.biortech.2010.08.010>
- Chevalier, G., Diamond, L. W., & Leu, W. (2010). Potential for deep geological sequestration of CO₂ in Switzerland: a first appraisal. *Swiss Journal of Geosciences*, 103(3), 427-455. doi:[10.1007/s00015-010-0030-4](https://doi.org/10.1007/s00015-010-0030-4)
- Chew, K. W., Yap, J. Y., Show, P. L., Suan, N. H., Juan, J. C., Ling, T. C., . . . Chang, J.-S. (2017). Microalgae biorefinery: High value products perspectives. *Bioresource Technology*, 229, 53-62. doi:<https://doi.org/10.1016/j.biortech.2017.01.006>
- Chhatre, A., & Agrawal, A. (2009). Trade-offs and synergies between carbon storage and livelihood benefits from forest commons. *Proceedings of the National Academy of Sciences*, 106(42), 17667-17670. doi:[10.1073/pnas.0905308106](https://doi.org/10.1073/pnas.0905308106)
- Chi, T., Zuo, J., & Liu, F. (2017). Performance and mechanism for cadmium and lead adsorption from water and soil by corn straw biochar. *Frontiers of Environmental Science & Engineering*, 11(2), 15. doi:[10.1007/s11783-017-0921-y](https://doi.org/10.1007/s11783-017-0921-y)
- Chia, C. H., Downie, A., & MUNROE, P. (2015). Characteristics of biochar: physical and structural properties. In *Biochar for Environmental Management: Science and Technology and Implementation*.
- Chia, C. H., Gong, B., Joseph, S. D., Marjo, C. E., MUNROE, P., & Rich, A. M. (2012). Imaging of Mineral-Enriched Biochar by FTIR, Raman and SEM-EDX. *Vibrational Spectroscopy*.
- Chia, C. H., Munroe, P., Joseph, S., & Lin, Y. (2010). Microscopic characterisation of synthetic

- Terra Preta. *Australian Journal of Soil Research*, 48, 593-605.
- Chia, C. H., Singh, B. P., Joseph, S., Gruber, E. R., & MUNROE, P. (2014). Characterization of an Enriched Biochar. *Journal of Analytical and Applied Pyrolysis*, 108, 26-34. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0165237014001272>
- Chia, S. R., Ong, H. C., Chew, K. W., Show, P. L., Phang, S.-M., Ling, T. C., . . . Chang, J.-S. (2017). Sustainable approaches for algae utilisation in bioenergy production. *Renewable Energy*. doi:<https://doi.org/10.1016/j.renene.2017.04.001>
- Chiang, P.-C., & Pan, S.-Y. (2017). Analytical Methods for Carbonation Material. In *Carbon Dioxide Mineralization and Utilization* (pp. 97-126). Singapore: Springer Singapore.
- Chiang, P.-C., & Pan, S.-Y. (2017). Applications of Carbonation Technologies. In *Carbon Dioxide Mineralization and Utilization* (pp. 159-185). Singapore: Springer Singapore.
- Chiang, P.-C., & Pan, S.-Y. (2017). Carbonation Mechanisms and Modelling. In *Carbon Dioxide Mineralization and Utilization* (pp. 127-158). Singapore: Springer Singapore.
- Chiang, P.-C., & Pan, S.-Y. (2017). CO₂ Mineralization and Utilization via Accelerated Carbonation. In *Carbon Dioxide Mineralization and Utilization* (pp. 35-49). Singapore: Springer Singapore.
- Chiang, P.-C., & Pan, S.-Y. (2017). Environmental Impact Assessment and CCS Guidance. In *Carbon Dioxide Mineralization and Utilization* (pp. 51-68). Singapore: Springer Singapore.
- Chiang, P.-C., & Pan, S.-Y. (2017). Natural Silicate and Carbonate Minerals (Ores). In *Carbon Dioxide Mineralization and Utilization* (pp. 221-232). Singapore: Springer Singapore.
- Chiang, P.-C., & Pan, S.-Y. (2017). Post-combustion Carbon Capture, Storage, and Utilization. In *Carbon Dioxide Mineralization and Utilization* (pp. 9-34). Singapore: Springer Singapore.
- Chiang, P.-C., & Pan, S.-Y. (2017). Principles of Accelerated Carbonation Reaction. In *Carbon Dioxide Mineralization and Utilization* (pp. 71-96). Singapore: Springer Singapore.
- Chiang, P.-C., & Pan, S.-Y. (2017). System Analysis. In *Carbon Dioxide Mineralization and Utilization* (pp. 187-217). Singapore: Springer Singapore.
- Chiang, P.-C., & Pan, S.-Y. (2017). Utilization of Carbonation Products. In *Carbon Dioxide Mineralization and Utilization* (pp. 277-292). Singapore: Springer Singapore.
- Chiappini, D., Andreassi, L., Jannelli, E., & Ubertini, S. (2011). Ultralow Carbon Dioxide Emission MCFC Based Power Plant. *Journal of Fuel Cell Science and Technology*, 8(3), 031003-031003-031008. doi:[10.1115/1.4002903](https://doi.org/10.1115/1.4002903)
- Chien, C. C., Huang, Y. P., Sah, J. G., Cheng, W. J., Chang, R. Y., & Lu, Y. S. (2011). Application of Rice Husk Charcoal on Remediation of Acid Soil. *Journal Materials Science Forum*, 685, 169-180. doi:[10.4028/www.scientific.net/MSF.685.169](https://doi.org/10.4028/www.scientific.net/MSF.685.169)
- Chintala, R., et al. (2013). Phosphorus Sorption and Availability from Biochars and Soil/Biochar Mixtures. *CLEAN – Soil, Air, Water*, 42(5), 626-633. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/clen.201300089/abstract>
- Chintala, R., et al. . (2014). Denitrification kinetics in biomass- and biochar-amended soils of different landscape positions. *Environmental Science and Pollution Research*, 22(7), 5152-5163. doi:[10.1007/s11356-014-3762-2](https://doi.org/10.1007/s11356-014-3762-2)
- Chintala, R., et al. (2014). Molecular Characterization of Biochars and Their Influence on Microbiological Properties of Soil. *Journal of Hazardous Materials*, 279, 244-256. doi:[10.1016/j.jhazmat.2014.06.074](https://doi.org/10.1016/j.jhazmat.2014.06.074)
- Chiodo, V., Zafarana, G., Maisano, S., Freni, S., & Urbani, F. (2016). Pyrolysis of different biomass: Direct comparison among Posidonia Oceanica, Lacustrine Alga and White-Pine. *Fuel*, 164, 220 - 227. doi:[10.1016/j.fuel.2015.09.093](https://doi.org/10.1016/j.fuel.2015.09.093)
- Chirakkara, R. A., & Reddy, K. R. (2015). Biomass and chemical amendments for enhanced phytoremediation of mixed contaminated soils. *Ecological Engineering*, 85, 265 - 274.

- doi:10.1016/j.ecoleng.2015.09.029
- Chisholm, S. W., Falkowski, P. G., & Cullen, J. J. (2001). Dis-Crediting Ocean Fertilization. *Science*, 294(5541), 309-310. doi:10.1126/science.1065349
- Chisti, Y. (2007). Biodiesel from microalgae. *Biotechnology Advances*, 25(3), 294-306. doi:<https://doi.org/10.1016/j.biotechadv.2007.02.001>
- Chisti, Y. (2008). Biodiesel from microalgae beats bioethanol. *Trends in Biotechnology*, 26(3), 126-131. doi:<https://doi.org/10.1016/j.tibtech.2007.12.002>
- Chisti, Y. (2013). Constraints to commercialization of algal fuels. *Journal of Biotechnology*, 167(3), 201-214. doi:<https://doi.org/10.1016/j.jbiotec.2013.07.020>
- Chiu, S.-Y., Kao, C.-Y., Chen, C.-H., Kuan, T.-C., Ong, S.-C., & Lin, C.-S. (2008). Reduction of CO₂ by a high-density culture of Chlorella sp. in a semicontinuous photobioreactor. *Bioresource Technology*, 99(9), 3389-3396. doi:<https://doi.org/10.1016/j.biortech.2007.08.013>
- Chmura, G. L., Anisfeld, S. C., Cahoon, D. R., & Lynch, J. C. (2003). Global carbon sequestration in tidal, saline wetland soils. *Global Biogeochemical Cycles*, 17(4), 1-12. doi:10.1029/2002GB001917
- Ch'ng, H. Y., Ahmed, O. H., Muhamad, N., & Muhamad, A. M. (2014). Biochar and compost influence the phosphorus availability, nutrients uptake, and growth of maize (*Zea mays* L.) in tropical acid soil. *Pakistan Journal of Agricultural Sciences*, 51(4), 797-806. Retrieved from <http://www.cabdirect.org/abstracts/20153182974.html>
- Cho, B. H., Chino, H., Tsuji, H., Kunito, T., Nagaoka, K., Otsuka, S., . . . Oyaizu, H. (1997). Laboratory-scale bioremediation of oil-contaminated soil of Kuwait with soil amendment materials. *Chemosphere*, 35(7), 1599-1611. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/9314191>
- Cho, D.-W., Cho, S.-H., Song, H., & Kwon, E. E. (2015). Carbon dioxide assisted sustainability enhancement of pyrolysis of waste biomass: A case study with spent coffee ground. *Bioresource Technology*, 189, 1-6. doi:10.1016/j.biortech.2015.04.002
- Cho, R. (2018). Can Removing Carbon From the Atmosphere Save Us From Climate Catastrophe? *State of the Planet*. Retrieved from <https://news.climate.columbia.edu/2018/11/27/carbon-dioxide-removal-climate-change/>
- Cho, W., Yu, H., & Mo, Y. (2017). CO₂ Conversion to Chemicals and Fuel for Carbon Utilization. In Y. Yun (Ed.), *Recent Advances in Carbon Capture and Storage* (pp. Ch. 09). Rijeka: InTech.
- Choi, I.-W., Seo, D.-C., Kang, S.-W., Lee, S.-G., Seo, Y.-J., Lim, B.-J., . . . Cho, J.-S. (2013). Adsorption Characteristics of Heavy Metals using Sesame Waste Biochar. *Korean Journal of Soil Science and Fertilizer*, 46, 8-15. Retrieved from http://www.koreascience.or.kr/search/articlepdf_ocean.jsp?url=http://ocean.kisti.re.kr/downfile/volume/ksssf/TBRHBL/2013/v46n1/TBRHBL_2013_v46n1_8.pdf
- Choi, J., et al. (2014). Production of brown algae pyrolysis oils for liquid biofuels depending on the chemical pretreatment methods. *Energy Conversion and Management*, 66, 371-378. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0196890414004063>
- Choi, J. H., Woo, H. C., & Suh, D. J. (2017). Pyrolysis of Seaweeds for Bio-oil and Bio-char Production. *Chemical Engineering Transactions*, 37, 121-126. Retrieved from <http://www.aidic.it/cet/14/37/021.pdf>
- Choi, J. Y., et al. (2009). Effect of Wood Vinegar on the Performance, Nutrient Digestibility and Intestinal Microflora in Weanling Pigs. *Asian-australasian journal of animal sciences*, 22, 267-274. Retrieved from <http://cat.inist.fr/?aModele=afficheN&cpsidt=21350704>
- Choi, S., Drese, J. H., Eisenberger, P. M., & Jones, C. W. (2011). Application of Amine-Tethered Solid Sorbents for Direct CO₂ Capture from the Ambient Air. *Environmental Science & Technology*, 45(6), 2420-2427. doi:10.1021/es102797w

- Choi, S., Drese, J. H., & Jones, C. W. (2009). Adsorbent materials for carbon dioxide capture from large anthropogenic point sources *ChemSusChem*, 2(9), 796-854. Retrieved from <https://pubmed.ncbi.nlm.nih.gov/19731282/>
- Choi, S., Gray, M. L., & Jones, C. W. (2011). Amine-Tethered Solid Adsorbents Coupling High Adsorption Capacity and Regenerability for CO₂ Capture From Ambient Air. *ChemSusChem*, 4(5), 628-635. doi:<https://doi.org/10.1002/cssc.201000355>
- Choi, W.-J., Park, H.-J., Cai, Y., & Chang, S. X. (2021). Environmental Risks in Atmospheric CO₂ Removal Using Enhanced Rock Weathering Are Overlooked. *Environmental Science & Technology*. doi:[10.1021/acs.est.1c02505](https://doi.org/10.1021/acs.est.1c02505)
- Choi, Y.-S., Shin, J.-D., Lee, S.-I., & Kim, S.-C. (2015). Adsorption Characteristics of Aqueous Ammonium Using Rice hull-Derived Biochar. *Korean Journal of Environmental Agriculture*, 34(3), 155 - 160. doi:[10.5338/kjea.2015.34.3.25](https://doi.org/10.5338/kjea.2015.34.3.25)
- Choppala, G., Bolan, N., Kunhikrishnan, A., & Bush, R. (2016). Differential effect of biochar upon reduction-induced mobility and bioavailability of arsenate and chromate. *Chemosphere*, 144, 374 - 381. doi:[10.1016/j.chemosphere.2015.08.043](https://doi.org/10.1016/j.chemosphere.2015.08.043)
- Choppala, G. K., et al. (2012). The Influence of Biochar and Black Carbon on Reduction and Bioavailability of Chromate in Soils. *Journal of Environmental Quality*, 41(4), 1175-1184. doi:[10.2134/jeq2011.0145](https://doi.org/10.2134/jeq2011.0145)
- Chopra, V. (2016). *Development of an Optimized Fitting Routine for Comparing Theoretical Data with Experiments on Moisture Sensitive Beads for Carbon Dioxide Capture*. (M.S.). Arizona State University, Retrieved from <https://search.proquest.com/docview/1797949537/accountid=14496>
- Chou, C.-t., et al. (2013). Carbon Dioxide Capture and Hydrogen Purification from Synthesis Gas by Pressure Swing Adsorption. *Chemical Engineering Transactions*, 32, 1855-1860. Retrieved from <https://www.aidic.it/cet/13/32/310.pdf>
- Chou, W.-C., Gong, G.-C., Hsieh, P.-S., Chang, M.-H., Chen, H.-Y., Yang, C.-Y., & Syu, R.-W. (2015). Potential impacts of effluent from accelerated weathering of limestone on seawater carbon chemistry: A case study for the Hoping power plant in northeastern Taiwan. *Marine Chemistry*, 168, 27-36. doi:<https://doi.org/10.1016/j.marchem.2014.10.008>
- Choudhury, N. D., Chutia, R. S., Bhaskar, T., & Kataki, R. (2014). Pyrolysis of jute dust: effect of reaction parameters and analysis of products. *Journal of Material Cycles and Waste Management*, 16(3), 449-459. Retrieved from <http://link.springer.com/article/10.1007/s10163-014-0268-4>
- Chowdhury, R., & Freire, F. (2015). Bioenergy production from algae using dairy manure as a nutrient source: Life cycle energy and greenhouse gas emission analysis. *Applied Energy*, 154, 1112-1121. doi:<https://doi.org/10.1016/j.apenergy.2015.05.045>
- Chowdhury, Z. Z., et al. (2015). Catalytic pretreatment of biochar residues derived from lignocellulosic feedstock for equilibrium studies of manganese, Mn(II) cations from aqueous solution. *RSC Adv.*, 5(9), 6345 - 6356. doi:[10.1039/c4ra09709b](https://doi.org/10.1039/c4ra09709b)
- Chowdhury, Z. Z., et al. (2016). Application of Graphitic Bio-Carbon using Two-Level Factorial Design for Microwave-assisted Carbonization. *BioResources*, 11(2), 3637-3659. Retrieved from http://ojs.cnr.ncsu.edu/index.php/BioRes/article/view/BioRes_11_2_3637_Chowdhury_Graphitic_Bio_Carbon_Factorial_Design/4298
- Chowdhury, Z. Z., et al. (2016). Influence of Carbonization Temperature on Physicochemical Properties of Biochar derived from Slow Pyrolysis of Durian Wood (*Durio zibethinus*) Sawdust. *BioResources*, 11(2), 3356-3372. Retrieved from http://152.1.0.246/index.php/BioRes/article/view/BioRes_11_2_3356_Chowdhury_Carbonization_Temperature_Biochar_Durian_Wood
- Christaki, U., Obernosterer, I., Van Wambeke, F., Veldhuis, M., Garcia, N., & Catala, P. (2008).

- Microbial food web structure in a naturally iron-fertilized area in the Southern Ocean (Kerguelen Plateau). *Deep Sea Research Part II: Topical Studies in Oceanography*, 55(5–7), 706-719. doi:<http://dx.doi.org/10.1016/j.dsr2.2007.12.009>
- Christensen, E. L., et al. (2020). Hitching a Ride on the Omnibus: COVID Relief and Appropriations Act Includes Major Climate Change and Energy Provisions. *The National Law Review*. Retrieved from <https://www.natlawreview.com/article/hitching-ride-omnibus-covid-relief-and-appropriations-act-includes-major-climate>
- Christensen, J. (2019). Primer: Section 45Q Tax Credit for Carbon Capture Projects. Retrieved from <https://www.betterenergy.org/blog/primer-section-45q-tax-credit-for-carbon-capture-projects/>
- Christian, D. G., Riche, A. B., & Yates, N. E. (2008). Growth, yield and mineral content of Miscanthus giganteus grown as a biofuel for 14 successive harvests. *Industrial Crops and Products*, 28(3), 320-327. doi:<http://dx.doi.org/10.1016/j.indcrop.2008.02.009>
- Christian, H., et al. (2018). Ratcheting ambition to limit warming to 1.5 °C—trade-offs between emission reductions and carbon dioxide removal. *Environmental Research Letters*, 13(6), 064028. Retrieved from <http://stacks.iop.org/1748-9326/13/i=6/a=064028>
- Christian, J., & Mowat, H. (2017). We already have a magic technology that sucks up carbon. Retrieved from <http://www.climatechangenews.com/2017/03/08/already-magic-technology-sucks-carbon/>
- Christiansen, K. L., & Carton, W. (2021). What ‘climate positive future’? Emerging sociotechnical imaginaries of negative emissions in Sweden. *Energy Research & Social Science*, 76, 102086. doi:<https://doi.org/10.1016/j.erss.2021.102086>
- Christianson, L., et al. . (2011). *Influence of Biochar Amendments of Denitification Bioreactor Performance*. Retrieved from http://www.massey.ac.nz/~flrc/workshops/11/Manuscripts/Christianson_2011.pdf
- Christoforou, E., & Fokaides, P. A. (2019). Sustainability Considerations of Solid Biofuels Production and Exploitation. In E. Christoforou & P. A. Fokaides (Eds.), *Advances in Solid Biofuels* (pp. 97-109). Cham: Springer International Publishing.
- Chrobak, U. (2021). Sci-fi carbon coins could actually save our planet. *Popular Science*. Retrieved from <https://www.popsci.com/story/environment/carbon-coin-real/>
- Chunduwat, S. P. S., et a. (2011). Deconstruction of Lignocellulosic Biomass to Fuels and Chemicals. *Annual Review of Chemical and Biomolecular Engineering*, 2, 121-145. Retrieved from <http://www.annualreviews.org/doi/10.1146/annurev-chembioeng-061010-114205>
- Chung, I. K., et al. (2013). Installing kelp forests/seaweed beds for mitigation and adaptation against global warming: Korean Project Overview. *ICES Journal of Marine Science*, 70(5), 1038-1044. Retrieved from <https://academic.oup.com/icesjms/article/70/5/1038/644026/Installing-kelp-forests-seaweed-beds-for>
- Chung, I. K., Beardall, J., Mehta, S., Sahoo, D., & Stojkovic, S. (2011). Using marine macroalgae for carbon sequestration: a critical appraisal. *Journal of Applied Phycology*, 23(5), 877-886. doi:[10.1007/s10811-010-9604-9](https://doi.org/10.1007/s10811-010-9604-9)
- Chung, K., et al. (2009). The Conceptual Coastal CO₂ Removal Belt and Estimation of Carbon Sequestration by Seaweed. *Phycologia*, 48(4), 21. Retrieved from https://www.researchgate.net/publication/295169190_THE_CONCEPTUAL_COASTAL_CO2_REMOVAL_BELT_AND_ESTIMATION_OF_CARBON_SEQUESTRATION_BY_SEAWEEDS
- Chung, Y.-S., Lee, J.-W., & Chung, C.-H. (2017). Molecular challenges in microalgae towards cost-effective production of quality biodiesel. *Renewable and Sustainable Energy Reviews*, 74, 139-144. doi:<https://doi.org/10.1016/j.rser.2017.02.048>
- ChunMei, Z., et al. (2014). Distillation of liquid yield from carbonization of agricultural residue.

- Journal of Shenyang Agricultural University*, 45(4), 495-498. Retrieved from <http://www.cabdirect.org/abstracts/20153047139.html>
- ChunMei, Z., et al. (2015). Bio-Oil Production from Fast Pyrolysis of Corn Wates and Eucalyptus Wood in a Fluidized Bed Reactor. *Journal of Agricultural Machinery*, 4(2), 226-235. Retrieved from <http://en.journals.sid.ir/ViewPaper.aspx?ID=418258>
- Chunxue, Y., et al. (2015). Developing More Effective Enhanced Biochar Fertilisers for Improvement of Pepper Yield and Quality. *Pedosphere*, 25(5), 703-712. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1002016015300515>
- Churkina, G., Organschi, A., Reyer, C. P. O., Ruff, A., Vinke, K., Liu, Z., . . . Schellnhuber, H. J. (2020). Buildings as a global carbon sink. *Nature Sustainability*. doi:10.1038/s41893-019-0462-4
- Ciha, T. (2021). *The Evaluation of Algae-Derived Activated Carbon Adsorbents for Direct CO₂ Capture from Ambient Air*. Retrieved from <https://repository.asu.edu/items/63823>
- Cimò, G., et al. (2014). Effect of Heating Time and Temperature on the Chemical Characteristics of Biochar from Poultry Manure. *Journal of Agricultural and Food Chemistry*, 62(8), 1912-1918. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/jf405549z>
- Cimons, M. (2019). Scientists Call for Artificial Trees to Fight Climate Change. *Nexus Media*. Retrieved from <https://nexusmedianews.com/scientists-call-for-artificial-trees-to-fight-climate-change-21357e04ba71>
- Cintas, O., Berndes, G., Cowie, A. L., Egnell, G., Holmström, H., & Ågren, G. I. (2016). The climate effect of increased forest bioenergy use in Sweden: evaluation at different spatial and temporal scales. *Wiley Interdisciplinary Reviews: Energy and Environment*, 5(3), 351-369. doi:10.1002/wene.178
- Cintas, O., Berndes, G., Cowie, A. L., Egnell, G., Holmström, H., Marland, G., & Ågren, G. I. (2017). Carbon balances of bioenergy systems using biomass from forests managed with long rotations: bridging the gap between stand and landscape assessments. *GCB Bioenergy*, 9(7), 1-14. doi:10.1111/gcbb.12425
- Cipolla, G., Calabrese, S., Noto, L. V., & Porporato, A. (2021). The role of hydrology on enhanced weathering for carbon sequestration I. Modeling rock-dissolution reactions coupled to plant, soil moisture, and carbon dynamics. *Advances in Water Resources*, 103934. doi:<https://doi.org/10.1016/j.advwatres.2021.103934>
- Cipolla, G., Calabrese, S., Noto, L. V., & Porporato, A. (2021). The role of hydrology on enhanced weathering for carbon sequestration II. From hydroclimatic scenarios to carbon-sequestration efficiencies. *Advances in Water Resources*, 103949. doi:<https://doi.org/10.1016/j.advwatres.2021.103949>
- Citerone, V. R. (2016). *Enhancing Gas Transfer at an Air-Water Interface Through Strengthened Secondary Flows Motivated by Algal Biofuel Production*.
- CJ, A., JD, F., & NA, H. (2010). Potential mechanisms for achieving agricultural benefits from biochar application to temperate soils: a review. *Plant and Soil*, 337(1), 1-18. Retrieved from <http://link.springer.com/article/10.1007/s11104-010-0464-5>
- Clancy, H. (2020). Carbontech is getting ready for its market moment. *GreenBiz*. Retrieved from <https://www.greenbiz.com/article/carbontech-getting-ready-its-market-moment>
- Clancy, H. (2020). How Stripe's 'negative emissions' team picked its first four carbon removal projects. *GreenBiz*. Retrieved from <https://www.greenbiz.com/article/how-stripes-negative-emissions-team-picked-its-first-four-carbon-removal-projects>
- Clancy, H. (2020). Strategy firm BCG pledges net-zero impact, eyes 'carbon positive' future. *Green Biz*. Retrieved from <https://www.greenbiz.com/article/strategy-firm-bcg-pledges-net-zero-impact-eyes-carbon-positive-future>
- Clancy, H. (2021). Betting on biochar. *Verge Weekly*. Retrieved from https://info.greenbiz.com/index.php/email/emailWebview?md_id=23014

- Clancy, H. (2021). New corporate alliance aims to scale climate action, starting with carbon removal *GreenBiz*. Retrieved from <https://www.greenbiz.com/article/new-corporate-alliance-aims-scale-climate-action-starting-carbon-removal>
- Clancy, H. (2021). The potential for carbon-capture tech is captivating. *GreenBiz*. Retrieved from <https://www.greenbiz.com/article/potential-carbon-capture-tech-captivating>
- Clancy, H. (2021). U.S. infrastructure bill lays foundation for carbon management economy. *GreenBiz*. Retrieved from <https://www.greenbiz.com/article/us-infrastructure-bill-lays-foundation-carbon-management-economy>
- Clare, A., Barnes, A., McDonagh, J., & Shackley, S. (2014). From rhetoric to reality: farmer perspectives on the economic potential of biochar in China. *International Journal of Agricultural Sustainability*, 12(3), 1-19. doi:10.1080/14735903.2014.927711
- Clare, A., Shackley, S., Joseph, S., Hammond, J., Pan, G., & Bloom, A. (2014). Competing uses for China's straw: the economic and carbon abatement potential of biochar. *GCB Bioenergy*, 7(6), 1272-1283. doi:10.1111/gcbb.12220
- Clarens, A. F., Nassau, H., Resurreccion, E. P., White, M. A., & Colosi, L. M. (2011). Environmental Impacts of Algae-Derived Biodiesel and Bioelectricity for Transportation. *Environmental Science & Technology*, 45(17), 7554-7560. doi:10.1021/es200760n
- Clark, D. (2009, July 5). Just add lime (to the sea) – the latest plan to cut CO₂ emissions. *The Guardian*. Retrieved from <https://www.theguardian.com/environment/2009/jul/06/lime-sea-carbon-dioxide-emissions>
- Clark, D. E. (2016). Monitoring of CO₂/H₂S gas mixture injection in basaltic rocks at Hellisheiði Geothermal Power Plant, Iceland. *Geophysical Research Abstracts*, 18(EGU2016-14713-1), 14713. Retrieved from <http://meetingorganizer.copernicus.org/EGU2016/EGU2016-14713-1.pdf>
- Clark, D. E., Gunnarsson, I., Aradóttir, E. S., Þ. Arnarson, M., Þorgeirsson, Þ. A., Sigurðardóttir, S. S., . . . Gíslason, S. R. (2018). The chemistry and potential reactivity of the CO₂-H₂S charged injected waters at the basaltic CarbFix2 site, Iceland. *Energy Procedia*, 146, 121-128. doi:<https://doi.org/10.1016/j.egypro.2018.07.016>
- Clark, D. E., Oelkers, E. H., Gunnarsson, I., Sigfússon, B., Snæbjörnsdóttir, S. Ó., Aradóttir, E. S., & Gíslason, S. R. (2020). CarbFix2: CO₂ and H₂S mineralization during 3.5 years of continuous injection into basaltic rocks at more than 250 °C. *Geochimica Et Cosmochimica Acta*. doi:<https://doi.org/10.1016/j.gca.2020.03.039>
- Clark, D. E., Oelkers, E. H., Gunnarsson, I., Sigfússon, B., Snæbjörnsdóttir, S. Ó., Aradóttir, E. S., & Gíslason, S. R. (2020). CarbFix2: CO₂ and H₂S mineralization during 3.5 years of continuous injection into basaltic rocks at more than 250 °C. *Geochimica Et Cosmochimica Acta*, 279, 45-66. doi:<https://doi.org/10.1016/j.gca.2020.03.039>
- Clark, E. L., Resasco, J., Landers, A., Lin, J., Chung, L.-T., Walton, A., . . . Bell, A. T. (2018). Standards and Protocols for Data Acquisition and Reporting for Studies of the Electrochemical Reduction of Carbon Dioxide. *ACS Catalysis*, 6560-6570. doi:10.1021/ascatal.8b01340
- Clark, J. H., Luque, R., & Matharu, A. S. (2012). Green Chemistry, Biofuels, and Biorefinery. *Annual Review of Chemical and Biomolecular Engineering*, 3, 183-207. Retrieved from <http://www.annualreviews.org/doi/10.1146/annurev-chembioeng-062011-081014>
- Clark, L., & Anchondo, C. (2021). Biden and CCS: Plans, politics, pitfalls. *E&E News*. Retrieved from <https://www.eenews.net/stories/1063727843>
- Clausse, M., Merel, J., & Meunier, F. (2011). Numerical parametric study on CO₂ capture by indirect thermal swing adsorption. *International Journal of Greenhouse Gas Control*, 5(5), 1206-1213. Retrieved from <https://www.mendeley.com/catalog/numerical-parametric-study-co2-capture-indirect-thermal-swing-adsorption/>
- Claussen, M., Brovkin, V., & Ganopolski, A. (2001). Biogeophysical versus biogeochemical

- feedbacks of large-scale land cover change. *Geophysical Research Letters*, 28(6), 1011-1014. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1029/2000GL012471/abstract>
- Clay, S. A., & Malo, D. D. (2011). The Influence of Biochar Production on Herbicide Sorption Characteristics. In *Herbicides – Properties, Synthesis and Control of Weeds* (pp. 59 - 74).
- Cleary, J., & Caspersen, J. P. (2015). Comparing the life cycle impacts of using harvest residue as feedstock for small- and large-scale bioenergy systems (part I). *Energy*, 88, 917-926. doi:<http://dx.doi.org/10.1016/j.energy.2015.07.045>
- Cleary, J., Wolf, D. P., & Caspersen, J. P. (2015). Comparing the life cycle costs of using harvest residue as feedstock for small- and large-scale bioenergy systems (part II). *Energy*, 86, 539-547. doi:[10.1016/j.energy.2015.04.057](https://doi.org/10.1016/j.energy.2015.04.057)
- Clegg, S. L., & Whitfield, M. (1990). A generalized model for the scavenging of trace metals in the open ocean—I. Particle cycling. *Deep Sea Research Part A. Oceanographic Research Papers*, 37(5), 809-832. doi:[https://doi.org/10.1016/0198-0149\(90\)90008-J](https://doi.org/10.1016/0198-0149(90)90008-J)
- Clements, W. H., Stahl, R. G., & Landis, R. C. (2015). Ecological Effects of Biochar on the Structure and Function of Stream Benthic Communities. *Environmental Science & Technology*, 49(24), 14649 - 14654. doi:[10.1021/acs.est.5b04400](https://doi.org/10.1021/acs.est.5b04400)
- Clifton-brown, J. C., Stampfl, P. F., & Jones, M. B. (2004). Miscanthus biomass production for energy in Europe and its potential contribution to decreasing fossil fuel carbon emissions. *Global Change Biology*, 10(4), 509-518. doi:[10.1111/j.1529-8817.2003.00749.x](https://doi.org/10.1111/j.1529-8817.2003.00749.x)
- Cliggett, M. S. (2015). *Point-of-use treatment of multiple drinking water contaminants by white spruce biochar*. UNIVERSITY OF ALASKA ANCHORAGE, Retrieved from <http://gradworks.umi.com/16/05/1605409.html>
- Climeworks. (2020). Climeworks raises CHF 73M (USD 75M) – the largest ever private investment into direct air capture [Press release]. Retrieved from <https://www.climeworks.com/news/climeworks-raises-chf-73m-usd-75m>
- Climeworks. (2021). Carbon capture: A critical tool in the climate restoration toolbox *Grist*. Retrieved from <https://grist.org/article/carbon-capture-a-critical-tool-in-the-climate-restoration-toolbox/>
- Climeworks. (2021). Climeworks and leading risk knowledge company Swiss Re sign the world's first and largest 10-year purchase agreement for direct air capture and storage of carbon dioxide Retrieved from <https://climeworks.com/news/swiss-re-sign-the-worlds-first-and-largest>
- Climeworks. (2021). The world's largest climate-positive direct air capture plant: Orca! . Retrieved from <https://climeworks.com/orca>
- Clough, T. J., et al. (2013). A Review of Biochar and Soil Nitrogen Dynamics. *Agronomy*, 3(2), 275-293. doi:[10.3390/agronomy3020275](https://doi.org/10.3390/agronomy3020275)
- Clough, T. J., Bertram, J. E., Ray, J. L., Condron, L. M., O'Callaghan, M., Sherlock, R. R., & Wells, N. S. (2010). Unweathered Wood Biochar Impact on Nitrous Oxide Emissions from a Bovine-Urine-Amended Pasture Soil. *Soil Science Society of America Journal*, 74(3), 852-860. Retrieved from https://www.researchgate.net/publication/43252542_Unweathered_Wood_Biochar_Impact_on_Nitrous_Oxide_Emissions_from_a_Bovine-Urine-Amended_Pasture_Soil
- Clough, T. J., & Condron, L. M. (2010). Biochar and the Nitrogen Cycle: Introduction. *Journal of Environmental Quality*, 39(4), 1218-1223. doi:[10.2134/jeq2010.0204](https://doi.org/10.2134/jeq2010.0204)
- Club, S. (2020). *Climate Resilience, Carbon Dioxide Removal, and Geoengineering Policy-Preface*. Retrieved from <https://www.sierraclub.org/sites/www.sierraclub.org/files/2020-Sierra-Club-Climate-Resilience-Policy.pdf>

- Coale, K. H., et al. (1996). A massive phytoplankton bloom induced by an ecosystem-scale iron fertilization experiment in the equatorial Pacific Ocean. *Nature*, 383, 495-501. Retrieved from <http://bio.classes.ucsc.edu/bioe107/L31996%20Coale%20et%20al%20Nature.pdf>
- Coale, K. H. (2001). Iron Fertilization* A2 - Steele, John H. In *Encyclopedia of Ocean Sciences (Second Edition)* (pp. 331-342). Oxford: Academic Press.
- Coale, K. H., et al. (2004). Southern Ocean Iron Enrichment Experiment: Carbon Cycling in High- and Low-Si Waters. *Science*, 304(5669), 408-414. Retrieved from <http://science.sciencemag.org/content/304/5669/408>
- Coale, K. H., Johnson, K. S., Fitzwater, S. E., Gordon, R. M., Tanner, S., Chavez, F. P., . . . Kudela, R. (1996). A massive phytoplankton bloom induced by an ecosystem-scale iron fertilization experiment in the equatorial Pacific Ocean. *Nature*, 383(6600), 495-501. Retrieved from <http://dx.doi.org/10.1038/383495a0>
- Coale, K. H., & Wong, M. (2018). Ocean Iron Fertilization☆. In *Reference Module in Earth Systems and Environmental Sciences*: Elsevier.
- Coalition, C. C. (2021). Carbon Capture Coalition Submits Key Carbon Capture Priorities to President Biden's Climate Team. Retrieved from <https://carboncapturecoalition.org/carbon-capture-coalition-submits-key-carbon-capture-priorities-to-president-bidens-climate-team/>
- Codur, A.-M., et al. (2017). *Hope Below Our Feet: Soil as a Climate Solution*. Retrieved from <http://www.ase.tufts.edu/gdae/Pubs/climate/ClimatePolicyBrief4.pdf>
- Coelho, M. S., Barbosa, F. G., & Souza, M. d. R. A. Z. (2014). The scientometric research on macroalgal biomass as a source of biofuel feedstock. *Algal Research*, 6(Part B), 132 - 138. doi:10.1016/j.algal.2014.11.001
- Coffey, D. (2020). Could we ever pull enough carbon out of the atmosphere to stop climate change? Retrieved from <https://www.livescience.com/can-carbon-removal-slow-climate-change.html>
- Coffield, S. R., Hemes, K. S., Koven, C. D., Goulden, M. L., & Randerson, J. T. (2021). Climate-Driven Limits to Future Carbon Storage in California's Wildland Ecosystems. *AGU Advances*, 2(3), e2021AV000384. doi:<https://doi.org/10.1029/2021AV000384>
- Cohen, R. M. (2019). The Environmental Left Is Softening on Carbon-Capture Technology. Maybe That's OK. *The Intercept*. Retrieved from <https://theintercept.com/2019/09/20/carbon-capture-technology-unions-labor/>
- Cohen, R. M. (2020). After George Floyd, Carbon Capture Tech Tiptoes into Racial Justice. *The Intercept*. Retrieved from <https://theintercept.com/2020/12/14/environmental-racial-justice-carbon-capture/>
- Cohen-Ofri, I., Popovitz-Biro, R., & Weiner, S. (2007). Structural Characterization of Modern and Fossilized Charcoal Produced in Natural Fires as Determined by Using Electron Energy Loss Spectroscopy. *Chemistry - A European Journal*, 13(8), 2306-2310. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/17163552>
- Colanton, A., et al. (2015). Use of hazelnut's pruning to produce biochar by gasifier small scale plant. *International Journal of Renewable Energy Research-IJRER*, 5(3), 872-876. Retrieved from http://www.ijrer.org/ijrer/index.php/ijrer/article/viewFile/2460/pdf_73
- Colbourn, G., Ridgwell, A., & Lenton, T. M. (2015). The time scale of the silicate weathering negative feedback on atmospheric CO₂. *Global Biogeochemical Cycles*, 29(5), 583-596. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/2014GB005054/pdf>
- Colchester, M. (2011). *Palm Oil and Indigenous Peoples in South Asia*. Retrieved from http://www.forestpeoples.org/sites/fpp/files/publication/2010/08/palmoilindigenouspeoplesoutheastasiafinalmceng_0.pdf
- Coldewey, D. (2021). Heimdal pulls CO₂ and cement-making materials out of seawater using renewable energy. *Tech Crunch*. Retrieved from <https://techcrunch.com/2021/08/30/>

- heimdal-pulls-co2-and-cement-making-materials-out-of-seawater-using-renewable-energy/
- Cole, A. J., Mata, L., Paul, N. A., & de Nys, R. (2014). Using CO₂ to enhance carbon capture and biomass applications of freshwater macroalgae. *GCB Bioenergy*, 6(6), 637-645. doi:10.1111/gcbb.12097
- Cole, D. P. (2015). *High resolution mass spectrometry for molecular characterization of pyrolysis products and kinetics*. Iowa State University, Retrieved from <http://lib.dr.iastate.edu/etd/14342/>
- Cole, D. P., Smith, E. A., & Lee, Y. J. (2012). High-Resolution Mass Spectrometric Characterization of Molecules on Biochar from Pyrolysis and Gasification of Switchgrass. *Energy Fuels*, 26(6), 3803-3809. doi:10.1021/ef300356u
- Cole, E. J. (2014). *Assessing Kiln-Produced Hardwood Biochar for Improving Soil Health in a Temperate Climate Agricultural Soil*. University of Massachusetts, Retrieved from http://scholarworks.umass.edu/dissertations_2/486/
- Coleman, B. S. L., Easton, Z. M., & Bock, E. M. (2019). Biochar fails to enhance nutrient removal in woodchip bioreactor columns following saturation. *Journal of Environmental Management*, 232, 490-498. doi:<https://doi.org/10.1016/j.jenvman.2018.11.074>
- Coleman, E. A., Schultz, B., Ramprasad, V., Fischer, H., Rana, P., Filippi, A. M., . . . Fleischman, F. (2021). Limited effects of tree planting on forest canopy cover and rural livelihoods in Northern India. *Nature Sustainability*. doi:10.1038/s41893-021-00761-z
- Collet, P., Lardon, L., Hélias, A., Bricout, S., Lombaert-Valot, I., Perrier, B., . . . Bernard, O. (2014). Biodiesel from microalgae – Life cycle assessment and recommendations for potential improvements. *Renewable Energy*, 71, 525-533. doi:<https://doi.org/10.1016/j.renene.2014.06.009>
- Collet, S., & Rousseau, A. (2015). *Création d'une entreprise sociale visant à récupérer les sols dégradés au Burkina Faso à l'aide de techniques agroécologiques innovantes. (Creating a social enterprise to recover degraded soils in Burkina Faso using innovative agroecological techniques)*. Université Catholique de Louvain (Catholic University of Louvain), Retrieved from http://dial.uclouvain.be/downloader/downloader.php?pid=thesis%3A2871&datastream=PDF_01
- Collins, H. P., et al. (2013). Phosphorus Uptake by Potato from Biochar Amended with Anaerobic Digested Dairy Manure Effluent. *Agronomy Journal*, 105(4), 989-998. Retrieved from <https://dl.sciencesocieties.org/publications/aj/pdfs/105/4/989>
- Collins, L. (2021). 'The amount of energy required by direct air carbon capture proves it is an exercise in futility' Retrieved from <https://www.rechargenews.com/energy-transition/the-amount-of-energy-required-by-direct-air-carbon-capture-proves-it-is-an-exercise-in-futility/2-1-1067588>
- Collison, M., et al. . (2009). *Biochar and Carbon Sequestration: A Regional Perspective*. Retrieved from http://www.uea.ac.uk/polopoly_fs/1.118134!LCIC%20EEDA%20BIOCHAR%20REVIEW%202020-04-09.pdf
- Colman, Z., et al. (2021). Biden mulls giving farmers billions to fight climate change. Even farmers are unsure about the plan. *Politico*. Retrieved from https://www.politico.com/news/2021/03/29/biden-carbon-bank-proposal-478224?utm_medium=email&_hsmi=118979859&_hsenc=p2ANqtz-_iCzBvGYGc6P5wf-0YBN7VaE1alzAHEzNBf_875VJZBw1MM56Eh0WKuYSyP1rGfrcZBT9HJtSHPJHsS2aEAdVdo80bRg&utm_content=118980047&utm_source=hs_email
- Colomb, A. (2015). *Production Of Activated Carbons From Pyrolytic Char For Environmental Applications*. The University of Western Ontario, Retrieved from <http://ir.lib.uwo.ca/cgi/viewcontent.cgi?article=4536&context=etd>
- Columbia, S., Center on Global Energy Policy (Producer). (2019). Inventing the Future: Zero

- Carbon Fuels and Climate Restoration. Retrieved from <https://energypolicy.columbia.edu/events-calendar/inventing-future-zero-carbon-fuels-and-climate-restoration>
- Colvin, R. M., Kemp, L., Talberg, A., De Castella, C., Downie, C., Friel, S., . . . Platow, M. J. (2019). Learning from the Climate Change Debate to Avoid Polarisation on Negative Emissions. *Environmental Communication*, 1-13. doi:10.1080/17524032.2019.1630463
- Comet, P. (2010). Biochar for CO₂ Reduction. *Chemical & Engineering News*, 88(11), 4. Retrieved from <http://cen.acs.org/articles/88/i11/Biochar-CO2-Reduction.html?type=paidArticleContent>
- Commission, C. B., Foundation, C. B., Corporation, M. T. D., & Coordination, F. P. P. (2012). *Manure To Energy: Sustainable Solutions for the Chesapeake Bay Region*. Retrieved from <http://www.biochar-international.org/sites/default/files/manure-to-energy%20report.pdf>
- Commission, E. (2018). Our Vision for a Clean Planet for All. Retrieved from <https://sofiesgroup.com/en/news/white-paper-sofies-co2-as-a-resource/>
- Committee on the Sustainable Development of Algal Biofuels, N. A. o. S. (2012). *Sustainable Development of Algal Biofuels*. Retrieved from <https://www.ourenergypolicy.org/wp-content/uploads/2012/10/13437.pdf>
- Compagnon, D. (2019). Governing a Mirage? False Promises of Negative Emissions Technologies. *Carbon & Climate Law Review*, 13(2), 104-112. doi:10.21552/cclr/2019/2/5 %J Carbon & Climate Law Review
- Conant, R. T. (2011). Sequestration through forestry and agriculture. *Wiley Interdisciplinary Reviews: Climate Change*, 2(2), 238-254. doi:doi:10.1002/wcc.101
- Conant, R. T., et al. (2017). Grasslands; soil sequestration. *Ecological Applications*, 27(2), 662-668. Retrieved from <https://esajournals.onlinelibrary.wiley.com/doi/abs/10.1002/eap.1473>
- Conant, R. T., Paustian, K., & Elliot, E. T. (2001). Grassland Management and Conversion into Grassland: Effects on Soil Carbon. *Ecological Applications*, 11(2), 343-355. Retrieved from <https://esajournals.onlinelibrary.wiley.com/doi/abs/10.1890/1051-0761%282001%29011%5B0343%3AGMACIG%5D2.0.CO%3B2>
- Conca, J. (2019). Carbon Engineering - Taking CO₂ Right Out Of The Air To Make Gasoline. *Forbes*. Retrieved from <https://www.forbes.com/sites/jamesconca/2019/10/08/carbon-engineering-taking-co2-right-out-of-the-air-to-make-gasoline/#393eb83613cc>
- Conference, G. (2018). Scientists find way to make mineral which can remove CO₂ from atmosphere. Retrieved from <https://phys.org/news/2018-08-scientists-mineral-co2-atmosphere.html>
- Conniff, R. (2019). Could Air-Conditioning Fix Climate Change? *Scientific American*. Retrieved from https://www.scientificamerican.com/article/could-air-conditioning-fix-climate-change/?fbclid=IwAR2ES5QR8_KhuxzOhFTHlh5LuSeHpHXEyOVg91_A06OMPX1HVm4xfDBPTw4
- Conniff, R. (2019). Scrubbing Carbon from the Sky. *Scientific American*(January). Retrieved from <https://www.scientificamerican.com/article/scrubbing-carbon-from-the-sky/>
- Connors, P., et al. (2021). IRS Finalizes Guidance Relating to Carbon Capture and Sequestration. *JD Supra*. Retrieved from <https://www.jdsupra.com/legalnews/irs-finalizes-guidance-relating-to-4860503/>
- Consoli, C. (2019). *Bionenergy and Carbon Capture and Storage*. Retrieved from https://www.globalccsinstitute.com/wp-content/uploads/2019/03/BECCS-Perspective_FINAL_18-March.pdf
- Constantz, B., et al. (2009). United States Patent No. US8603424B2.

- Constantz, B., et al. (2020).
- Conte, P., et al. (2012). Nature of water-biochar interface interactions. *GCB Bioenergy*, 5(2), 116-121. doi:10.1111/gcbb.12009
- Conte, P. (2014). Biochar, soil fertility, and environment. *Biology and Fertility of Soils*, 50(8), 1175 - 1175. doi:10.1007/s00374-014-0973-0
- Conte, P. (2014). Effects of ions on water structure: a low-field ^1H T1 NMR relaxometry approach. *Magnetic Resonance in Chemistry*, 53(9), 711-718. doi:10.1002/mrc.4174
- Conte, P., et al. . (2014). Mechanisms of Water Interaction with Pore Systems of Hydrochar and Pyrochar from Poplar Forestry Waste. *Journal of Agricultural and Food Chemistry*, 62(21), 4917-4923. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/jf5010034>
- Conte, P., & Nestle, N. (2015). Water dynamics in different biochar fractions. *Magnetic Resonance in Chemistry*, 53(9), 726-734. doi:10.1002/mrc.4204
- Conte, P., Schmidt, H.-P., & Cimò, G. (2015). *SSSA Special Publication Agricultural and Environmental Applications of Biochar: Advances and Barriers Research and Application of Biochar in Europe*: Soil Science Society of America, Inc.
- Conti, R., Rombolà, A. G., Modelli, A., Torri, C., & Fabbri, D. (2014). Evaluation of the thermal and environmental stability of switchgrass biochars by Py-GC-MS. *Journal of Analytical and Applied Pyrolysis*, 110, 239-247. doi:10.1016/j.jaat.2014.09.010
- Contributor, D. S. (2019). Caution urged over use of 'carbon unicorns' to limit warming. *Denton Daily*. Retrieved from <https://dentondaily.com/caution-urged-over-use-of-carbon-unicorns-to-limit-warming/>
- Conversa, G., et al. (2015). Influence of biochar, mycorrhizal inoculation and fertilizer rate on growth and flowering of pelargonium (*Pelargonium zonale* L.) plants. *Frontiers in Plant Science*, 16(6), 1-11. Retrieved from <http://journal.frontiersin.org/article/10.3389/fpls.2015.00429/pdf>
- Converse, B. A., et al. (2020). If humans design the planet: A call for psychological scientists to engage with climate engineering. *American Psychologist*. Retrieved from <https://psycnet.apa.org/record/2020-78671-001>
- Conway, T. M., Hamilton, D. S., Shelley, R. U., Aguilar-Islas, A. M., Landing, W. M., Mahowald, N. M., & John, S. G. (2019). Tracing and constraining anthropogenic aerosol iron fluxes to the North Atlantic Ocean using iron isotopes. *Nature Communications*, 10(1), 2628. doi:10.1038/s41467-019-10457-w
- Conz, R. F. (2015). *Characterization of feedstocks and biochars for agricultural use*. Escola Superior de Agricultura Luiz de Queiroz, Retrieved from <http://www.teses.usp.br/teses/disponiveis/11/11140/tde-13052015-142608/en.php>
- Cook, P. J. (2017). CCS Research Development and Deployment in a Clean Energy Future: Lessons from Australia over the Past Two Decades. *Engineering*, 3(4), 477-484. doi:<https://doi.org/10.1016/J.ENG.2017.04.014>
- Cooke, P. (2020). Investigation: The Problem with Big Oil's 'Forest Fever'. *Desmog UK*. Retrieved from <https://www.desmog.co.uk/2020/07/06/big-oil-forest-fever>
- Cook-Patton, S. C., Leavitt, S. M., Gibbs, D., Harris, N. L., Lister, K., Anderson-Teixeira, K. J., . . . Griscom, B. W. (2020). Mapping carbon accumulation potential from global natural forest regrowth. *Nature*, 585(7826), 545-550. doi:10.1038/s41586-020-2686-x
- Cooks, S. T., Jr. (2014). *Adsorption of contaminants found in hydraulic fracking produced water utilizing cost-effective biochar treatment*. THE UNIVERSITY OF TEXAS AT SAN ANTONIO, Retrieved from <http://gradworks.umi.com/15/56/1556483.html>
- Cookson, C. (2019). Researchers plan to enlist ocean viruses in climate change fight. *Financial Times*. Retrieved from <https://www.ft.com/content/4397152a-3309-11e9-bd3a-8b2a211d90d5>
- Coomer, T. D., et al. (2012). *Effect of Poultry Litter Biochar on Early-Season Cotton Growth*.

Retrieved from <http://arkansasagnews.uark.edu/610-16.pdf>

- Coomer, T. D. (2014). *Influence of Poultry-Litter Biochar on Early-Season Growth in Cotton*. University of Arkansas,
- Cooney, G., Littlefield, J., Marriott, J., & Skone, T. J. (2015). Evaluating the Climate Benefits of CO₂-Enhanced Oil Recovery Using Life Cycle Analysis. *Environmental Science & Technology*, 49(12), 7491-7500. doi:10.1021/acs.est.5b00700
- Cooney, M. J., Lewis, K., Harris, K., Zhang, Q., & Yan, T. (2015). Start up performance of biochar packed bed anaerobic digesters. *Journal of Water Process Engineering*, 9, e7-e13. doi:10.1016/j.jwpe.2014.12.004
- Coons, J. E., Kalb, D. M., Dale, T., & Marrone, B. L. (2014). Getting to low-cost algal biofuels: A monograph on conventional and cutting-edge harvesting and extraction technologies. *Algal Research*, 6, 250-270. doi:<https://doi.org/10.1016/j.algal.2014.08.005>
- Cooper, D. J., Watson, A. J., & Nightingale, P. D. (1996). Large decrease in ocean-surface CO₂ fugacity in response to in situ iron fertilization. *Nature*, 383(6600), 511-513. Retrieved from <http://search.proquest.com/openview/5df27d30c28745af50cfffe672fd851e/1?pq-origsite=gscholar&cbl=40569>
- Cooper, H. V., Vane, C. H., Evers, S., Aplin, P., Girkin, N. T., & Sjögersten, S. (2019). From peat swamp forest to oil palm plantations: The stability of tropical peatland carbon. *Geoderma*, 342, 109-117. doi:<https://doi.org/10.1016/j.geoderma.2019.02.021>
- Cooper, J. M., Butler, G., & Leifert, C. (2011). Life cycle analysis of greenhouse gas emissions from organic and conventional food production systems, with and without bio-energy options. *NJAS - Wageningen Journal of Life Sciences*, 58(3), 185-192. doi:<https://doi.org/10.1016/j.njas.2011.05.002>
- Cooper, S. (2021). *Biomass - potential to deliver hydrogen and negative emissions?* Paper presented at the ISSST 2021 - International Symposium on Sustainable Systems and Technology
- Cooperman, Y. (2016). Biochar and Carbon Sequestration. Retrieved from <https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=22224>
- Copley, T. R., Aliferis, K. A., & Jabaji, S. (2015). Maple bark biochar affects Rhizoctonia solani metabolism and increases damping-off severity. *Phytopathology*, 105(10), 1334-1346. doi:10.1094/phyto-08-14-0231-r
- Corbeels, M., Cardinael, R., Naudin, K., Guibert, H., & Torquebiau, E. (2019). The 4 per 1000 goal and soil carbon storage under agroforestry and conservation agriculture systems in sub-Saharan Africa. *Soil and Tillage Research*, 188, 16-26. doi:<https://doi.org/10.1016/j.still.2018.02.015>
- Corbett, C. (2020). Antacids for the Sea: Artificial Ocean Alkalization. *Legal Planet*. Retrieved from <https://legal-planet.org/2020/01/27/antacids-for-the-sea-artificial-ocean-alkalinization/>
- Coren, M. J. (2019). A controversial climate plan to restore a safe atmosphere debuts at the UN. *Quartz*. Retrieved from <https://qz.com/1710975/climate-restoration-made-its-debut-at-the-united-nations/>
- Cornelissen, G., et al. . (2013). Biochar Effect on Maize Yield and Soil Characteristics in Five Conservation Farming Sites in Zambia. *Agronomy*, 3(2), 256-274. Retrieved from <http://www.mdpi.com/2073-4395/3/2/256>
- Cornelissen, G., Elmquist, M., Groth, I., & Gustafsson, O. (2004). Effect of sorbate planarity on environmental black carbon sorption. *Environmental Science & Technology*, 38(13), 3574-3580. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/es049862g>
- Cornelissen, G., Kukulska, Z., Kalaitzidis, S., Christanis, K., & Gustafsson, O. (2004). Relations between environmental black carbon sorption and geochemical sorbent characteristics. *Environmental Science & Technology*, 38(13), 3632-3640. Retrieved from <http://>

pubs.acs.org/doi/abs/10.1021/es0498742

- Cornelissen, G., Rutherford, D. W., Arp, H. P. H., Dörsch, P., Kelly, C. N., & Rostad, C. E. (2013). Sorption of Pure N₂O to Biochars and Other Organic and Inorganic Materials under Anhydrous Conditions. *Environmental Science & Technology*, 47, 7704-7712. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/es400676q>
- Cornelissen, S., Koper, M., & Deng, Y. Y. (2012). The role of bioenergy in a fully sustainable global energy system. *Biomass and Bioenergy*, 41, 21-33. doi:<https://doi.org/10.1016/j.biombioe.2011.12.049>
- Coronella, C. J., et al. . (2012). *ENGINEERED PELLETS FROM BIOMASS BLEND*. Paper presented at the AIChE Annual Conference. http://www.researchgate.net/profile/M_Toufiq_Reza/publication/267311124_268611_Engineering_Pellets_of_Biomass_Blends/links/54ee67110cf25238f93a51be.pdf
- Corradini, G., Brotto, L., Ciccarese, L., & Pettenella, D. (2016). An overview of Italian participation in afforestation and reforestation projects under the Clean Development Mechanism. [An overview of Italian participation in afforestation and reforestation projects under the Clean Development Mechanism]. *iForest - Biogeosciences and Forestry*, 9(5), 720-728. doi:10.3832/ifor1654-009
- Corry, O., & Riesch, H. (2012). Beyond 'for or against': Environmental NGO-evaluations of CCS as a climate change solution. In *The Social Dynamics of Carbon Capture And Storage: Understanding CCS Representations, Governance and Innovation* (pp. 91-108).
- Corwall, W. (2017). Is wood a green source of energy? Scientists are divided. *Science (News)*. Retrieved from <http://www.sciencemag.org/news/2017/01/wood-green-source-energy-scientists-are-divided>
- Costa, J. A. V., & de Moraes, M. G. (2011). The role of biochemical engineering in the production of biofuels from microalgae. *Bioresource Technology*, 102(1), 2-9. doi:<https://doi.org/10.1016/j.biortech.2010.06.014>
- Costa Junior, C., Corbeels, M., Bernoux, M., Píccolo, M. C., Siqueira Neto, M., Feigl, B. J., . . . Lal, R. (2013). Assessing soil carbon storage rates under no-tillage: Comparing the synchronic and diachronic approaches. *Soil and Tillage Research*, 134, 207-212. doi:<https://doi.org/10.1016/j.still.2013.08.010>
- Costa, K. M., McManus, J. F., Anderson, R. F., Ren, H., Sigman, D. M., Winckler, G., . . . Ravelo, A. C. (2016). No iron fertilization in the equatorial Pacific Ocean during the last ice age. *Nature*, 529(7587), 519-522. doi:10.1038/nature16453
- Coteur, I., Wustenberghs, H., Debruyne, L., Lauwers, L., & Marchand, F. (2020). How do current sustainability assessment tools support farmers' strategic decision making? *Ecological Indicators*, 114, 106298. doi:<https://doi.org/10.1016/j.ecolind.2020.106298>
- Coumar, M. V., Parihar, R. S., Dwivedi, A. K., Saha, J. K., Rajendiran, S., Dotaniya, M. L., & Kundu, S. (2016). Impact of pigeon pea biochar on cadmium mobility in soil and transfer rate to leafy vegetable spinach. *Environmental Monitoring and Assessment*, 188(1). doi:10.1007/s10661-015-5028-y
- Coumaravel, K., Santhi, R., Kumar, V. S., & Mansour, M. M. (2011). Biochar – A Promising Soil Additive-A Review. *Agricultural Reviews*, 32(2), 134-139. Retrieved from <http://www.arccjournals.com/uploads/articles/R3227.pdf>
- Coumaravel, K., Santhi, R., & Maragatham, S. (2015). Effect of biochar on yield and nutrient uptake by hybrid maize and on soil fertility. *Indian Journal of Agricultural Research*, 49(2), 185. doi:10.5958/0976-058x.2015.00028.1
- Council, C. U. R. (2018). *Making Carbon a Commodity: The Potential of Carbon Capture RD&D*. Retrieved from <http://www.curc.net/making-carbon-a-commodity-the-potential-of-carbon-capture-rdd>

- Council, C. U. R. (2021). CURC Commends Bipartisan, Bicameral Introduction of the SCALE Act. Retrieved from <http://www.curc.net/curc-commends-bipartisan-bicameral-introduction-of-the-scale-act>
- Council, E. A. S. A. (2018). *Negative emission technologies: What role in meeting Paris Agreement targets?* Retrieved from https://easac.eu/fileadmin/PDF_s/reports_statements/Negative_Carbon/EASAC_Report_on_Negative_Emission_Technologies.pdf
- Council, E. A. S. A. (2019). *Forest bioenergy, carbon capture and storage, and carbon dioxide removal: an update.* Retrieved from <https://easac.eu/publications/details/forest-bioenergy-carbon-capture-and-storage-and-carbon-dioxide-removal-an-update/>
- Council, W. H. E. J. A. (2021). *Justice40: Climate and Economic Justice Screening Tool & Executive Order 12898 Revisions: Interim Final Recommendations.* Retrieved from [https://urldefense.com/v3/_https://carbon180.us11.list-manage.com/track/click?u=4823fd7f19ac2e684f23c310e&id=d561560d2f&e=69f319ee85__;!!laT_gp1N!lb7XWlpUOW6Xf8SVx5wzZmdp7VAeLWNxqJgx25inzGl9mJR7HyDAYmt93-pJa6VOAg\\$](https://urldefense.com/v3/_https://carbon180.us11.list-manage.com/track/click?u=4823fd7f19ac2e684f23c310e&id=d561560d2f&e=69f319ee85__;!!laT_gp1N!lb7XWlpUOW6Xf8SVx5wzZmdp7VAeLWNxqJgx25inzGl9mJR7HyDAYmt93-pJa6VOAg$)
- Covell, P., et al. . (2011). Advancing Biochar in the Chesapeake: A Strategy to Reduce Pollution from Poultry Litter. Retrieved from http://www.forest-trends.org/publication_details.php?publicationID=2891
- Covey, C., Doutriaux, C., Gleckler, P. J., Taylor, K. E., Trenberth, K. E., & Zhang, Y. (2018). High-Frequency Intermittency in Observed and Model-Simulated Precipitation. *Geophysical Research Letters*, 45(22), 12,514-512,522. doi:10.1029/2018gl078926
- Cowie, A. (2011, 08/2011). *Rural Climate Change Solutions Symposium.* Paper presented at the Rural Climate Change Solutions Symposium; May 3 - 4, 2011, University of New England.
- Cowie, A., et al. (2012). Biochar can enhance soil fertility and reduce greenhouse gas emissions. *16 Australian Agronomy Conference, 2012.* Retrieved from http://www.regional.org.au/au/asa/2012/climate-change/8277_cowiea.htm
- Cowie, A., et al. (2015). Biochar, carbon accounting and climate change. In J. Lehmann & S. Joseph (Eds.), *Biochar for Environmental Management Science, Technology and Implementation* (pp. 763-794).
- Cowie, A. (2020). The Morrison government wants to suck CO₂ out of the atmosphere. Here are 7 ways to do it. *The Conversation.* Retrieved from <https://theconversation.com/the-morrison-government-wants-to-suck-co-out-of-the-atmosphere-here-are-7-ways-to-do-it-144941>
- Cowie, A. L., & Cowie, A. J. (2014). *Life cycle assessment of greenhouse gas mitigation benefits of biochar.* University of New England, Retrieved from http://www.ieabioenergy-task38.org/publications/T38_Biochar_case_study.pdf
- Cowie., A. L., et al. (2012). Is sustainability certification for biochar the answer to environmental risks? *Pesq. agropec. bras.*, 47(5), 637-648. Retrieved from http://www.scielo.br/scielo.php?pid=S0100-204X2012000500002&script=sci_arttext
- Cox, D. (2013). *Response of 'First Lady' Marigolds to Plant Extract Fertilizers, Granular Organic Fertilizers, and Biochar.* Retrieved from Amherst, MA: <http://extension.umass.edu/floriculture/sites/floriculture/files/pdf-doc-ppt/13PlantExtractOrgFertBiochar.pdf>
- Cox, E. (2020). Barriers to Negative-Emissions Technologies. *One Earth*, 3(2), 137-139. doi:10.1016/j.oneear.2020.07.017
- Cox, E. (2020). Climate urgency dampens public acceptance of carbon dioxide removal. *Nature Research.* Retrieved from <https://socialsciences.nature.com/posts/climate-urgency-dampens-public-acceptance-of-carbon-dioxide-removal>
- Cox, E., Boettcher, M., Spence, E., & Bellamy, R. (2021). Casting a Wider Net on Ocean NETs.

- Frontiers in Climate*, 3(4). doi:10.3389/fclim.2021.576294
- Cox, E., & Edwards, N. R. (2019). Beyond carbon pricing: policy levers for negative emissions technologies. *Climate Policy*, 1-13. doi:10.1080/14693062.2019.1634509
- Cox, E., Pidgeon, N., & Spence, E. (2021). But They Told Us It Was Safe! Carbon Dioxide Removal, Fracking, and Ripple Effects in Risk Perceptions. *Risk Analysis*, n/a(n/a). doi:<https://doi.org/10.1111/risa.13717>
- Cox, E., Spence, E., & Pidgeon, N. (2020). Public perceptions of carbon dioxide removal in the United States and the United Kingdom. *Nature Climate Change*. doi:10.1038/s41558-020-0823-z
- Cox, E. M., Pidgeon, N., Spence, E., & Thomas, G. (2018). Blurred Lines: The Ethics and Policy of Greenhouse Gas Removal at Scale. *Frontiers in Environmental Science*, 6(38). doi:10.3389/fenvs.2018.00038
- Cox, J., et al. . (2012). *Biochar in horticulture - Prospects for the use of biochar in Australian horticulture*. Retrieved from http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0008/447857/DPI-BioChar-in-Horticulture.pdf
- Coyle, W. (2007). The Future of Biofuels: A Global Perspective. *Amber Waves*, 5, 24-29. Retrieved from <http://ageconsearch.umn.edu/bitstream/125366/2/Biofuels.pdf>
- Crabbe, M. (2009). Modelling effects of geoengineering options in response to climate change and global warming: Implications for coral reefs. *Computational Biology and Chemistry*, 33(6), 415-420. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1476927109001054>
- Craig, I. P., et al. (2015). Pesticide sustainable management practice (SMP) including porous biochar/geopolymer structures for contaminated water remediation. *International Journal of GEOMATE*, 9(2), 1523-1527. Retrieved from <http://www.gi-j.com/Serial%202018/1523-1527-4216-Jan-Dec-2015.pdf>
- Craik, N., Blackstock, J., & Hubert, M.-A. (2013). Regulating Geoengineering Research through Domestic Environmental Protection Frameworks: Reflections on the Recent Canadian Ocean Fertilization Case. *Carbon & Climate Law Review*, 7(2), 117-124.
- Crane-Droesch, A., et al. (2013). Heterogeneous global crop yield response to biochar: a meta-regression analysis. *Environmental Research Letters*, 8(4), 1-8. Retrieved from <http://iopscience.iop.org/article/10.1088/1748-9326/8/4/044049/meta>
- Crane-Droesch, A. (2015). Technology diffusion, outcome variability, and social learning: Evidence from a field experiment in Kenya. In.
- Creamer, A. E., & Gao, B. (2015). Absorbents for CO₂ Capture. In *Carbon Dioxide Capture: An Effective Way to Combat Global Warming* (pp. 43-49). Cham: Springer International Publishing.
- Creamer, A. E., & Gao, B. (2015). CO₂ Reduction and Utilization. In *Carbon Dioxide Capture: An Effective Way to Combat Global Warming* (pp. 51-57). Cham: Springer International Publishing.
- Creamer, A. E., & Gao, B. (2015). *SpringerBriefs in Molecular Science*Carbon Dioxide Capture: An Effective Way to Combat Global WarmingAdsorbents for CO₂ Capture. Cham: Springer International Publishing.
- Creamer, A. E., Gao, B., & Wang, S. (2016). Carbon dioxide capture using various metal oxyhydroxide–biochar composites. *Chemical Engineering Journal*, 283, 826 - 832. doi:10.1016/j.cej.2015.08.037
- Creamer, A. E., Gao, B., & Zhang, M. (2014). Carbon dioxide capture using biochar produced from sugarcane bagasse and hickory wood. *Chemical Engineering Journal*, 249(1), 174-179. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1385894714003945>
- Creamer, A. E., Gao, B., Zimmerman, A., & Harris, W. (2018). Biomass-facilitated production of

- activated magnesium oxide nanoparticles with extraordinary CO₂ capture capacity. *Chemical Engineering Journal*, 334, 81-88. doi:<https://doi.org/10.1016/j.cej.2017.10.035>
- Creamer, A. E. G., Bin. (2015). Adsorbents for CO₂ Capture. In (pp. 25-41).
- Creamer, A. E. G., Bin. (2015). Overview of CO₂ Capture Technology. In *Carbon Dioxide Capture: An Effective Way to Combat Global Warming* (pp. 17-24).
- Creative, G. (2019). The breakthrough that could actually reverse climate change. *Grist*, (April 8). Retrieved from <https://grist.org/sponsored/the-breakthrough-that-could-actually-reverse-climate-change/>
- Cressey, D. (2014). Rock's power to mop up carbon revisited. *Nature*, 505(7484), 464. Retrieved from <http://www.nature.com/news/rock-s-power-to-mop-up-carbon-revisited-1.14560>
- Creutzig, F., et al. (2012). Can bioenergy assessments deliver? *Economics of Energy & Environmental Policy*, 1, 65-82.
- Creutzig, F., et al. (2013). Integrating place-specific livelihood and equity outcomes into global assessments of bioenergy deployment. *Environmental Research Letters*(8), 2-12. Retrieved from <http://iopscience.iop.org/article/10.1088/1748-9326/8/3/035047/pdf>
- Creutzig, F. (2016). Economic and ecological views on climate change mitigation with bioenergy and negative emissions. *GCB Bioenergy*, 8(1), 4-10. doi:[10.1111/gcbb.12235](https://doi.org/10.1111/gcbb.12235)
- Creutzig, F., Breyer, C., Hilaire, J., Minx, J., Peters, G., & Socolow, R. H. (2019). The mutual dependence of negative emission technologies and energy systems. *Energy & Environmental Science*. doi:[10.1039/C8EE03682A](https://doi.org/10.1039/C8EE03682A)
- Creutzig, F., Erb, K.-H., Haberl, H., Hof, C., Hunsberger, C., & Roe, S. (2021). Considering sustainability thresholds for BECCS in IPCC and biodiversity assessments. *GCB Bioenergy*, 13(4), 510-515. doi:<https://doi.org/10.1111/gcbb.12798>
- Creutzig, F., Popp, A., Plevin, R., Luderer, G., Minx, J., & Edenhofer, O. (2012). Reconciling top-down and bottom-up modelling on future bioenergy deployment. *Nature Climate Change*, 2(5), 320-327. doi:<http://www.nature.com/nclimate/journal/v2/n5/abs/nclimate1416.html#supplementary-information>
- Creutzig, F., Ravindranath, N. H., Berndes, G., Bolwig, S., Bright, R., Cherubini, F., . . . Masera, O. (2015). Bioenergy and climate change mitigation: an assessment. *GCB Bioenergy*, 7(5), 916-944. doi:[10.1111/gcbb.12205](https://doi.org/10.1111/gcbb.12205)
- Crew, B. (2017). A Canadian Start-Up Is Removing CO₂ From The Air And Turning It Into Pellets. *Science Alert*. Retrieved from <https://www.sciencealert.com/a-canadian-start-up-is-removing-co2-from-the-air-and-turning-it-into-pellets>
- Cripps, G., Widdicombe, S., Spicer, J. I., & Findlay, H. S. (2013). Biological impacts of enhanced alkalinity in *Carcinus maenas*. *Marine Pollution Bulletin*, 71(1–2), 190-198. doi:<https://doi.org/10.1016/j.marpolbul.2013.03.015>
- Cristina Diez, M., et al. . (2013). Biochar as a Partial Replacement of Peat in Pesticide-Degrading Biomixtures Formulated with Different Soil Types. *Journal of Biobased Materials and Bioenergy*, 7, 741-747. Retrieved from <https://lechosbiologicos.files.wordpress.com/2014/05/diez-et-al-2013-biochar-as-partial-replacement.pdf>
- Cristina Diez, M., et al. (2013). *BIOCHAR AS PARTIAL REPLACEMENT OF PEAT IN A BIOMIXTURE FORMULATED WITH 3 TYPES OF SOILS TO DEGRADE PESTICIDES*. Paper presented at the III SYMPOSIUM ON AGRICULTURAL AND AGROINDUSTRIAL WASTE MANAGEMENT 12TH TO 14TH MARCH 2013, SAO PEDRO, SAO PAULO STATE, BRAZIL. http://www.sbera.org.br/3sigera/obras/ag_tec_02_MCristinaDiez.pdf
- Crombie, K., et al. (2012). The effect of pyrolysis conditions on biochar stability as determined by three methods. *GCB Bioenergy*, 5(2), 122-131. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/gcbb.12030/abstract>

- Crombie, K., et al. (2014). Biochar – synergies and trade-offs between soil enhancing properties and C sequestration potential. *GCB Bioenergy*, 7(5), 1161-1175. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/gcbb.12213/abstract>
- Crombie, K. (2014). Biochar – synergies between carbon storage, environmental functions and renewable energy production. In.
- Crombie, K., & Mašek, O. (2014). Pyrolysis biochar systems, balance between bioenergy and carbon sequestration. *GCB Bioenergy*, 7(2), 349-361. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/gcbb.12137/abstract>
- Cronian, J., et al. (2020). *Biomass, Afforestation and Energy Demand Reduction*. Retrieved from <http://www.ukerc.ac.uk/publications/afforestation-energy-demand.html>
- Crooks, E. (2021). The challenge of negative emissions. *Wood Mackenzie*. Retrieved from <https://www.woodmac.com/news/the-challenge-of-negative-emissions/>
- Croot, P. L., Bluhm, K., Schlosser, C., Streu, P., Breitbarth, E., Frew, R., & Van Ardelan, M. (2008). Regeneration of Fe(II) during EIFeX and SOFeX. *Geophysical Research Letters*, 35(19), n/a-n/a. doi:10.1029/2008GL035063
- Croot, P. L., Passow, U., Assmy, P., Jansen, S., & Strass, V. H. (2007). Surface active substances in the upper water column during a Southern Ocean Iron Fertilization Experiment (EIFEX). *Geophysical Research Letters*, 34(3). doi:10.1029/2006gl028080
- Cross, A., et al. (2016). The role of biochar in agricultural soils. In *Biochar in European Soils and Agriculture: Science and Practice*.
- Cross, A., & Sohi, S. P. (2011). The priming potential of biochar products in relation to labile carbon contents and soil organic matter status. *Soil Biology and Biochemistry*, 43(10), 2127-2134. doi:10.1016/j.soilbio.2011.06.016
- Cross, A., & Sohi, S. P. (2012). A method for screening the relative long-term stability of biochar. *GCB Bioenergy*, 5(2), 215-220. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/gcbb.12035/abstract>
- Crowcroft, O. (2020). Brussels says planting three billion trees will help save the planet. Experts aren't so sure ... *Euronews*. Retrieved from <https://www.euronews.com/2020/10/20/brussels-says-planting-three-billion-trees-will-help-save-the-planet-experts-aren-t-so-sur>
- Crowley, K., & Rathi, A. (2020). Exxon Holds Back on Technology That Could Slow Climate Change. *Bloomberg Green*. Retrieved from <https://www.bloomberg.com/news/features/2020-12-07/exxon-s-xom-carbon-capture-project-stalled-by-covid-19>
- Crusius, J. (2020). "Natural" Climate Solutions Could Speed Up Mitigation, With Risks. Additional Options Are Needed. *Earth's Future*, 8(4), e2019EF001310. doi:10.1029/2019ef001310
- Crutzen, P. J., & Andreae, M. O. (1990). Biomass burning in the tropics - impact on atmospheric chemistry and biogeochemical cycles. *Science*, 250(4988), 1669-1678. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/17734705>
- Crutzen, P. J., Mosier, A. R., Smith, K. A., & Winiwarter, W. (2008). N₂O release from agro-biofuel production negates global warming reduction by replacing fossil fuels. *Atmos. Chem. Phys.*, 8(2), 389-395. doi:10.5194/acp-8-389-2008
- Cruz Ceballos, D. C., et al. (2015). Effect of production conditions on self-heating propensity of torrefied sawmill residues. *Fuel*, 160, 227 - 237. doi:10.1016/j.fuel.2015.07.097
- Crystal-Ornelas, R., Thapa, R., & Tully, K. L. (2021). Soil organic carbon is affected by organic amendments, conservation tillage, and cover cropping in organic farming systems: A meta-analysis. *Agriculture, Ecosystems & Environment*, 312, 107356. doi:<https://doi.org/10.1016/j.agee.2021.107356>
- Cuellar, A., & Herzog, H. (2015). A Path Forward for Low Carbon Power from Biomass. *Energies*, 8(3), 1701-1715. Retrieved from <http://www.mdpi.com/1996-1073/8/3/1701>

- Cuellar, A. D. (2017). *Plant Power: The Cost of Using Biomass for Power Generation and Potential for Decreased Greenhouse Gas Emissions*. (MS, Technology & Policy Masters). MIT, Retrieved from http://sequestration.mit.edu/pdf/AmandaCuellar_Thesis_June2012.pdf
- Cuellar-Franca, R. M., & Azapagic, A. (2015). Carbon capture, storage and utilisation technologies: A critical analysis and comparison of their life cycle environmental impacts. *Journal of CO₂ Utilization*, 9, 82-102. doi:10.1016/j.jcou.2014.12.001
- Cueto García, M. J. (2016). *Potencial de producción de biochar en España a partir de residuos de la industria papelera, de lodos de E.D.A.R., de residuos sólidos urbanos y de residuos ganaderos: Estudio de la fijación de carbono* (translated from Spanish language). Retrieved from <http://oa.upm.es/39453/>
- Cui, E., Wu, Y., Zuo, Y., & Chen, H. (2016). Effect of different biochars on antibiotic resistance genes and bacterial community during chicken manure composting. *Bioresource Technology*, 203, 11-17. doi:10.1016/j.biortech.2015.12.030
- Cui, H.-J., et al. . (2011). Enhancing phosphorus availability in phosphorus-fertilized zones by reducing phosphate adsorbed on ferrihydrite using rice straw-derived biochar. *Journal of Soils and Sediments*, 11, 1135-1141. doi:10.1007/s11368-011-0405-9
- Cui, L., et al. . (2011). Biochar Amendment Greatly Reduces Rice Cd Uptake in a Contaminated Paddy Soil: A Two-Year Field Experiment. *BioResources*, 6(3), 2605 - 2618. Retrieved from http://ojs.cnr.ncsu.edu/index.php/BioRes/article/view/BioRes_06_3_2605_Cui_LZPBC_Biochar_Amendment_Rice_Cd_Uptake
- Cui, L., et al., & n. (2013). Adsorption Behaviour of Pymetrozine by Four Kinds of Biochar from Aqueous Solution. *Adsorption Science & Technology*, 31(6), 477-488. Retrieved from <http://journals.sagepub.com/doi/abs/10.1260/0263-6174.31.6.477>
- Cui, L. e. a. (2012). The Reduction of Wheat Cd Uptake in Contaminated Soil Via Biochar Amendment: A Two-Year Field Experiment. *BioResources*, 7, 5666-5676. Retrieved from http://www.ncsu.edu/bioresources/BioRes_07/BioRes_07_4_5666_Cui_PLYZBC_Biochar_Wheat_Cd_Uptake_Soil_2Year_3226.pdf
- Cui, Q., Lu, H., Li, C., Singh, S., Ba, L., Zhao, X., & Ku, A. Y. (2018). China baseline coal-fired power plant with post-combustion CO₂ capture: 1. Definitions and performance. *International Journal of Greenhouse Gas Control*, 78, 37-47. doi:<https://doi.org/10.1016/j.ijggc.2018.07.021>
- Cui, X., Hao, H., Zhang, C., He, Z., & Yang, X. (2016). Capacity and mechanisms of ammonium and cadmium sorption on different wetland-plant derived biochars. *Science of The Total Environment*, 539, 566 - 575. doi:10.1016/j.scitotenv.2015.09.022
- Cui, Z. (2015). *498 Research Paper: A Review of Biochar's Applications in the Soil Nitrogen Cycle*. New Mexico State University, Retrieved from <http://chme.nmsu.edu/files/2014/11/CHE-498-Final-Report-Cui-S15.pdf>
- Cukierman, A. L., & Bonelli, P. R. (2016). Potentialities of biochars from different biomasses for climate change abatement by carbon capture and soil amelioration. *Environmental Research Journal*, 9(4), 427-449. Retrieved from <http://web.b.ebscohost.com/abstract?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=19353049&AN=112166911&h=329%2bMyrY%2fqKzLq3PtOWjjsDr0sQeq4VoGfJ%2fVDBI8vRkhd7ml7knrfnij5zTS0qNwl%2bx7Ev7t2ZzFsEiTly5Q%3d%3d&crl=c&resultNs=AdminWebAuth&resultL>
- Cullen, J. J. (1995). Status of the iron hypothesis after the Open-Ocean Enrichment Experiment1. *Limnology and Oceanography*, 40(7), 1336-1343. doi:10.4319/lo.1995.40.7.1336
- Cullen, J. J., & Boyd, P. W. (2008). Predicting and verifying the intended and unintended consequences of large-scale ocean iron fertilization. *Marine Ecology Progress Series*, 364, 295-301. Retrieved from <http://www.int-res.com/abstracts/meps/v364/p295-301/>

- Cullenward, D., et al. (2020). Insights from our first project reports. Retrieved from <https://carbonplan.org/research/stripe-reports-insights>
- Cumicheo, C., Mac Dowell, N., & Shah, N. (2019). Natural gas and BECCS: A comparative analysis of alternative configurations for negative emissions power generation. *International Journal of Greenhouse Gas Control*, 90, 102798. doi:<https://doi.org/10.1016/j.ijggc.2019.102798>
- Cunningham, A. (2019). Carbon capture and storage must be at the heart of Labour's green revolution. *LabourList*. Retrieved from <https://labourlist.org/2019/05/carbon-capture-and-storage-must-be-at-the-heart-of-labours-green-revolution/>
- Cunningham, S. C., Mac Nally, R., Baker, P. J., Cavagnaro, T. R., Beringer, J., Thomson, J. R., & Thompson, R. M. (2015). Balancing the environmental benefits of reforestation in agricultural regions. *Perspectives in Plant Ecology, Evolution and Systematics*, 17(4), 301-317. doi:<https://doi.org/10.1016/j.ppees.2015.06.001>
- Curaqueo, G. (2014). Use of biochar on two volcanic soils: effects on soil properties and barley yield. *Journal of Soil Science and Plant Nutrition*, 14(4), 911-924. doi:[10.4067/s0718-95162014005000072](https://doi.org/10.4067/s0718-95162014005000072)
- Curaqueo, G. (2015). *Biochar and Arbuscular Mycorrhizal Fungi: An Alternative to Contributing to Agroecosystem Sustainability*. Paper presented at the 20th World Congress of Soil Science. http://www.researchgate.net/profile/Gustavo_Curaqueo/publication/265164653_poster_KOREA_2014/links/5401f6a40cf2bba34c1b7b72.pdf
- Curaqueo, G., González, A., Cea, M., Meier, S., Borie, F., & Navia, R. (2014). Use of Biochar in volcanic soils of Southern Chile and its effect on yield parameters of hordeum vulgare. *Journal of Soil Sciences and Plant Nutrition*, 14(4), 911-924. Retrieved from www.researchgate.net/profile/Gustavo_Curaqueo/publication/260017884_Use_of_Biochar_in_volcanic_soils_of_Southern_Chile_and_its_effect_on_yield_parameters_of_Hordeum_vulgare/links/0a85e52f10b4d69c22000000.pdf
- Curran, D. T. (2016). *Phosphate Removal and Recovery from Wastewater by Natural Materials for Ecologically Engineered Wastewater Treatment Systems*. University of Vermont, Retrieved from <http://scholarworks.uvm.edu/graddis/455/>
- Currie, D. (2018). Governing the “Big Bad Fix”: Geoengineering, human rights and international law. *Geoengineering Monitor*. Retrieved from <http://www.geoengineeringmonitor.org/2018/02/governing-the-big-bad-fix/>
- Currie, K. I., Macaskill, B., Reid, M. R., & Law, C. S. (2011). Processes governing the carbon chemistry during the SAGE experiment. *Deep-Sea Research Part II-Topical Studies In Oceanography*, 58(6), 851-860. doi:[10.1016/j.dsrr.2010.10.023](https://doi.org/10.1016/j.dsrr.2010.10.023)
- Cusack, D. F., et al. (2014). An interdisciplinary assessment of climate engineering strategies. *Frontiers in Ecology and the Environment*, 12(5), 280-287. Retrieved from <http://www.esajournals.org/doi/abs/10.1890/130030>
- Custelcean, R., Garrabrant, K. A., Agullo, P., & Williams, N. J. (2021). Direct air capture of CO₂ with aqueous peptides and crystalline guanidines. *Cell Reports Physical Science*, 2(4), 100385. doi:<https://doi.org/10.1016/j.xcrp.2021.100385>
- Custelcean, R., Williams, N. J., Garrabrant, K. A., Agullo, P., Brethomé, F. M., Martin, H. J., & Kidder, M. K. (2019). Direct Air Capture of CO₂ with Aqueous Amino Acids and Solid Bis-iminoguanidines (BIGs). *Industrial & Engineering Chemistry Research*, 58(51), 23338-23346. doi:[10.1021/acs.iecr.9b04800](https://doi.org/10.1021/acs.iecr.9b04800)
- Cutler, E. (2020). Unf*cking the Future – Afforestation of Scotland with rock dust and biochar. Retrieved from <https://www.remineralize.org/2020/12/unfcking-the-future-afforestation-of-scotland-with-rock-dust-and-biochar/>
- Cuvila, C. A., Kantarelis, E., Mellin, P., Saffaripour, M., Hye, A., & Yang, W. (2015). Effect of zeolite on product yield and composition during pyrolysis of hydrothermally pretreated

- Spruce. In.
- Cuvila, C. A., Kantarelis, E., & Yang, W. (2015). The Impact of a Mild Sub-Critical Hydrothermal Carbonization of Pretreatment on Umbila Wood : A Mass and Energy Balance Perspective. In.
- Cuvila, C. A., Said, M., Kantarelis, E., Saffaripour, M., & Yang, W. (2015). Effect of mild hydrothermal pretreatment on biomass pyrolysis characteristics and vapors : A Mass and Energy Balance Perspective. In.
- Cuvilas, C. A. (2015). *Mild Wet Torrefaction and Characterization of Woody Biomass from Mozambique for Thermal Applications*. KTH Royal Institute of Technology, Retrieved from <http://www.diva-portal.org/smash/record.jsf?pid=diva2%3A785099&dswid=1271>
- Ćwik, A., Casanova, I., Rausis, K., Koukouzas, N., & Zarębska, K. (2018). Carbonation of high-calcium fly ashes and its potential for carbon dioxide removal in coal fired power plants. *Journal of Cleaner Production*, 202, 1026-1034. doi:<https://doi.org/10.1016/j.jclepro.2018.08.234>
- Czekała, W., Malińska, K., Cáceres, R., Janczak, D., Dach, J., & Lewicki, A. (2016). Co-composting of poultry manure mixtures amended with biochar – The effect of biochar on temperature and C-CO₂ emission. *Bioresource Technology*, 200, 921 - 927. doi:[10.1016/j.biortech.2015.11.019](https://doi.org/10.1016/j.biortech.2015.11.019)
- Czernichowski-Lauriol, I., Berenblyum, R., Bigi, S., Car, M., Liebscher, A., Persoglia, S., . . . Wildenborg, T. (2017). CO₂GeoNet Perspective on CO₂ Capture and Storage: A Vital Technology for Completing the Climate Change Mitigation Portfolio. *Energy Procedia*, 114, 7480-7491. doi:<https://doi.org/10.1016/j.egypro.2017.03.1881>
- Czimczik, C. I., & Masiello, C. A. (2007). Controls on black carbon storage in soils. *Global Biogeochemical Cycles*, 21(3), 1-8. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1029/2006GB002798/abstract>
- D'Maris, C., & Andrew, L. (2017). Carbon dioxide removal and the futures market. *Environmental Research Letters*, 12(1), 015003. Retrieved from <http://stacks.iop.org/1748-9326/12/i=1/a=015003>
- da Silva Mendes. Jacqueline, e. a. (2015). Using MB-4 rock powder, poultry litter biochar, silicate and calcium carbonate to amend different soil types. *Australian Journal of Crop Science*, 9(10), 987-995. Retrieved from http://www.cropj.com/chaves_9_10_2015_987_995.pdf
- da Veiga Moline, E. F., Falcão, N. P. d. S., Pereira da Silva, D., Clement, C. R., & Júnior, J. L. (2015). Efeito da aplicação de biocarvão, cama de frango e formulado NPK no estado nutricional foliar de laranjeira em terra mulata (EFFECT OF BIOCHAR, POULTRY LITTER AND NPK ON THE NUTRITIONAL STATUS LEAF OF ORANGE ON TERRA MULATA). *Bioscience Journal*, 31(2), 362 - 369. doi:[10.14393/BJ-v31n2a2015-22298](https://doi.org/10.14393/BJ-v31n2a2015-22298)
- Daamen, D. D. L., Terwel, B. W., Mors, E. t., Reiner, D. M., Schumann, D., Anghel, S., . . . Ziogou, F. (2011). Scrutinizing the impact of CCS communication on opinion quality: Focus group discussions versus Information-Choice Questionnaires: Results from experimental research in six countries. *Energy Procedia*, 4, 6182-6187. doi:<https://doi.org/10.1016/j.egypro.2011.02.629>
- Daggash, H. A., et al. (2019). Higher Carbon Prices on Emissions Alone Will Not Deliver the Paris Agreement. *Joule*. doi:<https://doi.org/10.1016/j.joule.2019.08.008>
- Daggash, H. A., Fajardy, M., & Mac Dowell, N. (2020). Chapter 14 Negative Emissions Technologies. In *Carbon Capture and Storage* (pp. 447-511): The Royal Society of Chemistry.
- Daggash, H. A., Heuberger, C. F., & Mac Dowell, N. (2019). The role and value of negative emissions technologies in decarbonising the UK energy system. *International Journal of Greenhouse Gas Control*, 81, 181-198. doi:<https://doi.org/10.1016/j.ijggc.2018.12.019>

- Daggash, H. A., & Mac Dowell, N. (2019). Higher Carbon Prices on Emissions Alone Will Not Deliver the Paris Agreement. *Joule*, 3(9), 2120-2133. doi:10.1016/j.joule.2019.08.008
- Daggash, H. A., Patzschke, C. F., Heuberger, C. F., Zhu, L., Hellgardt, K., Fennell, P. S., . . . Mac Dowell, N. (2018). Closing the carbon cycle to maximise climate change mitigation: power-to-methanol vs. power-to-direct air capture. *Sustainable Energy & Fuels*. doi:10.1039/C8SE00061A
- Dagnarain, N. (2020). Ocean Crops: Is This The Next Frontier For Agriculture? *Forbes*. Retrieved from <https://www.forbes.com/sites/nishandegnarain/2020/07/29/ocean-crops-is-this-the-next-frontier-for-agriculture/#54c120a05c95>
- Dahal, N., & Bajracharya, R. M. (2013). *Use of Biochar for enhancing soil quality in mountain agricultural lands of Nepal*. Paper presented at the Proceedings of International Conference on Forests, People and Climate: Changing Paradigm, 2013. http://www.researchgate.net/profile/Ngamindra_Dahal/publication/281372574_Use_of_Biochar_for_enhancing_soil_quality_in_mountain_agricultural_land_s_of_Nepal/links/55e4357708ae6abe6e8e99bb.pdf
- Dahl, M., Asplund, M. E., Björk, M., Deyanova, D., Infantes, E., Isaeus, M., . . . Gullström, M. (2020). The influence of hydrodynamic exposure on carbon storage and nutrient retention in eelgrass (*Zostera marina* L.) meadows on the Swedish Skagerrak coast. *Scientific Reports*, 10(1), 13666. doi:10.1038/s41598-020-70403-5
- Dai, X., Boutton, T. W., Glaser, B., Ansley, R. J., & Zech, W. (2005). Black carbon in a temperate mixed-grass savanna. *Soil Biology & Biochemistry*, 37(10), 1879-1881. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0038071705000908>
- Dai, Z., et al. (2013). Principle Component and Hierarchical Cluster Analysis of Soil Properties following Biochar Incorporation. *Soil Science Society of America Journal*, 78, 205-213. Retrieved from <https://dl.sciencesocieties.org/publications/sssj/pdfs/78/1/205>
- Dai, Z., et al. (2014). The Effects and Mechanisms of Soil Acidity Changes, following Incorporation of Biochars in Three Soils Differing in Initial pH. *Soil Science Society of America Journal*, 78(5), 1-9. doi:10.2136/sssaj2013.08.0340
- Dai, Z., Brookes, P. C., Yan, H., & Xu, J. (2014). Increased Agronomic and Environmental Value Provided by Biochars with Varied Physicochemical Properties Derived from Swine Manure Blended with Rice Straw. *Journal of Agricultural and Food Chemistry*, 62(44), 10623 - 10631. doi:10.1021/jf504106v
- Dai, Z., Meng, J., Shi, Q., Xu, B., Lian, Z., Brookes, P. C., & Xu, J.-M. (2015). Effects of manure- and lignocellulose-derived biochars on adsorption and desorption of zinc by acidic types of soil with different properties. *European Journal of Soil Science*, 67(1), 40-50. doi:10.1111/ejss.12290
- Dai, Z., Middleton, R., Viswanathan, H., Fessenden-Rahn, J., Bauman, J., Pawar, R., . . . McPherson, B. (2014). An Integrated Framework for Optimizing CO₂ Sequestration and Enhanced Oil Recovery. *Environmental Science & Technology Letters*, 1(1), 49-54. doi:10.1021/ez4001033
- Dai, Z., Viswanathan, H., Fessenden-Rahn, J., Middleton, R., Pan, F., Jia, W., . . . Grigg, R. (2014). Uncertainty Quantification for CO₂ Sequestration and Enhanced Oil Recovery. *Energy Procedia*, 63, 7685-7693. doi:<https://doi.org/10.1016/j.egypro.2014.11.802>
- Dai, Z., Viswanathan, H., Middleton, R., Pan, F., Ampomah, W., Yang, C., . . . White, M. (2016). CO₂ Accounting and Risk Analysis for CO₂ Sequestration at Enhanced Oil Recovery Sites. *Environmental Science & Technology*, 50(14), 7546-7554. doi:10.1021/acs.est.6b01744
- Daigneault, A. J., Miranda, M. J., & Sohngen, B. (2010). Optimal Forest Management with Carbon Sequestration Credits and Endogenous Fire Risk. *Land Economics*, 86(1), 155-172.

- Daioglou, V., Woltjer, G., Strengers, B., Elbersen, B., Barberena Ibañez, G., Sánchez Gonzalez, D., . . . van Vuuren, D. P. (2020). Progress and barriers in understanding and preventing indirect land-use change. *Biofuels, Bioproducts and Biorefining*. doi:10.1002/bbb.2124
- Daioglous, V., et al. (2015). Competing uses of biomass for energy and chemicals: implications for long-term global CO₂ mitigation potential. *GCB Bioenergy*, 7, 1321-1334. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/gcbb.12228/epdf>
- Dale, B. (2008). Biofuels: Thinking Clearly about the Issues. *Journal of Agricultural and Food Chemistry*, 56, 3885-3891. Retrieved from <http://pubs.acs.org/doi/pdf/10.1021/jf800250u>
- Dale, B. (2017). A sober view of the difficulties in scaling cellulosic biofuels. *Biofuels, Bioproducts and Biorefining*, 11(1), 5-7. doi:10.1002/bbb.1745
- Dale, B. E., Allen, M. S., Laser, M., & Lynd, L. R. (2009). Protein feeds coproduction in biomass conversion to fuels and chemicals. *Biofuels, Bioproducts and Biorefining*, 3(2), 219-230. doi:10.1002/bbb.132
- Dale, B. E., Bals, B. D., Kim, S., & Eranki, P. (2010). Biofuels Done Right: Land Efficient Animal Feeds Enable Large Environmental and Energy Benefits. *Environmental Science & Technology*, 44(22), 8385-8389. doi:10.1021/es101864b
- Dale, B. E., & Ong, R. G. (2014). Design, implementation, and evaluation of sustainable bioenergy production systems. *Biofuels, Bioproducts and Biorefining*, 8(4), 487-503. doi:10.1002/bbb.1504
- Dale, V. H., Efroymson, R. A., Kline, K. L., & Davitt, M. S. (2015). A framework for selecting indicators of bioenergy sustainability. *Biofuels, Bioproducts and Biorefining*, 9(4), 435-446. doi:doi:10.1002/bbb.1562
- Dale, V. H., Efroymson, R. A., Kline, K. L., Langholtz, M. H., Leiby, P. N., Oladosu, G. A., . . . Hilliard, M. R. (2013). Indicators for assessing socioeconomic sustainability of bioenergy systems: A short list of practical measures. *Ecological Indicators*, 26, 87-102. doi:<https://doi.org/10.1016/j.ecolind.2012.10.014>
- Dale, V. H., Kline, K. L., Wright, L. L., Perlack, R. D., Downing, M., & Graham, R. L. (2011). Interactions among bioenergy feedstock choices, landscape dynamics, and land use. *Ecological Applications*, 21(4), 1039-1054. doi:10.1890/09-0501.1
- Dalena, F., Senatore, A., Tursi, A., & Basile, A. (2017). 17 - Bioenergy production from second- and third-generation feedstocks. In F. Dalena, A. Basile, & C. Rossi (Eds.), *Bioenergy Systems for the Future* (pp. 559-599): Woodhead Publishing.
- D'alessandro, D. (2021). Engineers have built machines to scrub carbon dioxide from the air. Will it halt climate change? *Phys.org*. Retrieved from <https://phys.org/news/2021-01-built-machines-carbon-dioxide-air.html>
- D'Alessandro, D. M., Berend, S., & Long, J. R. (2010). Carbon Dioxide Capture: Prospects for New Materials. *Angewandte Chemie International Edition*, 49(35), 6058-6082. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/anie.201000431/abstract>
- D'Alessandro, D. M., Smit B., & J.R., L. (2010). Carbon dioxide capture: prospects for new materials. *Angewandte Chemie International Edition*, 49(35), 6058-6082. Retrieved from <http://sydney.edu.au/science/chemistry/~deanna/images/Angew%20review.pdf>
- Dalheim, R. (2019). Upcoming mechanical trees suck carbon dioxide from the air. *Woodworking Network*. Retrieved from <https://www.woodworkingnetwork.com/technology/upcoming-mechanical-trees-suck-carbon-dioxide-air>
- DalmasNeto, C. J., Sydney, E. B., Assmann, R., Neto, D., & Soccol, C. R. (2014). Chapter 7 - Production of Biofuels from Algal Biomass by Fast Pyrolysis. In A. Pandey, D.-J. Lee, Y. Chisti, & C. R. Soccol (Eds.), *Biofuels from Algae* (pp. 143-153). Amsterdam: Elsevier.
- Dana, J. (2019). ASU air-cleaning 'mechanical tree' to be commercially built. *12 News (Arizona)*. Retrieved from <https://www.12news.com/article/news/asu-air-cleaning-mechanical-tree-to-be-commercially-built/75-8d24be9f-7a15-4f9f-85cc-387c55154816>

- Dana, J. (2020). The financial market can hold back climate change. *Asia Times*. Retrieved from <https://asiatimes.com/2020/12/how-financial-market-can-hold-back-climate-change/>
- Danckwerts, P. V., Kennedy, A. M., & Roberts, D. (1963). Kinetics of CO₂ absorption in alkaline solutions—II: Absorption in a packed column and tests of surface-renewal models. *Chemical Engineering Science*, 18(2), 63-72. doi:[https://doi.org/10.1016/0009-2509\(63\)80015-9](https://doi.org/10.1016/0009-2509(63)80015-9)
- Dang, Q., Mba Wright, M., & Brown, R. C. (2015). Ultra-Low Carbon Emissions from Coal-Fired Power Plants through Bio-Oil Co-Firing and Biochar Sequestration. *Environmental Science & Technology*, 49(24), 14688 - 14695. doi:[10.1021/acs.est.5b03548](https://doi.org/10.1021/acs.est.5b03548)
- Dang, T., Mosley, L. M., Fitzpatrick, R., & Marschner, P. (2015). Organic Materials Differ in Ability to Remove Protons, Iron and Aluminium from Acid Sulfate Soil Drainage Water. *Water, Air, & Soil Pollution*, 226(11). doi:[10.1007/s11270-015-2595-z](https://doi.org/10.1007/s11270-015-2595-z)
- Dang, T., Mosley, L. M., Fitzpatrick, R., & Marschner, P. (2016). Addition of organic material to sulfuric soil can reduce leaching of protons, iron and aluminium. *Geoderma*, 271, 63 - 70. doi:[10.1016/j.geoderma.2016.02.012](https://doi.org/10.1016/j.geoderma.2016.02.012)
- Daniel, J. A. J., Christian, A., Mariliis, L., & Glen, P. P. (2020). The role of negative carbon emissions in reaching the Paris climate targets: The impact of target formulation in integrated assessment models. *Environmental Research Letters*. Retrieved from <http://iopscience.iop.org/article/10.1088/1748-9326/abc3f0>
- Danielson, F., et al. (2009). Biofuel Plantations on Forested Lands: Double Jeopardy for Biodiversity and Climate. *Conservation Biology*, 23(2), 348-358. doi:[10.1111/j.1523-1739.2008.01096.x](https://doi.org/10.1111/j.1523-1739.2008.01096.x)
- Danish, S., et al. . (2014). Influence of biochar on growth and photosynthetic attributes of *Triticum aestivum* L. under half and full irrigation. *International Journal of Biosciences*, 5(7), 101-108. Retrieved from <http://www.cabdirect.org/abstracts/20153017517.html>
- Danish, S., et al. (2015). Phosphorus solubilizing bacteria and rice straw biochar consequence on maize pigments synthesis. *International Journal of Biosciences*, 5(12), 31-39. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?jsessionid=1AE856CB5F1C6628FFD7BD83FD59EBA3?doi=10.1.1.677.7745&rep=rep1&type=pdf>
- Dansie, A. P., Wiggs, G. F. S., Thomas, D. S. G., & Washington, R. (2017). Measurements of windblown dust characteristics and ocean fertilization potential: The ephemeral river valleys of Namibia. *Aeolian Research*, 29, 30-41. doi:[10.1016/j.aeolia.2017.08.002](https://doi.org/10.1016/j.aeolia.2017.08.002)
- Dao, T. T., et al. . (2013). Effect of different sources of biochar on growth of maize in sandy and feralite soils. *Livestock Research for Rural Development*, 25(4). Retrieved from <http://www.lrrd.cipav.org.co/lrrd25/4/dao25059.htm>
- Dara, S., Bonakdarpour, A., Ho, M., Govindarajan, R., & Wilkinson, D. P. (2018). Conversion of Saline waste-water and Gaseous Carbon Dioxide to (Bi)carbonate salts, Hydrochloric Acid and Desalinated Water for On-site Industrial Utilization. *Reaction Chemistry & Engineering*. doi:[10.1039/C8RE00259B](https://doi.org/10.1039/C8RE00259B)
- Darby, I., Xu, C.-Y., Wallace, H. M., Joseph, S., Pace, B., & Bai, S. H. (2016). Short-term dynamics of carbon and nitrogen using compost, compost-biochar mixture and organo-mineral biochar. *Environmental Science and Pollution Research*, 23(11), 11267 - 11278. doi:[10.1007/s11356-016-6336-7](https://doi.org/10.1007/s11356-016-6336-7)
- Darling, P. (2013). *Notes on Fungi and Past Human Activity in enhancing Nigeria's Rainforest Soils*. Retrieved from https://www.academia.edu/7544394/Notes_on_Fungi_and_Past_Human_Activity_in_enhancing_Nigerias_Rainforest_Soils
- Darton, R. C., & Yang, A. (2018). Removing Carbon Dioxide from the Atmosphere – Assessing the Technologies. *Chemical Engineering Transactions*, 69, 91-96. Retrieved from <https://www.aidic.it/cet/18/69/016.pdf>

- Darunte, L. A., Oetomo, A. D., Walton, K. S., Sholl, D. S., & Jones, C. W. (2016). Direct Air Capture of CO₂ Using Amine Functionalized MIL-101(Cr). *ACS Sustainable Chemistry & Engineering*, 4(10), 5761-5768. doi:10.1021/acssuschemeng.6b01692
- Darunte, L. A., Sen, T., Bhawanani, C., Walton, K. S., Sholl, D. S., Realff, M. J., & Jones, C. W. (2019). Moving Beyond Adsorption Capacity in Design of Adsorbents for CO₂ Capture from Ultradilute Feeds: Kinetics of CO₂ Adsorption in Materials with Stepped Isotherms. *Industrial & Engineering Chemistry Research*, 58(1), 366-377. doi:10.1021/acs.iecr.8b05042
- Darunte, L. A., Walton, K. S., Sholl, D. S., & Jones, C. W. (2016). CO₂ capture via adsorption in amine-functionalized sorbents. *Current Opinion in Chemical Engineering*, 12, 82-90. doi:<http://dx.doi.org/10.1016/j.coche.2016.03.002>
- Daryabeigi Zand, A., & Grathwohl, P. (2016). Enhanced Immobilization of Polycyclic Aromatic Hydrocarbons in Contaminated Soil Using Forest Wood-Derived Biochar and Activated Carbon under Saturated Conditions, and the Importance of Biochar Particle Size. *Polish Journal of Environmental Studies*, 25(1), 427 - 441. doi:10.15244/pjoes/60160
- Das, K. C., Garcia-Perez, M., Bibens, B., & Melear, N. (2008). Slow pyrolysis of poultry litter and pine woody biomass: Impact of chars and bio-oils on microbial growth. *Journal of Environmental Science and Health Part A-Toxic/hazardous Substances & Environmental Engineering*, 43(7), 714-724. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/18444073>
- Das, K. C., Singh, K., Adolphson, R., Hawkins, B., Oglesby, R., Lakly, D., & Day, D. (2010). Steam Pyrolysis and Catalytic Steam Reforming of Biomass for Hydrogen and Biochar Production. *Applied Engineering in Agriculture*, 26, 137-146. Retrieved from <https://elibrary.asabe.org/azdez.asp?AID=29470&t=2>
- Das, O., & Sarmah, A. K. (2015). The love–hate relationship of pyrolysis biochar and water: A perspective. *Science of The Total Environment*, 512-513, 682-685. doi:10.1016/j.scitotenv.2015.01.061
- Das, O., Sarmah, A. K., & Bhattacharyya, D. (2015). Biocomposites from waste derived biochars: Mechanical, thermal, chemical, and morphological properties. *Waste Management*, 49, 560-570. doi:10.1016/j.wasman.2015.12.007
- Das, O., Sarmah, A. K., & Bhattacharyya, D. (2015). A novel approach in organic waste utilization through biochar addition in wood/polypropylene composites. *Waste Management*, 38, 132-140. doi:10.1016/j.wasman.2015.01.015
- Das, O., Sarmah, A. K., & Bhattacharyya, D. (2015). Structure–mechanics property relationship of waste derived biochars. *Science of The Total Environment*, 538, 611 - 620. doi:10.1016/j.scitotenv.2015.08.073
- Das, O., Sarmah, A. K., & Bhattacharyya, D. (2015). A sustainable and resilient approach through biochar addition in wood polymer composites. *Science of The Total Environment*, 512-513, 326 - 336. doi:10.1016/j.scitotenv.2015.01.063
- Das, O., Sarmah, A. K., & Bhattacharyya, D. (2016). Nanoindentation assisted analysis of biochar added biocomposites. *Composites Part B: Engineering*, 91, 219 - 227. doi:10.1016/j.compositesb.2016.01.057
- Das, O., Sarmah, A. K., Zujovic, Z., & Bhattacharyya, D. (2016). Characterisation of waste derived biochar added biocomposites: chemical and thermal modifications. *Science of The Total Environment*, 550, 133 - 142. doi:10.1016/j.scitotenv.2016.01.062
- Das, S., Kim, G. W., Hwang, H. Y., Verma, P. P., & Kim, P. J. (2019). Cropping With Slag to Address Soil, Environment, and Food Security. *Frontiers in Microbiology*, 10(1320). doi:10.3389/fmicb.2019.01320
- Datta, A., et al. (2018). Negative Emissions Technologies: Has Their Time Arrived? *Forbes*. Retrieved from <https://www.forbes.com/sites/uhenergy/2018/09/14/negative-emissions->

- technologies-has-their-time-arrived/
- Datta, A., & Krishnamoorti, R. (2019). Opportunities for a Low Carbon Transition-Deploying Carbon Capture, Utilization, and Storage in Northeast India. *7(12)*. doi:10.3389/fenrg.2019.00012
- Datta, S. J., et al. (2015). CO₂ capture from humid flue gases and humid atmosphere using a microporous coppersilicate. *Science*, *350*(6258), 302-306. Retrieved from <http://science.sciencemag.org/content/350/6258/302>
- Dautbayeva, K. A., Kozybayeva, F. E., & Beyseeva, G. B. (2014). Quantitative and qualitative structure mikroartopod in dark-chestnut soils of the foothills of zailiysky alatau at use of biocoal as ameliorant. *Kaznu Bulletin*, *40*(1/1). Retrieved from <http://bulletin-ecology.kaznu.kz/index.php/1-eco/article/download/466/453>
- Dauvergne, P., & Neville, K. J. (2010). Forests, food, and fuel in the tropics: the uneven social and ecological consequences of the emerging political economy of biofuels. *The Journal of Peasant Studies*, *37*(4), 631-660. doi:10.1080/03066150.2010.512451
- David, A. S., Tim, D., Scott, D., & Tom, B. (2021). Assessing the sequestration time scales of some ocean-based carbon dioxide reduction strategies. *Environmental Research Letters*. Retrieved from <http://iopscience.iop.org/article/10.1088/1748-9326/ac0be0>
- David, B. J. (2016). *Transforming a liability into an asset*. Retrieved from https://www.env.go.jp/earth/cop/cop22/common/pdf/event/16/02_presentation3.pdf
- Davidson, C. L., Dahowski, R. T., McJeon, H. C., Clarke, L. E., Iyer, G. C., & Muratori, M. (2017). The Value of CCS under Current Policy Scenarios: NDCs and Beyond. *Energy Procedia*, *114*, 7521-7527. doi:<https://doi.org/10.1016/j.egypro.2017.03.1885>
- Davidson, E. A., & Ackerman, I. L. (1993). Changes in soil carbon inventories following cultivation of previously untilled soils. *Biogeochemistry*, *20*(3), 161-193. Retrieved from <https://link.springer.com/article/10.1007/BF00000786>
- Davidson, R. M. (2010). Advanced adsorption processes and technology for carbon dioxide (CO₂) capture in power plants A2 - Maroto-Valer, M. Mercedes. In *Developments and Innovation in Carbon Dioxide (CO₂) Capture and Storage Technology* (Vol. 1, pp. 183-202): Woodhead Publishing.
- Davies, L. L., Uchitel, K., & Ruple, J. (2013). Understanding barriers to commercial-scale carbon capture and sequestration in the United States: An empirical assessment. *Energy Policy*, *59*, 745-761. doi:<https://doi.org/10.1016/j.enpol.2013.04.033>
- Davies, P. A. (2015). Solar thermal decomposition of desalination reject brine for carbon dioxide removal and neutralisation of ocean acidity. *Environmental Science: Water Research & Technology*, *1*(2), 131-137. doi:10.1039/C4EW00058G
- Davies, P. A., et al. (2018). Desalination as a negative emissions technology. *Environmental Science - Water Research and Technology*, *4*(6), 839-850.
- Davis, C. (2019). West Texas Permian to Site Largest DAC, CO₂ Sequestration Project. *Shale Daily*. Retrieved from <https://www.naturalgasintel.com/articles/118457-west-texas-permian-to-site-largest-dac-co2-sequestration-project>
- Davis, C. (2020). Oxy Taking 'Contrarian Approach' to Net-Zero Emissions by Developing Oil Resources, Reusing CO₂. *Natural Gas Intelligence*. Retrieved from [https://www.naturalgasintel.com/oxy-taking-contrarian-approach-to-netzero-emissions-by-developing-oil-resources-reusing-co2/](https://www.naturalgasintel.com/oxy-taking-contrarian-approach-to-net-zero-emissions-by-developing-oil-resources-reusing-co2/)
- Davis, R., Aden, A., & Pienkos, P. T. (2011). Techno-economic analysis of autotrophic microalgae for fuel production. *Applied Energy*, *88*(10), 3524-3531. doi:<https://doi.org/10.1016/j.apenergy.2011.04.018>
- Davis, S. C., et al. (2012). Harvesting carbon from Eastern US Forests: Opportunities and Impacts of an Expanding Bioenergy Industry. *Forests*, *3*, 370-397.
- Davis, S. C. (2012). Impact of second-generation biofuel agriculture on greenhouse-gas

- emissions in the corn-growing regions of the US. *Frontiers in Ecology & the Environment*, 10(2), 69-74. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1890/110003/abstract>
- Davis, S. J., Lewis, N. S., Shaner, M., Aggarwal, S., Arent, D., Azevedo, I. L., . . . Caldeira, K. (2018). Net-zero emissions energy systems. *Science*, 360(6396). doi:10.1126/science.aas9793
- Dawson, C. (2016). Venture Seeks to Cut Emissions --- Canadian pilot project grabs carbon-dioxide particles from air to reduce gas discharges. *Wall Street Journal*. Retrieved from <http://www.wsj.com/articles/green-venture-seeks-to-turn-back-clock-on-carbon-emissions-1456930222>
- Day, D., Evans, R. J., Lee, J. W., & Reicosky, D. (2005). Economical CO₂, SO_x, and NO_x capture from fossil-fuel utilization with combined renewable hydrogen production and large-scale carbon sequestration. *Energy*, 30(14), 2558-2579. doi:<https://doi.org/10.1016/j.energy.2004.07.016>
- Day, J. G., Slocombe, S. P., & Stanley, M. S. (2012). Overcoming biological constraints to enable the exploitation of microalgae for biofuels. *Bioresource Technology*, 109, 245-251. doi:<https://doi.org/10.1016/j.biortech.2011.05.033>
- Day, R. M. (2015). *Effects of Biochar on Soil Water Retention, pH and Radish (Raphanus sativus) Plant Growth*. Paper presented at the Georgia Southern Research Forum.
- de Andrade, C. A., et al. (2015). Mineralização e efeitos de biocarvão de cama de frango sobre a capacidade de troca catiônica do solo (Mineralization and biochar effects of poultry litter on the ability of the soil exchange). *Pesquisa Agropecuária Brasileira (Brazilian Agricultural Research)*, 50(5), 407-416. Retrieved from <http://www.scielo.br/pdf/pab/v50n5/0100-204X-pab-50-05-00407.pdf>
- de Andrade, C. A., et al. (2015). Mineralização e efeitos de biocarvão de cama de frangosobre a capacidade de troca catiônica do solo. *Pesquisa Agropecuária Brasileira*, 50(5), 407 - 416. doi:10.1590/s0100-204x2015000500008
- de Arruda, M. R., Pereira, J. C. R., Moreira, A., & Teixeira, W. G. (2007). Survival rate of guarana herbaceous cuttings in different substrates. *Ciencia E Agrotecnologia*, 31, 236-241.
- de Baar, H. (1995). Importance of iron for plankton blooms and carbon dioxide drawdown in the Southern Ocean. *Nature*, 373(6513), 412-414. Retrieved from https://www.researchgate.net/publication/232796466_Importance_of_iron_for_plankton_blooms_and_carbon_dioxide_drawdown_in_the_Southern_Ocean
- de Baar, H. J. W., et al. (2005). Synthesis of iron fertilization experiments: From the Iron Age in the Age of Enlightenment. *Journal of Geophysical Research*, 110(C09S16), 1-24. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1029/2004JC002601/epdf>
- de Baar, H. J. W., Gerringa, L. J. A., Laan, P., & Timmermans, K. R. (2008). Efficiency of carbon removal per added iron in ocean iron fertilization. *Marine Ecology Progress Series*, 364, 269-282. Retrieved from <http://www.int-res.com/abstracts/meps/v364/p269-282/>
- De Beenhouwer, M., Geeraert, L., Mertens, J., Van Geel, M., Aerts, R., Vanderhaegen, K., & Honnay, O. (2016). Biodiversity and carbon storage co-benefits of coffee agroforestry across a gradient of increasing management intensity in the SW Ethiopian highlands. *Agriculture, Ecosystems & Environment*, 222(Supplement C), 193-199. doi:<https://doi.org/10.1016/j.agee.2016.02.017>
- de Best-Waldhofer, M., Brunsting, S., & Paukovic, M. (2012). Public concepts of CCS: Understanding of the Dutch general public and its reflection in the media. *International Journal of Greenhouse Gas Control*, 11, S139-S147. doi:<https://doi.org/10.1016/j.ijggc.2012.08.016>

- de Best-Waldhober, M., Daamen, D., & Faaij, A. (2009). Informed and uninformed public opinions on CO₂ capture and storage technologies in the Netherlands. *International Journal of Greenhouse Gas Control*, 3(3), 322-332. doi:<http://dx.doi.org/10.1016/j.ijggc.2008.09.001>
- de Best-Waldhober, M., Paukovic, M., Brunsting, S., & Daamen, D. (2011). Awareness, knowledge, beliefs, and opinions regarding CCS of the Dutch general public before and after information. *Energy Procedia*, 4, 6292-6299. doi:<http://dx.doi.org/10.1016/j.egypro.2011.02.644>
- de Coninck, H., & Benson, S. M. (2014). Carbon Dioxide Capture and Storage: Issues and Prospects. *Annual Review of Environment and Resources*, 39(1), 243-270. doi:[10.1146/annurev-environ-032112-095222](https://doi.org/10.1146/annurev-environ-032112-095222)
- De Coninck, H., De Best-Waldhober, M., & Groenenberg, H. (2010). Regulatory and social analysis for the legitimization and market formation of carbon dioxide (CO₂) capture and storage technologies A2 - Maroto-Valer, M. Mercedes. In *Developments and Innovation in Carbon Dioxide (CO₂) Capture and Storage Technology* (Vol. 1, pp. 64-92): Woodhead Publishing.
- De Coninck, H. C., et al. (2006). *Acceptability of CO₂ capture and storage. A review of legal, regulatory, economic and social aspects of CO₂ capture and storage*. Retrieved from <https://www.osti.gov/etdeweb/biblio/20767364>
- De Corato, U., Pane, C., Bruno, G. L., Cancellara, F. A., & Zaccardelli, M. (2015). Co-products from a biofuel production chain in crop disease management: A review. *Crop Protection*, 68, 12 - 26. doi:[10.1016/j.cropro.2014.10.025](https://doi.org/10.1016/j.cropro.2014.10.025)
- de Figueiredo, M. A. (2005). *The International Law of Sub-Seabed Carbon Dioxide Storage*. Retrieved from https://sequestration.mit.edu/pdf/international_law_subsea_co2_storage.pdf
- de Fraiture, C., Giordano, M., & Liao, Y. (2008). Biofuels and implications for agricultural water use: blue impacts of green energy. *Water Policy*, 10(Supplement 1), 67-81. Retrieved from <http://wp.iwaponline.com/content/ppiwawaterpol/10/S1/67.full.pdf>
- De Gisi, S., Petta, L., & Wendland, C. (2014). History and Technology of Terra Preta Sanitation. *Sustainability*, 6(3), 1328-1345. Retrieved from <http://www.mdpi.com/2071-1050/6/3/1328>
- De Gryze, S., Cullen, M., & Durschinger, L. (2010). *Evaluation of the Opportunities for Generating Carbon Offsets from Soil Sequestration of Biochar: An issues paper commissioned by the Climate Action Reserve*. Retrieved from http://www.climateactionreserve.org/how/protocols/future-protocol-development/#soil_carbon_sequestration
- de Jong, E., & Gosselink, R. J. A. (2014). Chapter 17 - Lignocellulose-Based Chemical Products. In V. K. Gupta, M. G. Tuohy, C. P. Kubicek, J. Saddler, & F. Xu (Eds.), *Bioenergy Research: Advances and Applications* (pp. 277-313). Amsterdam: Elsevier.
- de Jonge, M. M. J., Daemen, J., Loriaux, J. M., Steinmann, Z. J. N., & Huijbregts, M. A. J. (2019). Life cycle carbon efficiency of Direct Air Capture systems with strong hydroxide sorbents. *International Journal of Greenhouse Gas Control*, 80, 25-31. doi:<https://doi.org/10.1016/j.ijggc.2018.11.011>
- de la Fuente, M., Calvo, E., Skinner, L., Pelejero, C., Evans, D., Muller, W., . . . Cacho, I. (2017). The Evolution of Deep Ocean Chemistry and Respired Carbon in the Eastern Equatorial Pacific Over the Last Deglaciation. *Paleoceanography*, 32(12), 1371-1385. doi:[10.1002/2017pa003155](https://doi.org/10.1002/2017pa003155)
- de la Rosa, A., & Korscha, R. (2014). *Biochar systems for carbon finance -- an evaluation based on Life Cycle Assessment studies in New Zealand : a thesis presented in partial fulfilment of the requirements of Doctor of Philosophy in Science at Massey University*,

Wellington, New Zealand. (Ph.D.). Massey University, Retrieved from <http://mro.massey.ac.nz/handle/10179/5973>

- De la Rosa, J. M., Knicker, H., Lopez-Capel, E., Manning, D. A. C., Gonzalez-Perez, J. A., & Gonzalez-Vila, F. J. (2008). Direct Detection of Black Carbon in Soils by py-GC/MS, Carbon-13 NMR Spectroscopy and Thermogravimetric Techniques. *Soil Science Society of America Journal*, *72*(1), 258-267.
- de la Rosa, J. M., Paneque, M., Hilber, I., Blum, F., Knicker, H. E., & Bucheli, T. D. (2015). Assessment of polycyclic aromatic hydrocarbons in biochar and biochar-amended agricultural soil from Southern Spain. *Journal of Soils and Sediments*. doi:10.1007/s11368-015-1250-z
- de la Rosa, J. M., Paneque, M., Miller, A. Z., & Knicker, H. (2014). Relating physical and chemical properties of four different biochars and their application rate to biomass production of *Lolium perenne* on a Calcic Cambisol during a pot experiment of 79days. *Science of The Total Environment*, *499*, 175 - 184. doi:10.1016/j.scitotenv.2014.08.025
- de Lannoy, C.-F., Eisaman, M. D., Jose, A., Karnitz, S. D., DeVaul, R. W., Hannun, K., & Rivest, J. L. B. (2018). Indirect ocean capture of atmospheric CO₂: Part I. Prototype of a negative emissions technology. *International Journal of Greenhouse Gas Control*, *70*, 243-253. doi:<https://doi.org/10.1016/j.ijggc.2017.10.007>
- De Matos, A. T., Brandao, V. S., Neves, J. C. L., & Martinez, M. A. (2003). Removal of Cu and Zn from swine raising wastewater using organic filters. *Environmental Technology*, *24*(2), 171-178. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/12666787>
- de Melo Carvalho, M. T., et al. . (2013). Biochar improves fertility of a clay soil in the Brazilian Savannah: short term effects and impact on rice yield. *Journal of Agriculture and Rural Development in the Tropics and Subtropics*, *114*(2), 101–107. Retrieved from <http://www.jarts.info/index.php/jarts/article/view/2013081343330>
- de Melo Carvalho, M. T., et al. (2014). Biochar increases plant-available water in a sandy loam soil under an aerobic rice crop system. *Solid Earth*, *5*(2), 939-952. Retrieved from <http://www.solid-earth.net/5/939/2014/se-5-939-2014.pdf>
- de Morais, M. G., & Costa, J. A. V. (2007). Biofixation of carbon dioxide by *Spirulina* sp. and *Scenedesmus obliquus* cultivated in a three-stage serial tubular photobioreactor. *Journal of Biotechnology*, *129*(3), 439-445. doi:<https://doi.org/10.1016/j.biotech.2007.01.009>
- de Morais, M. G., & Costa, J. A. V. (2007). Isolation and selection of microalgae from coal fired thermoelectric power plant for biofixation of carbon dioxide. *Energy Conversion and Management*, *48*(7), 2169-2173. doi:<https://doi.org/10.1016/j.enconman.2006.12.011>
- de Oliveira Garcia, W., Amann, T., & Hartmann, J. (2018). Increasing biomass demand enlarges negative forest nutrient budget areas in wood export regions. *Scientific Reports*, *8*(1), 5280. doi:10.1038/s41598-018-22728-5
- de Oliveira Garcia, W., Amann, T., Hartmann, J., Karstens, K., Popp, A., Boysen, L. R., . . . Goll, D. (2020). Impacts of enhanced weathering on biomass production for negative emission technologies and soil hydrology. *Biogeosciences*, *17*(7), 2107-2133. doi:10.5194/bg-17-2107-2020
- de Oliveira Mendes, G., et al. (2015). Optimization of *Aspergillus niger* rock phosphate solubilization in solid-state fermentation and use of the resulting product as a P fertilizer. *Microbial Biotechnology*, *8*(6), 930-939. doi:10.1111/1751-7915.12289
- de Oliveira, P. R., et al. , Lamy-Mendes, A. C., Gogola, J. L., Mangrich, A. S., Marcolino Junior, L. H., & Bergamini, M. F. (2015). Mercury nanodroplets supported at biochar for electrochemical determination of zinc ions using a carbon paste electrode. *Electrochimica Acta*, *151*, 525 - 530. doi:10.1016/j.electacta.2014.11.057
- De Pasquale, C., et al. (2012). Fast field cycling NMR relaxometry characterization of biochars obtained from an industrial thermochemical process. *Journal of Soils and Sediments*,

- 12(8), 1211-1221. doi:10.1007/s11368-012-0489-x
- de Puy Kamp, M. (2021). How marginalized communities in the South are paying the price for 'green energy' in Europe. Retrieved from <https://www.cnn.com/interactive/2021/07/us/american-south-biomass-energy-invs/>
- de Queiroz Fernandes Araújo, O., Luiz de Medeiros, J., Yokoyama, L., & do Rosário Vaz Morgado, C. (2015). Metrics for sustainability analysis of post-combustion abatement of CO₂ emissions: Microalgae mediated routes and CCS (carbon capture and storage). *Energy*, 92, 556-568. doi:<https://doi.org/10.1016/j.energy.2015.03.116>
- de Richter, R., Caillol, S., & Ming, T. (2019). 20 - Geoengineering: Sunlight reflection methods and negative emissions technologies for greenhouse gas removal. In T. M. Letcher (Ed.), *Managing Global Warming* (pp. 581-636): Academic Press.
- de Richter, R. K., Ming, T. Z., & Caillol, S. (2013). Fighting global warming by photocatalytic reduction of CO₂ using giant photocatalytic reactors. *Renewable & Sustainable Energy Reviews*, 19, 82-106. doi:10.1016/j.rser.2012.10.026
- de Rozari, P., Greenway, M., & El Hanandeh, A. (2015). An investigation into the effectiveness of sand media amended with biochar to remove BOD5, suspended solids and coliforms using wetland mesocosms. In.
- de Souza, J. F. T., Pacca, S. A. J. M., & Change, A. S. f. G. (2019). How far can low-carbon energy scenarios reach based on proven technologies? *Mitigation Adapt. Strat. Global Change*, 24(5), 687-705. doi:10.1007/s11027-018-9826-8
- de Torres Vincent, T., & Boyer, T. H. (2020). Beneficial reuse of treated municipal wastewater and flue gas carbon dioxide via combined ion exchange. *Journal of Water Process Engineering*, 37, 101405. doi:<https://doi.org/10.1016/j.jwpe.2020.101405>
- de Visser, E., Hendriks, C., Hamelinck, C., van de Brug, E., Jung, M., Meyer, S., . . . Gerling, P. (2011). PlantaCap: A ligno-cellulose bio-ethanol plant with CCS. *Energy Procedia*, 4, 2941-2949. doi:<https://doi.org/10.1016/j.egypro.2011.02.202>
- de Wild, P. (2011). *BIOMASS PYROLYSIS FOR CHEMICALS*. (PhD). Rijksuniversiteit Groningen, the Netherlands, Retrieved from http://www.biochar-international.org/sites/default/files/Thesis_pyrolyse_compleet_Paul_de_Wild.pdf
- de_Richter, R., Ming, T., Davies, P., Liu, W., & Caillol, S. (2017). Removal of non-CO₂ greenhouse gases by large-scale atmospheric solar photocatalysis. *Progress in Energy and Combustion Science*, 60, 68-96. doi:<https://doi.org/10.1016/j.pecs.2017.01.001>
- de_Richter, R. K., Ming, T., Caillol, S., & Liu, W. (2016). Fighting global warming by GHG removal: Destroying CFCs and HCFCs in solar-wind power plant hybrids producing renewable energy with no-intermittency. *International Journal of Greenhouse Gas Control*, 49, 449-472. doi:<http://dx.doi.org/10.1016/j.ijggc.2016.02.027>
- Dean, J. (2009). Iron Fertilization: A Scientific Review with International Policy Recommendations. *Environs Environmental Law and Policy*, 32, 321-344. Retrieved from <http://www.lexisnexis.com/hottopics/lnacademic/>
- Deb, D., Kloft, M., Lässig, J., & Walsh, S. (2016). Variable effects of biochar and P solubilizing microbes on crop productivity in different soil conditions. *Agroecology and Sustainable Food Systems*, 40(2), 145 - 168. doi:10.1080/21683565.2015.1118001
- deB Richter, D., & Houghton, R. A. (2011). Gross CO₂ fluxes from land-use change: implications for reducing global emissions and increasing sinks. *Carbon Management*, 2(1), 41-47. doi:10.4155/cmt.10.43
- Dechene, A., et al. (2014). Sorption of polar herbicides and herbicide metabolites by biochar-amended soil. *Chemosphere*, 109, 180-186. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0045653514002124>
- DeCicco, J. M. (2013). Biofuel's carbon balance: doubts, certainties and implications. *Climatic Change*, 121(4), 801-814. doi:10.1007/s10584-013-0927-9

- DeCicco, J. M., Liu, D. Y., Heo, J., Krishnan, R., Kurthen, A., & Wang, L. (2016). Carbon balance effects of U.S. biofuel production and use. *Climatic Change*, 138(3), 667-680. doi:10.1007/s10584-016-1764-4
- Deenik, J., & Cooney, M. (2016). The Potential Benefits and Limitations of Corn Cob and Sewage Sludge Biochars in an Infertile Oxisol. *Sustainability*, 8(2), 131. doi:10.3390/su8020131
- Deenik, J. L., et al. (2011). Charcoal Effects on Soil Properties and Plant Growth: Charcoal Ash and Volatile Matter Effects on Soil Properties and Plant Growth in an Acid Ultisol. *Soil Science*, 176(7), 336-345. Retrieved from https://www.researchgate.net/publication/232114108_Charcoal_Ash_and_Volatile_Matter_Effects_on_Soil_Properties_and_Plant_Growth_in_an_Acid_Ultisol
- DEFRA, U. (2009). *An Assessment of the Potential Benefits, Costs and Issues Surrounding the addition of Biochar to Soil: An Expert Elicitation Approach*. Retrieved from http://randd.defra.gov.uk/Document.aspx?Document=SP0576_9141_FRP.pdf
- DeGryze, S., Cullen, M., & Durschinger, L. (2010). *Evaluation of the opportunities for generating Carbon Offsets from soil sequestration of Biochar*. Retrieved from
- Dehkhana, A. M., & Ellis, N. (2012). Biochar-based catalyst for simultaneous reactions of esterification and transesterification. *Catalysis Today*, 207, 86-92. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0920586112004002>
- Dehkhana, A. M., Ellis, N., & Gyenge, E. (2013). Electrosorption on activated biochar: effect of thermo-chemical activation treatment on the electric double layer capacitance. *Journal of Applied Electrochemistry*, 44(1), 141-157. Retrieved from <https://link.springer.com/article/10.1007/s10800-013-0616-4>
- Dehkhana, A. M., Ellis, N., & Gyenge, E. (2016). Effect of activated biochar porous structure on the capacitive deionization of NaCl and ZnCl₂ solutions. *Microporous and Mesoporous Materials*, 224, 217 - 228. doi:10.1016/j.micromeso.2015.11.041
- Dehkhana, A. M., West, A. H., & Ellis, N. (2010). Biochar based solid acid catalyst for biodiesel production. *Applied Catalysis*, 382, 197-204. doi:10.1016/j.apcata.2010.04.051
- Deich, N. (2015). Direct Air Capture Explained in 10 Questions. Retrieved from <http://www.centerforcarbonremoval.org/blog-posts/2015/9/20/direct-air-capture-explained-in-10-questions>
- Deich, N., & Reali, E. (2019). Big Oil is funding climate tech – but should they? Blog Retrieved from <https://medium.com/@carbon180/big-oil-is-funding-future-climate-tech-but-should-they-c103aed36011>
- Delaney, J. (2019). John Delaney's plan for Negative Emissions Technologies. *Delaney for President 2020*. Retrieved from <https://www.johndelaney.com/issues/negative-emissions-technologies/>
- del-Campo, B. G. (2015). *Optimizing the production of activated carbon from fast pyrolysis char*. Iowa State University, Retrieved from <http://www.worldscientific.com/doi/abs/10.1142/S2339547815400026>
- Delille, B., Borges, A. V., & Delille, D. (2009). Influence of giant kelp beds (*Macrocystis pyrifera*) on diel cycles of pCO₂ and DIC in the Sub-Antarctic coastal area. *Estuarine, Coastal and Shelf Science*, 81(1), 114-122. doi:<https://doi.org/10.1016/j.ecss.2008.10.004>
- Delrue, F., Li-Beisson, Y., Setier, P. A., Sahut, C., Roubaud, A., Froment, A. K., & Peltier, G. (2013). Comparison of various microalgae liquid biofuel production pathways based on energetic, economic and environmental criteria. *Bioresource Technology*, 136, 205-212. doi:<https://doi.org/10.1016/j.biortech.2013.02.091>
- DeLuca, T. H., et al. , & . (2006). Wildfire-produced charcoal directly influences nitrogen cycling in ponderosa pine forests. *Soil Science Society of America Journal*, 70(2), 448-453. Retrieved from <https://dl.sciencesocieties.org/publications/ssaj/abstracts/70/2/448>?

- access=0&view=pdf
- DeLuca, T. H., & Aplet, G. H. (2008). Charcoal and carbon storage in forest soils of the rocky mountain west. *Frontiers in Ecology and the Environment*, 6(1), 18-24. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1890/070070/abstract>
- DeLuca, T. H., MacKenzie, M. D., & Gundale, M. J. (2009). Biochar Effects on Soil Nutrient Transformation. In J. Lehmann & S. Joseph (Eds.), *Biochar for Environmental Management: Science and Technology* (pp. 251-270). London, UK: Earthscan.
- Delucchi, M. (2011). A conceptual framework for estimating the climate impacts of land-use change due to energy crop programs. *Biomass & Bioenergy*, 35(6), 2337-2360. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0961953410004198>
- Delucchi, M. A. (2010). Impacts of biofuels on climate change, water use, and land use. *Annals of the New York Academy of Sciences*, 1195(1), 28-45. doi:10.1111/j.1749-6632.2010.05457.x
- DeLucia, E. H. (2015). How Biofuels Can Cool Our Climate and Strengthen Our Ecosystems. *EOS*. Retrieved from <https://eos.org/features/how-biofuels-can-cool-our-climate-and-strengthen-our-ecosystems>
- Delzeit, R., Pongratz, J., Schneider, J. M., Schuenemann, F., Mauser, W., & Zabel, F. (2019). Forest restoration: Expanding agriculture. *Science*, 366(6463), 316-317. doi:10.1126/science.aaz0705
- DeMessie, B., Sahle-Demessie, E., & Sorial, G. A. (2015). Cleaning Water Contaminated With Heavy Metal Ions Using Pyrolyzed Biochar Adsorbents. *Separation Science and Technology*, 150707112535009. doi:10.1080/01496395.2015.1064134
- Demirbas, A. (2004). Bioenergy, Global Warming, and Environmental Impacts. *Energy Sources*, 26(3), 225-236. doi:10.1080/00908310490256581
- Demirbas, A. (2004). Determination of calorific values of biochars and pyro-oils from pyrolysis of beech trunkbarks. *Journal of Analytical and Applied Pyrolysis*, 72(2), 215-219.
- Demirbas, A. (2004). Effects of temperature and particle size on bio-char yield from pyrolysis of agricultural residues. *Journal of Analytical and Applied Pyrolysis*, 72(2), 243-248. doi:<http://dx.doi.org/10.1016/j.jaat.2004.07.003>
- Demirbas, A. (2006). Production and characterization of bio-chars from biomass via pyrolysis. *Energy Sources Part A-Recovery Utilization and Environmental Effects*, 28(5), 413-422.
- Demirbas, A. (2008). Bio-fuels from Agricultural Residues. *Energy Sources Part A-Recovery Utilization and Environmental Effects*, 30(2), 101-109.
- Demirbas, A. (2008). Biofuels sources, biofuel policy, biofuel economy and global biofuel projections. *Energy Conversion and Management*, 49(8), 2106-2116.
- Demirbas, A. (2009). Political, economic and environmental impacts of biofuels: A review. *Applied Energy*, 86, Supplement 1, S108-S117. doi:<https://doi.org/10.1016/j.apenergy.2009.04.036>
- Demirbas, A. (2010). Use of algae as biofuel sources. *Energy Conversion and Management*, 51(12), 2738-2749. doi:<https://doi.org/10.1016/j.enconman.2010.06.010>
- Demirbaş, A. (2008). Production of Biodiesel from Algae Oils. *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects*, 31(2), 163-168. doi:10.1080/15567030701521775
- Demirbas, A., & Fatih Demirbas, M. (2011). Importance of algae oil as a source of biodiesel. *Energy Conversion and Management*, 52(1), 163-170. doi:<https://doi.org/10.1016/j.enconman.2010.06.055>
- Demirbas, A., Pehlivan, E., & Altun, T. (2006). Potential evolution of Turkish agricultural residues as bio-gas, bio-char and bio-oil sources. *International Journal of Hydrogen Energy*, 31(5), 613-620. doi:<http://dx.doi.org/10.1016/j.ijhydene.2005.06.003>
- Demirbas, M. F. (2011). Biofuels from algae for sustainable development. *Applied Energy*,

- 88(10), 3473-3480. doi:<https://doi.org/10.1016/j.apenergy.2011.01.059>
- Demisie, W., Liu, Z., & Zhang, M. (2014). Effect of biochar on carbon fractions and enzyme activity of red soil. *CATENA*, 121, 214-221. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0341816214001556>
- Demisie, W., & Zhang, M. (2015). Effect of biochar application on microbial biomass and enzymatic activities in degraded red soil. *African Journal of Agricultural Research*, 10(8), 755-766. doi:10.5897/ajar2013.8209
- Dempster, D. N., et al. (2011). Decreased soil microbial biomass and nitrogen mineralisation with Eucalyptus biochar addition to a coarse textured soil. *Plant and Soil*, 354(1), 311-324. doi:10.1007/s11104-011-1067-5
- Dempster, D. N., Jones, D. L., & Murphy, D. V. (2012). Clay and biochar amendments decreased inorganic but not dissolved organic nitrogen leaching in soil. *Soil Research*, 50(3), 216-221. Retrieved from https://www.researchgate.net/publication/274433159_Clay_and_biochar_amendments_decreased_inorganic_but_not_dissolved_organic_nitrogen_leaching_in_soil
- Dempster, D. N., Jones, D. L., & Murphy, D. V. (2012). Organic nitrogen mineralisation in two contrasting agro-ecosystems is unchanged by biochar addition. *Soil Biology and Biochemistry*, 48, 47-50. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0038071712000260>
- Demus, T., et al. (2015). Biochar Usage in EAF-Steelmaking Potential and Feasibility. In. den hond, B. (2019). Looking for Climate Solutions Down in the Dirt. *EOS*, (April 17). Retrieved from <https://eos.org/articles/looking-for-climate-solutions-down-in-the-dirt>
- Denevan, W. M. (1996). A bluff model of riverine settlement in prehistoric amazonia. *Annals of the Association of American Geographers*, 86(4), 654-681. Retrieved from https://www.jstor.org/stable/2564346?seq=1#page_scan_tab_contents
- Deng, B., Tammeorg, P., Luukkanen, O., Helenius, J., & Starr, M. (2016). Effects of Acacia seyal and biochar on soil properties and sorghum yield in agroforestry systems in South Sudan. *Agroforestry Systems*, 91(1), 137-148. doi:10.1007/s10457-016-9914-2
- Deng, C., Lin, R., Kang, X., Wu, B., O'Shea, R., & Murphy, J. D. (2020). Improving gaseous biofuel yield from seaweed through a cascading circular bioenergy system integrating anaerobic digestion and pyrolysis. *Renewable and Sustainable Energy Reviews*, 128, 109895. doi:<https://doi.org/10.1016/j.rser.2020.109895>
- Deng, G. Z., et al. (2013). Adsorption Characteristics of Phenol in Aqueous Solution by Pinus massoniana Biochar. *Applied Mechanics and Materials*, 295-298, 1154-1160. Retrieved from <https://www.scientific.net/AMM.295-298.1154>
- Deng, H. (2013). *Effect of Biochar Amendment on Soil Nitrous Oxide Emission*. (Master of Science). McGill University, Retrieved from <http://webpages.mcgill.ca/staff/deptshare/FAES/066-Bioresource/Theeses/theses/442HongyuanDeng2012/HongyuanDeng.pdf>
- Deng, H. (2013). *Sorption of Atrazine by Biochar Prepared from Manioc Wastes in Tropical Soils*. Paper presented at the Selected Proceedings of the Eighth International Conference on Waste Management and Technology.
- deng, H., et al. (2014). Sorption of Atrazine in Tropical Soil by Biochar Prepared from Cassava Waste. *BioResources*, 9(4), 6627-6643. Retrieved from http://ojs.cnr.ncsu.edu/index.php/BioRes/article/view/BioRes_09_4_6627_Deng_Sorption_Atrazine_Tropical_Soil/3060
- Deng, S., et al. (2014). Energy efficient considerations on carbon dioxide capture: Solar thermal engineering (Part II). *Energy Procedia*, 61, 2674-2677. Retrieved from https://www.academia.edu/33985434/Energy_Efficient_ConSIDerations_on_Carbon_Dioxide_Capture_Solar_Thermal_Engineering_Part_I_
- Deng, W., Zwieten, L. V., Lin, Z., Liu, X., Sarmah, A. K., & Wang, H. (2016). Sugarcane bagasse

- biochars impact respiration and greenhouse gas emissions from a latosol. *Journal of Soils and Sediments*, 17(3), 632-640. doi:10.1007/s11368-015-1347-4
- Deng, X., Zhan, Y., Wang, F., Ma, W., Ren, Z., Chen, X., . . . Lv, X. (2016). Soil organic carbon of an intensively reclaimed region in China: Current status and carbon sequestration potential. *Science of The Total Environment*, 565, 539-546. doi:<https://doi.org/10.1016/j.scitotenv.2016.05.042>
- Deng, Y., Li, J., Miao, Y., & Izikowitz, D. (2021). A comparative review of performance of nanomaterials for Direct Air Capture. *Energy Reports*, 7, 3506-3516. doi:<https://doi.org/10.1016/j.egyr.2021.06.002>
- Denman, K. L. (2008). Climate change, ocean processes and ocean iron fertilization. *Marine Ecology Progress Series*, 354, 219-225. Retrieved from <http://www.int-res.com/articles/theme/m364p219.pdf>
- Denman, K. L., Voelker, C., Angelica Peña, M., & Rivkin, R. B. (2006). Modelling the ecosystem response to iron fertilization in the subarctic NE Pacific: The influence of grazing, and Si and N cycling on CO₂ drawdown. *Deep Sea Research Part II: Topical Studies in Oceanography*, 53(20–22), 2327-2352. doi:<http://dx.doi.org/10.1016/j.dsr2.2006.05.026>
- Dennis, J., & Kou, K. C. S. (2014). Evaluating the agronomic benefits of biochar amended soils in an organic system : results from a field study at the UBC Farm, Vancouver. *Centre for Sustainable Food Systems at UBC Farm*. Retrieved from <https://circle.ubc.ca/handle/2429/51197?show=full>
- Dennis, S., Deng, Q., Hui, D., Wang, J., Iwuozo, S., Yu, C.-L., & Reddy, C. (2015). In-Field Management Practices for Mitigating Soil CO₂ and CH₄ Fluxes under Corn (*Zea mays*) Production System in Middle Tennessee. *American Journal of Climate Change*, 04(04), 367 - 378. doi:10.4236/ajcc.2015.44029
- Denyes, M., Zeeb, B., & Rutter, A. (2015). *The Use of Biochar and Activated Carbon to Minimize Hydrophobic Organic Contaminant Bioavailability in Soils*. Retrieved from <http://espace.rmc.ca/handle/11264/422>
- Denyes, M. J., et al. (2012). The use of biochar to reduce soil PCB bioavailability to *Cucurbita pepo* and *Eisenia fetida*. *Science of The Total Environment*, 437, 76–82. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0048969712010339>
- Denyes, M. J., et al. (2014). Physical, Chemical and Biological Characterization of Six Biochars Produced for the Remediation of Contaminated Sites. *Journal of Visualized Experiments*, 93, 1-12. doi:10.3791/52183
- Denyes, M. J., Rutter, A., & Zeeb, B. A. (2013). In situ application of activated carbon and biochar to PCB-contaminated soil and the effects of mixing regime. *Environmental Pollution*, 182, 201–208. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0269749113003850>
- Denyes, M. J., Rutter, A., & Zeeb, B. A. (2016). Bioavailability assessments following biochar and activated carbon amendment in DDT-contaminated soil. *Chemosphere*, 144, 1428 - 1434. doi:10.1016/j.chemosphere.2015.10.029
- DePaolo, D. (2020). *Rock Solid: Harnessing Mineralization for Large-Scale Carbon Management*. Retrieved from <https://energyfuturesinitiative.org/efi-reports>
- der Horst, D., & Vermeylen, S. (2011). Spatial scale and social impacts of biofuel production. *Biomass and Bioenergy*, 35(6), 2435-2444. Retrieved from [http://www.research.lancs.ac.uk/portal/en/publications/spatial-scale-and-social-impacts-of-biofuel-production\(5c757982-9b73-437a-a425-f99f9c769392\).html](http://www.research.lancs.ac.uk/portal/en/publications/spatial-scale-and-social-impacts-of-biofuel-production(5c757982-9b73-437a-a425-f99f9c769392).html)
- Derevschikov, V. S., Veselovskaya, J. V., Shalygin, A. S., A.Yatsenko, D., Sheshkovas, A. Z., & Martyanov, O. N. (2021). Operating limits and features of direct air capture on K₂CO₃/ZrO₂ composite sorbent. *Chinese Journal of Chemical Engineering*. doi:<https://doi.org/10.1016/j.cjche.2021.07.005>

- Desbarats, J., et al. (2010). *Review of the public participation practices for CCS and non-CCS projects in Europe*. Retrieved from https://www.researchgate.net/publication/236146889_Review_of_the_public_participation_practices_for_CCS_and_non-CCS_projects_in_Europe
- Deseta, N. (2020). Mining CO₂ – Is Mining Atmospheric Carbon the Future of Environmental Sustainability? *Geology for Investors*. Retrieved from <https://www.geologyforinvestors.com/mining-co2-is-mining-atmospheric-carbon-the-future-of-environmental-sustainability/>
- Desideri, U. (2010). Advanced absorption processes and technology for carbon dioxide (CO₂) capture in power plants A2 - Maroto-Valer, M. Mercedes. In *Developments and Innovation in Carbon Dioxide (CO₂) Capture and Storage Technology* (Vol. 1, pp. 155-182): Woodhead Publishing.
- Dessert, C., Dupré, B., Gaillardet, J., François, L. M., & Allègre, C. J. (2003). Basalt weathering laws and the impact of basalt weathering on the global carbon cycle. *Chemical Geology*, 202(3), 257-273. doi:<https://doi.org/10.1016/j.chemgeo.2002.10.001>
- Deutz, S., & Bardow, A. (2021). Life-cycle assessment of an industrial direct air capture process based on temperature–vacuum swing adsorption. *Nature Energy*. doi:[10.1038/s41560-020-00771-9](https://doi.org/10.1038/s41560-020-00771-9)
- DeVallance, D. B., Oporto, G. S., & Quigley, P. (2015). Investigation of hardwood biochar as a replacement for wood flour in wood-polypropylene composites. *Journal of Elastomers and Plastics*. doi:[10.1177/0095244315589655](https://doi.org/10.1177/0095244315589655)
- Deveci, H., & Kar, Y. (2012). Adsorption of hexavalent chromium from aqueous solutions by biochars obtained during biomass pyrolysis. *Journal of Industrial and Engineering Chemistry*, 19(1), 190-196. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1226086X12002602>
- Devereux, R. C., Sturrock, C. J., & Mooney, S. J. (2013). The effects of biochar on soil physical properties and winter wheat growth. *Earth and Environmental Science Transactions of the Royal Society of Edinburgh*, 103, 13-18. Retrieved from <https://www.cambridge.org/core/services/aop-cambridge-core/content/view/S1755691012000011>
- Devi, P., & Saroh, A. K. a. (2014). Risk analysis of pyrolyzed biochar made from paper mill effluent treatment plant sludge for bioavailability & eco-toxicity of heavy metals. *Bioresource Technology*, 162, 308-315. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0960852414003988>
- Devi, P., & Saroha, A. K. (2013). Effect Of Temperature On Biochar Properties During Paper Mill Sludge Pyrolysis. *International Journal of ChemTech Research*, 5, 682-687. Retrieved from [http://sphinxsai.com/2013/conf/PDFS%20ICGSEE%202013/CT=21\(682-687\)ICGSEE.pdf](http://sphinxsai.com/2013/conf/PDFS%20ICGSEE%202013/CT=21(682-687)ICGSEE.pdf)
- Devi, P., & Saroha, A. K. (2014). Synthesis of the magnetic biochar composites for use as an adsorbent for the removal of pentachlorophenol from the effluent. *Bioresource Technology*, 169, 525 - 531. doi:[10.1016/j.biortech.2014.07.062](https://doi.org/10.1016/j.biortech.2014.07.062)
- Devi, P., & Saroha, A. K. (2015). Effect of pyrolysis temperature on polycyclic aromatic hydrocarbons toxicity and sorption behaviour of biochars prepared by pyrolysis of paper mill effluent treatment plant sludge. *Bioresource Technology*, 192, 312 - 320. doi:[10.1016/j.biortech.2015.05.084](https://doi.org/10.1016/j.biortech.2015.05.084)
- Devi, P., & Saroha, A. K. (2015). Simultaneous adsorption and dechlorination of pentachlorophenol from effluent by Ni-ZVI magnetic biochar composites synthesized from paper mill sludge. *Chemical Engineering Journal*, 271, 195 - 203. doi:[10.1016/j.cej.2015.02.087](https://doi.org/10.1016/j.cej.2015.02.087)
- Devi, R. A., Jature, S. D., & Chattopadhyay, S. B. (2015). Effect of flyash, biochar, coal and vermicompost on the growth, yield and quality of palak (*Beta vulgaris* L.) cv All Green.

- Environment and Ecology*, 33(1A), 306-309. Retrieved from <http://www.cabdirect.org/abstracts/20153099501.html>
- Devi, S. B. (2015). Climate Change Mitigation by Soil Carbon Sequestration in Tropics—A Review. *Green India: Strategic Knowledge for Combating Climate Change: Prospects & Challenges*, 315-319. Retrieved from http://groupexcelindia.com/Online_cd/PDF/315.pdf.pdf
- Dhanapal, S., Sekar, D. S., & Satheesh, P. M. (2014). Efficiency of RAPD, SSR and ISSR markers in evaluating the genetic fidelity for micropropogated Musa acuminate plant exposed to coal extracted humic acid and commercially available products. *International Journal of Agricultural Science and Research*, 4, 77-86. Retrieved from <http://www.cabdirect.org/abstracts/20143319109.html?jsessionid=D07DBC3D7E402AF09D8E8ED61B0AA814>
- Dharmakeerthi, R. S., Chandrasiri, J. A., & Edirimanne, V. U. (2012). Effect of rubber wood biochar on nutrition and growth of nursery plants of Hevea brasiliensis established in an Ultisol. *SpringerPlus*, 1, 1-12. doi:10.1186/2193-1801-1-84
- Dharmakeerthi, R. S., Chandrasiri, J. A. S., & Edirimanne, V. U. (2010). *Use of charcoal as a soil amendment in rubber (Hevea brasiliensis) plantations: Effectiveness in young budding polybagged plants*. Paper presented at the Third Symposium on Plantation Crop Research - Stakeholder Empowerment through Technological Advances, Colombo, Sri Lanka.
- Dhillon, R. S., & von Wuehlisch, G. (2013). Mitigation of global warming through renewable biomass. *Biomass and Bioenergy*, 48, 75-89. doi:<https://doi.org/10.1016/j.biombioe.2012.11.005>
- Dhiman, J., et al. (2015). "USE OF SUPER ABSORBENT POLYMERS (HYDROGELS) TO PROMOTE SAFE USE OF WASTEWATER IN AGRICULTURE ". Paper presented at the 22nd Canadian Hydrotechnical Conference. [http://www.researchgate.net/profile/Jaskaran_Dhiman/publication/275660614_USE_OF_SUPER_ABSORBENT_POLYMERS_\(HYDROGELS\)_TO_PROMOTE_SAFE_USE_OF_WASTEWATER_IN_AGRICULTURE/links/55445f890cf24107d3965045.pdf](http://www.researchgate.net/profile/Jaskaran_Dhiman/publication/275660614_USE_OF_SUPER_ABSORBENT_POLYMERS_(HYDROGELS)_TO_PROMOTE_SAFE_USE_OF_WASTEWATER_IN_AGRICULTURE/links/55445f890cf24107d3965045.pdf)
- Di Maria, A., Snellings, R., Alaerts, L., Quaghebeur, M., & Van Acker, K. (2020). Environmental assessment of CO₂ mineralisation for sustainable construction materials. *International Journal of Greenhouse Gas Control*, 93, 102882. doi:<https://doi.org/10.1016/j.ijggc.2019.102882>
- Di Sacco, A., Hardwick, K. A., Blakesley, D., Brancalion, P. H. S., Breman, E., Cecilio Rebola, L., . . . Antonelli, A. (2021). Ten golden rules for reforestation to optimize carbon sequestration, biodiversity recovery and livelihood benefits. *Global Change Biology*, n/a(n/a). doi:<https://doi.org/10.1111/gcb.15498>
- Di Salvatore, M., Carafa, A. M., & Carratu, G. (2008). Assessment of heavy metals phytotoxicity using seed germination and root elongation tests: A comparison of two growth substrates. *Chemosphere*, 73(9), 1461-1464. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0045653508009831>
- Diakun, A. T. (2015). *Clearing the Air on 'Geoengineering' and Intellectual Property Rights Towards a framework approach*. (MRP). University of Waterloo, Retrieved from https://www.academia.edu/17877265/_Clearing_the_Air_on_Geoengineering_and_Intellectual_Property_Rights_Towards_a_Framework_Approach_University_of_Waterloo_Masters_Research_Paper_?email_work_card=thumbnail
- Diallo, O. (2014). *Effect of Poultry Litter Biochar on Saccharomyces cerevisiae Growth and Ethanol Production from Steam-Exploded Poplar and Corn Stover*. Utah State University,

- Retrieved from <http://digitalcommons.usu.edu/etd/3901/>
- Diallo, O., & Agblevor, F. (2015). *Enhanced productivity and very high gravity fermentation of glucose and steam exploded corn stover using poultry litter biochar*. Paper presented at the Symposium on Biotechnology for Fuels and Chemicals. <https://sim.confex.com/sim/37th/webprogram/Paper29028.html>
- Diamandis, P. H. (2019). The Promise of Direct Air Capture: Making Stuff Out of Thin Air. *Singularity Hub*. Retrieved from <https://singularityhub.com/2019/08/23/the-promise-of-direct-air-capture-making-stuff-out-of-thin-air/>
- Diao, Y.-F., Zheng, X.-Y., He, B.-S., Chen, C.-H., & Xu, X.-C. (2004). Experimental study on capturing CO₂ greenhouse gas by ammonia scrubbing. *Energy Conversion and Management*, 45(13–14), 2283-2296. doi:<https://doi.org/10.1016/j.enconman.2003.10.011>
- Dias, B. O., Sanchez-Monedero, M. A., Silva, C. A., Higashikawa, F. S., & Roig, A. (2009). Use of biochar as bulking agent for the composting of poultry manure: Effect on organic matter degradation and humification. *Bioresource Technology*, 101, 1239-1246.
- Dias, C. M. d. F. (2014). *Estudos de adsorção de CO₂ gasoso em biocarvão (Studies of adsorption of gaseous CO₂ into biochar)*. Unibersidade de Coimbra, Retrieved from <https://estudogeral.sib.uc.pt/handle/10316/27290>
- Díaz-Rey, M. R., Cortés-Reyes, M., Herrera, C., Larrubia, M. A., Amadeo, N., Laborde, M., & Alemany, L. J. (2014). Hydrogen-rich gas production from algae-biomass by low temperature catalytic gasification. *Catalysis Today*, 257(2), 177-184. doi:[10.1016/j.cattod.2014.04.035](https://doi.org/10.1016/j.cattod.2014.04.035)
- Dibenedetto, A. (2019). Enhanced Fixation of CO₂ in Land and Aquatic Biomass. In M. Aresta, I. Karimi, & S. Kawi (Eds.), *An Economy Based on Carbon Dioxide and Water: Potential of Large Scale Carbon Dioxide Utilization* (pp. 379-412). Retrieved from https://link.springer.com/chapter/10.1007/978-3-030-15868-2_11
- Dichicco, M. C., et al. (2015). Serpentinite carbonation for CO₂ sequestration in the southern Apennines: preliminary study. *Energy Procedia*, 76, 477-486. Retrieved from https://ac.els-cdn.com/S1876610215016641/1-s2.0-S1876610215016641-main.pdf?_tid=b0d4bf41-c5d5-40fc-b5b9-4dd336b053c6&acdnat=1524877239_bc681dbdff6de881f6e763277c5be652
- Dicke, C., Lanza, G., Mumme, J., Ellerbrock, R., & Kern, J. (2014). Effect of Hydrothermally Carbonized Char Application on Trace Gas Emissions from Two Sandy Soil Horizons. *Journal of Environment Quality*, 43(5), 1790. doi:[10.2134/jeq2013.12.0513](https://doi.org/10.2134/jeq2013.12.0513)
- Dickinson, D., et al. (2015). *Biochar priming of native SOC and the net carbon balance: observations from a ¹³C-biochar microcosm study*. Paper presented at the Symposium des ANS e.V. 2015. <https://biblio.ugent.be/publication/6951712>
- Dickinson, D., Balduccio, L., Buysse, J., Ronse, F., van Huylenbroeck, G., & Prins, W. (2015). Cost-benefit analysis of using biochar to improve cereals agriculture. *GCB Bioenergy*, 7(4), 850-864. doi:[10.1111/gcbb.12180](https://doi.org/10.1111/gcbb.12180)
- Dicko, M., et al. (2015). *Fast pyrolysis of Miscanthus x Giganteus in an IR heated reactor*. Paper presented at the European Congress of Chemical Engineering. <https://hal-mines-paristech.archives-ouvertes.fr/hal-01250841/>
- Didas, S. A., et al. (2012). *Role of Amine Structure on Carbon Dioxide Adsorption from Ultradilute Gas Streams such as Ambient Air*. *ChemSusChem*, 5(10), 2058-2064. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/cssc.201200196/abstract>
- Didas, S. A., Choi, S., Chaikittisilp, W., & Jones, C. W. (2015). Amine-Oxide Hybrid Materials for CO₂ Capture from Ambient Air. *Accounts of Chemical Research*, 48(10), 2680-2687. doi:[10.1021/acs.accounts.5b00284](https://doi.org/10.1021/acs.accounts.5b00284)
- Diego, M. E., & Alonso, M. (2016). Operational feasibility of biomass combustion with in situ

- CO₂ capture by CaO during 360h in a 300kWth calcium looping facility. *Fuel*, 181, 325-329. doi:<https://doi.org/10.1016/j.fuel.2016.04.128>
- Diego, M. E., Arias, B., & Abanades, J. C. (2017). Evolution of the CO₂ carrying capacity of CaO particles in a large calcium looping pilot plant. *International Journal of Greenhouse Gas Control*, 62(Supplement C), 69-75. doi:<https://doi.org/10.1016/j.ijggc.2017.04.005>
- Dieguez Alonso, A. (2016). Fixed-bed biomass pyrolysis: mechanisms and biochar production. In.
- Dietrich, J. P., et al. (2013). Forecasting technological change in agriculture-An endogenous implementation in a global, and use model. *Technological Forecasting and Social Change*, 81, 236-249. Retrieved from https://www.researchgate.net/publication/256543549_Forecasting_technological_change_in_agriculture-An_endogenous_implementation_in_a_global_and_use_model
- Dietrich, T. (2018). NASA Langley scientist touts biochar: an 'environmental superstar'. *Daily Press*. Retrieved from <http://www.dailypress.com/news/science/dp-nws-biochar-nasa-langley-20180102-story.html>
- Dietzen, C., Harrison, R., & Michelsen-Correa, S. (2018). Effectiveness of enhanced mineral weathering as a carbon sequestration tool and alternative to agricultural lime: An incubation experiment. *International Journal of Greenhouse Gas Control*, 74, 251-258. doi:<https://doi.org/10.1016/j.ijggc.2018.05.007>
- Digdaya, I. A., Sullivan, I., Lin, M., Han, L., Cheng, W.-H., Atwater, H. A., & Xiang, C. (2020). A direct coupled electrochemical system for capture and conversion of CO₂ from oceanwater. *Nature Communications*, 11(1), 4412. doi:[10.1038/s41467-020-18232-y](https://doi.org/10.1038/s41467-020-18232-y)
- Diggs, C. (2021). Russian parliament adopts law aimed at limiting greenhouse gasses. Retrieved from <https://bellona.org/news/climate-change/2021-06-russian-parliament-adopts-law-aimed-at-limiting-greenhouse-gasses>
- Dikgwatlhe, S. B., Chen, Z.-D., Lal, R., Zhang, H.-L., & Chen, F. (2014). Changes in soil organic carbon and nitrogen as affected by tillage and residue management under wheat-maize cropping system in the North China Plain. *Soil and Tillage Research*, 144, 110-118. doi:<https://doi.org/10.1016/j.still.2014.07.014>
- Dil, M., & Oelbermann, M. (2014). Evaluating the long-term effects of pre-conditioned biochar on soil organic carbon in two southern Ontario soils using the century model. In *Sustainable agroecosystems in climate change mitigation*.
- Dil, M., Oelbermann, M., & Xue, W. (2014). An Evaluation of Biochar pre-conditioned with Urea Ammonium Nitrate on Maize (*Zea mays L.*) Production and Soil Biochemical Characteristics. *Canadian Journal of Soil Science*, 94(4), 551-562. doi:[10.4141/cjss-2014-010](https://doi.org/10.4141/cjss-2014-010)
- Dillon, J. (2019). Hill warms to CO₂ air capture technologies. *E&E Daily*. Retrieved from <https://www.eenews.net/eedaily/stories/1061428337>
- Di'Lonardo, S., et al. . (2012). Biochar successfully replaces activated charcoal for in vitro culture of two white poplar clones reducing ethylene concentration. *Plant Growth Regulation*, 69(1), 43-50. doi:[10.1007/s10725-012-9745-8](https://doi.org/10.1007/s10725-012-9745-8)
- Dimitriou, I., García-Gutiérrez, P., Elder, R. H., Cuéllar-Franca, R. M., Azapagic, A., & Allen, R. W. K. (2015). Carbon dioxide utilisation for production of transport fuels: process and economic analysis. *Energy & Environmental Science*, 8(6), 1775-1789. doi:[10.1039/C4EE04117H](https://doi.org/10.1039/C4EE04117H)
- Ding, H., Zheng, H., Liang, X., & Ren, L. (2020). Getting ready for carbon capture and storage in the iron and steel sector in China: Assessing the value of capture readiness. *Journal of Cleaner Production*, 244, 118953. doi:<https://doi.org/10.1016/j.jclepro.2019.118953>
- Ding, W., et al. . (2013). Effects of phosphorus concentration on Cr(VI) sorption onto phosphorus-rich sludge biochar. *Frontiers of Environmental Science & Engineering*, 8(3),

- 379-385. Retrieved from <https://link.springer.com/article/10.1007/s11783-013-0606-0>
- Ding, W., Fu, L., Ouyang, J., & Yang, H. (2014). CO₂ mineral sequestration by wollastonite carbonation. *Physics and Chemistry of Minerals*, 41(7), 489-496. doi:10.1007/s00269-014-0659-z
- Ding, W. C., Tian, X. M., Wang, D. Y., Zeng, X. L., Xu, Q., Chen, J. K., & Ai, X. Y. (2012). Mechanism of Cr(VI) removal from aqueous solution using biochar promoted by humic acid. *Huan Jing Ke Xue.*, 33(11), 3847-3853. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/23323415>
- Ding, Y., Liu, Y., Liu, S., Li, Z., Tan, X., Huang, X., . . . Zheng, B. (2016). Biochar to improve soil fertility. A review. *Agronomy for Sustainable Development*, 36(2), 36. doi:10.1007/s13593-016-0372-z
- Ding, Y., Liu, Y. X., Wu, W. X., Shi, D. Z., Yang, M., & Zhong, Z. K. (2010). Evaluation of Biochar Effects on Nitrogen Retention and Leaching in Multi-Layered Soil Columns. *Water Air and Soil Pollution*, 213(1), 47-55. Retrieved from <https://link.springer.com/article/10.1007/s11270-010-0366-4>
- Ding, Z., Hu, X., Wan, Y., Wang, S., & Gao, B. (2016). Removal of lead, copper, cadmium, zinc, and nickel from aqueous solutions by alkali-modified biochar: Batch and column tests. *Journal of Industrial and Engineering Chemistry*, 33, 239 - 245. doi:10.1016/j.jiec.2015.10.007
- Directors, C. E. C. (2021). Bechtel working with Drax to build biomass plants with carbon capture & storage. *Power Engineering*. Retrieved from <https://www.power-eng.com/emissions/bechtel-working-with-drax-to-build-biomass-plants-with-carbon-capture-storage/>
- Dismukes, D. C., et al. (2008). Aquatic phototrophs: efficient alternatives to land-based crops for biofuels. *Current Opinion in Biotechnology*, 19(3), 235-240.
- Dismukes, D. E., Layne, M., & Snyder, B. F. (2019). Understanding the challenges of industrial carbon capture and storage: an example in a U.S. petrochemical corridor. *International Journal of Sustainable Energy*, 38(1), 13-23. doi:10.1080/14786451.2018.1494172
- Dispenza, V. (2015). *Utilizzo del biochar come substrato alternativo nella coltivazione di specie ornamentali in vaso (Use of biochar as an alternative substrate in the cultivation of ornamental plants in pots)*. UNIVERSITA DEGLI STUDI DI PALERMO (UNIVERSITY OF PALERMO), Retrieved from <https://iris.unipa.it/retrieve/handle/10447/105093/144552/Tesi%20dottorato%20XXV%20ciclo%20-%20Vincenzo%20Dispenza.pdf>
- Dissanayake, P. D., Choi, S. W., Igalavithana, A. D., Yang, X., Tsang, D. C. W., Wang, C.-H., . . . Ok, Y. S. (2020). Sustainable gasification biochar as a high efficiency adsorbent for CO₂ capture: A facile method to designer biochar fabrication. *Renewable and Sustainable Energy Reviews*, 124, 109785. doi:<https://doi.org/10.1016/j.rser.2020.109785>
- Dissanayake, P. D., You, S., Igalavithana, A. D., Xia, Y., Bhatnagar, A., Gupta, S., . . . Ok, Y. S. (2019). Biochar-based adsorbents for carbon dioxide capture: A critical review. *Renewable and Sustainable Energy Reviews*, 109582. doi:<https://doi.org/10.1016/j.rser.2019.109582>
- Dissanayake, P. D., You, S., Igalavithana, A. D., Xia, Y., Bhatnagar, A., Gupta, S., . . . Ok, Y. S. (2020). Biochar-based adsorbents for carbon dioxide capture: A critical review. *Renewable and Sustainable Energy Reviews*, 119, 109582. doi:<https://doi.org/10.1016/j.rser.2019.109582>
- Dissanayake, P. D., You, S., Igalavithana, A. D., Xia, Y., Bhatnagar, A., Gupta, S., . . . Ok, Y. S. (2020). Biochar-based adsorbents for carbon dioxide capture: A critical review. *Renewable and Sustainable Energy Reviews*, 119, 109582. doi:<https://doi.org/10.1016/j.rser.2019.109582>
- Dittmeyer, R., Klumpp, M., Kant, P., & Ozin, G. (2019). Crowd oil not crude oil. *Nature*

- Communications*, 10(1), 1818. doi:10.1038/s41467-019-09685-x
- Diversity, S. o. t. C. o. B. (2016). *Update on Climate Geoengineering in Relation to the Convention on Biological Diversity: Potential Impacts and Regulatory Framework* (CBD Technical Series No. 84). Retrieved from <https://www.cbd.int/doc/publications/cbd-ts-84-en.pdf>
- Dixon, M. (2017). Farmers can be profitable AND sequester carbon to help climate change. *Red Green and Blue*. Retrieved from <http://redgreenandblue.org/2017/10/03/farmers-can-profitable-sequester-carbon-help-climate-change/>
- Dixon, R. (2021). Burning trees will not save us from the climate crisis - Richard Dixon. *The Scotsman*. Retrieved from <https://www.scotsman.com/news/opinion/burning-trees-will-not-save-us-climate-crisis-richard-dixon-3112293>
- Dixon, R. K., Winjum, J. K., Andrasko, K. J., Lee, J. J., & Schroeder, P. E. (1994). Integrated land-use systems: Assessment of promising agroforest and alternative land-use practices to enhance carbon conservation and sequestration. *Climatic Change*, 27(1), 71-92. doi:10.1007/bf01098474
- Dixon, T., Garrett, J., & Kleverlaan, E. (2014). Update on the London Protocol – Developments on Transboundary CCS and on Geoengineering. *Energy Procedia*, 63, 6623-6628. doi:<http://dx.doi.org/10.1016/j.egypro.2014.11.698>
- Dixon, T., Leamon, G., Zakkour, P., & Warren, L. (2013). CCS Projects as Kyoto Protocol CDM Activities. *Energy Procedia*, 37, 7596-7604. doi:<https://doi.org/10.1016/j.egypro.2013.06.704>
- Dixon, T., McCoy, S. T., & Havercroft, I. (2015). Legal and Regulatory Developments on CCS. *International Journal of Greenhouse Gas Control*, 40(Supplement C), 431-448. doi:<https://doi.org/10.1016/j.ijggc.2015.05.024>
- Drugogorski, B. Z., & Balucan, R. D. (2014). Dehydroxylation of serpentine minerals: Implications for mineral carbonation. *Renewable and Sustainable Energy Reviews*, 31, 353-367. doi:<https://doi.org/10.1016/j.rser.2013.11.002>
- Do, X.-H., & Lee, B.-K. (2013). Removal of Pb²⁺ using a biochar–alginate capsule in aqueous solution and capsule regeneration. *Journal of Environmental Management*, 131, 375–382. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0301479713006476>
- Doan, T. T., . et al. . (2014). Influence of buffalo manure, compost, vermicompost and biochar amendments on bacterial and viral communities in soil and adjacent aquatic systems. *Applied Soil Ecology*, 73, 78–86. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0929139313002199>
- Doan, T. T., et al. (2015). Impact of compost, vermicompost and biochar on soil fertility, maize yield and soil erosion in Northern Vietnam: A three year mesocosm experiment. *Science of The Total Environment*, 514, 147 - 154. doi:10.1016/j.scitotenv.2015.02.005
- Doassans-Carrère, N., Muller, S., & Mitzkat, M. (2014). REVE — a new industrial technology for biomass torrefaction: pilot studies. *Fuel Processing Technology*, 126, 155-162. doi:10.1016/j.fuproc.2014.04.026
- Dobbs, J. M., & Rosenfeld, J. (2014).
- Dockrill, P. (2017). Scientists Have Discovered a Way to Make Alcohol Out of Thin Air. Retrieved from <http://www.sciencealert.com/scientists-may-have-discovered-how-to-make-alcohol-out-of-thin-air>
- Dodor, D. E., Amanor, Y. J., Asamoah-Bediako, A., MacCarthy, D. S., & Dovie, D. B. K. (2019). Kinetics of Carbon Mineralization and Sequestration of Sole and/or Co-amended Biochar and Cattle Manure in a Sandy Soil. *Communications in Soil Science and Plant Analysis*, 50(20), 2593-2609. doi:10.1080/00103624.2019.1671443
- Dolejš, P., Poštulka, V., Sedláková, Z., Jandová, V., Vejražka, J., Esposito, E., . . . Izák, P.

- (2014). Simultaneous hydrogen sulphide and carbon dioxide removal from biogas by water–swollen reverse osmosis membrane. *Separation and Purification Technology*, 131, 108-116. doi:<https://doi.org/10.1016/j.seppur.2014.04.041>
- Dolor, R. (2019). Climate Change Threat: Invasive Insects Are Releasing Carbon Stored In US Forests. *International Business Times*. Retrieved from <https://www.ibtimes.com/climate-change-threat-invasive-insects-are-releasing-carbon-stored-us-forests-2813485>
- Domene, X., et al. (2014). Medium-term effects of corn biochar addition on soil biota activities and functions in a temperate soil cropped to corn. *Soil Biology and Biochemistry*, 72, 152-162. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0038071714000455>
- Domene, X., et al. (2015). Short-term mesofauna responses to soil additions of corn stover biochar and the role of microbial biomass. *Applied Soil Ecology*, 89, 10 - 17. doi:[10.1016/j.apsoil.2014.12.005](https://doi.org/10.1016/j.apsoil.2014.12.005)
- Domene, X., Enders, A., Hanley, K., & Lehmann, J. (2015). Ecotoxicological characterization of biochars: Role of feedstock and pyrolysis temperature. *Science of The Total Environment*, 512-513, 552 - 561. doi:[10.1016/j.scitotenv.2014.12.035](https://doi.org/10.1016/j.scitotenv.2014.12.035)
- Domingues, M., Bueno, C., Fraceto, L., Watanabe, C. H., Loyola, C., Crowley, D., & Rosa, A. H. (2014). Polymeric alginate microspheres containing biochar to immobilize phosphate ions. *Chemical Engineering Transactions*, 37, 109-114. doi:[10.3303/cet1437019](https://doi.org/10.3303/cet1437019)
- Domingues, M. T., et al. . (2014). "ANÁLISE TERMOGRAVIMÉTRICA DO BIOCHAR DE BAGAÇO DE CANA-DE-AÇÚCAR PRODUZIDO SOB DIFERENTES CONDIÇÕES DE ATMOSFERA (Thermogravimetric analysis biochar BAGASSE OF CANE SUGAR PRODUCED UNDER DIFFERENT CONDITIONS OF ATMOSPHERE)". *IX Congresso Brasileiro de Análise Térmica e Calorimetria (IX Brazilian Congress of Thermal Analysis and Calorimetry)*. Retrieved from <http://abratec.com.br/cbratec9/trabalhos/023B.pdf>
- Domingues, M. T., et al. (2014). *Short-Term Effect of Alginate-Biochar Microbeads in Corn Germination*. Paper presented at the 2nd International Conference on Food and Agricultural Sciences. <http://www.ipcbee.com/vol77/007-ICFAS2014-F0014.pdf>
- Domingues, M. T. (2015). *Imobilização de fosfatos em microesferas poliméricas contendo biochar: preparação, caracterização e liberação lenta em sistemas aquosos (Immobilization of phosphates into polymeric microspheres containing biochar: preparation, characterization and slow release)*. Universidade Estadual Paulista, Retrieved from <http://base.repositorio.unesp.br/handle/11449/123203?show=full>
- Domke, G. M., Oswalt, S. N., Walters, B. F., & Morin, R. S. (2020). Tree planting has the potential to increase carbon sequestration capacity of forests in the United States. *Proceedings of the National Academy of Sciences*, 117(40), 24649-24651. doi:[10.1073/pnas.2010840117](https://doi.org/10.1073/pnas.2010840117)
- Don, A., Osborne, B., Hastings, A., Skiba, U., Carter, M. S., Dreher, J., . . . Zenone, T. (2012). Land-use change to bioenergy production in Europe: implications for the greenhouse gas balance and soil carbon. *GCB Bioenergy*, 4(4), 372-391. doi:[10.1111/j.1757-1707.2011.01116.x](https://doi.org/10.1111/j.1757-1707.2011.01116.x)
- Donato, D. C., Kauffman, J. B., Murdiyarso, D., Kurnianto, S., Stidham, M., & Kanninen, M. (2011). Mangroves among the most carbon-rich forests in the tropics. *Nature Geoscience*, 4, 293. doi:[10.1038/ngeo1123](https://doi.org/10.1038/ngeo1123)
<https://www.nature.com/articles/ngeo1123#supplementary-information>
- Dong, D., et al. (2013). Responses of methane emissions and rice yield to applications of biochar and straw in a paddy field. *Journal of Soils and Sediments*, 13(8), 1450-1460. Retrieved from <http://link.springer.com/article/10.1007/s11368-013-0732-0>
- Dong, D., et al. (2014). Effects of biochar amendment on rice growth and nitrogen retention in a waterlogged paddy field. *Journal of Soils and Sediments*, 15(1), 153-162. doi:[10.1007/s11368-013-0732-0](https://doi.org/10.1007/s11368-013-0732-0)

s11368-014-0984-3

- Dong, D., Wu, W., & Zhong, T. (2015). Effects of Straw-Derived Biochar on Rice Paddy. In *Biochar: Production, Characterization, and Applications*.
- Dong, P., Li, X., Yu, Y., Zhang, Z., & Feng, J. (2021). Direct Air Capture via Natural Draft Dry Cooling Tower. *International Journal of Greenhouse Gas Control*, 109, 103375. doi:<https://doi.org/10.1016/j.ijggc.2021.103375>
- Dong, T., Gao, D., Miao, C., Yu, X., Degan, C., Garcia-Pérez, M., . . . Chen, S. (2015). Two-step microalgal biodiesel production using acidic catalyst generated from pyrolysis-derived bio-char. *Energy Conversion and Management*, 105, 1389-1396. doi:10.1016/j.enconman.2015.06.072
- Dong, W., Walkiewicz, A., Bieganowski, A., Oenema, O., Nosalewicz, M., He, C., . . . Hu, C. (2020). Biochar promotes the reduction of N₂O to N₂ and concurrently suppresses the production of N₂O in calcareous soil. *Geoderma*, 362, 114091. doi:<https://doi.org/10.1016/j.geoderma.2019.114091>
- Dong, X., et al. (2013). Enhanced Cr(VI) reduction and As(III) oxidation in ice phase: important role of dissolved organic matter from biochar. *Journal of Hazardous Materials*, 267, 62-70. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0304389413009576>
- Dong, X., Guan, T., Li, G., Lin, Q., & Zhao, X. (2016). Long-term effects of biochar amount on the content and composition of organic matter in soil aggregates under field conditions. *Journal of Soils and Sediments*, 16(5), 1481-1497. doi:10.1007/s11368-015-1338-5
- Dong, X., Singh, B. P., Li, G., Lin, Q., & Zhao, X. (2019). Biochar increased field soil inorganic carbon content five years after application. *Soil and Tillage Research*, 186, 36-41. doi:<https://doi.org/10.1016/j.still.2018.09.013>
- DongXiaoling, Ma, L. Q., Gao, B., & Li, Y. (2011). Characteristics and mechanisms of hexavalent chromium removal by biochar from sugar beet tailing. *Journal of Hazardous Materials*. doi:10.1016/j.jhazmat.2011.04.008
- Donner, S. D., & Kucharik, C. J. (2008). Corn-based ethanol production compromises goal of reducing nitrogen export by the Mississippi River. *Proceedings of the National Academy of Sciences*, 105(11), 4513-4518. doi:10.1073/pnas.0708300105
- Donnison, C. (2020). Guest post: Where in the UK might be suitable for BECCS? *CarbonBrief*. Retrieved from <https://www.carbonbrief.org/guest-post-where-in-the-uk-might-be-suitable-for-beccs>
- Donnison, C., Holland, R. A., Hastings, A., Armstrong, L.-M., Eigenbrod, F., & Taylor, G. (2020). Bioenergy with Carbon Capture and Storage (BECCS): Finding the win-wins for energy, negative emissions and ecosystem services—size matters. *GCB Bioenergy*, 12(8), 586-584. doi:10.1111/gcbb.12695
- Dooley, J. J., et al. (2010). *CO₂-driven Enhanced Oil Recovery as a Stepping Stone to What?* Retrieved from https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-19557.pdf
- Dooley, J. J. (2013). Estimating the Supply and Demand for Deep Geologic CO₂ Storage Capacity over the Course of the 21st Century: A Meta-analysis of the Literature. *Energy Procedia*, 37(Supplement C), 5141-5150. doi:<https://doi.org/10.1016/j.egypro.2013.06.429>
- Dooley, J. J., Dahowski, R. T., Davidson, C. L., Bachu, S., Gupta, N., & Gale, J. (2005). A CO₂-storage supply curve for North America and its implications for the deployment of carbon dioxide capture and storage systems. In *Greenhouse Gas Control Technologies* 7 (pp. 593-601). Oxford: Elsevier Science Ltd.
- Dooley, J. J., Trabucchi, C., & Patton, L. (2010). Design considerations for financing a national trust to advance the deployment of geologic CO₂ storage and motivate best practices.

- International Journal of Greenhouse Gas Control*, 4(2), 381-387. doi:<https://doi.org/10.1016/j.ijggc.2009.09.009>
- Dooley, K., et al. (2020). Safeguarding biodiversity in carbon dioxide removal approaches. Retrieved from <https://www.c2g2.net/safeguarding-biodiversity-in-carbon-dioxide-removal-approaches/>
- Dooley, K., Christoff, P., & Nicholas, K. A. (2018). Co-producing climate policy and negative emissions: trade-offs for sustainable land-use. *Global Sustainability*, 1, 1-10. doi:10.1017/sus.2018.6
- Dooley, K., Harrold-Kolieb, E., & Talberg, A. (2021). Carbon-dioxide Removal and Biodiversity: A Threat Identification Framework. *Global Policy*, 12(S1), 34-44. doi:<https://doi.org/10.1111/1758-5899.12828>
- Dooley, K., & Kartha, S. (2018). Land-based negative emissions: risks for climate mitigation and impacts on sustainable development. *International Environmental Agreements: Politics, Law and Economics*, 18, 79-98. doi:10.1007/s10784-017-9382-9
- Dooley, K., & Stabinsky, D. (2018). *Missing Pathways to 1.5°C: The role of the land sector in ambitious climate action*. Retrieved from https://static1.squarespace.com/static/5b22a4b170e802e32273e68c/t/5bef947f4fa51adec11bfa69/1542427787745/MissingPathwaysCLARReport_2018r2.pdf
- Dorais, M., Gravel, V., & Ménard, C. (2013). Organic potted plants amended with biochar: its effect on growth and Pythium colonization. *Canadian Journal of Plant Science*, 93(6), 1217-1227. Retrieved from <http://www.nrcresearchpress.com/doi/pdf/10.4141/cjps2013-315>
- Dorgan, B., & Barbour, H. (2019). Capturing carbon emissions could move world to clean energy future. *The Hill*. Retrieved from <https://thehill.com/opinion/energy-environment/451985-capturing-carbon-emissions-could-move-world-to-clean-energy-future>
- Dornburg, V., van Dam, J., & Faaij, A. (2007). Estimating GHG emission mitigation supply curves of large-scale biomass use on a country level. *Biomass and Bioenergy*, 31(1), 46-65. doi:<https://doi.org/10.1016/j.biombioe.2006.04.006>
- Dornburg, V., van Vuuren, D., van de Ven, G., Langeveld, H., Meeusen, M., Banse, M., . . . Faaij, A. (2010). Bioenergy revisited: Key factors in global potentials of bioenergy. *Energy & Environmental Science*, 3(3), 258-267. doi:10.1039/B922422J
- Dorndorf, T., et al. . (2021). Carbon removal experts support splitting “net zero” into twin targets. *Climate Home News*. Retrieved from [https://www.climatechannews.com/2021/05/11/carbon-removal-experts-support-splitting-netzero-twin-targets/](https://www.climatechannews.com/2021/05/11/carbon-removal-experts-support-splitting-net-zero-twin-targets/)
- dos Passos, A. M. A., Rezende, P. M. d., Carvalho, E. R., & de Ávila, F. W. (2015). Biochar, farmyard manure and poultry litter on chemical attributes of a Distrophic Cambissol and soybean crop. *Brazilian Journal of Agricultural Sciences / Revista Brasileira de Ciências Agrárias*, 10(3), 382-388. Retrieved from <http://web.b.ebscohost.com/abstract?direct=true&profile=ehost&scope=site&authtype=crawler&jrnln=19811160&AN=110543920&h=Kjcn%2b%2btIXVKeJ70RzxNPAPpB2hNHYDfVkwfzOVdvDvrjfj43Dt26LOfUAb3uPby%2fvS2%2fP9sFE7EBM2KsO79Q5g%3d%3d&crl=c&resultNs=AdminWebAuth&resultL>
- Dos Reis, G. S., Cazacliu, B., Artoni, R., Torrenti, J.-M., Hoffmann, C. S., & Lima, E. C. (2021). Coupling of attrition and accelerated carbonation for CO₂ sequestration in recycled concrete aggregates. *Cleaner Engineering and Technology*, 3, 100106. doi:<https://doi.org/10.1016/j.clet.2021.100106>
- Dou, L., Komatsuzaki, M., & Nakagawa, M. (2012). Effects of Biochar, Mokusakueki and Bokashi application on soil nutrients, yields and qualities of sweet potato. *International Research Journal of Agricultural Science and Soil Science*, 2, 318-327. Retrieved from <http://interesjournals.org/IRJAS/Pdf/2012/August/Dou%20et%20al.pdf>

- Doucet, F. (2011). *Scoping study on CO₂ mineralization technologies*. Retrieved from https://www.academia.edu/4061042/Scoping_study_on_CO2_mineralization_technologies?email_work_card=view-paper
- Doughty, C. E., et al. (2013). The production, allocation and cycling of carbon in a forest on fertile terra preta soil in eastern Amazonia compared with a forest on adjacent infertile soil. *Plant Ecology & Diversity*, 7(1-2), 41-53. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/17550874.2013.798367>
- Doumer, M. E., Rigol, A., Vidal, M., & Mangrich, A. S. (2015). Removal of Cd, Cu, Pb, and Zn from aqueous solutions by biochars. *Environmental Science and Pollution Research*, 23(3), 2684-2692. doi:10.1007/s11356-015-5486-3
- Dowd, A.-M., et al. (2012). CCS in the media: An Analysis of international coverage. *Energy & Environment*, 23(2&3), 284-298. Retrieved from <http://journals.sagepub.com/doi/pdf/10.1260/0958-305X.23.2-3.283>
- Dowd, A.-M., Itaoka, K., Ashworth, P., Saito, A., & de Best-Waldhofer, M. (2014). Investigating the link between knowledge and perception of CO₂ and CCS: An international study. *International Journal of Greenhouse Gas Control*, 28, 79-87. doi:<http://dx.doi.org/10.1016/j.ijggc.2014.06.009>
- Dowd, A.-M., & James, M. (2014). A Social Licence for Carbon Dioxide Capture and Storage: How Engineers and Managers Describe Community Relations. *Social Epistemology*, 28(3-4), 364-384. doi:10.1080/02691728.2014.922639
- Dowd, A.-M., Rodriguez, M., & Jeanneret, T. (2015). Social Science Insights for the BioCCS Industry. *Energies*, 8(5), 4024. Retrieved from <http://www.mdpi.com/1996-1073/8/5/4024>
- Dowell, G., et al. (2020). Rooting carbon dioxide removal research in the social sciences. *Interface Focus*, 10(5), 20190138. doi:doi:10.1098/rsfs.2019.0138
- Dowell, N. M., & Fajard, M. (2016). On the potential for BECCS efficiency improvement through heat recovery from both post-combustion and oxy-combustion facilities. *Faraday Discussions*, 192, 241-250. doi:10.1039/C6FD00051G
- Downie, A., et al. (2012). Biochar as a Geoengineering Climate Solution: Hazard Identification and Risk Management. *Critical Reviews in Environmental Science and Technology*, 42(3), 225-250. doi:10.1080/10643389.2010.507980
- Downie, A., Crosky, A., & Munroe, P. (2009). Physical Properties of Biochar. In J. Lehmann & S. Joseph (Eds.), *Biochar for Environmental Management: Science and Technology* (pp. 13-32). London, UK: Earthscan.
- Downie, A., Lau, D., Cowie, A., & Munroe, P. (2014). Approaches to greenhouse gas accounting methods for biomass carbon. *Biomass and Bioenergy*, 60, 18-31. doi:<https://doi.org/10.1016/j.biombioe.2013.11.009>
- Downie, A., & Van Zwieten, L. (2013). Biochar: A Coproduct to Bioenergy from Slow-Pyrolysis Technology. In *Advanced Biofuels and Bioproducts* (Vol. 2, pp. 97-117).
- Downie, A. E., et al. . (2011). Terra Preta Australis: Reassessing the carbon storage capacity of temperate soils. *Agriculture, Ecosystems and Environment*, 140(1-2), 137-147. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0167880910003117>
- Dowson, G. R. M., Cooper, J., & Styring, P. (2021). Reactive capture using metal looping: the effect of oxygen. *Faraday Discussions*, 230(0), 292-307. doi:10.1039/D1FD00001B
- Doydora, S. A. (2011). Release of Nitrogen and Phosphorus from Poultry Litter Amended with Acidified Biochar. *International Journal of Environmental Research and Public Health*, 8, 1491-1502. doi:10.3390/ijerph8051491
- Doyle, A. (2017). Scientists dim sunlight, suck up carbon dioxide to cool planet. *Reuters*. Retrieved from <https://www.reuters.com/article/us-climatechange-geoengineering-idUSKBN1AB0J3>
- Doyle, A. (2019). Capturing CO₂ with C-Capture. *The Chemical Engineer*. Retrieved from

- <https://www.thechemicalengineer.com/features/capturing-co2-with-c-capture/>
- Doyle, A. (2019). Drax announces ambition to be world's first carbon negative company by 2030. *The Chemical Engineer*. Retrieved from <https://www.thechemicalengineer.com/news/drax-announces-ambition-to-be-world-s-first-carbon-negative-company-by-2030/>
- Doyle, A. (2021). Scared by global warming? In Iceland, one solution is petrifying. *Reuters*. Retrieved from <https://www.reuters.com/article/climate-change-technology-emissions-idUSL8N2K84OU>
- Drake, J. A., Carrucan, A., Jackson, W. R., Cavagnaro, T. R., & Patti, A. F. (2015). Biochar application during reforestation alters species present and soil chemistry. *Science of The Total Environment*, 514, 359 - 365. doi:10.1016/j.scitotenv.2015.02.012
- Drake, J. A., Cavagnaro, T. R., Cunningham, S. C., Jackson, W. R., & Patti, A. F. (2015). Does Biochar Improve Establishment of Tree Seedlings in Saline Sodic Soils? *Land Degradation & Development*, 27(1), 52-59. doi:10.1002/ldr.2374
- Draper, K. (2014). Biochar Paper – elevating biochar from novelty to ubiquity. *the Biochar Journal*. Retrieved from <http://www.biochar-journal.org/en/ct/15>
- Drax. (2019). Carbon dioxide now being captured in first of its kind BECCS pilot [Press release]. Retrieved from https://www.drax.com/press_release/world-first-co2-beccs-ccus/
- Drax. (2021). Achieving UK climate goals is £4.5bn cheaper with BECCS at Drax. Retrieved from https://www.drax.com/press_release/achieving-uk-climate-goals-is-4-5bn-cheaper-with-beccs-at-drax/
- Drax. (2021). *Value of Biomass with Carbon Capture and Storage (BECCS) in Power: Summary Report*. Retrieved from <https://www.drax.com/wp-content/uploads/2021/04/Drax-Baringa-Report-Summary-2021.pdf>
- Drever, J. I., & Stillings, L. L. (1997). The role of organic acids in mineral weathering. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 120(1), 167-181. doi:[https://doi.org/10.1016/S0927-7757\(96\)03720-X](https://doi.org/10.1016/S0927-7757(96)03720-X)
- Dri, M., Sanna, A., & Maroto-Valer, M. M. (2014). Mineral carbonation from metal wastes: Effect of solid to liquid ratio on the efficiency and characterization of carbonated products. *Applied Energy*, 113, 515-523. doi:<https://doi.org/10.1016/j.apenergy.2013.07.064>
- Drigo, B., & Anderson, I. C. (2015). The future of dirt: re-establishing self-sustaining vegetative cover on reclaimed mine lands. In.
- Driver, T., Bajhaiya, A., & Pittman, J. K. (2014). Potential of Bioenergy Production from Microalgae. *Current Sustainable/Renewable Energy Reports*, 1(3), 94-103. doi:10.1007/s40518-014-0011-8
- Drollette, D. (2019). What if the Arctic melts, and we lose the great white shield? Interview with environmental policy expert Durwood Zaelke. *Bulletin of the Atomic Scientists*, 75(5), 239-246. doi:10.1080/00963402.2019.1654269
- Druckenmiller, M. L., & Maroto-Valer, M. M. (2005). Carbon sequestration using brine of adjusted pH to form mineral carbonates. *Fuel Processing Technology*, 86(14), 1599-1614. doi:<https://doi.org/10.1016/j.fuproc.2005.01.007>
- Drugmand, D., & Muffett, C. (2021). https://www.ewg.org/news-insights/news/confronting-myth-carbon-free-fossil-fuels-why-carbon-capture-not-climate#_ftn3. Retrieved from https://www.ewg.org/news-insights/news/confronting-myth-carbon-free-fossil-fuels-why-carbon-capture-not-climate#_ftn3
- Drumea, P., Matache, G., & Pavel, I. (2015). *THE IMPORTANCE OF THE BYPRODUCT BIOCHAR ACHIEVED IN THE PROCESS OF OBTAINING ENERGY FROM BIOMASS*. Paper presented at the 4th International Conference on Thermal Equipment, Renewable Energy and Rural Development. [http://www.researchgate.net/profile/Monica_Vasile/publication/278021508_Proceedings_TE-RE-RD_2015_\(CD-ROM\)/links/55792a6608ae752158704081.pdf#page=237](http://www.researchgate.net/profile/Monica_Vasile/publication/278021508_Proceedings_TE-RE-RD_2015_(CD-ROM)/links/55792a6608ae752158704081.pdf#page=237)

- Du, Z., et al. . (2014). Consecutive Biochar Application Alters Soil Enzyme Activities in the Winter Wheat–Growing Season. *Soil Science*, 179(2), 75 - 83. doi:10.1097/ss.0000000000000050
- Du, Z.-L., Zhao, J.-K., Wang, Y.-D., & Zhang, Q.-Z. (2016). Biochar addition drives soil aggregation and carbon sequestration in aggregate fractions from an intensive agricultural system. *Journal of Soils and Sediments*. doi:10.1007/s11368-015-1349-2
- Duan, P., Zhang, X., Zhang, Q., Wu, Z., & Xiong, Z. (2018). Field-aged biochar stimulated N₂O production from greenhouse vegetable production soils by nitrification and denitrification. *Science of The Total Environment*, 642, 1303-1310. doi:<https://doi.org/10.1016/j.scitotenv.2018.06.166>
- Duarte, C. M., et al. (2010). Seagrass community metabolism: Assessing the carbon sink capacity of seagrass meadows. *Global Biogeochemical Cycles*, 24, 1-8. Retrieved from <http://digital.csic.es/bitstream/10261/46309/1/SeagrassCommunity.pdf>
- Duarte, C. M., et al. (2011). Assessing the capacity of seagrass meadows for carbon burial: Current limitations and future strategies. *Ocean and Coastal Management*, 83, 32-38. Retrieved from [https://imedeauib-csic.es/master/cambioglobal/Modulo_III_cod101608/tema%201-caracteristicas,funciones,servicios/Duarte%20et%20al%202011%20\(ocean&coastal%20management\).pdf](https://imedeauib-csic.es/master/cambioglobal/Modulo_III_cod101608/tema%201-caracteristicas,funciones,servicios/Duarte%20et%20al%202011%20(ocean&coastal%20management).pdf)
- Duarte, C. M., Agusti, S., Barbier, E., Britten, G. L., Castilla, J. C., Gattuso, J.-P., . . . Worm, B. (2020). Rebuilding marine life. *Nature*, 580(7801), 39-51. doi:10.1038/s41586-020-2146-7
- Duarte, C. M., Losada, I. J., Hendriks, I. E., Mazarrasa, I., & Marbà, N. (2013). The role of coastal plant communities for climate change mitigation and adaptation. *Nature Climate Change*, 3, 961. doi:10.1038/nclimate1970
<https://www.nature.com/articles/nclimate1970#supplementary-information>
- Duarte, C. M., Middelburg, J. J., & Caraco, N. (2005). Major role of marine vegetation on the oceanic carbon cycle. *Biogeosciences*, 2(1), 1-8. doi:10.5194/bg-2-1-2005
- Duarte, C. M., Wu, J., Xiao , X., Bruhn, A., & Krause-Jensen, D. (2017). Can Seaweed Farming Play a Role in Climate Change Mitigation and Adaptation? *Frontiers in Marine Science*, 4(100). doi:10.3389/fmars.2017.00100
- Dubey, M., et al. (2003). *Chemical Extraction of Carbon Dioxide from Air to Sustain Fossil Energy by Avoiding Climate Change*. Paper presented at the 2nd Annual Conference on Carbon Sequestration. <https://www.netl.doe.gov/publications/proceedings/03/carbon-seq/PDFs/064.pdf>
- Dubhashi, V. S. (2021). *Dynamic analysis and characterization of a desorption column for a continuous air capture process*. (Masters Thesis). Delft University of Technology, Retrieved from <http://resolver.tudelft.nl/uuid:a2931657-274d-4e2f-baab-f31d317974ce>
- Duce, R. A., & Tindale, N. W. (1991). Atmospheric transport of iron and its deposition in the ocean. *Limnology and Oceanography*, 36(8), 1715-1726. doi:10.4319/lo.1991.36.8.1715
- Ducey, T., Novak, J., & Johnson, M. (2015). Effects of Biochar Blends on Microbial Community Composition in Two Coastal Plain Soils. *Agriculture*, 5(4), 1060 - 1075. doi:10.3390/agriculture5041060
- Ducey, T. F., et al. (2013). Addition of activated switchgrass biochar to an aridic subsoil increases microbial nitrogen cycling gene abundances. *Applied Soil Ecology*, 65, 65-72. Retrieved from <http://www.scielo.cl/pdf/jsspn/v16n1/aop1016.pdf>
- Duckworth, B. (2017). Scientists look to grazing to aid carbon retention in soil. *The Western Producer*.
- Ducrot, Y. (2020). Congress' Commitment to Carbon Removal in New \$900 Billion Stimulus Package. *The Ritz Herald*. Retrieved from <https://ritzherald.com/congress-commitment-to-carbon-removal-in-new-900-billion-stimulus-package/>

- Dudek, M., & Socha, R. (2014). Direct Electrochemical Conversion of the Chemical Energy of Raw Waste Wood to Electrical Energy in Tubular Direct Carbon Solid Oxide Fuel Cells. *International Journal of ELECTROCHEMICAL SCIENCE*, 9, 7414-7430. Retrieved from <http://electrochemsci.org/papers/vol9/91207414.pdf>
- Duenisch, O., Lima, V. C., Seehann, G., Donath, J., Montoia, V. R., & Schwarz, T. (2007). Retention properties of wood residues and their potential for soil amelioration. *Wood Science and Technology*, 41(2), 169-189. Retrieved from <http://link.springer.com/article/10.1007/s00226-006-0098-1>
- Duetschke, E., Schumann, D., Pietzner, K., Wohlfarth, K., & Höller, S. (2014). Does it Make a Difference to the Public Where CO₂ Comes from and Where it is Stored?: An Experimental Approach to Enhance Understanding of CCS Perceptions. *Energy Procedia*, 63, 6999-7010. doi:<https://doi.org/10.1016/j.egypro.2014.11.733>
- Dugan, E., et al. . (2010). Bio-char from sawdust, maize stover and charcoal: Impact on water holding capacities (WHC) of three soils from Ghana. Retrieved from <http://www.iuss.org/19th%20WCSS/symposium/pdf/1158.pdf>
- Dugar, D., & Stephanopoulos, G. (2011). Relative potential of biosynthetic pathways for biofuels and bio-based products. *Nature Biotechnology*, 29(12), 1074-1078. doi:[10.1038/nbt.2055](https://doi.org/10.1038/nbt.2055) <http://www.nature.com/nbt/journal/v29/n12/abs/nbt.2055.html#supplementary-information>
- Duguid, A., Glier, J., Heinrichs, M., Hawkins, J., Peterson, R., & Mishra, S. (2021). Practical leakage risk assessment for CO₂ assisted enhanced oil recovery and geologic storage in Ohio's depleted oil fields. *International Journal of Greenhouse Gas Control*, 109, 103338. doi:<https://doi.org/10.1016/j.ijggc.2021.103338>
- Duguma, L. A., Minang, P. A., Aynekulu, B. E., Nzyoka, J., Bah, A., Jamnadass, R. H., & Carsan, S. (2020). *From Tree Planting to Tree Growing: Rethinking Ecosystem Restoration Through Trees*.
- Duhoux, B., Mehrani, P., Lu, D. Y., Symonds, R. T., Anthony, E. J., & Macchi, A. (2016). Combined Calcium Looping and Chemical Looping Combustion for Post-Combustion Carbon Dioxide Capture: Process Simulation and Sensitivity Analysis. *Energy Technology*, 4(10), 1158-1170. doi:[10.1002/ente.201600024](https://doi.org/10.1002/ente.201600024)
- Duiker, S. W., & Lal, R. (1999). Crop residue and tillage effects on carbon sequestration in a Luvisol in central Ohio. *Soil and Tillage Research*, 52(1), 73-81. doi:[https://doi.org/10.1016/S0167-1987\(99\)00059-8](https://doi.org/10.1016/S0167-1987(99)00059-8)
- Duku, M. H. (2015). *Bio-Oil Production from Lignocellulosic Biomass Using Fast Pyrolysis in a Fluidized-Bed Reactor*. Kwame Nkrumah University Of Science And Technology, Retrieved from <http://ir.knust.edu.gh/handle/123456789/6796>
- Duku, M. H., Gu, S., & Hagan, E. B. (2011). Biochar production potential in Ghana—A review. *Renewable and Sustainable Energy Reviews*, 15, 3539– 3551. Retrieved from <http://www.sinig.net/mose1.pdf>
- Dumanski, J. (2004). Carbon Sequestration, Soil Conservation, and the Kyoto Protocol: Summary of Implications. *Climatic Change*, 65(3), 255-261. doi:[10.1023/b:clim.0000038210.66057.61](https://doi.org/10.1023/b:clim.0000038210.66057.61)
- Dumbrell, N. P., Kragt, M. E., & Gibson, F. L. (2015). *What carbon farming activities are West Australian farmers willing to adopt?* Paper presented at the 17th Australian Agronomy Conference. <http://2015.agronomyconference.com/977>
- Dumbrell, N. P., Kragt, M. E., & Gibson, F. L. (2016). What carbon farming activities are farmers likely to adopt? A best-worst scaling survey. *Land Use Policy*, 54, 29 - 37. doi:[10.1016/j.landusepol.2016.02.002](https://doi.org/10.1016/j.landusepol.2016.02.002)
- Dume, B., Berecha, G., & Tulu, S. (2015). Characterization of Biochar Produced at Different Temperatures and its Effect on Acidic Nitosol of Jimma, Southwest Ethiopia. *International Journal of Soil Science*, 10(2), 63 - 73. doi:[10.3923/ijss.2015.63.73](https://doi.org/10.3923/ijss.2015.63.73)

- Dumroese, R. K., et al. (2011). Pelleted biochar: Chemical and physical properties show potential use as a substrate in container nurseries. *Biomass and Bioenergy*, 35(6), 2018-2027. doi:doi:10.1016/j.biombioe.2011.01.053
- Duncan, L. A., et al. (2015). Fate and Transport of 17beta-estradiol Beneath Animal Waste Holding Ponds. In.
- Dundee, U. o. (2018). A biological solution to carbon capture and recycling? [Press release]. Retrieved from https://www.eurekalert.org/pub_releases/2018-01/ud-abs010818.php
- Dunia, R., Rochelle, G., Edgar, T. F., & Nixon, M. (2014). Multivariate monitoring of a carbon dioxide removal process. *Computers & Chemical Engineering*, 60, 381-395. doi:<https://doi.org/10.1016/j.compchemeng.2013.09.010>
- Dunlop, S. J., et al. (2015). Closing the Loop: Use of Biochar Produced from Tomato Crop Green waste as a Substrate for Soilless, Hydroponic Tomato Production. *HortScience*, 50(10), 1572-1581. Retrieved from <http://hortsci.ashpublications.org/content/50/10/1572.short>
- Dunne, D. (2018). UK could become 'net zero by 2050' using negative emissions. *CarbonBrief*. Retrieved from [https://www.carbonbrief.org/uk-could-become-netzero-by-2050-using-negative-emissions](https://www.carbonbrief.org/uk-could-become-net-zero-by-2050-using-negative-emissions)
- Dunne, D. (2020). Restoring soils could remove up to '5.5bn tonnes' of greenhouse gases every year. *CarbonBrief*. Retrieved from <https://www.carbonbrief.org/restoring-soils-could-remove-up-to-5-5bn-tonnes-of-greenhouse-gases-every-year>
- Dunnigan, L., Ashman, P., Zhang, X., & Kwong, C. W. (2015). *Atmospheric emissions from the co-combustion of biomass tars and synthesis gas during biochar and bioenergy production*. Paper presented at the Asia Pacific Confederation of Chemical Engineering Congress. <http://search.informit.com.au/documentSummary;dn=710088032094475;res=IELENG>
- Dunning, H. (2020). Putting the Great Barrier Reef marine cloud brightening experiment into context. Retrieved from <https://www.imperial.ac.uk/news/197993/countries-must-work-together-co2-removal/>
- Dunphy, S. (2019). Carbon capture could become big business: Is it the right approach? *European Science*. Retrieved from <https://www.europeanscientist.com/en/energy/carbon-capture-could-become-big-business/>
- Dunsmore, H. E. (1992). A geological perspective on global warming and the possibility of carbon dioxide removal as calcium carbonate mineral. *Energy Conversion and Management*, 33(5), 565-572. doi:[https://doi.org/10.1016/0196-8904\(92\)90057-4](https://doi.org/10.1016/0196-8904(92)90057-4)
- Duong, Q. V. (2014). *Greenhouse Gas Emissions from Manure Management Chains on Smallholder Livestock Farms with and without Biogas*. University of Copenhagen, Retrieved from <http://forskningsbasen.deff.dk/Share.external?sp=S99d06b13-4515-4dee-94ad-67bbd973c5bd&sp=Sku>
- Durak, H., & Aysu, T. (2014). Effect of pyrolysis temperature and catalyst on production of bio-oil and bio-char from avocado seeds. *Research on Chemical Intermediates*, 41(1), 8067-8097. doi:10.1007/s11164-014-1878-0
- Durall, C., & Lindblad, P. (2015). Mechanisms of carbon fixation and engineering for increased carbon fixation in cyanobacteria. *Algal Research*, 11, 263-270. doi:<https://doi.org/10.1016/j.algal.2015.07.002>
- Durenkamp, M., Luo, Y., & Brookes, P. C. (2010). Impact of black carbon addition to soil on the determination of soil microbial biomass by fumigation extraction. *Soil Biology & Biochemistry*, 42(11), 2026-2029. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0038071710002646>
- Duricova, A., & Hybska, H. (2014). *INFLUENCE THE PROPERTIES OF SEWAGE SLUDGE CREATING MIXTURES WITH BIOCHAR*. Paper presented at the 14th SGEM

- GeoConference on Ecology, Economics, Education And Legislation. <http://www.citeulike.org/group/18367/article/13484437>
- Durucan, S., Korre, A., Shi, J.-Q., Idiens, M., Stańczyk, K., Kapusta, K., . . . Mastalerz, M. (2014). TOPS: Technology Options for Coupled Underground Coal Gasification and CO₂ Capture and Storage. *Energy Procedia*, 63, 5827-5835. doi:<https://doi.org/10.1016/j.egypro.2014.11.616>
- Dutreuil, S., Bopp, L., & Tagliabue, A. (2009). Impact of enhanced vertical mixing on marine biogeochemistry: lessons for geo-engineering and natural variability. *Biogeosciences Discussions*, 6, 901 - 912. doi:[10.5194/bg-6-901-2009](https://doi.org/10.5194/bg-6-901-2009)
- Dütschke, E., Wohlfarth, K., Höller, S., Viebahn, P., Schumann, D., & Pietzner, K. (2016). Differences in the public perception of CCS in Germany depending on CO₂ source, transport option and storage location. *International Journal of Greenhouse Gas Control*, 53, 149-159. doi:<https://doi.org/10.1016/j.ijggc.2016.07.043>
- Dutta, B., et al. (2015). Surface characterisation and classification of microwave pyrolysed maple wood biochar. *Biosystems Engineering*, 131, 49-64. doi:[10.1016/j.biosystemseng.2015.01.002](https://doi.org/10.1016/j.biosystemseng.2015.01.002)
- Dutta, B., Raghavan, G. S. V., & Ngadi, M. (2012). Surface Characterization and Classification of Slow and Fast Pyrolyzed Biochar Using Novel Methods of Pycnometry and Hyperspectral Imaging. *Journal of Wood Chemistry and Technology*, 32, 105-120. doi:[10.1080/02773813.2011.607535](https://doi.org/10.1080/02773813.2011.607535)
- Dutta, B., & Raghavan, V. (2014). A life cycle assessment of environmental and economic balance of biochar systems in Quebec. *International Journal of Energy and Environmental Engineering*, 5, 1-11. Retrieved from <http://link.springer.com/article/10.1007/s40095-014-0106-4>
- Dutta, S., Neto, F., & Coelho, M. C. (2016). Microalgae biofuels: A comparative study on techno-economic analysis & life-cycle assessment. *Algal Research*, 20, 44-52. doi:<https://doi.org/10.1016/j.algal.2016.09.018>
- Duveiller, G., Filippini, F., Ceglar, A., Bojanowski, J., Alkama, R., & Cescatti, A. (2021). Revealing the widespread potential of forests to increase low level cloud cover. *Nature Communications*, 12(1), 4337. doi:[10.1038/s41467-021-24551-5](https://doi.org/10.1038/s41467-021-24551-5)
- Duvenage, I., Langston, C., Stringer, L. C., & Dunstan, K. (2013). Grappling with biofuels in Zimbabwe: depriving or sustaining societal and environmental integrity? *Journal of Cleaner Production*, 42(Supplement C), 132-140. doi:<https://doi.org/10.1016/j.jclepro.2012.11.011>
- Duyar, M. S., Treviño, M. A. A., & Farrauto, R. J. (2015). Dual function materials for CO₂ capture and conversion using renewable H₂. *Applied Catalysis B: Environmental*, 168–169, 370-376. doi:<http://dx.doi.org/10.1016/j.apcatb.2014.12.025>
- Dvořáčková, H., et al. (2015). The Effect of Biochar, Inoculated Biochar and Compost Biological Component of the Soil. *International Journal of Biological, Biomolecular, Agricultural, Food and Biotechnological Engineering*, 9(12), 1233-1236. Retrieved from <http://waset.org/publications/10003095/the-effect-of-biochar-inoculated-biochar-and-compost-biological-component-of-the-soil>
- Dwyer, J. M., Fensham, R. J., Butler, D. W., & Buckley, Y. M. (2009). Carbon for conservation: Assessing the potential for win-win investment in an extensive Australian regrowth ecosystem. *Agriculture, Ecosystems & Environment*, 134(1), 1-7. doi:<https://doi.org/10.1016/j.agee.2009.06.003>
- Dyke, J., et al. (2021). Climate scientists: concept of net zero is a dangerous trap. Retrieved from [https://theconversation.com/climate-scientists-concept-of-netzero-is-a-dangerous-trap-157368](https://theconversation.com/climate-scientists-concept-of-net-zero-is-a-dangerous-trap-157368)
- Dyson, F. J. (1977). Can we control the carbon dioxide in the atmosphere? *Energy*, 2(3),

287-291. doi:[https://doi.org/10.1016/0360-5442\(77\)90033-0](https://doi.org/10.1016/0360-5442(77)90033-0)

- Dzomekul, K., & Illiasu, O. (2015). Evaluation of Type and Application Timing of Indigenous Organic Materials on the Productivity of Maize (*Zea mays L.*) in Guinea Savannah of Ghana. *Ghana Journal of Science, Technology & Development*, 3(1), 25-35. Retrieved from <http://gjstd.org/index.php/GJSTD/article/view/60/22>
- Dzonzi-Undi, J., Masek, O., & Abass, O. (2014). Determination of Spontaneous Ignition Behaviour of Biochar Accumulations. *International Journal of Science and Research*, 3(8), 656-661. Retrieved from <http://www.ijsr.net/archive/v3i8/MDIwMTUyNzU=.pdf>
- Earth Institute, C. U. (2020). The world's first carbon dioxide removal law database. *Phys.org*. Retrieved from <https://phys.org/news/2020-10-world-carbon-dioxide-law-database.html>
- Eastman, C. M. (2011). *Soil Physical Characteristics of an Aeric Ochraqualf amended with Biochar*. (Degree Master of Science). Ohio State University, Retrieved from http://rave.ohiolink.edu/etdc/view?acc_num=osu1316548127
- Easton, Z. M., Rogers, M., Davis, M., Wade, J., Eick, M., & Bock, E. (2015). Mitigation of sulfate reduction and nitrous oxide emission in denitrifying environments with amorphous iron oxide and biochar. *Ecological Engineering*, 82, 605 - 613. doi:10.1016/j.ecoleng.2015.05.008
- Ebeheakey, A. A. (2014). *The use of biochar and charcoal as soil amendments to improve allelochemical-laden soils in the landscape*. KNUST, Retrieved from <http://ir.knust.edu.gh/handle/123456789/6626>
- Eberly, B. C. (2010). *A component based model for the prediction of the product yields of the pyrolysis of a biomass particle*.
- Ebersbach, F., Assmy, P., Martin, P., Schulz, I., Wolzenburg, S., & Nöthig, E.-M. (2014). Particle flux characterisation and sedimentation patterns of protistan plankton during the iron fertilisation experiment LOHAFEX in the Southern Ocean. *Deep Sea Research Part I: Oceanographic Research Papers*, 89, 94-103. doi:<https://doi.org/10.1016/j.dsr.2014.04.007>
- Echterhof, T., & Pfeifer, H. (2012). *Study on biochar usage in the electric arc furnace*. Paper presented at the 2nd International Conference Clean Technologies in the Steel Industry.
- Eckmeier, E., Gerlach, R., Skjemstad, J. O., Ehrmann, O., & Schmidt, M. W. I. (2007). Minor changes in soil organic carbon and charcoal concentrations detected in a temperate deciduous forest a year after an experimental slash-and-burn. *Biogeosciences*, 4(3), 377-383. Retrieved from <http://www.biogeosciences.net/4/377/2007/>
- Eckmeier, E., Rosch, M., Ehrmann, O., Schmidt, M. W. I., Schier, W., & Gerlach, R. (2007). Conversion of biomass to charcoal and the carbon mass balance from a slash-and-burn experiment in a temperate deciduous forest. *Holocene*, 17(4), 539-542. Retrieved from <http://journals.sagepub.com/doi/abs/10.1177/0959683607077041>
- Eddy, L. B., Wolstenholme, J., Tiege, P. B., Meza Trevino, N. Y., & Quezada Rivera, J. J. (2015).
- Eden, M. J., Bray, W., Herrera, L., & McEwan, C. (1984). Terra-preta soils and their archaeological context in the caqueta basin of southeast colombia. *American Antiquity*, 49(1), 125-140. Retrieved from https://www.jstor.org/stable/280517?seq=1#page_scan_tab_contents
- Edenborn, S. L., Edenborn, H. M., Krynick, R. M., & Haug, K. L. Z. (2015). Influence of biochar application methods on the phytostabilization of a hydrophobic soil contaminated with lead and acid tar. *Journal of Environmental Management*, 150, 226 - 234. doi:10.1016/j.jenvman.2014.11.023
- Edmonds, J., Luckow, P., Calvin, K., Wise, M., Dooley, J., Kyle, P., . . . Clarke, L. (2013). Can radiative forcing be limited to 2.6 Wm(-2) without negative emissions from bioenergy AND CO₂ capture and storage? *Climatic Change*, 118(1), 29-43. doi:10.1007/s10584-012-0678-z

- Edmunds, C. W. (2012). *The Effects of Biochar Amendment to Soil on Bioenergy Crop Yield and Biomass Composition*. (Master of Science). University of Tennessee, Retrieved from http://trace.tennessee.edu/utk_gradthes/1150
- Edrisi, S. A., & Abhilash, P. C. (2016). Exploring marginal and degraded lands for biomass and bioenergy production: An Indian scenario. *Renewable and Sustainable Energy Reviews*, 54, 1537-1551. doi:<https://doi.org/10.1016/j.rser.2015.10.050>
- Edwards, D. P., et al. (2017). Climate change mitigation: potential benefits and pitfalls of enhanced rock weathering in tropical agriculture. *Biology Letters*, 13(4), 1-7. Retrieved from <http://rsbl.royalsocietypublishing.org/content/13/4/20160715>
- Edwards, D. P., Fisher, B., & Boyd, E. (2010). Protecting degraded rainforests: enhancement of forest carbon stocks under REDD+. *Conservation Letters*, 3(5), 313-316. doi:[10.1111/j.1755-263X.2010.00143.x](https://doi.org/10.1111/j.1755-263X.2010.00143.x)
- Edwards, R., & Spokas, K. (2018). A Promising Technology to Fight Climate Change Is Finally Becoming a Reality. *Slate.com*. Retrieved from <https://slate.com/technology/2018/03/carbon-capture-and-storage-a-technology-to-fight-climate-change-is-becoming-a-reality.html>
- EdwinGeo, V., Fol, G., Aloui, F., Thiagarajan, S., Jerome Stanley, M., Sonthalia, A., . . . Saravanan, C. G. (2021). Experimental analysis to reduce CO₂ and other emissions of CRDI CI engine using low viscous biofuels. *Fuel*, 283, 118829. doi:<https://doi.org/10.1016/j.fuel.2020.118829>
- Effendi, R. (2016). Economic analysis of biochar application in agroforestry systems. In *Biochar for future food security: learning from experiences and identifying research priorities*.
- Efroyimson, R. A., Dale, V. H., Kline, K. L., McBride, A. C., Bielicki, J. M., Smith, R. L., . . . Shaw, D. M. (2013). Environmental Indicators of Biofuel Sustainability: What About Context? *Environmental Management*, 51(2), 291-306. doi:[10.1007/s00267-012-9907-5](https://doi.org/10.1007/s00267-012-9907-5)
- Efroyimson, R. A., Dale, V. H., & Langholtz, M. H. (2017). Socioeconomic indicators for sustainable design and commercial development of algal biofuel systems. *GCB Bioenergy*, 9(6), 1005-1023. doi:[10.1111/gcbb.12359](https://doi.org/10.1111/gcbb.12359)
- Egamberdieva, D., Wirth, S., Behrendt, U., Abd_Allah, E. F., & Berg, G. (2016). Biochar Treatment Resulted in a Combined Effect on Soybean Growth Promotion and a Shift in Plant Growth Promoting Rhizobacteria. *Frontiers in Microbiology*, 7, 1-11. doi:[10.3389/fmicb.2016.00209](https://doi.org/10.3389/fmicb.2016.00209)
- Egeskog, A., Berndes, G., Freitas, F., Gustafsson, S., & Sparovek, G. (2011). Integrating bioenergy and food production—A case study of combined ethanol and dairy production in Pontal, Brazil. *Energy for Sustainable Development*, 15(1), 8-16. doi:<https://doi.org/10.1016/j.esd.2011.01.005>
- Eggleston, G., & Lima, I. (2015). Sustainability Issues and Opportunities in the Sugar and Sugar-Bioproduct Industries. *Sustainability*, 7(9), 12209 - 12235. doi:[10.3390/su70912209](https://doi.org/10.3390/su70912209)
- Ehlert, D., & Zickfeld, K. (2018). Irreversible ocean thermal expansion under carbon dioxide removal. *Earth System Dynamics*, 9, 197-210. Retrieved from <https://www.earth-syst-dynam.net/9/197/2018/esd-9-197-2018.pdf>
- Ehrenstein, V. (2018). Carbon sink geopolitics. *Economy and Society*, 47(1), 162-186. doi:[10.1080/03085147.2018.1445569](https://doi.org/10.1080/03085147.2018.1445569)
- Ehsan, M., Barakat, M. A., Husein, D. Z., & Ismail, S. M. (2014). Immobilization of Ni and Cd in Soil by Biochar Derived From Unfertilized Dates. *Water, Air, & Soil Pollution*, 225(11). doi:[10.1007/s11270-014-2123-6](https://doi.org/10.1007/s11270-014-2123-6)
- Eichenauer, S., Weber, B., & Stadlbauer, E. A. (2015). *Thermochemical Processing of Animal Fat and Meat and Bone Meal to Hydrocarbon Based Fuels*. Paper presented at the ASME 2015 9th International Conference on Energy Sustainability, San Diego,

- California, USA. <http://proceedings.asmedigitalcollection.asme.org/proceeding.aspx?articleid=2467400>
- Eide, A. (2008). *The Right to Food and the Impact of Liquid Biofuels (Agrofuels)*. Retrieved from https://www.fuhem.es/media/ecosocial/file/Boletin%20ECOS/ECOS%20CDV/Bolet%C3%ADn%204/Right_Food_and_Biofuels.pdf
- Eide, J. (2013). *Rethinking CCS – Strategies for Technology Development in Times of Uncertainty*. (Master of Science in Technology & Policy). MIT, Retrieved from https://sequestration.mit.edu/pdf/2013_JanEide_Thesis.pdf
- Eikeland, E., Blichfeld, A. B., Tyrsted, C., Jensen, A., & Iversen, B. B. (2015). Optimized Carbonation of Magnesium Silicate Mineral for CO₂ Storage. *Acs Applied Materials & Interfaces*, 7(9), 5258-5264. doi:10.1021/am508432w
- Eilers, J., Postuma, S. A., & Sie, S. T. (1990). The Shell Middle Distillate Synthesis Process (SMDS). *Catal. Lett.*, 7, 253.
- (2020). *Peter Eisenberger on the Promise of Direct Air Capture* [Retrieved from https://soundcloud.com/elephantpodcast/peter-eisenberger-on-the-promise-of-direct-air-capture?utm_source=Global+Thermostat+News&utm_campaign=ca2381341b-EMAIL_CAMPAIGN_2020_07_16_06_03&utm_medium=email&utm_term=0_1c3bf08404-ca2381341b-230160973
- Einsiedel, E. F., Boyd, A. D., Medlock, J., & Ashworth, P. (2013). Assessing socio-technical mindsets: Public deliberations on carbon capture and storage in the context of energy sources and climate change. *Energy Policy*, 53, 149-158. doi:<http://dx.doi.org/10.1016/j.enpol.2012.10.042>
- Eisaman, M. D., et al. (2012). CO₂ extraction from seawater using bipolar membrane electrodialysis. *Energy & Environmental Science*, 5(6), 7346-7352. Retrieved from <http://pubs.rsc.org/en/Content/ArticleLanding/2012/EE/C2EE03393C#!divAbstract>
- Eisaman, M. D. (2020). Negative Emissions Technologies: The Tradeoffs of Air-Capture Economics. *Joule*, 4(3), 516-520. doi:<https://doi.org/10.1016/j.joule.2020.02.007>
- Eisaman, M. D., Parajuly, K., Tuganov, A., Eldershaw, C., Chang, N., & Littau, K. A. (2012). CO₂ extraction from seawater using bipolar membrane electrodialysis. *Energy & Environmental Science*, 5(6), 7346-7352. doi:10.1039/C2EE03393C
- Eisaman, M. D., Rivest, J. L. B., Karnitz, S. D., de Lannoy, C.-F., Jose, A., DeVaul, R. W., & Hannun, K. (2018). Indirect ocean capture of atmospheric CO₂: Part II. Understanding the cost of negative emissions. *International Journal of Greenhouse Gas Control*, 70, 254-281. doi:<https://doi.org/10.1016/j.ijggc.2018.02.020>
- Eisenberger, P., et al. (2021). *Mobilize Now: Setting Up Direct Air Capture*. Retrieved from <https://www.mobilizeforclimate.org/>
- Eisenberger, P. M., Cohen, R. W., Chichilnisky, G., Eisenberger, N. M., Chance, R. R., & Jones, C. W. (2009). Global Warming and Carbon-Negative Technology: Prospects for a Lower-Cost Route to a Lower-Risk Atmosphere. *Energy & Environment*, 20(6), 973-984. doi:10.1260/095830509789625374
- Eisenburg, A. (2013). Company looks to pull carbon dioxide from the atmosphere -- at a profit. *International Herald Tribune*. Retrieved from <https://search.proquest.com/docview/1266621389?accountid=14496>
- Ekebafe, M. O., Ekebafe, L. O., & Maliki, M. (2013). Utilisation of biochar and superabsorbent polymers for soil amendment. *Science Progress*, 96 (Pt. 1), 85-94. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/23738439>
- Ekebafe, M. O., Ekebafe, L. O., & Ugbesia, S. O. (2015). Biochar composts and composites. *Science Progress*, 98(2), 169 - 176. doi:10.3184/003685015x14301544319061
- Ekebafe, M. O., Oviasogie, P., & Asueni, N. O. (2015). Laboratory Incubation Studies of Biochar Amendment on Non-Co₂ Greenhouse Gas Emissions From Soil Cultivated to Coconut

- Seedlings. *Nigerian Journal of Soil Science*, 23(2), 20-26. Retrieved from [http://soilsnigeria.net/wp-content/Nigerian%20Journal%20of%20Soil%20Science%2023\(2\)%202013%20.pdf#page=27](http://soilsnigeria.net/wp-content/Nigerian%20Journal%20of%20Soil%20Science%2023(2)%202013%20.pdf#page=27)
- Ekhardt, F., & von Bredow, H. (2012). Managing the Ecological and Social Ambivalences of Bioenergy. *Journal of Renewable Energy Law & Policy*, 3, 49-64.
- El Hanandeh, A. (2011). *Trade-offs in the production and end-use of biochar and bio-oil from the solid waste generated from the olive oil industry in Australia*. Paper presented at the 19th International Congress on Modelling and Simulation, Perth, Australia. <http://www.mssanz.org.au/modsim2011/F1/elhanandeh.pdf>
- Elad, Y., Cytryn, E., Meller-Harel, Y., Lew, B., & Graber, E. R. (2012). The Biochar Effect: Plant resistance to biotic stresses. *Phytopathologia Mediterranea*, 50, 335-349. Retrieved from <http://www.fupress.net/index.php/pm/article/view/9807/9897>
- Elad, Y., Rav David, D., Meller-Harel, Y., Borenshtein, M., H., B. K., Silber, A., & Graber, E. R. (2010). Induction of systemic resistance in plants by biochar, a soil-applied carbon sequestering agent. *Phytopathology*, 100, 913-921. Retrieved from <http://apsjournals.apsnet.org/doi/pdfplus/10.1094/PHYTO-100-9-0913>
- El-Adly, R. A., et al. . (2015). Biogrease Based on Biochar from Rice Straw and Waste Cooking Oil. *International Journal of Advances in Pharmacy, Biology and Chemistry*, 4(1), 91-97. Retrieved from <http://www.ijapbc.com/files/12-34210.pdf>
- Elaigwu, S. E. (2014). *Pollution reduction with processed waste materials*. University of Hull, Retrieved from <http://ethos.bl.uk/OrderDetails.do?uin=uk.bl.ethos.612668>
- Elangovan, R., & Sekaran, N. C. (2014). Effect of biochar application on growth, yield and soil fertility status in cotton. *Asian Journal of Soil Science* 2014, 9(1), 41-49. Retrieved from <http://www.cabdirect.org/abstracts/20143335040.html>
- Elangovan, R., & Sekaran, N. C. (2014). Effect of biochar application on soil properties and quality parameters in cotton. *Asian Journal of Soil Science* 2014, 9(1), 1-10. Retrieved from <http://www.cabdirect.org/abstracts/20143335033.html>
- Elbana, T. A., Mohammad, S. G., & Ahmed, S. M. (2015). *Chromium removal from industrial wastewater using biochar materials: kinetic batch experiments*. http://www.researchgate.net/profile/Tamer_Elbana/publication/277624444_Chromium_removal_from_industrial_wastewater_using_biochar_materials_kinetic_batch_experiments/links/556ffaaea08aec226830abac9.pdf
- Eldardiry, H., & Habib, E. (2018). Carbon capture and sequestration in power generation: review of impacts and opportunities for water sustainability. *Energy, Sustainability and Society*, 8(6), 1-15. doi:DOI 10.1186/s13705-018-0146-3
- Elfving, J., Bajamundi, C., & Kauppinen, J. (2017). Characterization and Performance of Direct Air Capture Sorbent. *Energy Procedia*, 114, 6087-6101. doi:<https://doi.org/10.1016/j.egypro.2017.03.1746>
- Elfving, J., Bajamundi, C., Kauppinen, J., & Sainio, T. (2017). Modelling of equilibrium working capacity of PSA, TSA and TVSA processes for CO₂ adsorption under direct air capture conditions. *Journal of CO₂ Utilization*, 22, 270-277. doi:<https://doi.org/10.1016/j.jcou.2017.10.010>
- Elfving, J., & Sainio, T. (2021). Kinetic approach to modelling CO₂ adsorption from humid air using amine-functionalized resin: Equilibrium isotherms and column dynamics. *Chemical Engineering Science*, 246, 116885. doi:<https://doi.org/10.1016/j.ces.2021.116885>
- Elgin, B. (2020). These Trees Are Not What They Seem. *Bloomberg Green*. Retrieved from <https://www.bloomberg.com/features/2020-nature-conservancy-carbon-offsets-trees/>
- Elgin, B. (2021). A Top U.S. Seller of Carbon Offsets Starts Investigating Its Own Projects. *Bloomberg Green*. Retrieved from <https://www.bloomberg.com/news/features/2021-04-05/a-top-u-s-seller-of-carbon-offsets-starts-investigating-its-own-projects>

- Elkamel, A., Mirzaesmaeli, H., Croiset, E., & Douglas, P. L. (2010). Energy supply planning for the introduction of carbon dioxide (CO₂) capture technologies A2 - Maroto-Valer, M. Mercedes. In *Developments and Innovation in Carbon Dioxide (CO₂) Capture and Storage Technology* (Vol. 1, pp. 93-152): Woodhead Publishing.
- Elkind, E., et al. (2020). *Capturing Opportunity: Law and Policy Solutions to Accelerate Engineered Carbon Removal in California*. Retrieved from <https://www.law.berkeley.edu/research/clee/research/climate-change-and-business-research-initiative/accelerating-engineered-carbon-removal-in-california/>
- Elleuch, A., et al. (2013). *Experimental Investigation of a three-layer planar Direct Carbon Fuel Cell using almond shell biochar as fuel*. Paper presented at the Journées Internationales de Thermique (JITH 2013).
- Elleuch, A. e. a. (2013). Experimental investigation of Direct Carbon Fuel Cell fueled by almond shell biochar: Part II. Improvement of cell stability and performance by a three-layer planar configuration. *International Journal of Hydrogen Energy*, 38(36), 16605–16614. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0360319913018089>
- Elliot, T. R., & Celia, M. A. (2012). Potential Restrictions for CO₂ Sequestration Sites Due to Shale and Tight Gas Production. *Environmental Science & Technology*, 46(7), 4223-4227. doi:10.1021/es2040015
- Elliott, R. (2020). Carbon Capture Wins Fans Among Oil Giants. *The Wall Street Journal*. Retrieved from <https://www.wsj.com/articles/carbon-capture-is-winning-fans-among-oil-giants-11581516481#:~:text=Chevron%20has%20invested%20in%20companies,natural%20gas%20or%20making%20cement>
- Ellis, L. D., Badel, A. F., Chiang, M. L., Park, R. J.-Y., & Chiang, Y.-M. (2020). Toward electrochemical synthesis of cement—An electrolyzer-based process for decarbonating CaCO₃ while producing useful gas streams. *Proceedings of the National Academy of Sciences*, 117(23), 12584-12591. doi:10.1073/pnas.1821673116
- Ellison, D., Morris, C. E., Locatelli, B., Sheil, D., Cohen, J., Murdiyarso, D., . . . Sullivan, C. A. (2017). Trees, forests and water: Cool insights for a hot world. *Global Environmental Change*, 43, 51-61. doi:<https://doi.org/10.1016/j.gloenvcha.2017.01.002>
- EL-MAHROUKY, M., EL-NAGGAR, A. H., USMAN, A. R., & AI-WABEL, M. (2014). Dynamics of CO₂ emission and biochemical properties of a sandy calcareous soil amended with Conocarpus waste and biochar. *Pedosphere*, 25(1), 46-56. Retrieved from http://pedosphere.issas.ac.cn/trqen/ch/reader/view_abstract.aspx?file_no=20150105&flag=1
- Elmay, Y., Delmotte, L., Gadiou, R., Le Brech, Y., Dufour, A., & Brosse, N. (2014). Effect of pyrolysis temperature on the property modifications of lignocellulosic biomass and its components. *Renewable Energy Congress (IREC)*. Retrieved from http://ieeexplore.ieee.org/xpl/articleDetails.jsp?tp=&arnumber=6826991&url=http%3A%2F%2Fieeexplore.ieee.org%2Fxpls%2Fabs_all.jsp%3Farnumber%3D6826991
- Elmer, W. H., Lattao, C. V., & Pignatello, J. J. (2014). Active removal of biochar by earthworms (*Lumbricus terrestris*). *Pedobiologia*, 58(1), 1-6. doi:10.1016/j.pedobi.2014.11.001
- Elmer, W. H., & Pignatello, J. (2011). Effect of biochar amendment on mycorrhizal associations and Fusarium crown and root rot of asparagus in replant soils. *Plant Disease*, 95(8), 960-966. doi:10.1094/pdis-10-10-0741
- Elmquist, M., Cornelissen, G., Kukulski, Z., & Gustafsson, Ö. (2006). Distinct oxidative stabilities of char versus soot black carbon: implications for quantification and environmental recalcitrance. *Global Biogeochemical Cycles*, 20(2), 1-11.
- El-Nagar, R. A., Nessim, M., Abd El-Wahab, A., Ibrahim, R., & Faramawy, S. (2017). Investigating the efficiency of newly prepared imidazolium ionic liquids for carbon dioxide removal from natural gas. *Journal of Molecular Liquids*, 237, 484-489. doi:<https://doi.org/10.1016/j.molliq.2017.07.037>

10.1016/j.molliq.2017.04.042

- El-Naggar, A., Awad, Y. M., Tang, X.-Y., Liu, C., Niazi, N. K., Jien, S.-H., . . . Lee, S. S. (2018). Biochar influences soil carbon pools and facilitates interactions with soil: A field investigation. *29(7)*, 2162-2171. doi:doi:10.1002/ldr.2896
- El-Naggar, A. H., Usman, A. R. A., Al-Omrani, A., Ok, Y. S., Ahmad, M., & Al-Wabel, M. I. (2015). Carbon mineralization and nutrient availability in calcareous sandy soils amended with woody waste biochar. *Chemosphere*, *138*, 67 - 73. doi:10.1016/j.chemosphere.2015.05.052
- Elobeid, A., et al. . (2013). Biofuel Expansion, Fertilizer Use, and GHG Emissions: Unintended Consequences of Mitigation Policies. *Economics Research International*, *2013*, 1-12. Retrieved from https://www.academia.edu/attachments/53468961/download_file?st=work_strip&ct=MTUwMjY3OTUwMSwxNTAyNjgwMjU0LDI1NDM4NQ==
- Eloka-Eboka, A. C., Bwapwa, J. K., & Maroa, S. (2019). Biomass for CO₂ Sequestration. In *Reference Module in Materials Science and Materials Engineering*: Elsevier.
- Eloneva, S., Said, A., Fogelholm, C. J., & Zevenhoven, R. (2012). Preliminary assessment of a method utilizing carbon dioxide and steelmaking slags to produce precipitated calcium carbonate. *Applied Energy*, *90*(1), 329-334. doi:10.1016/j.apenergy.2011.05.045
- Eloneva, S., Teir, S., Salminen, J., Fogelholm, C.-J., & Zevenhoven, R. (2008). Fixation of CO₂ by carbonating calcium derived from blast furnace slag. *Energy*, *33*(9), 1461-1467. doi:<https://doi.org/10.1016/j.energy.2008.05.003>
- Elsaidi, S. K., Venna, S. R., Mohamed, M. H., Gipple, M. J., & Hopkinson, D. P. (2020). Dual-Layer MOF Composite Membranes with Tuned Interface Interaction for Postcombustion Carbon Dioxide Separation. *Cell Reports Physical Science*, *1*(5). doi:10.1016/j.xcrp.2020.100059
- Elsgaard, L., & Karki, S. (2015). *Greenhouse gas emissions from biochar-amended soil*. AARHUS Universitet, Retrieved from http://www.refertil.info/sites/default/files/tolede_poster_lel_saka.pdf
- EL-Tawil, A. A. e. a. (2015). *Effect of Volatile Matter on Reduction of Iron Oxide-Containing Carbon Composite*. http://www.researchgate.net/profile/Asmaa_Eltawil/publication/280102656_EFFECT_OF_VOLATILE_MATTER_ON_REDUCTION_OF_IRON_OXIDE_CONTAINING_CARBON_COMPOSITE/links/55f0c1f608aedecb68ffc1c3.pdf
- Emerson, D. (2019). Biogenic Iron Dust: A Novel Approach to Ocean Iron Fertilization as a Means of Large Scale Removal of Carbon Dioxide From the Atmosphere. *Frontiers in Marine Science*, *6*, 1-8. doi:10.3389/fmars.2019.00022
- Emissions, C. f. N. (2021). *The case for Negative Emissions*. Retrieved from <https://coalitionfornegativeemissions.org/wp-content/uploads/2021/06/The-Case-for-Negative-Emissions-Coalition-for-Negative-Emissions-report-FINAL.pdf>
- Emissions, T. C. f. N. (2020). Building back better by supporting negative emissions technologies. Retrieved from <https://www.drax.com/energy-policy/coalition-negative-emissions/>
- Enders, A., Hanley, K., Whitman, T., Joseph, S., & Lehmann, J. (2012). Characterization of biochars to evaluate recalcitrance and agronomic performance. *Bioresour Technol*, *114*, 644-653. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/22483559>
- Enders, A., & Lehmann, J. (2012). Comparison of Wet-Digestion and Dry-Ashing Methods for Total Elemental Analysis of Biochar. *Communications in Soil Science and Plant Analysis*, *43*, 1042-1052. doi:10.1080/00103624.2012.656167
- Endo, T., et al. (2018). Carbon Storage in Tidal Flats. In T. Kuwae & M. Hori (Eds.), *Blue Carbon in Shallow Coastal Ecosystems: Carbon Dynamics, Policy, and Implementation* (pp. 129-151).
- Endres, J. (2013). U.S. Federal and State Water Laws' Impact on Bioenergy Policy. In J. F.

- Dellemand & P. W. Gerbens-Leenes (Eds.), *Bioenergy and Water* (pp. 211-224): European Commission.
- Endres, J. M. (2012). Bioenergy, Resource Scarcity, and the Rising Importance of Land Use Definitions. *North Dakota Law Review*, 88, 559-594. Retrieved from <https://poseidon01.ssrn.com/delivery.php?ID=707091125114112030107087120097008077118020024084061089000007116106020065002073108096026057102032006102108122125123115086107015038034045078021107097124110069094100001069030017007079001029080094004002025023069121116103075124116122099013116109012017104025&EXT=pdf>
- Endres, J. M. (2013). Barking up the Wrong Tree? Forest Sustainability in the Wake of Emerging Bioenergy Policies. *Vermont Law Review*, 37, 763-832. Retrieved from <https://lawreview.vermontlaw.edu/wp-content/uploads/2013/07/10-Endres.pdf>
- Endrődi, B., Samu, A., Kecsenovity, E., Halmágyi, T., Sebők, D., & Janáky, C. (2021). Operando cathode activation with alkali metal cations for high current density operation of water-fed zero-gap carbon dioxide electrolysers. *Nature Energy*, 6(4), 439-448. doi:10.1038/s41560-021-00813-w
- Energy Futures Institute, e. a. (2020). *An Action Plan for Carbon Capture and Storage in California: Opportunities, Challenges, and Solutions*. Retrieved from <https://energyfuturesinitiative.org/efi-reports>
- Energy, P. B. D. (2021). Storegga attracts investment from GIC, Mitsui & Co., Ltd. and Macquarie. Retrieved from <https://pale-blu.com/2021/03/03/storegga-attracts-investment-from-gic-mitsui-co-ltd-and-macquarie-highlights/amp/>
- Energy, U. S. D. o. (2018). *2016 Billion-Ton Report: Advancing Domestic Resources for a Thriving Bioeconomy*. Retrieved from <https://www.energy.gov/eere/bioenergy/2016-billion-ton-report>
- Energy, U. S. D. o. (2019). U.S. Department of Energy Announces \$110M for Carbon Capture, Utilization, and Storage. Retrieved from <https://www.energy.gov/articles/us-department-energy-announces-110m-carbon-capture-utilization-and-storage>
- Energy, U. S. D. o. (2021). DOE Invests \$24 Million to Advance Transformational Air Pollution Capture [Press release]. Retrieved from <https://www.energy.gov/articles/doe-invests-24-million-advance-transformational-air-pollution-capture>
- Engineering, C. (2013). Direct Air Capture as an Enabler of Ultra-Low Carbon Fuels. Retrieved from <http://carbonengineering.com/wp-content/uploads/2017/06/CE-DAC-CCS-Comparison.pdf>
- Engineering, C. (2019). Carbon Engineering concludes USD\$68 million private investment round and proceeds with commercialization of carbon dioxide removal technology. Retrieved from <https://carbonengineering.com/carbon-engineering-concludes-usd68-million-private-investment-round/>
- Engineering, C. (2019). Oxy Low Carbon Ventures and Carbon Engineering begin engineering of the world's largest Direct Air Capture and sequestration plant [Press release]. Retrieved from <https://carbonengineering.com/worlds-largest-direct-air-capture-and-sequestration-plant/>
- Engineering, C. (2020). CE Breaks Ground at Direct Air Capture Innovation Centre [Press release]. Retrieved from <https://carbonengineering.com/news-updates/innovation-centre/>
- Engineering, N. T. S. o. (2020). NYU Tandon's Urban Future Lab and leading organizations launch carbontech initiative. *EurekaAlert!* Retrieved from https://www.eurekalert.org/pub_releases/2020-07/ntso-ntu071620.php
- Ennes, J. (2021). Amazon, meet Amazon: Tech giant rolls out rainforest carbon offset project. *Mongabay*. Retrieved from <https://news.mongabay.com/2021/09/amazon-meet-amazon-tech-giant-rolls-out-rainforest-carbon-offset-project/>

- Ennis, C. J., Evans, A. G., Islam, M., Ralebitso-Senior, T. K., & Senior, E. (2012). Biochar: Carbon Sequestration, Land Remediation, and Impacts on Soil Microbiology. *Critical Reviews in Environmental Science and Technology*, 42(22), 2311-2364. doi:10.1080/10643389.2011.574115
- Eom, J., Edmonds, J., Krey, V., Johnson, N., Longden, T., Luderer, G., . . . Van Vuuren, D. P. (2015). The impact of near-term climate policy choices on technology and emission transition pathways. *Technological Forecasting and Social Change*, 90, 73-88. doi:<https://doi.org/10.1016/j.techfore.2013.09.017>
- EPRI. (2011). "Blue Sky" Approaches to Greenhouse Gas Mitigation: An Initial Assessment of Potential New Types of Greenhouse Gas Emissions Offsets. Retrieved from Palo Alto, CA: http://my.epri.com/portal/server.pt?Abstract_id=000000000001023662
- Erans, M., Manovic, V., & Anthony, E. J. (2016). Calcium looping sorbents for CO₂ capture. *Applied Energy*, 180(Supplement C), 722-742. doi:<https://doi.org/10.1016/j.apenergy.2016.07.074>
- Erans, M., Nabavi, S. A., & Manović, V. (2020). Carbonation of lime-based materials under ambient conditions for direct air capture. *Journal of Cleaner Production*, 242, 118330. doi:<https://doi.org/10.1016/j.jclepro.2019.118330>
- Erawati, E., Budiyati, E., & Sediawan, W. B. (2015). Research Report of the Inter-University Cooperation (Character) Product Characteristics Pyrolysis Of Rice Husk, Corn Cob, And Sawdust Teak Using Zeolite Catalysts [translated from Indonesian language]. In.
- Erb, K.-H., Haberl, H., & Plutzar, C. (2012). Dependency of global primary bioenergy crop potentials in 2050 on food systems, yields, biodiversity conservation and political stability. *Energy Policy*, 47, 260-269. doi:<http://dx.doi.org/10.1016/j.enpol.2012.04.066>
- Erb, K.-H., Kastner, T., Plutzar, C., Bais, A. L. S., Carvalhais, N., Fetzel, T., . . . Luysaert, S. (2017). Unexpectedly large impact of forest management and grazing on global vegetation biomass. *Nature*. doi:10.1038/nature25138
<https://www.nature.com/articles/nature25138#supplementary-information>
- Erb, K.-H., Mayer, A., Krausmann, F., Lauk, C., Plutzar, C., Steinberger, J., & Haberl, H. (2012). The interrelations of Future Global Bioenergy Potentials, Food demand, and Agricultural Technology. In A. Gasparatos & P. Stromberg (Eds.), *Socioeconomic and Environmental Impacts of Biofuels: Evidence from Developing Nations* (pp. 27-52). Cambridge: Cambridge University Press.
- Ercoli, L., Mariotti, M., Masoni, A., & Bonari, E. (1999). Effect of irrigation and nitrogen fertilization on biomass yield and efficiency of energy use in crop production of Miscanthus. *Field Crops Research*, 63(1), 3-11. doi:[https://doi.org/10.1016/S0378-4290\(99\)00022-2](https://doi.org/10.1016/S0378-4290(99)00022-2)
- Erickson, C. (2020). Act aimed at boosting carbon capture approved. *Rocket Miner*. Retrieved from https://www.wyomingnews.com/rocketminer/news/state/act-aimed-at-boosting-carbon-capture-approved/article_63b87360-e95a-54ee-b073-89130a2a6f50.html
- Erickson, C. (2020). UW carbon capture project enters third phase in Wyoming. *Casper Star Tribune*. Retrieved from https://trib.com/business/energy/uw-carbon-capture-project-enters-third-phase-in-wyoming/article_f9b4b893-1945-50b2-8856-29fcfd521e1c.html
- Erickson, J. (2021). Climate benefits vs. burdens: Which products are best suited for emerging carbon capture technologies? [Press release]. Retrieved from <https://news.umich.edu/climate-benefits-vs-burdens-which-products-are-best-suited-for-emerging-carbon-capture-technologies/>
- Eriksen, N. T., Riisgård, F. K., Gunther, W. S., & Lønsmann Iversen, J. J. J. J. o. A. P. (2006). On-line estimation of O₂ production, CO₂ uptake, and growth kinetics of microalgal cultures in a gas-tight photobioreactor. *Journal of Applied Phycology*, 19(2). doi:10.1007/s10811-006-9122-y

- Ernani, P. R., Almeida, J. A., Miquelluti, D. J., Fontoura, S. M. V., & Kaminski, J. (2006). Downward movement of soil cations in highly weathered soils caused by addition of gypsum. *Communications in Soil Science and Plant Analysis*, 37, 571-586. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/00103620500449443>
- Ernsting, A. (2009). Biochar: can charcoal really stop global warming? *Ecologist*. Retrieved from <https://theecologist.org/2009/jun/30/biochar-can-charcoal-really-stop-global-warming>
- Ernsting, A. (2013). Biochar: a cause for concern? *Ecologist*. Retrieved from <https://theecologist.org/2013/jul/24/biochar-cause-concern>
- Ernsting, A., & Munnion, O. (2015). *Last-ditch climate option, or wishful thinking: Bioenergy with carbon capture and storage*. Retrieved from <http://www.biofuelwatch.org.uk/wp-content/uploads/BECCS-report-web.pdf>
- Ertas, M., & Alma, M. H. (2010). Pyrolysis of laurel (*Laurus nobilis* L.) extraction residues in a fixed-bed reactor: Characterization of bio-oil and bio-char. *Journal of Analytical and Applied Pyrolysis*, 88(1), 22-29. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0165237010000173>
- Escobar, P., & Emir, J. (2015). *Application of Ligninolytic Enzymes in the Production of Biofuels from Cotton Wastes*. Texas A & M University, Retrieved from <https://oaktrust.library.tamu.edu/handle/1969.1/154082?show=full>
- Escudero, A. I., Espatolero, S., Romeo, L. M., Lara, Y., Paufique, C., Lesort, A.-L., & Liszka, M. (2016). Minimization of CO₂ capture energy penalty in second generation oxy-fuel power plants. *Applied Thermal Engineering*, 103, 274-281. doi:<http://dx.doi.org/10.1016/j.applthermaleng.2016.04.116>
- Essandoh, M., Kunwar, B., Pittman, C. U., Mohan, D., & Mlsna, T. (2015). Sorptive removal of salicylic acid and ibuprofen from aqueous solutions using pine wood fast pyrolysis biochar. *Chemical Engineering Journal*, 265, 219 - 227. doi:[10.1016/j.cej.2014.12.006](https://doi.org/10.1016/j.cej.2014.12.006)
- Eswarlal, V. K., et al. (2014). Role of community acceptance in sustainable bioenergy projects in India. *Energy Policy*, 73, 333-343. Retrieved from http://econpapers.repec.org/article/eeeenepol/v_3a73_3ay_3a2014_3ai_3ac_3ap_3a333-343.htm
- Ettehadtavakkol, A., Lake, L. W., & Bryant, S. L. (2014). CO₂-EOR and storage design optimization. *International Journal of Greenhouse Gas Control*, 25, 79-92. doi:<https://doi.org/10.1016/j.ijggc.2014.04.006>
- Eufrasio-Espinosa, R. M., & Lenny Koh, S. C. (2019). The UK Path and the Role of NETs to Achieve Decarbonisation. In N. Shurpali, A. K. Agarwal, & V. K. Srivastava (Eds.), *Greenhouse Gas Emissions: Challenges, Technologies and Solutions* (pp. 87-109). Singapore: Springer Singapore.
- Europa, B. (2016). *Bellona Europa response to the consultation on a sustainable bioenergy policy for the period after 2020*. Retrieved from network.bellona.org/content/uploads/sites/3/2016/05/Bellona-Response-to-EC-Consultation-on-bioenergy-sustainability-policy-after-2020.pdf
- Europa, B. (2016). *CCU in the EU ETS: risk of CO₂ laundering preventing a permanent CO₂ solution*. Retrieved from http://network.bellona.org/content/uploads/sites/3/2016/10/BellonaBrief_CCU-in-the-EU-ETS-risk-of-CO2-laundering-preventing-a-permanent-CO2-solution-October-2016-2.pdf
- Europe, B. (2019). Europe Launches CCUS Knowledge Exchange Network to Support Industry's Climate Action. Retrieved from <https://bellona.org/news/ccs/2019-04-europe-launches-ccus-knowledge-exchange-network-to-support-industrys-climate-action>
- Europe, B. (2020). Takeaways on defining Real and Credible Carbon Dioxide Removal. Retrieved from <https://bellona.org/news/carbon-dioxide-removal/2020-11-takeaways-on-defining-real-and-credible-carbon-dioxide-removal>
- Europe, B. (2020). Why we need transparency on Carbon Dioxide Removal. Retrieved from <https://bellona.org/news/carbon-dioxide-removal/2020-11-why-we-need-transparency-on-carbon-dioxide-removal>

- <https://bellona.org/news/eu/2020-07-why-we-need-transparency-on-carbon-dioxide-removal>
- Europe, B. (2021). Bio-CCS' role on path to net-zero – dependent on legislative framework's recognition of shipping and CO₂ storage. Retrieved from [https://bellona.org/news/ccs/2021-03-bio-ccs-role-on-path-to-netzero-dependent-on-legislative-frameworks-recognition-of-shipping-and-co2-storage](https://bellona.org/news/ccs/2021-03-bio-ccs-role-on-path-to-net-zero-dependent-on-legislative-frameworks-recognition-of-shipping-and-co2-storage)
- Evangelou, M. W. H., et al. (2014). Soil application of biochar produced from biomass grown on trace element contaminated land. *Journal of Environmental Management*, 146, 100 - 106. doi:10.1016/j.jenvman.2014.07.046
- Evans, A., Strezov, V., & Evans, T. J. (2010). Sustainability considerations for electricity generation from biomass. *Renewable and Sustainable Energy Reviews*, 14(5), 1419-1427. doi:<https://doi.org/10.1016/j.rser.2010.01.010>
- Evans, A. M. (2015). *Effects of Novel Feed Ingredients and Additives on Feed Quality and Broiler Performance*. West Virginia University, Retrieved from <http://gradworks.umi.com/3672/3672843.html>
- Evans, A. M., Loop, S. A., & Moritz, J. S. (2015). Effect of poultry litter biochar diet inclusion on feed manufacture and 4- to 21-d broiler performance. *The Journal of Applied Poultry Research*, 24(3), 380 - 386. doi:10.3382/japr/pfv039
- Evans, M. (2020). Climate fix? 'Fertilizing' oceans with iron unlikely to sequester more carbon. Retrieved from <https://news.mongabay.com/2020/03/climate-fix-fertilizing-oceans-with-iron-unlikely-to-sequester-more-carbon/>
- Evans, S. (2017). The Swiss company hoping to capture 1% of global CO₂ emissions by 2025. *Carbon Brief*. Retrieved from <https://www.carbonbrief.org/swiss-company-hoping-capture-1-global-co2-emissions-2025>
- Evans, S. (2019). Direct CO₂ capture machines could use 'a quarter of global energy' in 2100. *Carbon Brief*. Retrieved from <https://www.carbonbrief.org/direct-co2-capture-machines-could-use-quarter-global-energy-in-2100>
- Evans, S. G., Ramage, B. S., DiRocco, T. L., & Potts, M. D. (2015). Greenhouse Gas Mitigation on Marginal Land: A Quantitative Review of the Relative Benefits of Forest Recovery versus Biofuel Production. *Environmental Science & Technology*, 49(4), 2503-2511. doi:10.1021/es502374f
- Ewing, M., & Msangi, S. (2009). Biofuels production in developing countries: assessing tradeoffs in welfare and food security. *Environmental Science & Policy*, 12(4), 520-528. doi:<https://doi.org/10.1016/j.envsci.2008.10.002>
- Eykelbosh, A. J., et al. . (2014). Biochar from Sugarcane Filtercake Reduces Soil CO₂ Emissions Relative to Raw Residue and Improves Water Retention and Nutrient Availability in a Highly-Weathered Tropical Soil. *Plos One*, 9(6), 1-9. Retrieved from <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0098523>
- Eykelbosh, A. J. (2014). *Closing the carbon loop in sugarcane bioethanol : effects of filtercake biochar amendment on soil quality, leaching and carbon utilization*. The University of British Columbia, Retrieved from <https://circle.ubc.ca/handle/2429/50410>
- Eykelbosh, A. J., Johnson, M. S., & Couto, E. G. (2014). Biochar decreases dissolved organic carbon but not nitrate leaching in relation to vinasse application in a Brazilian sugarcane soil. *Journal of Environmental Management*, 149, 9-16. doi:10.1016/j.jenvman.2014.09.033
- Eyles, A., Bound, S. A., Oliver, G., Corkrey, R., Hardie, M., Green, S., & Close, D. C. (2015). Impact of biochar amendment on the growth, physiology and fruit of a young commercial apple orchard. *Trees*, 29(6), 1817-1826. doi:10.1007/s00468-015-1263-7
- Eynck, C., et al. (2013). Sustainable Oil Crops Production. In B. P. Singh (Ed.), *Biofuel Crop Sustainability* (pp. 164-202).

- Ezawa, T., Yamamoto, K., & Yoshida, S. (2002). Enhancement of the effectiveness of indigenous arbuscular mycorrhizal fungi by inorganic soil amendments. *Japanese Society of Soil Science and Plant Nutrition*, 48(6), 897-900. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/00380768.2002.10408718>
- Ezcurra, P., Ezcurra, E., Garcillán, P. P., Costa, M. T., & Aburto-Oropeza, O. (2016). Coastal landforms and accumulation of mangrove peat increase carbon sequestration and storage. *Proceedings of the National Academy of Sciences*, 113(16), 4404-4409. doi:10.1073/pnas.1519774113
- Ezzati, G., & Asghari, A. (2015). Ammonia Removal Efficiency of Peat against Biochar in Biofiltration of Domestic Wastewater. In.
- Faaij, A. (2008). *Bioenergy and global food security*. Retrieved from [http://np-net.pbworks.com/f/WBGU,+Faaij+\(2008\)+Bioenergy+and+Food+Security.pdf](http://np-net.pbworks.com/f/WBGU,+Faaij+(2008)+Bioenergy+and+Food+Security.pdf)
- Faaij, A. P. C. (2018). *Securing sustainable resource availability of biomass for energy applications in Europe; review of recent literature*. Retrieved from <https://bioenergyeurope.org/wp-content/uploads/2018/11/Bioenergy-Europe-EU-Biomass-Resources-Andr%C3%A9A9-Faaij-Final.pdf>
- Fabbri, A., Bonijoly, D., Bouc, O., Bureau, G., Castagnac, C., Chapuis, F., . . . Zammit, C. (2011). From geology to economics: Technico-economic feasibility of a biofuel-CCS system. *Energy Procedia*, 4, 2901-2908. doi:<https://doi.org/10.1016/j.egypro.2011.02.197>
- Fabbri, D., et al. (2012). Determination of polycyclic aromatic hydrocarbons in biochar and biochar amended soil. *Journal of Analytical and Applied Pyrolysis*, 103, 60-67. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0165237012001830>
- Fabbri, D., et al., Torri, C., & Spokas, K. A. (2011). Analytical pyrolysis of synthetic chars derived from biomass with potential agronomic application (biochar). Relationships with impacts on microbial carbon dioxide production. *Journal of Analytical and Applied Pyrolysis*, 93, 77-84. doi:10.1016/j.jaap.2011.09.012
- Faé Gomes, G. M., & Encarnação, F. (2012). The environmental impact on air quality and exposure to carbon monoxide from charcoal production in southern Brazil. *Environmental Research*, 116, 136-139. doi:<https://doi.org/10.1016/j.envres.2012.03.012>
- Fagan, M. E., et al. (2019). How feasible are global forest restoration commitments? *Conservation Letters*. Retrieved from <https://onlinelibrary.wiley.com/doi/pdf/10.1111/conl.12700>
- Fagbenro, J. A., et al. (2015). Biomass Production, Tissue Nutrient Concentration and N2 - fixing Potentials of Seven Tropical Leguminous Species. *Communications in Soil Science and Plant Analysis*, 46(6), 709-723. doi:10.1080/00103624.2015.1005221
- Fagbenro, J. A., Oshunsanya, S. O., & Onawumi, O. A. (2013). Effect of Saw Dust Biochar and NPK 15:15:15 Inorganic Fertilizer on *Moringa oleifera* Seedlings Grown in an Oxisol. *African Journals Online: Afrika Statistika*, 46(5), 619-626. Retrieved from <http://www.ajol.info/index.php/agrosh/article/view/93728/83151>
- Fagbenro, J. A., Oshunsanya, S. O., & Oyeleye, B. A. (2015). Effect of *Gliricidia* Biochar and Inorganic Fertilizer on *Moringa* Plant Grown in an Oxisol. In.
- Fahad, S., Hussain, S., Saud, S., Hassan, S., Tanveer, M., Ihsan, M. Z., . . . Huang, J. (2016). A combined application of biochar and phosphorus alleviates heat-induced adversities on physiological, agronomical and quality attributes of rice. *Plant Physiology and Biochemistry*, 103, 191 - 198. doi:10.1016/j.plaphy.2016.03.001
- Fahad, S., Hussain, S., Saud, S., Tanveer, M., Bajwa, A. A., Hassan, S., . . . Huang, J. (2015). A biochar application protects rice pollen from high-temperature stress. *Plant Physiology and Biochemistry*, 96, 281 - 287. doi:10.1016/j.plaphy.2015.08.009
- Fairs, M. (2020). "One tonne of olivine sand can take in up to one tonne of CO2" says Teresa

- van Dongen. Retrieved from [https://www.dezeen.com/2021/06/15/carbon-capture-material-library-aireal-olivine-teresa-van-dongen/amp/](https://www.dezeen.com/2021/06/15/carbon-capture-material-library-aireal-olivine-teresa-van-dongen/)
- Fairs, M. (2021). Planting trees "doesn't make any sense" in the fight against climate change say experts. *de Zeen*. Retrieved from <https://www.dezeen.com/2021/07/05/carbon-climate-change-trees-afforestation/>
- Fajard, M., et al. . (2019). *BECCS deployment: a reality check*. Retrieved from <https://www.imperial.ac.uk/media/imperial-college/grantham-institute/public/publications/briefing-papers/BECCS-deployment---a-reality-check.pdf>
- Fajard, M., et al. (2020). *The economics of bioenergy with carbon capture and storage (BECCS) deployment in a 1.5°C or 2°C world*. Retrieved from <https://globalchange.mit.edu/publication/17489>
- Fajard, M., Chiquier, S., & Mac Dowell, N. (2018). Investigating the BECCS resource nexus: delivering sustainable negative emissions. *Energy & Environmental Science*, 11(12), 3408-3430. doi:10.1039/C8EE01676C
- Fajard, M., & Mac Dowell, N. (2017). Can BECCS deliver sustainable and resource efficient negative emissions? *Energy & Environmental Science*, 10, 1389-1426. Retrieved from <http://pubs.rsc.org/en/content/articlepdf/2017/ee/c7ee00465f>
- Fajard, M., & mac Dowell, N. (2018). The energy return on investment of BECCS: is BECCS a threat to energy security? *Energy & Environmental Science*, 11(6), 1581-1594. Retrieved from <http://pubs.rsc.org/en/content/articlehtml/2018/ee/c7ee03610h>
- Fajard, M., Morris, J., Gurgel, A., Herzog, H., Mac Dowell, N., & Paltsev, S. (2021). The economics of bioenergy with carbon capture and storage (BECCS) deployment in a 1.5 °C or 2 °C world. *Global Environmental Change*, 68, 102262. doi:<https://doi.org/10.1016/j.gloenvcha.2021.102262>
- Fajard, M., Patrizio, P., Daggash, H. A., & Mac Dowell, N. (2019). Negative Emissions: Priorities for Research and Policy Design. *Frontiers in Climate: Negative Emissions Technologies*, 1(6). doi:10.3389/fclim.2019.00006
- Fall, A. B. (2012). *THE BIOCHAR: an alternative energy for the development of the Sahel countries¹*. (Doctorate). University Gaston Berger, Saint-louis, Senegal. Retrieved from <http://periodicos.fundaj.gov.br/index.php/CIT/article/viewFile/1489/1305>
- Fallah Talooki, E., Ghorbani, M., & Ghoreyshi, A. A. (2015). Investigation of α-iron oxide-coated polymeric nanocomposites capacity for efficient heavy metal removal from aqueous solution. *Polymer Engineering & Science*, 55(12), 2735-2742. doi:10.1002/pen.24162
- Fan, J., Gephart, J., Marker, T., Stover, D., Updike, B., & Shonnard, D. R. (2016). Carbon Footprint Analysis of Gasoline and Diesel from Forest Residues and Corn Stover using Integrated Hydropyrolysis and Hydroconversion. *ACS Sustainable Chemistry & Engineering*, 4(1), 284 - 290. doi:10.1021/acssuschemeng.5b01173
- Fan, J.-L., Xu, M., Wei, S.-J., Zhong, P., Zhang, X., Yang, Y., & Wang, H. (2018). Evaluating the effect of a subsidy policy on carbon capture and storage (CCS) investment decision-making in China — A perspective based on the 45Q tax credit. *Energy Procedia*, 154, 22-28. doi:<https://doi.org/10.1016/j.egypro.2018.11.005>
- Fan, R.-Q., et al. (2015). Effects of biochar and super absorbent polymer on substrate properties and water spinach growth. *Pedosphere*, 25(5), 737-748. Retrieved from http://pedosphere.issas.ac.cn/trqen/ch/reader/view_abstract.aspx?file_no=20150512
- Fan, W., Chen, J., Pan, Y., Huang, H., Arthur Chen, C.-T., & Chen, Y. (2013). Experimental study on the performance of an air-lift pump for artificial upwelling. *Ocean Engineering*, 59, 47-57. doi:<https://doi.org/10.1016/j.oceaneng.2012.11.014>
- Fan, W., Zhang, Z., Yao, Z., Xiao, C., Zhang, Y., Zhang, Y., . . . Pan, Y. (2020). A sea trial of enhancing carbon removal from Chinese coastal waters by stimulating seaweed cultivation through artificial upwelling. *Applied Ocean Research*, 101, 102260. doi:<https://doi.org/10.1016/j.apor.2020.102260>

doi.org/10.1016/j.apor.2020.102260

- Fan, X., Ji, Z., Gan, M., Chen, X., Li, Q., & Jiang, T. (2015). Influence of Preformation Process on Combustibility of Biochar and its Application in Iron Ore Sintering. *ISIJ International*, 55(11), 2342 - 2349. doi:10.2355/isijinternational.ISIJINT-2015-332
- Fan, X., Ji, Z., Gan, M., Chen, X., Yin, L., & Jiang, T. (2015). Characteristics of Prepared Coke–biochar Composite and Its Influence on Reduction of NO_x Emission in Iron Ore Sintering. *ISIJ International*, 55(3), 521 - 527. doi:10.2355/isijinternational.55.521
- Fan, X.-h., DENG, Q., Gan, M., & WANG, H.-b. (2015). Effect of Biochar as Reductant on Magnetizing-roasting Behavior of Pyrite Cinder. *Journal of Iron and Steel Research, International*, 22(5), 371 - 376. doi:10.1016/s1006-706x(15)30014-5
- Fang, B., Lee, X., Zhang, J., Li, Y., Zhang, L., Cheng, J., . . . Cheng, H. (2016). Impacts of straw biochar additions on agricultural soil quality and greenhouse gas fluxes in karst area, Southwest China. *Soil Science and Plant Nutrition*, 62(5-6), 526-533. doi:10.1080/00380768.2016.1202734
- Fang, C., et al. (2014). Application of Magnesium Modified Corn Biochar for Phosphorus Removal and Recovery from Swine Wastewater. *International Journal of Environmental Research and Public Health*, 11(9), 9217 - 9237. doi:10.3390/ijerph110909217
- Fang, C., et al. (2015). Phosphorus recovery from biogas fermentation liquid by Ca–Mg loaded biochar. *Journal of Environmental Sciences*, 29, 106-114. doi:10.1016/j.jes.2014.08.019
- Fang, G., et al. (2014). Key Role of Persistent Free Radicals in Hydrogen Peroxide Activation by Biochar: Implications to Organic Contaminant Degradation. *Environmental Science and Technology*, 48(3), 1902-1910. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/es4048126>
- Fang, G., et al. (2015). Mechanism of hydroxyl radical generation from biochar suspensions: Implications to diethyl phthalate degradation. *Bioresource Technology*, 176, 210 - 217. doi:10.1016/j.biortech.2014.11.032
- Fang, Q., et al. (2013). Aromatic and Hydrophobic Surfaces of Wood-derived Biochar Enhance Perchlorate Adsorption via Hydrogen Bonding to Oxygen-containing Organic Groups. *Environmental Science and Technology*, 48(1), 279-288. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/es403711y>
- Fang, S. e., Tsang, D. C. W., Zhou, F., Zhang, W., & Qiu, R. (2016). Stabilization of cationic and anionic metal species in contaminated soils using sludge-derived biochar. *Chemosphere*, 149, 263 - 271. doi:10.1016/j.chemosphere.2016.01.060
- Fang, Y. (2014). *Biochar Carbon stability in some contrasting soils from Australia*. (PhD). University of Sydney,
- Fang, Y., et al. (2014). Effect of temperature on biochar priming effects and its stability in soils. *Soil Biology and Biochemistry*, 80, 136 - 145. doi:10.1016/j.soilbio.2014.10.006
- Fang, Y., Singh, B., Singh, B. P., & Krull, E. (2013). Biochar carbon stability in four contrasting soils. *European Journal of Soil Science*, 65(1), 60-71. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/ejss.12094/abstract>
- Fang, Y., Singh, B. P., & Singh, B. (2014). Temperature sensitivity of biochar and native carbon mineralisation in biochar-amended soils. *Agriculture, Ecosystems & Environment*, 191, 158-167. doi:<http://dx.doi.org/10.1016/j.agee.2014.02.018>
- Faran, T. S., & Olsson, L. (2018). Geoengineering: neither economical, nor ethical—a risk-reward nexus analysis of carbon dioxide removal. *International Environmental Agreements: Politics, Law and Economics*, 18(1), 63-77. doi:10.1007/s10784-017-9383-8
- Farand, C. (2020). Mark Carney oversees blueprint for scaling up carbon market as offset demand soars. *Climate Home News*. Retrieved from <https://www.climatechangenews.com/2020/11/10/mark-carney-oversees-blueprint-scaling->

- carbon-market-offset-demand-soars/
- Fargione, J., Hill, J., Polasky, S., & Hawthorne, P. (2008). Land clearing and the biofuel carbon debt. *Science*, 319(5867), 1235-1238. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/18258862>
- Fargione, J. E., Bassett, S., Boucher, T., Bridgman, S. D., Conant, R. T., Cook-Patton, S. C., . . . Griscom, B. W. (2018). Natural climate solutions for the United States. *4*(11), eaat1869. doi:10.1126/sciadv.aat1869 %J Science Advances
- Farine, D. R., O'Connell, D. A., John Raison, R., May, B. M., O'Connor, M. H., Crawford, D. F., . . . Kriticos, D. (2012). An assessment of biomass for bioelectricity and biofuel, and for greenhouse gas emission reduction in Australia. *GCB Bioenergy*, 4(2), 148-175. doi:10.1111/j.1757-1707.2011.01115.x
- Farmer, M. (2020). UK 2020 Budget announces funding for carbon capture schemes. *Offshore Technology*. Retrieved from <https://www.offshore-technology.com/news/uk-budget-2020-carbon-capture/>
- Farogh, S. I. (2015). *Carbon-based catalyst*. Aalto University, Retrieved from <https://aalto.doc.aalto.fi/handle/123456789/18678?show=full>
- Farrell, A. E., Plevin, R. J., Turner, B. T., Jones, A. D., O'Hare, M., & Kammen, D. M. (2006). Ethanol Can Contribute to Energy and Environmental Goals. *Science*, 311(5760), 506-508. doi:10.1126/science.1121416
- Farrell, M., et al. (2013). Biochar and fertiliser applications influence phosphorus fractionation and wheat yield. *Biology and Fertility of Soils*, 50(1), 169-178. Retrieved from <https://link.springer.com/article/10.1007/s00374-013-0845-z>
- Farrell, M., et al. (2013). Microbial utilisation of biochar-derived carbon. *Science of The Total Environment*, 465, 288-297. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0048969713003951>
- Farrell, M., Macdonald, L. M., & Baldock, J. A. (2014). Biochar differentially affects the cycling and partitioning of low molecular weight carbon in contrasting soils. *Soil Biology and Biochemistry*, 80, 79 - 88. doi:10.1016/j.soilbio.2014.09.018
- Farrelly, D. J., Everard, C. D., Fagan, C. C., & McDonnell, K. P. (2013). Carbon sequestration and the role of biological carbon mitigation: A review. *Renewable and Sustainable Energy Reviews*, 21, 712-727. doi:<https://doi.org/10.1016/j.rser.2012.12.038>
- Fasahati, P., Saffron, C. M., Woo, H. C., & Liu, J. J. (2017). Potential of brown algae for sustainable electricity production through anaerobic digestion. *Energy Conversion and Management*, 135, 297-307. doi:<https://doi.org/10.1016/j.enconman.2016.12.084>
- Fasihi, M., Efimova, O., & Breyer, C. (2019). Techno-economic assessment of CO₂ direct air capture plants. *Journal of Cleaner Production*, 224, 957-980. doi:<https://doi.org/10.1016/j.jclepro.2019.03.086>
- Faße, A., Winter, E., & Grote, U. (2014). Bioenergy and rural development: The role of agroforestry in a Tanzanian village economy. *Ecological Economics*, 106, 155-166. doi:<http://dx.doi.org/10.1016/j.ecolecon.2014.07.018>
- Faulkner, T. (2018). Carbon-Capture Machines Part of Southern New England's 'Climate Change Moonshot' Initiative. *Eco RI News*. Retrieved from <https://www.ecore.org/climate-change/2018/1/12/carbon-capture-machines-part-of-southern-new-england-climate-change-moonshot>
- Favero, A., & Massetti, E. (2014). Trade of woody biomass for electricity generation under climate mitigation policy. *Resource and Energy Economics*, 36(1), 166-190. doi:10.1016/j.reseneeco.2013.11.005
- Favero, A., & Mendelsohn, R. (2014). Using Markets for Woody Biomass Energy to Sequester Carbon in Forests. *Journal of the Association of Environmental and Resource Economists*, 1(1/2), 75-95. doi:10.1086/676033

- Fawzy, E. M. (2008). Soil remediation using in situ immobilisation techniques. *Chemistry and Ecology*, 24(2), 147-156. Retrieved from <http://www.tandfonline.com/doi/pdf/10.1080/02757540801920154>
- Fawzy, S., Osman, A. I., Doran, J., & Rooney, D. W. (2020). Strategies for mitigation of climate change: a review. *Environmental Chemistry Letters*. doi:10.1007/s10311-020-01059-w
- Fawzy, S., Osman, A. I., Yang, H., Doran, J., & Rooney, D. W. (2021). Industrial biochar systems for atmospheric carbon removal: a review. *Environmental Chemistry Letters*. doi:10.1007/s10311-021-01210-1
- Federal Office for the Environment, S. (2019). Negative emissions technologies. Retrieved from <https://www.bafu.admin.ch/bafu/en/home/topics/climate/info-specialists/climate-target2050/negative-emissionstechnologien.html#-2080617483>
- Federico, d. A., Lovisotto, L., & Bezzo, F. (2020). Introducing social acceptance into the design of CCS supply chains: A case study at a European level. *Journal of Cleaner Production*, 249, 119337. doi:<https://doi.org/10.1016/j.jclepro.2019.119337>
- Fehrenbach, H. (2013). Certification systems and other schemes for bioenergy-related water impacts. In J. F. Dellemann & P. W. Gerbens-Leenes (Eds.), *Bioenergy and Water* (pp. 225-242): European Commission.
- Fehrenbacher, K. (2018). Y Combinator Is Looking for Carbon Removal Startups. Retrieved from https://www.greentechmedia.com/articles/read/y-combinator-is-looking-for-carbon-removal-startups#gs._ue=3H8
- Fei, L., et al., & g. (2014). Characterization of Contaminants in Rapeseed Cake-Derived Biochars and Evaluation of Their Suitability for Soil Improvement. 环境科学研究 (*Environmental Science*), 27(11), 1292-1297. Retrieved from http://www.hjkxyj.org.cn/hjkxyj/ch/reader/view_abstract.aspx?file_no=20141111
- Fei, S., Morin, R. S., Oswalt, C. M., & Liebhold, A. M. (2019). Biomass losses resulting from insect and disease invasions in US forests. 201820601. doi:10.1073/pnas.1820601116 %J Proceedings of the National Academy of Sciences
- Feigl, V., et al. (2015). *Ecotoxicity of biochars from organic wastes focusing on their use as soil ameliorant*. Retrieved from http://enfo.agt.bme.hu/drupal/sites/default/files/Paper_Aquaconsoil%202015_Feigl_fin.pdf
- Feiner, R., et al. (2013). Liquefaction of Pyrolysis derived Biochar: A new step towards biofuel from renewable resource. *RSC Advances*, 3, 17898-17903. Retrieved from <http://pubs.rsc.org/en/content/articlepdf/2013/ra/c3ra43516d>
- Feiner, R., et al. . (2014). Chemical loop systems for biochar liquefaction: hydrogenation of Naphthalene. *RSC Advances*, 4(66), 34955-34962. doi:10.1039/c4ra03487b
- Feiner, R., et al. (2014). Kinetics of Biochar Liquefaction. *BioEnergy Research*, 7(4), 1343-1350. doi:10.1007/s12155-014-9469-x
- Felber, R., et al. (2013). Nitrous oxide emission reduction with greenwaste biochar: comparison of laboratory and field experiments. *European Journal of Soil Science*, 65(1), 128-138. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/ejss.12093/abstract>
- Felber, R., Hüppi, R., Leifeld, J., & Neftel, A. (2012). Nitrous oxide emission reduction in temperate biochar-amended soils. *Biogeosciences Discussions*, 2012, 151-189. doi:10.5194/bgd-9-151-2012
- Feldpausch, T. R., et al. (2006). Biomass Variation, Harvestable Area, and Forest Structure Estimated from Commercial Timber Inventories and Remotely Sensed Imagery in Southern Amazonia. *Forest Ecology and Management*, 233, 121-132. Retrieved from <http://eprints.whiterose.ac.uk/75370/>
- Feldpausch-Parker, A., Burnham, M., Melnik, M., Callaghan, M., & Selva, T. (2015). News Media Analysis of Carbon Capture and Storage and Biomass: Perceptions and Possibilities. *Energies*, 8(4), 3058. Retrieved from <http://www.mdpi.com/1996-1073/8/4/3058>

- Feldpausch-Parker, A. M., Chaudhry, R., Stephens, J. C., Fischlein, M., Hall, D. M., Melnick, L. L., . . . Wilson, E. J. (2011). A comparative state-level analysis of carbon capture and storage (CCS) discourse among U.S. energy stakeholders and the public. *Energy Procedia*, 4, 6368-6375. doi:<https://doi.org/10.1016/j.egypro.2011.02.654>
- Feldpausch-Parker, A. M., Ragland, C. J., Melnick, L. L., Chaudhry, R., Hall, D. M., Peterson, T. R., . . . Wilson, E. J. (2013). Spreading the News on Carbon Capture and Storage: A State-Level Comparison of US Media. *Environmental Communication*, 7(3), 336-354. doi:[10.1080/17524032.2013.807859](https://doi.org/10.1080/17524032.2013.807859)
- Feliciano, D., Ledo, A., Hillier, J., & Nayak, D. R. (2018). Which agroforestry options give the greatest soil and above ground carbon benefits in different world regions? *Agriculture, Ecosystems & Environment*, 254, 117-129. doi:<https://doi.org/10.1016/j.agee.2017.11.032>
- Feliciano-Bruzual, C. (2014). Charcoal injection in blast furnaces (Bio-PCI): CO₂ reduction potential and economic prospects. *Journal of Materials Research and Technology*, 3(3), 233 - 243. doi:[10.1016/j.jmrt.2014.06.001](https://doi.org/10.1016/j.jmrt.2014.06.001)
- Fellet, G. (2011). Application of biochar on mine tailings: Effects and perspectives for land reclamation. *Chemosphere*, 83(9), 1262-1267. doi:[10.1016/j.chemosphere.2011.03.053](https://doi.org/10.1016/j.chemosphere.2011.03.053)
- Fellet, G., Marmiroli, M., & Marchiolm, L. (2014). Elements uptake by metal accumulator species grown on mine tailings amended with three types of biochar. *Science of The Total Environment*, 468-469, 598-608.
- Fellman, M. (2021). Northwestern receives DOE funding to study carbon capture systems [Press release]. Retrieved from <https://news.northwestern.edu/stories/2021/08/doe-funding-carbon-capture-systems/>
- Fendt, A., et al. . (2012). Hyphenation of two simultaneously employed soft photo ionization mass spectrometers with Thermal Analysis of biomass and biochar. *Thermochimica Acta*, 551, 155-163.
- Feng, D., et al. (2013). *Preparation, Characterization of Bagasse-Based Biochar and its Adsorption Performance in Tropical Soils*. Paper presented at the Selected Proceedings of the Eighth International Conference on Waste Management and Technology.
- Feng, D., et al. . (2015). Adsorption Characteristics of Norfloxacin by Biochar Prepared by Cassava Dreg: Kinetics, Isotherms, and Thermodynamic Analysis. *BioResources*, 10(4), 6751-6768. Retrieved from http://152.1.0.246/index.php/BioRes/article/view/BioRes_10_4_6751_Feng_Adsorption_Norfloxacin_Biochar
- Feng, D., Wang, S., Zhang, Y., Zhao, Y., Sun, S., Chang, G., . . . Qin, Y. (2020). Review of Carbon Fixation Evaluation and Emission Reduction Effectiveness for Biochar in China. *Energy & Fuels*, 34(9), 10583-10606. doi:[10.1021/acs.energyfuels.0c02396](https://doi.org/10.1021/acs.energyfuels.0c02396)
- Feng, E. Y., David, P. K., Wolfgang, K., & Andreas, O. (2016). Could artificial ocean alkalinization protect tropical coral ecosystems from ocean acidification? *Environmental Research Letters*, 11(7), 074008. Retrieved from <http://stacks.iop.org/1748-9326/11/i=7/a=074008>
- Feng, E. Y., Koeve, W., Keller, D. P., & Oschlies, A. (2017). Model-Based Assessment of the CO₂ Sequestration Potential of Coastal Ocean Alkalization. *Earth's Future*, 5(12), 1252-1266. doi:[10.1002/2017EF000659](https://doi.org/10.1002/2017EF000659)
- Feng, E. Y., Sawall, Y., Wall, M., Lebrato, M., & Fu, Y. (2020). Modeling Coral Bleaching Mitigation Potential of Water Vertical Translocation – An Analogue to Geoengineered Artificial Upwelling. *Frontiers in Marine Science*, 7(816). doi:[10.3389/fmars.2020.556192](https://doi.org/10.3389/fmars.2020.556192)
- Feng Feng, M., et al. (2015). Characteristics phosphate adsorption onto biochars derived from dairy manure and its influencing factors. *China Environmental Science*. Retrieved from <http://www.cabdirect.org/abstracts/20153171894.html;jsessionid=7DEE7DF8F509AF7F92BD13AAEF0ED6C1>

- Feng, Y., Xu, Y., Yu, Y., Xie, Z., & Lin, X. (2012). Mechanisms of biochar decreasing methane emission from Chinese paddy soils. *Soil Biology and Biochemistry*, 46, 80-88. doi:<https://doi.org/10.1016/j.soilbio.2011.11.016>
- Feng, Y., Yang, B., Hou, Y., Duan, T.-H., Yang, L., & Wang, Y. (2021). Comparative environmental benefits of power generation from underground and surface coal gasification with carbon capture and storage. *Journal of Cleaner Production*, 310(127383), 1-15. doi:<https://doi.org/10.1016/j.jclepro.2021.127383>
- Feng, Z., & Zhu, L. (2017). Impact of biochar on soil N₂O emissions under different biochar-carbon/fertilizer-nitrogen ratios at a constant moisture condition on a silt loam soil. *Science of The Total Environment*, 584-585, 776-782. doi:<https://doi.org/10.1016/j.scitotenv.2017.01.115>
- Ferguson, K. M., Saafan, H., Wildeboer, E. K., Reeves, T., & Croiset, E. (2021). Production of Carbon Neutral Methanol Using Co-Electrolysis of CO₂ and Steam in Solid Oxide Electrolysis Cell in Tandem with Direct Air Capture. *ECS Transactions*, 103(1), 663-676. doi:[10.1149/10301.0663ecst](https://doi.org/10.1149/10301.0663ecst)
- FERN. (2017). *How the EU Governance Regulation can help achieve negative emissions.* Retrieved from <http://www.fern.org/sites/fern.org/files/briefingnote%20negative%20emissions.pdf>
- Fernández, B. M., et al. (2004). A review of accelerated carbonation technology in the treatment of cement-based materials and sequestration of CO₂. *Journal of Hazardous Materials*, 112(3), 193-205. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/15302440>
- Fernandez, F. G. A., Gonzalez-Lopez, C. V., Sevilla, J. M. F., & Grima, E. M. (2012). Conversion of CO₂ into biomass by microalgae: how realistic a contribution may it be to significant CO₂ removal? *Applied Microbiology and Biotechnology*, 96(3), 577-586. doi:[10.1007/s00253-012-4362-z](https://doi.org/10.1007/s00253-012-4362-z)
- Fernández, J. M., et al. . (2014). Carbon dioxide emissions from semi-arid soils amended with biochar alone or combined with mineral and organic fertilizers. *Science of The Total Environment*, 482-483, 1-7.
- Fernández-Ugalde, O., Gartzia-Bengoetxea, N., Arostegi, J., Moragues, L., & Arias-González, A. (2017). Storage and stability of biochar-derived carbon and total organic carbon in relation to minerals in an acid forest soil of the Spanish Atlantic area. *Science of The Total Environment*, 587-588, 204-213. doi:<https://doi.org/10.1016/j.scitotenv.2017.02.121>
- Ferreira, A. F., et al. (2014). *Bio-oil and bio-char characterization from microalgal biomass.* Paper presented at the V Conferência Nacional de Mecânica dos Fluidos, Termodinâmica e Energia (Fifth National Conference on Fluid Mechanics, Thermodynamics and Energy). http://paginas.fe.up.pt/~mefte2014/wp-content/uploads/2014/preprint/mefte2014_submission_45.pdf
- Ferreira Cunha, B. E., T. J., M., Canellas, L. P., Ribeiro, L. P., Benites, V. d. M., & Santos, G. d. A. (2009). Soil organic matter and fertility of anthropogenic dark earths (terra preta de indio) in the brazilian amazon basin. *Revista Brasileira de Ciencia do Solo*, 33(1), 85-93.
- Ferreira, J., Lennox, G. D., Gardner, T. A., Thomson, J. R., Berenguer, E., Lees, A. C., . . . Barlow, J. (2018). Carbon-focused conservation may fail to protect the most biodiverse tropical forests. *Nature Climate Change*, 8(8), 744-749. doi:[10.1038/s41558-018-0225-7](https://doi.org/10.1038/s41558-018-0225-7)
- Ferrer González, M. (2017). *Climate engineering by enhancement of ocean alkalinity: impacts on the Earth system and a comparison with solar radiation management.* (Ph.D.). Max Planck-Institut für Meteorologie, Retrieved from http://pubman.mpdl.mpg.de/pubman/item/escidoc:2472753:3/component/escidoc:2472752/WEB_BzE_193.pdf
- Fiato, R. A., Sun, Y., Allen, M., & Zhao, Q. (2014).
- Fiaz, K., Danish, S., Younis, U., Malik, S. A., Raza Shah, M. H., & Niaz, S. (2014). Drought impact on Pb/Cd toxicity remediated by biochar in Brassica campestris. *Journal of Soil*

Science and Plant Nutrition, 14(4), 845-854. doi:10.4067/s0718-95162014005000067

- Fidel, R. B. (2012). *Evaluation and implementation of methods for quantifying organic and inorganic components of biochar alkalinity*. (Master of Science). IOWA STATE UNIVERSITY,
- Fidel, R. B. (2016). *Biochar properties and impact on soil CO₂ and N₂O emissions*. IOWA STATE UNIVERSITY, Retrieved from <http://gradworks.umi.com/10/00/10009021.html>
- Fidel, R. B., Laird, D. A., & Parkin, T. B. (2019). Effect of Biochar on Soil Greenhouse Gas Emissions at the Laboratory and Field Scales. *Soil Systems*, 3(1), 8. Retrieved from <http://www.mdpi.com/2571-8789/3/1/8>
- Fiekowsky, P. (2017). Where Do We Put Trillions of Tons of CO₂? Retrieved from https://brainscienceandclimatechange.wordpress.com/2017/03/05/where-do-we-put-a-trillion-tons-of-co2/?fb_action_ids=10212541004470421&fb_action_types=news.publishes
- Fiekowsky, P. (2019). The Green New Deal Doesn't Go Far Enough. Here's Why (Op-Ed). *Live Science*. Retrieved from <https://www.livescience.com/65484-green-new-deal-climate-change.html>
- Field, C. B., et al. (2007). Biomass energy: the scale of the potential resource. *Trends in Ecology & Evolution*, 23, 65-72. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/18215439>
- Field, C. B., Campbell, J. E., & Lobell, D. B. (2008). Biomass energy: the scale of the potential resource. *Trends in Ecology and Evolution*, 23(2), 65-72. Retrieved from http://np-net.pbworks.com/f/Field%2Bet%2Bal%2B2007_bioenergy.pdf
- Field, C. B., & Mach, K. J. (2017). Rightsizing carbon dioxide removal. *Science*, 356(6339), 706-707. doi:10.1126/science.aam9726
- Field, J. L. (2015). *Towards the systematic identification of low-cost ecosystem-mediated carbon sequestration opportunities in bioenergy supply chains*. Colorado State University, Retrieved from <https://dspace.library.colostate.edu/handle/10217/167235>
- Field, J. L. (2021). Revisiting "Additional Carbon": Tracking Atmosphere-Ecosystem Carbon Exchange to Establish Mitigation and Negative Emissions From Bio-Based Systems. *Frontiers in Climate*, 3(27). doi:10.3389/fclim.2021.603239
- Field, J. L., Keske, C. M. H., Birch, G. L., DeFoort, M. W., & Cotrufo, M. F. (2012). Distributed biochar and bioenergy coproduction: a regionally specific case study of environmental benefits and economic impacts. *GCB Bioenergy*, 5(2), 177-191. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/gcbb.12032/full>
- Field, J. L., Marx, E., Easter, M., Adler, P. R., & Paustian, K. (2016). Ecosystem model parameterization and adaptation for sustainable cellulosic biofuel landscape design. *GCB Bioenergy*, 8(6), 1106-1123. doi:10.1111/gcbb.12316
- Field, J. L., Richard, T. L., Smithwick, E. A. H., Cai, H., Laser, M. S., LeBauer, D. S., . . . Lynd, L. R. (2020). Robust paths to net greenhouse gas mitigation and negative emissions via advanced biofuels. *Proceedings of the National Academy of Sciences*, 201920877. doi:10.1073/pnas.1920877117
- Field, L., Ivanova, D., Bhattacharyya, S., Mlaker, V., Sholtz, A., Decca, R., . . . Katuri, K. (2018). Increasing Arctic Sea Ice Albedo Using Localized Reversible Geoengineering. *Earth's Future*, 6(6), 882-901. doi:doi:10.1029/2018EF000820
- Field, M. (2019). The world can support far more trees. Planting them can reduce carbon pollution a lot: An interview with professor Tom Crowther. *Bulletin of the Atomic Scientists*, 75(5), 236-238. doi:10.1080/00963402.2019.1654267
- Fieldsend, A., & Singh, H. P. (2013). Biofuel Food Sustainability. In B. P. Singh (Ed.), (pp. 357-382).
- Figueroa, J. D., Fout, T., Plasynski, S., McIlvried, H., & Srivastava, R. D. (2008). Advances in CO₂ capture technology—The U.S. Department of Energy's Carbon Sequestration

- Program. *International Journal of Greenhouse Gas Control*, 2(1), 9-20. doi:[https://doi.org/10.1016/S1750-5836\(07\)00094-1](https://doi.org/10.1016/S1750-5836(07)00094-1)
- Fike, J. H., Parrish, D. J., & Fike, W. B. (2013). Sustainable Cellulosic Grass Production. In B. P. Singh (Ed.), *Biofuels Crop Production* (pp. 110-164).
- Fike, J. H., Parrish, D. J., Wolf, D. D., Balasko, J. A., Green, J. T., Rasnake, M., & Reynolds, J. H. (2006). Long-term yield potential of switchgrass-for-biofuel systems. *Biomass and Bioenergy*, 30(3), 198-206. doi:<http://dx.doi.org/10.1016/j.biombioe.2005.10.006>
- Filbee-Dexter, K., & Wernberg, T. (2020). Substantial blue carbon in overlooked Australian kelp forests. *Scientific Reports*, 10(1), 12341-12341. doi:[10.1038/s41598-020-69258-7](https://doi.org/10.1038/s41598-020-69258-7)
- Filho, J. P. N., et al. . (2007). Distribuição Espacial de Carbono em Solo Sob Floresta Primária na Amazônia Meridional (Spatial Distribution of Soil Carbon under Primary Forest Cover in Southern Amazonia). *Revista Árvore (Tree Journal)*, 31(1), 83-92. Retrieved from http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0100-67622007000100010
- Filho, J. P. N., et al. (2007). Variabilidade Espacial de Atributos Físicos de Solo Usada na Identificação de Classes Pedológicas de Microbasias na Amazônia Meridional. *Revista Brasileira de Ciencia do Solo*, 31, 91-100.
- Filiberto, D. M., & Gaunt, J. L. (2013). Practicality of Biochar Additions to Enhance Soil and Crop Productivity. *Agriculture*, 3(4), 715-725. Retrieved from <http://www.mdpi.com/2077-0472/3/4/715/htm>
- Fimrite, P. (2019). Could putting pebbles on beaches help solve climate change? *San Francisco Chronicle*. Retrieved from <https://www.sfchronicle.com/environment/article/Could-putting-pebbles-on-beaches-help-solve-14911295.php>
- Findley, J., Al-Haj, H., Shanaa, J., Al-Duaiji, A., & Economou, S. (2014). *A Potential Solution for Waste Management at Remote Sites*. Paper presented at the SPE Middle East Health, Safety, Environment & Sustainable Development Conference and ExhibitionSPE Middle East Health, Safety, Environment & Sustainable Development Conference and Exhibition, Doha, Qatar. <https://www.onepetro.org/conference-paper/SPE-170351-MS>
- Finkenrath, M. (2012). Carbon Dioxide Capture from Power Generation – Status of Cost and Performance. *Chemical Engineering & Technology*, 35(3), 482-488. doi:[doi:10.1002/ceat.201100444](https://doi.org/10.1002/ceat.201100444)
- Finley, R. J., et al. (2013). *Early Operational Experience at a One-million Tonne CCS Demonstration Project, Decatur, Illinois, USA* (Vol. 37).
- Finney, K. N., Akram, M., Diego, M. E., Yang, X., & Pourkashanian, M. (2019). Chapter 2 - Carbon capture technologies. In J. C. Magalhães Pires & A. L. D. Cunha Gonçalves (Eds.), *Bioenergy with Carbon Capture and Storage* (pp. 15-45): Academic Press.
- Firdaus, A. H. (2014). *Fast Pyrolysis of Palm Kernel Shell Biomass in Fluidized Bed Reactor*. National Central University, Retrieved from <http://ir.lib.ncu.edu.tw/handle/987654321/65979>
- Fischer, D., & Glaser, B. (2012). Synergisms between Compost and Biochar for Sustainable Soil Amelioration. In S. Kumar (Ed.), *Management of Organic Waste* (pp. 167-199).
- Fischer, G., Prieler, S., & van Velthuizen, H. (2005). Biomass potentials of miscanthus, willow and poplar: results and policy implications for Eastern Europe, Northern and Central Asia. *Biomass and Bioenergy*, 28(2), 119-132. doi:<https://doi.org/10.1016/j.biombioe.2004.08.013>
- Fischer, G., & Schrattenholzer, L. (2001). Global bioenergy potentials through 2050. *Biomass and Bioenergy*, 20(3), 151-159. doi:[https://doi.org/10.1016/S0961-9534\(00\)00074-X](https://doi.org/10.1016/S0961-9534(00)00074-X)
- Fishman, Z. (2019). 3(2). Retrieved from <https://q.sustainability.illinois.edu/scrubbing-the-skies-is-clean-coal-a-fact-or-fantasy/>
- Fitzgerald, M. (2016). Prison or Precaution: Unilateral, State-Mandated. Geoengineering Under Principles of International Environmental Law. *New York University School of Law*

- Environmental Law*, 24, 256-282. Retrieved from https://www.nyuclj.org/wp-content/uploads/2016/09/nye_24-2-Fitzgerald.pdf
- Fitzherbert, E. B., Struebig, M. J., Morel, A., Danielsen, F., Brühl, C. A., Donald, P. F., & Phalan, B. (2008). How will oil palm expansion affect biodiversity? *Trends in Ecology & Evolution*, 23(10), 538-545. doi:<http://dx.doi.org/10.1016/j.tree.2008.06.012>
- Flaathen, T. K., Gislason, S. R., Oelkers, E. H., & Sveinbjörnsdóttir, Á. E. (2009). Chemical evolution of the Mt. Hekla, Iceland, groundwaters: A natural analogue for CO₂ sequestration in basaltic rocks. *Applied Geochemistry*, 24(3), 463-474. doi:<https://doi.org/10.1016/j.apgeochem.2008.12.031>
- Flam, F. (2018). Bet on Carbon Capture (But Not Only on Carbon Capture). *Bloomberg*. Retrieved from <https://www.bloomberg.com/opinion/articles/2018-10-16/carbon-capture-is-one-of-the-keys-to-averting-climate-disaster>
- Flamholz, A. I. (2020). Functional reconstitution of a bacterial CO₂ concentrating mechanism in *Escherichia coli*. *eLife*, 9, 1-30.
- Flannery, B. P., Kheshgi, H. S., Hoffert, M. I., & Lapenis, A. G. (1993). Assessing the effectiveness of marine CO₂ disposal. *Energy Conversion and Management*, 34(9), 983-989. doi:[https://doi.org/10.1016/0196-8904\(93\)90045-C](https://doi.org/10.1016/0196-8904(93)90045-C)
- Flannery, T. (2017). How farming giant seaweed can feed fish and fix the climate. *The Conversation*. Retrieved from https://theconversation.com/how-farming-giant-seaweed-can-feed-fish-and-fix-the-climate-81761?utm_medium=email&utm_campaign=Latest+from+The+Conversation+for+August+1+2017+-+79876393&utm_content=Latest+from+The+Conversation+for+August+1+2017+-+79876393+CID_f76edd14b7481ffe21e9c07f485f705c&utm_source=campaign_monitor&utm_term=How+farming+giant+seaweed+can+feed+fish+and+fix+the+climate
- Flannery, T. (2017). *Sunlight and Seaweed*. Melbourne: Text Publishing.
- Flavia, N. (2012). *Potential Role of Biochar in Water Management in Rainfed Agriculture*. (MSc Environment & Development thesis). Retrieved from <http://hdl.handle.net/1842/6366>
- Fleischman, F., Basant, S., Chhatre, A., Coleman, E. A., Fischer, H. W., Gupta, D., . . . Veldman, J. W. (2020). Pitfalls of Tree Planting Show Why We Need People-Centered Natural Climate Solutions. *BioScience*. doi:[10.1093/biosci/biaa094](https://doi.org/10.1093/biosci/biaa094)
- Fleishman, L., De Bruin, W., & Morgan, M. G. (2010). Informed public preferences for electricity portfolios with CCS and other low-carbon technologies. *Risk Analysis*, 30, 1399-1410. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2907007/>
- Fleming, A. (2021). Cloud spraying and hurricane slaying: how ocean geoengineering became the frontier of the climate crisis. *The Guardian*. Retrieved from <https://www.theguardian.com/environment/2021/jun/23/cloud-spraying-and-hurricane-slaying-could-geoengineering-fix-the-climate-crisis>
- Fleming, J. R. (2021). Excuse Us, While We Fix the Sky: WEIRD Supermen and Climate Intervention. In P. M. Pulé & M. Hultman (Eds.), *Men, Masculinities, and Earth: Contending with the (m)Anthropocene* (pp. 501-513). Cham: Springer International Publishing.
- Fleming, J. S., Habibi, S., & MacLean, H. L. (2006). Investigating the sustainability of lignocellulose-derived fuels for light-duty vehicles. *Transportation Research Part D: Transport and Environment*, 11(2), 146-159. doi:<https://doi.org/10.1016/j.trd.2006.01.001>
- Flesher, J. (2021). Carbon storage offers hope for climate, cash for farmers. *AP*. Retrieved from <https://apnews.com/article/climate-change-climate-business-science-environment-and-nature-cb5a64441149f73d183c2cbc56f773cf>
- Fletcher, A. J., et al. (2013). Production Factors Controlling the Physical Characteristics of Biochar Derived from Phytoremediation Willow for Agricultural Applications. *BioEnergy Research*, 7(1), 371-380. Retrieved from <http://link.springer.com/article/10.1007/s12155-013-9231-2>

s12155-013-9380-x

- Florey, J. (2012). *The Potential for Activated Biochar to Remove Waterborne Viruses from Environmental Waters*. (Masters). Texas A&M University,
- Flynn, K. (2017). Algal biofuel production is neither environmentally nor commercially sustainable. *The Conversation*. Retrieved from <https://phys.org/print421402047.html>
- Foereid, B. (2015). Biochar in Nutrient Recycling—The Effect and Its Use in Wastewater Treatment. *Open Journal of Soil Science*, 05(02), 39 - 44. doi:10.4236/ojss.2015.52004
- Foereid, B., Lehmann, J., & Major, J. (2011). Modeling black carbon degradation and movement in soil. *Plant Soil*, 345, 223–236.
- Fogarassy, C., Lukacs, A., & Borocz, M. (2008). Basic structure of Co2 emission management practice in agricultural land use. *Cereal Research Communications*, 36(5), 327-330. Retrieved from <https://www.cabdirect.org/cabdirect/abstract/20103108636>
- Fogel, C. (2005). Biotic Carbon Sequestration and the Kyoto Protocol: The Construction of Global Knowledge by the Intergovernmental Panel on Climate Change. *International Environmental Agreements: Politics, Law and Economics*, 5(2), 191-210. doi:10.1007/s10784-005-1749-7
- Foley, J. (2021). Occam's Razor for the Planet. Retrieved from <https://globalecoguy.org/occams-razor-for-the-planet-b3a720cc961c>
- Foley, J. (2021). Opinion: The world needs better climate pledges. Retrieved from <https://drawdown.org/news/insights/opinion-the-world-needs-better-climate-pledges>
- Foley, J. (2021). We Need 4 Waves of Climate Action. Retrieved from <https://globalecoguy.org/we-need-4-waves-of-climate-solutions-6e58adbc5ad6>
- Foley, J. (2021). Why the world needs better climate pledges. Retrieved from <https://www.greenbiz.com/article/why-world-needs-better-climate-pledges>
- Follett, R. F., et al. (2001). *The Potential of U.S. Grazing Lands to Sequester Carbon and Mitigate the Greenhouse Effect*.
- Follett, R. F., & Reed, D. A. (2010). Soil Carbon Sequestration in Grazing Lands: Societal Benefits and Policy Implications. *Rangeland Ecology & Management*, 63(1), 4-15. doi:<https://doi.org/10.2111/08-225.1>
- Forbes, M. S., Raison, R. J., & Skjemstad, J. O. (2006). Formation, transformation and transport of black carbon (charcoal) in terrestrial and aquatic ecosystems. *Science of The Total Environment*, 370(1), 190-206.
- Forbes, S. M., Almendra, F., & Ziegler, M. S. (2010). *CCS and Community Engagement*. Retrieved from http://pdf.wri.org/ccs_and_community_engagement.pdf
- Forests, A. (2020). Statement of American Forests on Re-Introduction of the Trillion Trees Act. Retrieved from <https://www.americanforests.org/media-release/statement-of-american-forests-on-re-introduction-of-the-trillion-trees-act/>
- Forján, R., Asensio, V., Rodríguez-Vila, A., & Covelo, E. F. (2016). Contribution of waste and biochar amendment to the sorption of metals in a copper mine tailing. *CATENA*, 137, 120 - 125. doi:10.1016/j.catena.2015.09.010
- Forján, R., Asensio, V., Vila, A. R.-, & Covelo, E. F. (2015). Contributions of a compost-biochar mixture to the metal sorption capacity of a mine tailing. *Environmental Science and Pollution Research*. doi:10.1007/s11356-015-5489-0
- Forschungskommunikation. (2017). Human impacts on forests and grasslands much larger and older than previously assumed. Retrieved from <https://www.aau.at/en/blog/globale-treibhausgasemissionen-der-wald-und-weidewirtschaft-viel-groesser-und-aelter-als-bisher-angenommen/>
- Fortner, S. K., Lyons, W. B., Carey, A. E., Shipitalo, M. J., Welch, S. A., & Welch, K. A. (2012). Silicate weathering and CO₂ consumption within agricultural landscapes, the Ohio-Tennessee River Basin, USA. *Biogeosciences*, 9(3), 941-955. doi:10.5194/

bg-9-941-2012

- Fortuna, G. (2021). EU sets the scene for carbon removal actions in farming. Retrieved from <https://www.euractiv.com/section/agriculture-food/news/eu-sets-the-scene-for-carbon-removal-actions-in-farming/>
- Forum, W. E. (2021). *Consultation: Nature and Net Zero*. Retrieved from <https://www.mckinsey.com/~media/McKinsey/Business%20Functions/Sustainability/Our%20Insights/Why%20investing%20in%20nature%20is%20key%20to%20climate%20mitigation/Nature-and-net-zero.pdf>
- Fosso-Kankeu, E., Waanders, F. B., & Steyn, F. W. (2016). The Preparation and Characterization of ClayBiochar Composites for the Removal of Metal Pollutants. In.
- Fotrum. (2019). World's first marketplace for CO₂ removals is launched to reverse climate change [Press release]. Retrieved from <https://www.fortum.com/media/2019/04/worlds-first-marketplace-co2-removals-launched-reverse-climate-change>
- Fountain, H. (2012). A Rogue Climate Experiment Outrages Scientists. *New York Times*. Retrieved from http://www.nytimes.com/2012/10/19/science/earth/iron-dumping-experiment-in-pacific-alarms-marine-experts.html?_r=0
- Fountain, H. (2018). How Oman's Rocks Could Help Save the Planet. *N.Y. Times*.
- Fourqurean, J. W., Duarte, C. M., Kennedy, H., Marba, N., Holmer, M., Mateo, M. A., . . . Serrano, O. (2012). Seagrass ecosystems as a globally significant carbon stock. *Nature Geoscience*, 5(7), 505-509. doi:<http://www.nature.com/ngeo/journal/v5/n7/abs/ngeo1477.html#supplementary-information>
- Fowler, S. (2020). 'Foaming at the mouth': First responders describe scene after pipeline rupture, gas leak. *Clarion Ledger*. Retrieved from <https://www.clarionledger.com/story/news/local/2020/02/27/yazoo-county-pipe-rupture-co-2-gas-leak-first-responders-rescues/4871726002/>
- Fox, A. (2019). Adding 1 billion hectares of forest could help check global warming. *Science*. Retrieved from <https://www.sciencemag.org/news/2019/07/adding-1-billion-hectares-forest-could-help-check-global-warming>
- Fox, A., Kwapinski, W., Griffiths, B. S., & Schmalenberger, A. (2014). The role of sulfur and phosphorus mobilizing bacteria in biochar induced growth promotion of *Lolium perenne*. *FEMS Microbiology Ecology*, 90(1), 78-91. doi:10.1111/1574-6941.12374
- Fox, T. A. (2012). Energy Innovation and Avoiding Policy Complexity: The Air Capture Approach. *Energy & Environment*, 23(6-7), 1075-1092. doi:10.1260/0958-305x.23.6-7.1075
- Francaviglia, R., Di Bene, C., Farina, R., Salvati, L., Vicente-Vicente, J. L. J. M., & Change, A. S. f. G. (2019). Assessing "4 per 1000" soil organic carbon storage rates under Mediterranean climate: a comprehensive data analysis. *24(5)*, 795-818. doi:10.1007/s11027-018-9832-x
- Francavilla, M., Kamaterou, P., Intini, S., Monteleone, M., & Zabaniotou, A. (2015). Cascading microalgae biorefinery: Fast pyrolysis of *Dunaliella tertiolecta* lipid extracted-residue. *Algal Research*, 11, 184-193. doi:<https://doi.org/10.1016/j.algal.2015.06.017>
- Francavilla, M., Manara, P., Kamaterou, P., Monteleone, M., & Zabaniotou, A. (2014). Cascade approach of red macroalgae *Gracilaria gracilis* sustainable valorization by extraction of phycobiliproteins and pyrolysis of residue. *Bioresource Technology*, 184, 305-313. doi:10.1016/j.biortech.2014.10.147
- France-Lanord, C., & Derry, L. A. (1997). Organic carbon burial forcing of the carbon cycle from himalayan erosion. *Nature*, 390, 65-67. Retrieved from <https://www.nature.com/nature/journal/v390/n6655/full/390065a0.html>
- Franceschini, S., Chitarra, W., Pugliese, M., Gisi, U., Garibaldi, A., & Lodovica Gullino, M. (2016). Quantification of *Aspergillus fumigatus* and enteric bacteria in European compost

- and biochar. *Compost Science & Utilization*, 24(1), 20 - 29. doi:10.1080/1065657x.2015.1046612
- Francischinelli Rittl, T., Arts, B., & Kuyper, T. W. (2015). Biochar: An emerging policy arrangement in Brazil? *Environmental Science & Policy*, 51, 45 - 55. doi:10.1016/j.envsci.2015.03.010
- Francisco, É. C., Neves, D. B., Jacob-Lopes, E., & Franco, T. T. (2010). Microalgae as feedstock for biodiesel production: Carbon dioxide sequestration, lipid production and biofuel quality. *Journal of Chemical Technology & Biotechnology*, 85(3), 395-403. doi:10.1002/jctb.2338
- Franco, J., et al. (2010). Assumptions in the European Union biofuels policy: frictions with experiences in Germany, Brazil and Mozambique. *Journal of Peasant Studies*, 37(4), 661-698. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/21125723>
- Frank, S., et. al. (2017). Reducing greenhouse gas emissions in agriculture without compromising food security? *Environmental Research Letters*, 12(10), 105004. Retrieved from <http://stacks.iop.org/1748-9326/12/i=10/a=105004>
- Franscisco Brazao Vieira Alho, C., et al. . (2013). Biochar Stable Fraction Quantification by Thermo-Chemical Oxidation and Assessment by ¹³C NMR Spectroscopy. *Embrapa*. Retrieved from <http://www.alice.cnptia.embrapa.br/bitstream/doc/979469/1/2013ClaudiaMEBSHBiocharStable.pdf>
- Frantz, J., Alkhateeb, F., & Thurbide, K. (2015). A Novel Micro Pressurized Liquid Extraction Method for Rapid Sample Preparation of Polycyclic Aromatic Hydrocarbons in Various Solids. *Chromatography*, 2(3), 488 - 501. doi:10.3390/chromatography2030488
- Frazier, R., Jin, E., & Kumar, A. (2015). Life Cycle Assessment of Biochar versus Metal Catalysts Used in Syngas Cleaning. *Energies*, 8(1), 621 - 644. doi:10.3390/en8010621
- Frazin, R. (2020). Government probe finds companies claiming carbon capture tax credit didn't follow EPA requirements. *The Hill*. Retrieved from <https://thehill.com/policy/energy-environment/495526-government-probe-finds-companies-claiming-carbon-capture-tax-credit>
- Freddo, A., et al. (2012). Environmental contextualisation of potential toxic elements and polycyclic aromatic hydrocarbons in biochar. *Environmental Pollution*, 171, 18–24. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0269749112003375>
- Fredin, O., et al. (2017). The inheritance of a Mesozoic landscape in western Scandinavia. *Nature Communications*, 8, 1-11. Retrieved from <https://www.nature.com/articles/ncomms14879>
- Free, H. F., McGill, C. R., Rowarth, J. S., & Hedley, M. J. (2010). The effect of biochars on maize (*Zea mays*) germination. *New Zealand Journal of Agricultural Research*, 53(1), 1-4. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/00288231003606039>
- Freeman, C., Fenner, N., & Shirsat, A. H. (2012). Peatland geoengineering: an alternative approach to terrestrial carbon sequestration. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, 370(1974), 4404-4421. doi:10.1098/rsta.2012.0105
- Freeman, M., & Yellen, D. (2018). We Need to Capture Carbon to Fight Climate Change. *Scientific American*. Retrieved from https://www.scientificamerican.com/article/we-need-to-capture-carbon-to-fight-climate-change/?utm_source=newsletter&utm_medium=email&utm_campaign=sustainability&utm_content=link&utm_term=2018-08-16_top-stories&spMailingID=57193683&spUserID=NTY1OTMzMTQ5OAS2&spJobID=1462210331&spReportId=MTQ2MjIxMDMzMQS2
- Freer, M., Gough, C., Welfle, A., & Lea-Langton, A. (2021). Carbon optimal bioenergy with carbon capture and storage supply chain modelling: How far is too far? *Sustainable*

- Energy Technologies and Assessments*, 47, 101406. doi:<https://doi.org/10.1016/j.seta.2021.101406>
- Freestone, D., & Rayfuse, R. (2008). Ocean iron fertilization and international law. *Marine Ecology Progress Series*, 364, 227-233. Retrieved from <http://www.int-res.com/articles/theme/m364p227.pdf>
- Freibauer, A., Rounsevell, M. D. A., Smith, P., & Verhagen, J. (2004). Carbon sequestration in the agricultural soils of Europe. *Geoderma*, 122(1), 1-23. doi:<https://doi.org/10.1016/j.geoderma.2004.01.021>
- Frew, R., Bowie, A., Croot, P., & Pickmere, S. (2001). Macronutrient and trace-metal geochemistry of an in situ iron-induced Southern Ocean bloom. *Deep Sea Research Part II: Topical Studies in Oceanography*, 48(11–12), 2467-2481. doi:[http://dx.doi.org/10.1016/S0967-0645\(01\)00004-2](http://dx.doi.org/10.1016/S0967-0645(01)00004-2)
- Fricker, K. J. (2014). *Magnesium hydroxide sorbents for combined carbon dioxide capture and storage in energy conversion systems*. (Ph.D. Dissertation/Thesis). Columbia University, Retrieved from <https://search.proquest.com/docview/1614119336?accountid=14496>
- Fridahl, M. (2017). Socio-political prioritization of bioenergy with carbon capture and storage. *Energy Policy*, 104, 89-99. doi:<http://dx.doi.org/10.1016/j.enpol.2017.01.050>
- Fridahl, M. (2019). Chapter 3 - Pre- and post-Paris views on bioenergy with carbon capture and storage. In J. C. Magalhães Pires & A. L. D. Cunha Gonçalves (Eds.), *Bioenergy with Carbon Capture and Storage* (pp. 47-62): Academic Press.
- Fridahl, M., & Bellamy, R. (2018). Multilevel Policy Incentives for BECCS in Sweden. In M. Fridahl (Ed.), *Bioenergy with carbon capture and storage: From global potentials to domestic realities* (pp. 57-67).
- Fridahl, M., Haikola, S., Rogers, P. M., & Hansson, A. (2020). Biochar Deployment Drivers and Barriers in Least Developed Countries. In W. Leal Filho, J. Luetz, & D. Ayal (Eds.), *Handbook of Climate Change Management: Research, Leadership, Transformation* (pp. 1-30). Cham: Springer International Publishing.
- Fridahl, M., & Lehtveer, M. (2018). Bioenergy with carbon capture and storage (BECCS): Global potential, investment preferences, and deployment barriers. *Energy Research & Social Science*, 42, 155-165. doi:<https://doi.org/10.1016/j.erss.2018.03.019>
- Fridlund, J. (2014). *The Effects of Increasing Rates of Biochar on Corn Grown in Salinas Clay Loam*. Retrieved from <http://digitalcommons.calpoly.edu/agedsp/44/>
- Friedlander, B. (2018). Forests can capture more carbon to ease climate change. *Cornell Chronicle*. Retrieved from <http://news.cornell.edu/stories/2018/02/forests-can-capture-more-carbon-ease-climate-change>
- Friedlingstein, P., Allen, M., Canadell, J. G., Peters, G. P., & Seneviratne, S. I. (2019). Comment on “The global tree restoration potential”. *Science*, 366(6463), eaay8060. doi:[10.1126/science.aay8060](https://doi.org/10.1126/science.aay8060)
- Friedman, G. (2021). Shopify hopes to 'kickstart the market' by buying contract to suck CO2 out of the air — 10,000 tons of it *Financial Post*. Retrieved from <https://financialpost.com/technology/kickstart-the-market-shopify-will-pay-to-remove-10000-tonnes-of-co2-from-the-atmosphere>
- Friedmann, J. S. (2020). *NET-ZERO AND GEOSPHERIC RETURN: ACTIONS TODAY FOR 2030 AND BEYOND*. Retrieved from https://www.energypolicy.columbia.edu/research/report/net-zero-and-geospheric-return-actions-today-2030-and-beyond?utm_source=Center+on+Global+Energy+Policy+Mailing+List&utm_campaign=f2e06d4f54-EMAIL_CAMPAIGN_2019_09_24_06_19_COPY_01&utm_medium=email&utm_term=0_0773077aac-f2e06d4f54-102075069
- Friedmann, S. J. (2019). Engineered CO2 Removal, Climate Restoration, and Humility.

Frontiers in Climate, 1(3). doi:10.3389/fclim.2019.00003

- Friedmann, S. J., Ochu, E., & Brown, J. D. (2020). *Capturing Investment: Policy Design to Finance CCUS Projects in the U.S. Power Sector*. Retrieved from <https://energypolicy.columbia.edu/research/report/capturing-investment-policy-design-finance-ccus-projects-us-power-sector>
- Friggs, N. L., Hester, A. J., Mitchell, R. J., Parker, T. C., Subke, J.-A., & Wookey, P. A. (2020). Tree planting in organic soils does not result in net carbon sequestration on decadal timescales. *Global Change Biology*, 26(9), 5178-5188. doi:<https://doi.org/10.1111/gcb.15229>
- Frings, P. J., & Buss, H. L. (2019). The Central Role of Weathering in the Geosciences. *Elements*, 15(4), 229-234. doi:10.2138/gselements.15.4.229 %J Elements
- Frischmann, C. J., Mehra, M., Allard, R., Bayuk, K., Gouveia, J. P., & Gorman, M. R. (2020). Drawdown's "System of Solutions" Helps to Achieve the SDGs. In W. Leal Filho, A. M. Azul, L. Brandli, A. Lange Salvia, & T. Wall (Eds.), *Partnerships for the Goals* (pp. 1-25). Cham: Springer International Publishing.
- Frišták, V., Friesl-Hanl, W., Wawra, A., Pipíška, M., & Soja, G. (2015). Effect of biochar artificial ageing on Cd and Cu sorption characteristics. *Journal of Geochemical Exploration*, 159, 178 - 184. doi:10.1016/j.gexplo.2015.09.006
- Frišták, V., Pipíška, M., Lesný, J., Soja, G., Friesl-Hanl, W., & Packová, A. (2015). Utilization of biochar sorbents for Cd²⁺, Zn²⁺, and Cu²⁺ ions separation from aqueous solutions: comparative study. *Environmental Monitoring and Assessment*, 187(1), 1-16. doi:10.1007/s10661-014-4093-y
- Frišták, V., & Soja, G. (2015). Effect Of Wood-Based Biochar And Sewage Sludge Amendments For Soil Phosphorus AvailabilityAbstract. *Nova Biotechnologica et Chimica*, 14(1), 104-115. doi:10.1515/nbec-2015-0020
- Fritzsche, U. R., Iriarte, L., de Jong, J., Agostini, A., & Scarlat, N. (2014). Extending the EU Renewable Energy Directive sustainability criteria to solid bioenergy from forests. *Natural Resources Forum*, 38(2), 129-140. doi:10.1111/1477-8947.12042
- Fritzsche, U. R., Sims, R. E. H., & Monti, A. (2010). Direct and indirect land-use competition issues for energy crops and their sustainable production – an overview. *Biofuels, Bioproducts and Biorefining*, 4(6), 692-704. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/bbb.258/abstract>
- Fritz, S., See, L., van der Velde, M., Nalepa, R. A., Perger, C., Schill, C., . . . Obersteiner, M. (2013). Downgrading Recent Estimates of Land Available for Biofuel Production. *Environmental Science & Technology*, 47(3), 1688-1694. doi:10.1021/es303141h
- Froehlich, H. E., Afflerbach, J. C., Frazier, M., & Halpern, B. S. (2019). Blue Growth Potential to Mitigate Climate Change through Seaweed Offsetting. *Current Biology*, 29(18), 3087-3093.e3083. doi:<https://doi.org/10.1016/j.cub.2019.07.041>
- Frost, C. D., & Jakle, A. C. (2010). Geologic carbon sequestration in Wyoming: prospects and progress. *Rocky Mountain Geology*, 45(2), 83-91. Retrieved from https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwiEzra33dTwAhXTB80KHUATAZQQFjACegQIAhAD&url=http%3A%2Fwww.uwyo.edu%2Fgeolgeophys%2Fpeople%2Ffaculty%2Fc frost%2F_files%2Fdocs%2Fintroduction_screen.pdf&usg=AOvVaw0kBBeefYafCKKM2-8I8jTx
- Fruth, D. A., & Ponzi, J. A. (2010). Adjusting Carbon Management Policies to Encourage Renewable, Net-Negative Projects such as Biochar Sequestration. *William Mitchell Law Review*, 36, 992-1013. Retrieved from http://www.lexisnexis.com/hottopics/lnacademic/?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwiEzra33dTwAhXTB80KHUATAZQQFjACegQIAhAD&url=http%3A%2Fwww.uwyo.edu%2Fgeolgeophys%2Fpeople%2Ffaculty%2Fc frost%2F_files%2Fdocs%2Fintroduction_screen.pdf&usg=AOvVaw0kBBeefYafCKKM2-8I8jTx
- Fry, J. M., Joyce, J., & Aumônier, S. (2012). *Carbon Footprint of Seaweed as a Biofuel*. Retrieved from <https://www.researchgate.net/file.PostFileLoader.html?>

id=56a87dc36307d9231f8b45d0&assetKey=AS%3A322422358642688%401453882888
282

- Fryda, L., & Visser, R. (2015). Biochar for Soil Improvement: Evaluation of Biochar from Gasification and Slow Pyrolysis. *Agriculture*, 5(4), 1076 - 1115. doi:10.3390/agriculture5041076
- Fu, H., Liu, H., Mao, J., Chu, W., Li, Q., Alvarez, P. J. J., . . . Zhu, D. (2016). Photochemistry of Dissolved Black Carbon Released from Biochar: Reactive Oxygen Species Generation and Phototransformation. *Environmental Science & Technology*, 50(3), 1218-1226. doi:10.1021/acs.est.5b04314
- Fu, P., et al. (2012). Evolution of char structure during steam gasification of the chars produced from rapid pyrolysis of rice husk. *Bioresource Technology*, 114, 691-697. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0960852412005366>
- Fu, P., Li, Z. H., Yi, W. M., & Bai, X. Y. (2011). Structural Change of Rice Husk Char Particles during Steam Gasification. *Advanced Materials Research*, 236-238, 233-236. doi:10.4028/www.scientific.net/AMR.236-238.233
- Fuchs, J., Schmid, J. C., Muller, S., & Hofbauer, H. (2019). Dual fluidized bed gasification of biomass with selective carbon dioxide removal and limestone as bed material: A review. *Renewable & Sustainable Energy Reviews*, 107, 212-231. doi:10.1016/j.rser.2019.03.013
- Fuchs, M. R., Garcia-Perez, M., Small, P., & Flora, G. (2014). Campfire Lessons: Breaking Down the Combustion Process to Understand Biochar Production and Characterization. *the Biochar Journal*, 1. Retrieved from <http://www.biochar-journal.org/itjo/media/doc/1420082881242.pdf>
- Fuentes-George, K. (2017). Consensus, Certainty, and Catastrophe: Discourse, Governance, and Ocean Iron Fertilization. *Global Environmental Politics*, 17(2), 125-143. Retrieved from http://www.mitpressjournals.org/doi/abs/10.1162/GLEP_a_00404#.WQzEvdIrLb1
- Fuentes-George, K. (2017). Consensus, Certainty, and Catastrophe: The Debate Over Ocean Iron Fertilization. Retrieved from <https://www.newsecuritybeat.org/2017/05/consensus-certainty-catastrophe-ocean-iron-fertilization-debate/>
- Fuertes, A. B., Camps Arbestain, M., Sevilla, M., Macia-Agullo, J. A., Fiol, S., Lopez, R., . . . Macias, F. (2010). Chemical and structural properties of carbonaceous products obtained by pyrolysis and hydrothermal carbonisation of corn stover. *Australian Journal of Soil Research*, 48, 618-626. Retrieved from https://www.researchgate.net/publication/224893622_Chemical_and_structural_properties_of_carbonaceous_products_obtained_by_pyrolysis_and_hydrothermal_carbonisation_of_corn_stover
- Fuhrman, J., Clarens, A. F., McJeon, H., Patel, P., Ou, Y., Doney, S. C., . . . Pradhan, S. (2021). The role of negative emissions in meeting China's 2060 carbon neutrality goal. *Oxford Open Climate Change*, 1(1). doi:10.1093/oxfclm/kgab004
- Fuhrman, J., McJeon, H., Doney, S. C., Shobe, W., & Clarens, A. F. (2019). From Zero to Hero?: Why Integrated Assessment Modeling of Negative Emissions Technologies Is Hard and How We Can Do Better. *Frontiers in Climate*, 1(11). doi:10.3389/fclim.2019.00011
- Fuhrman, J., McJeon, H., Patel, P., Doney, S. C., Shobe, W. M., & Clarens, A. F. (2020). Food–energy–water implications of negative emissions technologies in a +1.5 °C future. *Nature Climate Change*. doi:10.1038/s41558-020-0876-z
- Fuhrmann, J. A., & Capone, D. G. (1991). Possible biogeochemical consequences of ocean fertilization. *Limnology and Oceanography*, 36(8), 1951-1959. Retrieved from <http://onlinelibrary.wiley.com/doi/10.4319/lo.1991.36.8.1951/pdf>
- Fujii, M., & Chai, F. (2009). Influences of initial plankton biomass and mixed-layer depths on the outcome of iron-fertilization experiments. *Deep Sea Research Part II: Topical Studies in Oceanography*, 56(26), 2936-2947. doi:<http://dx.doi.org/10.1016/j.dsrr.2009.07.007>

- Fujii, M., Yoshie, N., Yamanaka, Y., & Chai, F. (2005). Simulated biogeochemical responses to iron enrichments in three high nutrient, low chlorophyll (HNLC) regions. *Progress in Oceanography*, 64(2), 307-324. doi:<https://doi.org/10.1016/j.pocean.2005.02.017>
- Fujikawa, S., Selyanchyn, R., & Kunitake, T. (2021). A new strategy for membrane-based direct air capture. *Polymer Journal*, 53(1), 111-119. doi:10.1038/s41428-020-00429-z
- Fujita, R. (2021). Seaweeds to the rescue, redux. Retrieved from <http://blogs.edf.org/edfish/2021/02/23/seaweeds-to-the-rescue-redux/>
- Fukai, I., Mishra, S., & Moody, M. A. (2016). Economic analysis of CO₂-enhanced oil recovery in Ohio: Implications for carbon capture, utilization, and storage in the Appalachian Basin region. *International Journal of Greenhouse Gas Control*, 52, 357-377. doi:<https://doi.org/10.1016/j.ijggc.2016.07.015>
- Fukai, I., Mishra, S., & Pasumarti, A. (2017). Technical and Economic Performance Metrics for CCUS Projects: Example from the East Canton Consolidated Oil Field, Ohio, USA. *Energy Procedia*, 114, 6968-6979. doi:<https://doi.org/10.1016/j.egypro.2017.03.1838>
- Full, J., Merseburg, S., Miehe, R., & Sauer, A. (2021). A New Perspective for Climate Change Mitigation—Introducing Carbon-Negative Hydrogen Production from Biomass with Carbon Capture and Storage (HyBECCS). *Sustainability*, 13(7), 4026. Retrieved from <https://www.mdpi.com/2071-1050/13/7/4026>
- Fulton, W., Gray, M., Prahl, F., & Kleber, M. (2012). A simple technique to eliminate ethylene emissions from biochar amendment in agriculture. *Biomedical and Life Sciences Agronomy for Sustainable Development*, 33(3), 469-474. doi:10.1007/s13593-012-0118-5
- Fungo, B. (2014). N₂O and CH₄ emission from soil amended with steam-activated biochar. *Journal of Plant Nutrition and Soil Science*, 177(1), 34-38.
- Funk, J. M., Field, C. B., Kerr, S., & Daigneault, A. (2014). Modeling the impact of carbon farming on land use in a New Zealand landscape. *Environmental Science & Policy*, 37, 1-10. doi:<https://doi.org/10.1016/j.envsci.2013.08.008>
- Fuss, S. (2017). The 1.5°C Target, Political Implications, and the Role of BECCS. *Oxford Research Encyclopedia of Climate Science*, 1-28. Retrieved from <http://climatescience.oxfordre.com/view/10.1093/acrefore/9780190228620.001.0001/acrefore-9780190228620-e-585?print=pdf>
- Fuss, S., et al. (2018). Negative emissions—Part 2: Costs, potentials and side effects. *Environmental Research Letters*, 13(6), 063002. Retrieved from <http://stacks.iop.org/1748-9326/13/i=6/a=063002>
- Fuss, S., Canadell, J. G., Ciais, P., Jackson, R. B., Jones, C. D., Lyngfelt, A., . . . Van Vuuren, D. P. (2020). Moving toward Net-Zero Emissions Requires New Alliances for Carbon Dioxide Removal. *One Earth*, 3(2), 145-149. doi:10.1016/j.oneear.2020.08.002
- Fuss, S., Canadell, J. G., Peters, G. P., Tavoni, M., Andrew, R. M., Ciais, P., . . . Yamagata, Y. (2014). Betting on negative emissions. *Nature Clim. Change*, 4(10), 850-853. doi:10.1038/nclimate2392
- Fuss, S., & Johnsson, F. (2021). The BECCS Implementation Gap—A Swedish Case Study. *Frontiers in Energy Research*, 8(385). doi:10.3389/fenrg.2020.553400
- Fuss, S., Jones, C. D., Kraxner, F., Peters, G. P., Smith, P., Tavoni, M., . . . Yamagata, Y. (2016). Research priorities for negative emissions. *Environmental Research Letters*, 11(11), 11. doi:10.1088/1748-9326/11/11/115007
- Fuss, S., Reuter, W. H., Szolgayova, J., & Obersteiner, M. (2013). Optimal mitigation strategies with negative emission technologies and carbon sinks under uncertainty. *Climatic Change*, 118(1), 73-87. doi:10.1007/s10584-012-0676-1
- Futter, M. N. e. a. (2012). Uncertainty in silicate mineral weathering rate estimates: source partitioning and policy implications. *Environmental Research Letters*, 7(2), 1-8. Retrieved

- from <http://iopscience.iop.org/article/10.1088/1748-9326/7/2/024025/pdf>
- Fyson, C. (2020). Who should be responsible for removing CO₂ from the atmosphere? Retrieved from <https://climateanalytics.org/blog/2020/who-should-be-responsible-for-removing-co2-from-the-atmosphere/>
- Fyson, C. L., Baur, S., Gidden, M., & Schleussner, C.-F. (2020). Fair-share carbon dioxide removal increases major emitter responsibility. *Nature Climate Change*, 10(9), 836-841. doi:10.1038/s41558-020-0857-2
- Gabbatiss, J. (2019). Massive restoration of world's forests would cancel out a decade of CO₂ emissions, analysis suggests. *The Independent*. Retrieved from https://www.independent.co.uk/environment/forests-climate-change-co2-greenhouse-gases-trillion-trees-global-warming-a8782071.html?fbclid=IwAR1zxCgeF6YTyevABg9dmeHkgkOhUtCArUw3q1PHPAFeT1LPVG0_JoEJrHs
- Gadikota, G. (2020). Multiphase carbon mineralization for the reactive separation of CO₂ and directed synthesis of H₂. *Nature Reviews Chemistry*, 4(2), 78-89. doi:10.1038/s41570-019-0158-3
- Gadikota, G., Matter, J., Kelemen, P., & Park, A.-h. A. (2014). Chemical and morphological changes during olivine carbonation for CO₂ storage in the presence of NaCl and NaHCO₃. *Physical Chemistry Chemical Physics*, 16(10), 4679-4693. doi:10.1039/C3CP54903H
- Gadikota, G., Swanson, E. J., Zhao, H., & Park, A.-H. A. (2014). Experimental Design and Data Analysis for Accurate Estimation of Reaction Kinetics and Conversion for Carbon Mineralization. *Industrial & Engineering Chemistry Research*, 53(16), 6664-6676. doi:10.1021/ie500393h
- Gaede, J., & Rowlands, I. H. (2018). Visualizing social acceptance research: A bibliometric review of the social acceptance literature for energy technology and fuels. *Energy Research & Social Science*, 40, 142-158. doi:<https://doi.org/10.1016/j.erss.2017.12.006>
- Gaffney, F., Deane, J. P., Drayton, G., Glynn, J., & Gallachóir, B. P. Ó. (2020). Comparing negative emissions and high renewable scenarios for the European power system. *BMC Energy*, 2(1), 3. doi:10.1186/s42500-020-00013-4
- Gaffron, H. (1942). Reduction of Carbon Dioxide Coupled with the Oxyhydrogen Reaction in Algae. *The Journal of General Physiology*, 26(2), 241-267. doi:10.1085/jgp.26.2.241
- Gagern, A., et al. (2019). *Ocean Alkalinity Enhancement: Current state of knowledge and potential role of philanthropy*. Retrieved from https://oursharedseas.com/oss_downloads/ocean-alkalinity-enhancement-current-state-of-knowledge-and-potential-role-of-philanthropy/
- Gagern, A. (2021). Demystifying Ocean-based Carbon Dioxide Removal: An Explainer. *Our Shared Seas*. Retrieved from <https://oursharedseas.com/demystifying-ocean-based-carbon-dioxide-removal-an-explainer/>
- Gagern, A., & Kapsenberg, L. (2021). *Ocean –based carbon dioxide removal: A primer for philanthropy*. Retrieved from <https://www.climateworks.org/report/ocean-carbon-dioxide-removal-the-need-and-the-opportunity/>
- Gai, X., Wang, H., Liu, J., Zhai, L., Liu, S., Ren, T., & Liu, H. (2014). Effects of Feedstock and Pyrolysis Temperature on Biochar Adsorption of Ammonium and Nitrate. *Plos One*, 9(12), e113888. doi:10.1371/journal.pone.0113888.s002
- Gaillardet, J., Dupré, B., Louvat, P., & Allègre, C. J. (1999). Global silicate weathering and CO₂ consumption rates deduced from the chemistry of large rivers. *Chemical Geology*, 159(1–4), 3-30. doi:[http://dx.doi.org/10.1016/S0009-2541\(99\)00031-5](http://dx.doi.org/10.1016/S0009-2541(99)00031-5)
- Galdos, M. V., Pires, L. F., Cooper, H. V., Calonego, J. C., Rosolem, C. A., & Mooney, S. J. (2019). Assessing the long-term effects of zero-tillage on the macroporosity of Brazilian soils using X-ray Computed Tomography. *Geoderma*, 337, 1126-1135. doi:<https://doi.org/10.1016/j.geoderma.2019.112611>

10.1016/j.geoderma.2018.11.031

- Gale, J., & Freund, P. (2001). Coal-Bed Methane Enhancement with CO₂ Sequestration Worldwide Potential. *Environmental Geosciences*, 8(3), 210-217. doi:10.1046/1526-0984.2001.008003210.x
- Gale, J. J. (2004). Using Coal Seams for CO₂ Sequestration. *Geologica Belgica*, 7(3-4), 99-103. Retrieved from <https://popups.ulege.be/1374-8505/index.php?id=1452&file=1&pid=239>
- Gale, R. (2019). Nature should be our greatest ally in the fight against climate change. *The Telegraph*. Retrieved from https://www.telegraph.co.uk/politics/2019/10/15/nature-should-greatest-ally-fight-against-climate-change/?utm_campaign=Carbon%20Brief%20Daily%20Briefing&utm_medium=email&utm_source=Revue%20newsletter
- Galgani, P., van der Voet, E., & Korevaar, G. (2014). Composting, anaerobic digestion and biochar production in Ghana. Environmental-economic assessment in the context of voluntary carbon markets. *Waste Management*, 34(12), 2454-2465. doi:10.1016/j.wasman.2014.07.027
- Galik, C. S., & Jackson, R. B. (2009). Risks to forest carbon offset projects in a changing climate. *Forest Ecology and Management*, 257(11), 2209-2216. doi:<http://dx.doi.org/10.1016/j.foreco.2009.03.017>
- Galina, N. R., Arce, G. L. A. F., & Ávila, I. (2019). Evolution of carbon capture and storage by mineral carbonation: Data analysis and relevance of the theme. *Minerals Engineering*, 142, 105879. doi:<https://doi.org/10.1016/j.mineng.2019.105879>
- Galinato, S. P., Yoder, J. K., & Granatstein, D. (2011). The economic value of biochar in crop production and carbon sequestration. *Energy Policy*, 39(10), 6344-6350. doi:10.1016/j.enpol.2011.07.035
- Gall, E. T., & Nazaroff, W. W. (2015). New directions: Potential climate and productivity benefits from CO₂ capture in commercial buildings. *Atmospheric Environment*, 103, 378-380. doi:<http://dx.doi.org/10.1016/j.atmosenv.2015.01.004>
- Gall, M. P., Boyd, P. W., Hall, J., Safi, K. A., & Chang, H. (2001). Phytoplankton processes. Part 1: Community structure during the Southern Ocean Iron RElease Experiment (SOIREE). *Deep Sea Research Part II: Topical Studies in Oceanography*, 48(11–12), 2551-2570. doi:[http://dx.doi.org/10.1016/S0967-0645\(01\)00008-X](http://dx.doi.org/10.1016/S0967-0645(01)00008-X)
- Gall, M. P., Strzepek, R., Maldonado, M., & Boyd, P. W. (2001). Phytoplankton processes. Part 2: Rates of primary production and factors controlling algal growth during the Southern Ocean Iron RElease Experiment (SOIREE). *Deep Sea Research Part II: Topical Studies in Oceanography*, 48(11–12), 2571-2590. doi:[http://dx.doi.org/10.1016/S0967-0645\(01\)00009-1](http://dx.doi.org/10.1016/S0967-0645(01)00009-1)
- Gallagher, E. (2008). *The Gallagher Review of the indirect effects of biofuels production*. Retrieved from https://www.unido.org/fileadmin/user_media/UNIDO_Header_Site/Subsites/Green_Industry_Asia_Conference__Maanila/_GC13/Gallagher_Report.pdf
- Gallucci, M. (2020). Capture Carbon in Concrete Made With CO₂. *IEEE Spectrum*. Retrieved from <https://spectrum.ieee.org/energywise/energy/fossil-fuels/carbon-capture-power-plant-co2-concrete>
- Galvez, A., et al. (2012). Short term effects of bioenergy by-products on soil C and N dynamics, nutrient availability and biochemical properties. *Agriculture, Ecosystems & Environment*, 160, 3–14.
- Galy, V., France-Lanord, C., Beyssac, O., Faure, P., Kudrass, H., & Palhol, F. (2007). Efficient organic carbon burial in the bengal fan sustained by the himalayan erosional system. *Nature*, 450, 407-410. Retrieved from <http://www.nature.com/nature/journal/v450/n7168/abs/nature06273.html>
- Gamage, D. V., et al. (2015). Effect of rice husk biochar on selected soil properties in tropical

- Alfisols. *Soil, Land Care & Environmental Research*, 54(3), 302-331-. Retrieved from http://www.publish.csiro.au/view/journals/dsp_journals_pip_abstract_Scholar1.cfm?nid=84&pip=SR15102
- Gambardella, S. (2019). The Stormy Emergence of Geoengineering in the International Law of the Sea. *Carbon & Climate Law Review*, 13(2), 122-129. doi:10.21552/cclr/2019/2/7 %J Carbon & Climate Law Review
- Gambhir, A., Butnar, I., Li, P.-H., Smith, P., & Strachan, N. (2019). A Review of Criticisms of Integrated Assessment Models and Proposed Approaches to Address These, through the Lens of BECCS. 12(9), 1747. Retrieved from <https://www.mdpi.com/1996-1073/12/9/1747>
- Gambhir, A., & Tavoni, M. (2019). Direct Air Carbon Capture and Sequestration: How It Works and How It Could Contribute to Climate-Change Mitigation. *One Earth*, 1(4), 405-409. doi:<https://doi.org/10.1016/j.oneear.2019.11.006>
- Gambill, P. (2018). Blog. Retrieved from <https://medium.com/nori-carbon-removal/why-a-carbon-removal-market-belongs-on-the-blockchain-91da31127228>
- Gamborg, C., Anker, H. T., & Sandøe, P. (2014). Ethical and legal challenges in bioenergy governance: Coping with value disagreement and regulatory complexity. *Energy Policy*, 69, 326-333. doi:<https://doi.org/10.1016/j.enpol.2014.02.013>
- Gamborg, C., Millar, K., Shortall, O., & Sandøe, P. (2012). Bioenergy and Land Use: Framing the Ethical Debate. *Journal of Agricultural and Environmental Ethics*, 25(6), 909-925. doi:10.1007/s10806-011-9351-1
- Gambrill, D. (2021). The future of carbon removal insurance: As big as oil and gas? . Retrieved from <https://www.canadianunderwriter.ca/insurance/the-future-of-carbon-removal-insurance-as-big-as-oil-and-gas-1004205962/>
- Gámiz, B., Pignatello, J. J., Cox, L., Hermosín, M. C., & Celis, R. (2016). Environmental fate of the fungicide metalaxyl in soil amended with composted olive-mill waste and its biochar: An enantioselective study. *Science of The Total Environment*, 541, 776 - 783. doi:10.1016/j.scitotenv.2015.09.097
- Gan, C., Liu, Y., Tan, X., Wang, S., Zeng, G., Zheng, B., . . . Liu, W. (2015). Effect of porous zinc–biochar nanocomposites on Cr(VI) adsorption from aqueous solution. *RSC Adv.*, 5(44), 35107 - 35115. doi:10.1039/c5ra04416b
- Gan, M., Fan, X.-h., Jiang, T., Chen, X.-l., Yu, Z.-y., & Ji, Z.-y. (2014). Fundamental study on iron ore sintering new process of flue gas recirculation together with using biochar as fuel. *Journal of Central South University*, 21(11), 4109 - 4114. doi:10.1007/s11771-014-2405-6
- Gan, M., Xiaohui, F., Tao, J., Hui-ling, C., Yuan, S., & Jizhiyún. (2014). Fundamental study on iron ore sintering new process of flue gas recirculation together with using biochar as fuel. *Journal of Central South University*, 21(11), 4109-4114. Retrieved from <http://www.cnki.com.cn/Article/CJFDTOTAL-ZNGY201411011.htm>
- Gandahi, A. W., et al. . (2015). Impact of rice husk biochar and macronutrient fertilizer on fodder maize and soil properties. *International Journal of Biosciences (IJB)*, 7(4), 12 - 21. doi:10.12692/ijb/7.4.12-21
- Ganguli, S. S. (2017). Ankleshwar Oil Field: A Proposed CO₂ Injection Site. In *Integrated Reservoir Studies for CO₂-Enhanced Oil Recovery and Sequestration: Application to an Indian Mature Oil Field* (pp. 11-20). Cham: Springer International Publishing.
- Ganguli, S. S. (2017). Implication of CO₂-EOR and Storage at Ankleshwar Oil Field—A Reservoir Geomechanics Viewpoint. In *Integrated Reservoir Studies for CO₂-Enhanced Oil Recovery and Sequestration: Application to an Indian Mature Oil Field* (pp. 99-115). Cham: Springer International Publishing.
- Ganguli, S. S. (2017). Time-Lapse Monitoring of CO₂ Response at Ankleshwar Oil Field: A

- Seismic Modeling Approach for Feasible CO₂-EOR and Storage. In *Integrated Reservoir Studies for CO₂-Enhanced Oil Recovery and Sequestration: Application to an Indian Mature Oil Field* (pp. 117-130). Cham: Springer International Publishing.
- Gannon, K., & Hulme, M. (2017). *Geoengineering at the “Edge of the World”: Exploring perceptions of ocean fertilisation through the Haida Salmon Restoration Corporation*. Retrieved from <http://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2017/09/Working-Paper-280-Gannon-Hulme-1.pdf>
- Gannon, K. E. (2016). *40 Million Salmon Might Be Wrong’: Ecological Worldviews and Geoengineering Technologies: The Case of the Haida Salmon Restoration Corporation*. (Ph.D. Thesis). King's College, Retrieved from https://kclpure.kcl.ac.uk/portal/files/60866652/2016_Gannon_Kate_Elizabeth_1351341_ethesis.pdf
- Gannon, K. E., & Hulme, M. (2018). Geoengineering at the “Edge of the World”: Exploring perceptions of ocean fertilisation through the Haida Salmon Restoration Corporation. *Geo: Geography and Environment*, 5(1), e00054. doi:10.1002/geo2.54
- Gao, C., Li, X., Guo, L., & Zhao, F. (2013). Heavy oil production by carbon dioxide injection. *Greenhouse Gases: Science and Technology*, 3(3), 185-195. doi:10.1002/ghg.1346
- Gao, F., Xue, Y., Deng, P., Cheng, X., & Yang, K. (2015). Removal of aqueous ammonium by biochars derived from agricultural residuals at different pyrolysis temperatures. *Chemical Speciation & Bioavailability*, 27(2), 92 - 97. doi:10.1080/09542299.2015.1087162
- Gao, K., Aruga, Y., Asada, K., Ishihara, T., Akano, T., & Kiyohara, M. (1991). Enhanced growth of the red alga *Porphyra yezoensis* Ueda in high CO₂ concentrations. *Journal of Applied Phycology*, 3(4), 355-362. doi:10.1007/bf00026098
- Gao, K., Aruga, Y., Asada, K., & Kiyohara, M. J. J. o. A. P. (1993). Influence of enhanced CO₂ on growth and photosynthesis of the red algae *Gracilaria* sp. and *G. chilensis*. 5(6), 563-571. doi:10.1007/bf02184635
- Gao, K., & McKinley, K. R. (1994). Use of macroalgae for marine biomass production and CO₂ remediation: a review. *Journal of Applied Phycology*, 6(1), 45-60. doi:10.1007/bf02185904
- Gao, W., Zhang, M., & Wu, H. (2016). Fuel properties and ageing of bioslurry prepared from glycerol/methanol/bio-oil blend and biochar. *Fuel*, 176, 72 - 77. doi:10.1016/j.fuel.2016.02.056
- Gao, X., & Wu, H. (2011). Biochar as a Fuel: 4. Emission Behavior and Characteristics of PM1 and PM10 from the Combustion of Pulverized Biochar in a Drop-Tube Furnace. *Energy Fuels*, 25(6), 2702-2710. doi:10.1021/ef200296u
- Gao, X., & Wu, H. (2013). Aerodynamic Properties of Biochar Particles: Effect of Grinding and Implications. *Environmental Science & Technology Letters*, 1(1), 60-64. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/ez400165g>
- Gao, X., Yani, S., & Wu, H. (2014). Pyrolysis of Spent Biomass from Mallee Leaf Steam Distillation: Biochar Properties and Recycling of Inherent Inorganic Nutrients. *Energy Fuels*, 28(7), 4642-4649. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/ef501114v>
- Gao, Y., et al. (2012). Algae biodiesel - a feasibility report. *Chemistry Central Journal*, 6, 1-16. Retrieved from <https://www.ourenergypolicy.org/wp-content/uploads/2012/04/1752-153X-6-S1-S1.pdf>
- Garba, N. A., Duckers, L. J., & Hall, W. J. (2014). Climate change impacts on life cycle greenhouse gas (GHG) emissions savings of biomethanol from corn and soybean. *International Journal of Life Cycle Assessment*, 19(4), 806-813. doi:10.1007/s11367-013-0680-3
- Garcia, B., Beaumont, V., Perfetti, E., Rouchon, V., Blanchet, D., Oger, P., . . . Haeseler, F. (2010). Experiments and geochemical modelling of CO₂ sequestration by olivine: Potential, quantification. *Applied Geochemistry*, 25(9), 1383-1396. doi:<https://doi.org/>

10.1016/j.apgeochem.2010.06.009

- Garcia, C., Nannipieri, P., & Hernandez, T. (2018). Chapter 9 - The Future of Soil Carbon. In C. Garcia, P. Nannipieri, & T. Hernandez (Eds.), *The Future of Soil Carbon* (pp. 239-267): Academic Press.
- Garcia, C. A., Riegelhaupt, E., Ghilardi, A., Skutsch, M., Islas, J., Manzini, F., & Masera, O. (2015). Sustainable bioenergy options for Mexico: GHG mitigation and costs. *Renewable & Sustainable Energy Reviews*, 43, 545-552. doi:10.1016/j.rser.2014.11.062
- Garcia Freites, S., & Jones, C. (2021). *A Review of the Role of Fossil Fuel-Based Carbon Capture and Storage in the Energy System*
Retrieved from https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwjyidnlylbyAhWBWM0KHY5NBJcQFjABegQICRAD&url=https%3A%2F%2Fwww.research.manchester.ac.uk%2Fportal%2Ffiles%2F184755890%2FCCS_REPORT_FINAL_v2_UPLOAD.pdf&usg=AOvVaw2CWQTyNLTdncwfxUmJ6jUp
- Garcia Izquierdo, C., et al. . (2014). Enmiendas orgánicas de nueva generación: biochar y otras biomoléculas (Organic amendments next generation: biochar and other biomolecules). In *De Residuo a Recurso: El Camino hacia la Sostenibilidad (Waste to Resource: The Path to Sustainability)*.
- Garcia, S. F., & Jones, C. (2021). *A Review of the Role of Fossil Fuel Based Carbon Capture and Storage in the Energy System*. Retrieved from
- García-Delgado, C., Alfaro, I., & Eymar, E. (2015). *Assessment of the combination of biochar amendment and Pleurotus ostreatus application in bioremediation of creosote polluted soil*. Paper presented at the International Conference on Solid Waste. https://arcpe.hkbu.edu.hk/conf2015/implement/files/D5E_A268a_GARCIA_DELGADO_C.pdf
- García-Delgado, C., Alfaro-Barta, I., & Eymar, E. (2015). Combination of biochar amendment and mycoremediation for polycyclic aromatic hydrocarbons immobilization and biodegradation in creosote-contaminated soil. *Journal of Hazardous Materials*, 285, 259 - 266. doi:10.1016/j.jhazmat.2014.12.002
- García-Freites, S., Gough, C., & Röder, M. (2021). The greenhouse gas removal potential of bioenergy with carbon capture and storage (BECCS) to support the UK's net-zero emission target. *Biomass and Bioenergy*, 151, 106164. doi:<https://doi.org/10.1016/j.biombioe.2021.106164>
- García-Jaramillo Rodríguez, M. (2015). *Application of organic amendments and biochars derived from olive oil industry in the cultivation of rice: influence on the dynamics of pesticides and agronomic properties (translated from Spanish language)*. Universidad de Sevilla (University of Seville), Retrieved from <https://idus.us.es/xmlui/handle/11441/30430>
- Garcia-Perez, M., et al. (2012). *Methods for Producing Biochar and Advanced Bio-fuels in Washington State. Part 3: Literature Review of Technologies for Product Collection and Refining*. Retrieved from Pullman, WA:
- Garcia-Perez, M., et al.,. (2013). *Methods for Producing Biochar and Advanced Biofuels in Washington State - Part 4: Literature Review of Sustainability Issues, Business Models, and Financial Analyses*. Retrieved from <https://fortress.wa.gov/ecy/publications/documents/1207035.pdf>
- Garcia-Perez, M., et al. . (2015). Sustainability, Business Models, and Techno-Economic Analysis of Biomass Pyrolysis Technologies. In *Innovative Solutions in Fluid-Particle Systems and Renewable Energy Management* (pp. 1-45).
- Gardarsdottir, S. O., Normann, F., Andersson, K., & Johnsson, F. (2014). Process Evaluation of CO₂ Capture in three Industrial case Studies. *Energy Procedia*, 63, 6565-6575. doi:<http://dx.doi.org/10.1016/j.egypro.2014.11.693>

- Gardiner, W. (2019). How Drax Power Station will go carbon negative by 2030 and lead the world. *The Yorkshire Post*. Retrieved from <https://www.yorkshirepost.co.uk/news/opinion/columnists/how-drax-power-station-will-go-carbon-negative-by-2030-and-lead-the-world-will-gardiner-1-10147543>
- Gardiner, W. (2020). Putting the North at the heart of a green industrial revolution. *The Spectator*. Retrieved from <https://www.spectator.co.uk/article/putting-the-north-at-the-heart-of-a-green-industrial-revolution>
- Garedew, M. (2014). *Lignin depolymerization and upgrading via fast pyrolysis and electrocatalysis for the production of liquid fuels and value-added products*. Michigan State University, Retrieved from <http://gradworks.umi.com/15/64/1564309.html>
- Garg, A., & Shukla, P. R. (2009). Coal and energy security for India: Role of carbon dioxide (CO₂) capture and storage (CCS). *Energy*, 34(8), 1032-1041. doi:<https://doi.org/10.1016/j.energy.2009.01.005>
- Garner, J. (2011). Can Biochar Help you Realize more Value from Manure? In.
- Garrett, J., & McCoy, S. (2013). Carbon Capture and Storage and the London Protocol: Recent Efforts to Enable Transboundary CO₂ Transfer. *Energy Procedia*, 37, 7747-7755. doi:<http://dx.doi.org/10.1016/j.egypro.2013.06.721>
- Gartner, E., et al. (2015). *A Novel Atmospheric Pressure Approach to the Mineral Capture of CO₂ from Industrial Point Sources*. Paper presented at the Thirteenth Annual Conference on Carbon Capture, Utilization and Storage. https://www.academia.edu/18448501/A_Novel_Atmospheric_Pressure_Approach_to_the_Mineral_Capture_of_CO2_from_Industrial_Point_Sources?email_work_card=title
- Gascó, G., Paz-Ferreiro, J., & Méndez, A. (2011). Thermal analysis of soil amended with sewage sludge and biochar from sewage sludge pyrolysis. *Journal of Thermal Analysis and Calorimetry*, 108(2), 1-7. doi:<10.1007/s10973-011-2116-2>
- Gaskin, J. W., Das, K. C., Tassistro, A., Sonon, L., Harris, K., & Hawkins, B. (2009). Characterization of Char for Agricultural Use in the Soils of the Southeastern United States. *Amazonian Dark Earths: Wim Sombroek's Vision*.
- Gaskin, J. W., Harris, K., Lee, D., Speir, A., Morris, L. M., Ogden, L., & Das, K. C. (2007, 2007). *Potential for pyrolysis char to affect soil moisture and nutrient status of loamy sand soil*. Paper presented at the Georgia Water Resources Conference, University of Georgia.
- Gaskin, J. W., Speir, R. A., Harris, K., Das, K. C., Lee, R. D., Morris, L. A., & Fisher, D. S. (2010). Effect of Peanut Hull and Pine Chip Biochar on Soil Nutrients, Corn Nutrient Status, and Yield. *Agronomy Journal*, 102, 623-633.
- Gaskin, J. W., Steiner, C., Harris, K., Das, K. C., & Bibens, B. (2008). Effect of Low-Temperature Pyrolysis Conditions on Biochar for Agricultural Use. *Transactions of the ASABE*, 51(6), 2061-2029. Retrieved from <https://elibrary.asabe.org/azdez.asp?AID=25409&T=2>
- Gaspar Ravagnani, A. T. F. S., Ligero, E. L., & Suslick, S. B. (2009). CO₂ sequestration through enhanced oil recovery in a mature oil field. *Journal of Petroleum Science and Engineering*, 65(3), 129-138. doi:<https://doi.org/10.1016/j.petrol.2008.12.015>
- Gassensmith, J. J., Furukawa, H., Smaldone, R. A., Forgan, R. S., Botros, Y. Y., Yaghi, O. M., & Stoddart, J. F. (2011). Strong and Reversible Binding of Carbon Dioxide in a Green Metal–Organic Framework. *Journal of the American Chemical Society*, 133(39), 15312-15315. doi:<10.1021/ja206525x>
- Gasser, T., Guivarch, C., Tachiiri, K., Jones, C. D., & Ciais, P. (2015). Negative emissions physically needed to keep global warming below 2 degrees C. *Nature Communications*, 6, 7. doi:<10.1038/ncomms8958>
- Gathorne-Hardy, A. (2012). *The role of biochar in English agriculture : agronomy, biodiversity, economics and climate change*. Imperial College London (University of London),

- Gattinger, A., et al. (2012). Enhanced top soil carbon stocks under organic farming. *Proceedings of the National Academy of Sciences*, 109(4), 18226-18231. Retrieved from <http://www.pnas.org/content/109/44/18226.full>
- Gattuso, J.-P., Magnan, A. K., Bopp, L., Cheung, W. W. L., Duarte, C. M., Hinkel, J., . . . Rau, G. H. (2018). Ocean Solutions to Address Climate Change and Its Effects on Marine Ecosystems. *Frontiers in Marine Science*, 5(337). doi:10.3389/fmars.2018.00337
- Gattuso, J.-P., Williamson, P., Duarte, C. M., & Magnan, A. K. (2021). The Potential for Ocean-Based Climate Action: Negative Emissions Technologies and Beyond. *Frontiers in Climate*, 2(37). doi:10.3389/fclim.2020.575716
- Gauder, M., Graeff-Hönninger, S., Lewandowski, I., & Claupein, W. (2012). Long-term yield and performance of 15 different Miscanthus genotypes in southwest Germany. *Annals of Applied Biology*, 160(2), 126-136. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/j.1744-7348.2011.00526.x/abstract>
- Gaunt, J. L., & Cowie, A. (2009). Biochar, Greenhouse Gas Accounting and Emissions Trading. In J. Lehmann & S. Joseph (Eds.), *Biochar for Environmental Management: Science and Technology* (pp. 317-340). London, UK: Earthscan.
- Gaunt, J. L., & Lehmann, J. (2008). Energy Balance and Emissions Associated with Biochar Sequestration and Pyrolysis Bioenergy Production. *Environmental Science & Technology*, 42(11), 4152-4158. doi:10.1021/es071361i
- Gautam, S., Pulkki, R., Shahi, C., & Leitch, M. (2010). Economic and energy efficiency of salvaging biomass from wildfire burnt areas for bioenergy production in northwestern Ontario: A case study. *Biomass & Bioenergy*, 34(11), 1562-1572. doi:10.1016/j.biombioe.2010.06.001
- Gaworecki, M. (2021). Is planting trees as good for the Earth as everyone says? *Mongabay*. Retrieved from https://news.mongabay.com/2021/05/is-planting-trees-as-good-for-the-earth-as-everyone-says/?utm_source=Mongabay+Newsletter&utm_campaign=89d58f8ce9-Newsletter_2020_04_30_COPY_01&utm_medium=email&utm_term=0_940652e1f4-89d58f8ce9-77159097&mc_cid=89d58f8ce9&mc_eid=ceaae677fe
- Gayán, P., Abad, A., de Diego, L. F., García-Labiano, F., & Adánez, J. (2013). Assessment of technological solutions for improving chemical looping combustion of solid fuels with CO₂ capture. *Chemical Engineering Journal*, 233, 56-69. doi:<https://doi.org/10.1016/j.cej.2013.08.004>
- Gearino, D. (2021). A Lifeline for a Coal Plant Gives Hope to a North Dakota Town. Others See It as a Boondoggle. *Inside Climate News*, (July 17). Retrieved from <https://insideclimatenews.org/news/17072021/north-dakota-coal-energy-transition-jobs-carbon-capture/>
- Gebald, C., Wurzbacher, J. A., Tingaut, P., & Steinfeld, A. (2013). Stability of Amine-Functionalized Cellulose during Temperature-Vacuum-Swing Cycling for CO₂ Capture from Air. *Environmental Science & Technology*, 47(17), 10063-10070. doi:10.1021/es401731p
- Gebhardt, M. M. (2015). *Soil Amendment Effects on Degraded Soils and Consequences for Plant Growth and Soil Microbial Communities*. The University of Arizona, Retrieved from <http://arizona.openrepository.com/arizona/handle/10150/556614>
- Gebremedhin, G. H., & Haileselassie, B. (2015). Effect of Biochar on Yield and Yield Components of Wheat and Post-harvest Soil Properties in Tigray, Ethiopia. *Journal of Biofertilizers & Biopesticides*, 06(02). doi:10.4172/jbfbp.1000158
- Gebreslassie, B. H., Waymire, R., & You, F. (2013). Sustainable design and synthesis of algae-based biorefinery for simultaneous hydrocarbon biofuel production and carbon sequestration. 59(5), 1599-1621. doi:10.1002/aic.14075

- Geden, O. (2017). Define limits for temperature overshoot targets. *Nature Geoscience*, 10, 881-882. Retrieved from <https://www.nature.com/articles/s41561-017-0026-z>
- Geden, O. (2019). Targeting Net Zero Emissions. Retrieved from <https://kleinmanenergy.upenn.edu/policy-digests/targeting-net-zero-emissions>
- Geden, O., Peters, G. P., & Scott, V. (2019). Targeting carbon dioxide removal in the European Union. *Climate Policy*, 19(4), 487-494. doi:10.1080/14693062.2018.1536600
- Geden, O., & Schafer, S. (2016). "Negative Emissions": A Challenge for Climate Policy. Retrieved from https://www.swp-berlin.org/fileadmin/contents/products/comments/2016C53_gdn_Schaefer.pdf
- Geden, O., & Schenuit, F. (2020). *Unconventional Mitigation: Carbon Dioxide Removal as a New Approach in EU Climate Policy*. Retrieved from <https://www.swp-berlin.org/10.18449/2020RP08/>
- Geden, O., Scott, V., & Palmer, J. (2018). Integrating carbon dioxide removal into EU climate policy: Prospects for a paradigm shift. *Wiley Interdisciplinary Reviews: Climate Change*, 9(4), e521. doi:doi:10.1002/wcc.521
- Geerlings, H., & Zevenhoven, R. (2013). CO₂ Mineralization—Bridge Between Storage and Utilization of CO₂. *Annual Review of Chemical and Biomolecular Engineering*, 4, 103-117. Retrieved from <http://www.annualreviews.org/doi/pdf/10.1146/annurev-chembioeng-062011-080951>
- Gehrig-Fasel, J., et al. (2020). Scaling-up Nature-based Solutions. *Carbon Mechanisms Review*, 9(2), 36-43. Retrieved from <https://www.carbon-mechanisms.de/en/publications/details/cmr-02-2021>
- Gelardi, D. L., Li, C., & Parikh, S. J. (2019). An emerging environmental concern: Biochar-induced dust emissions and their potentially toxic properties. *Science of The Total Environment*, 678, 813-820. doi:<https://doi.org/10.1016/j.scitotenv.2019.05.007>
- Gelfand, I., Hamilton, S. K., Kravchenko, A. N., Jackson, R. D., Thelen, K. D., & Robertson, G. P. (2020). Empirical Evidence for the Potential Climate Benefits of Decarbonizing Light Vehicle Transport in the U.S. with Bioenergy from Purpose-Grown Biomass with and without BECCS. *Environmental Science & Technology*, 54(5), 2961-2974. doi:10.1021/acs.est.9b07019
- Gelfand, I., Sahajpal, R., Zhang, X., Izaurrealde, R. C., Gross, K. L., & Robertson, G. P. (2013). Sustainable bioenergy production from marginal lands in the US Midwest. *Nature*, 493(7433), 514-517. doi:<http://www.nature.com/nature/journal/v493/n7433/abs/nature11811.html#supplementary-information>
- Gelinas, Y., Prentice, K. M., Baldock, J. A., & Hedges, J. I. (2001). An improved thermal oxidation method for the quantification of soot/graphitic black carbon in sediments and soils. *Environmental Science & Technology*, 35(17), 3519-3525.
- Geman, B. (2020). Making sense of United Airlines' carbon pledge. *Axios*. Retrieved from <https://wwwaxios.com/united-airlines-carbon-pledge-2050-airlines-7d2db06a-48c6-4120-b17f-8b1496dd5819.html>
- Geman, B. (2021). 1 big thing: The expanding carbon removal market. *Axios*. Retrieved from https://wwwaxios.com/newsletters/axios-generate-9b7f6efd-2b41-4bdb-ba5c-c77d8b642199.html?chunk=0&utm_term=emshare
- Geman, B. (2021). Direct air capture player throws open its doors. *Axios*. Retrieved from https://wwwaxios.com/newsletters/axios-generate-6ba74e11-9016-49aa-90dc-385eee0a3478.html?utm_source=newsletter&utm_medium=email&utm_campaign=newsletter_axiosgenerate&stream=top
- Genes, E. J. E. (2014). *DESTILACIÓN SECUNDARIA DE ALQUITRANES GENERADOS EN LA GASIFICACIÓN DE CUESCO DE PALMA AFRICANA (HIGH TAR DISTILLATION*

- GENERATED GASIFICATION AFRICAN PALM CUESCO).* National University of Columbia, Retrieved from <http://www.bdigital.unal.edu.co/12907/1/73119247.2014.pdf>
- Genes, É. J. E. (2015). *Destilación secundaria de alquitranes generados en la gasificación de cuesco de palma africana (Secondary distillation of tar generated in the gasification of palm cuesco)*. Unibersidad Nacional de Colombia, Retrieved from <http://www.bdigital.unal.edu.co/12907/>
- Genesio, L., et al. (2012). Surface albedo following biochar application in durum wheat. *Environmental Research Letters*, 7. Retrieved from <http://iopscience.iop.org/1748-9326/7/1/014025/article>
- Genesio, L., et al. (2015). Biochar increases vineyard productivity without affecting grape quality: Results from a four years field experiment in Tuscany. *Agriculture, Ecosystems & Environment*, 201, 20 - 25. doi:10.1016/j.agee.2014.11.021
- Genesio, L., Vaccari, F. P., & Miglietta, F. (2016). Black carbon aerosol from biochar threats its negative emission potential. *Global Change Biology*, 22(7), 2313-2314. doi:10.1111/gcb.13254
- GenLin, W., et al. . (2015). Effects of bio-char on soil microbes in herbicide residual soils. *Journal of Agricultural Resources and Environment*, 32(5), 471-476. Retrieved from <http://www.cabdirect.org/abstracts/20163033487.html;jsessionid=E4E1DE088D070530E5108D3B0284E023>
- Genovese, M., Jiang, J., Lian, K., & Holm, N. (2014). High capacitive performance of exfoliated biochar nanosheets from biomass waste corn cob. *J. Mater. Chem. A*, 3, 2903-2913. doi:10.1039/c4ta06110a
- GenXing, P., et al. . (2015). Industrialization of biochar from biomass pyrolysis: a new option for straw burning ban and green agriculture of China. *Science & Technology Review*, 33(13), 92-101. Retrieved from <https://www.cabdirect.org/cabdirect/abstract/20153305806>
- George, B. (2013). Bioenergy & water in Australia. In J. F. Dellemand & P. W. Gerbens-Leenes (Eds.), *Bioenergy and Water* (pp. 143-158): European Commission.
- George, C., Kohler, J., & Rillig, M. C. (2016). Biochars reduce infection rates of the root-lesion nematode *Pratylenchus penetrans* and associated biomass loss in carrot. *Soil Biology and Biochemistry*, 95, 11-18. doi:10.1016/j.soilbio.2015.12.003
- George, R. (2019). Perfect Timing, Russian Volcano Brings Life to North Pacific Ocean Pastures. Retrieved from <http://russgeorge.net/2019/06/26/perfect-timing-russian-volcano-brings-life-to-north-pacific-ocean-pastures/>
- George, R., Fiekowsky, P., & Carlin, A. (Writers). (2019). Ocean Pasture Restoration. In UNFCCC (Producer), *25th Conference of the Parties*.
- Georgescu, M., Lobell, D. B., & Field, C. B. (2011). Direct climate effects of perennial bioenergy crops in the United States. *Proceedings of the National Academy of Sciences*, 108(11), 4307-4312. doi:10.1073/pnas.1008779108
- Georgiou, A. (2019). How Waste from Soft Drink Production Could be Used to Tackle Global Warming. *Newsweek*.
- Gerard, D., & Wilson, E. J. (2009). Environmental bonds and the challenge of long-term carbon sequestration. *Journal of Environmental Management*, 90(2), 1097-1105. doi:<https://doi.org/10.1016/j.jenvman.2008.04.005>
- Gerardo, M. L., et al. (2015). Harvesting of microalgae within a biorefinery approach: A review of the developments and case studies from pilot-plants. *Algal Research*, 11, 248-262. Retrieved from https://ac.els-cdn.com/S2211926415300059/1-s2.0-S2211926415300059-main.pdf?_tid=spdf-74162d4e-a025-4fc8-9bea-71df8cbaf892&acdnat=1519699733_fb8465b0984733a558fe317cdcec656c

- Gerbens-Leenes, P. W., Hoekstra, A. Y., & van der Meer, T. (2009). The water footprint of energy from biomass: A quantitative assessment and consequences of an increasing share of bio-energy in energy supply. *Ecological Economics*, 68, 1052-1060. Retrieved from https://www.utwente.nl/en/et/wem/staff/hoekstra/the_water_footprint_of_bioenergy.pdf
- Gerbens-Leenes, W., Hoekstra, A. Y., & van der Meer, T. H. (2009). The water footprint of bioenergy. *Proceedings of the National Academy of Sciences*, 106(25), 10219-10223. doi:10.1073/pnas.0812619106
- Gerber, L. N., Tester, J. W., Beal, C. M., Huntley, M. E., & Sills, D. L. (2016). Target Cultivation and Financing Parameters for Sustainable Production of Fuel and Feed from Microalgae. *Environmental Science & Technology*, 50(7), 3333-3341. doi:10.1021/acs.est.5b05381
- Gerdemann, S. J., O'Connor, W. K., Dahlin, D. C., Penner, L. R., & Rush, H. (2007). Ex Situ Aqueous Mineral Carbonation. *Environmental Science & Technology*, 41(7), 2587-2593. doi:10.1021/es0619253
- Gergova, K., Petrov, N., & Eser, S. (1994). Adsorption properties and microstructure of activated carbons produced from agricultural by-products by steam pyrolysis. *Carbon*, 32(4), 693-702. doi:[http://dx.doi.org/10.1016/0008-6223\(94\)90091-4](http://dx.doi.org/10.1016/0008-6223(94)90091-4)
- Gerlach, A., & Schmidt, H.-P. (2015). The use of biochar in cattle farming. *the Biochar Journal*. Retrieved from <http://www.biochar-journal.org/en/ct/9>
- Gerlach, H., & Schmidt, H. P. (2012). Biochar in poultry farming. *Ithaka Journal*, 262–264. Retrieved from <http://www.ithaka-journal.net/druckversionen/e032012-bc-poultry.pdf>
- German, L., Schoneveld, G. C., & Pacheco, P. (2011). *Local Social and Environmental Impacts of Biofuels: Global Comparative Assessment and Implications for Governance*. *Ecology and Society*, 16(4), Article 29. Retrieved from <http://www.ecologyandsociety.org/issues/article.php/4516>
- German, L., Schoneveld, G. C., & Pacheco, P. (2011). *The Social and Environmental Impacts of Biofuel Feedstock Cultivation: Evidence from Multi-Site Research in the Forest Frontier*. *Ecology and Society*, 16(3), Article 24. doi:10.5751/ES-04309-160324
- German, L. A. (2003). Historical contingencies in the coevolution of environment and livelihood: Contributions to the debate on amazonian black earth. *Geoderma*, 111(3-4), 307-331.
- German, L. A., Schoneveld, G. C., & Gumbo, D. (2011). The Local Social and Environmental Impacts of Smallholder-Based Biofuel Investments in Zambia. *Ecology and Society*, 16(4), Article 12. doi:10.5751/ES-04280-160412
- Germano, M. G., et al., & i. (2012). Functional diversity of bacterial genes associated with aromatic hydrocarbon degradation in anthropogenic dark earth of Amazonia. *Pesquisa Agropecuária Brasileira*, 47(5), 654-664. Retrieved from http://www.scielo.br/scielo.php?pid=s0100-204x2012000500004&script=sci_arttext
- Gernon, T. M., Hincks, T. K., Merdith, A. S., Rohling, E. J., Palmer, M. R., Foster, G. L., . . . Müller, R. D. (2021). Global chemical weathering dominated by continental arcs since the mid-Palaeozoic. *Nature Geoscience*. doi:10.1038/s41561-021-00806-0
- Gerrard, M. (2020). Direct air capture: An emerging necessity to fight climate change. Retrieved from https://www.americanbar.org/groups/environment_energy_resources/publications/trends/2019-2020/march-april-2020/direct-air-capture/
- Gerssen-Gondelach, S. J., Wicke, B., & Faaij, A. P. C. (2017). GHG emissions and other environmental impacts of indirect land use change mitigation. *GCB Bioenergy*, 9(4), 725-742. doi:10.1111/gcbb.12394
- Gertner, J. (2019). Reverse Engineering the Climate Crisis Is Not Only Possible—It's Necessary. *Audobon*. Retrieved from <https://www.audubon.org/magazine/fall-2019/reverse-engineering-climate-crisis-not-only>
- Gertner, J. (2019, February 12). The Tiny Swiss Company That Thinks It Can Help Stop Climate

- Change. *New York Times*. Retrieved from https://www.nytimes.com/2019/02/12/magazine/climeworks-business-climate-change.html?fbclid=IwAR2XekNVymA62&locked=0&geoContinent=NA&geoRegion=CA&recAlloc=top_conversion&geoCountry=US&blockId=most-popular&imp_id=276412354&action=click&module=Most+Popular&pgtype=Homepage
- Gertner, J. (2021). The Dream of Carbon Air Capture Edges Toward Reality. Retrieved from <https://e360.yale.edu/features/the-dream-of-co2-air-capture-edges-toward-reality>
- Gevaerd, A., de Oliveira, P. R., Mangrich, A. S., Bergamini, M. F., & Marcolino-Junior, L. H. (2016). Evaluation of antimony microparticles supported on biochar for application in the voltammetric determination of paraquat. *Materials Science and Engineering: C*, 62, 123 - 129. doi:10.1016/j.msec.2016.01.020
- Gevers, J., et al. . (2011). Biodiversity and the mitigation of climate change through bioenergy: impacts of increased maize cultivation on farmland wildlife. *GCB Bioenergy*, 3(6), 472-482. doi:10.1111/j.1757-1707.2011.01104.x
- Ghacham, A. B., Pasquier, L.-c., Cecchi, E., Blais, J.-f., & Mercier, G. (2016). CO₂ sequestration by mineral carbonation of steel slags under ambient temperature: parameters influence, and optimization. *Environmental Science and Pollution Research International*, 23(17), 17635-17646. doi:<http://dx.doi.org/10.1007/s11356-016-6926-4>
- Ghadirian, E., Abbasian, J., & Arastoopour, H. (2019). CFD simulation of gas and particle flow and a carbon capture process using a circulating fluidized bed (CFB) reacting loop. *Powder Technology*, 344, 27-35. doi:10.1016/j.powtec.2018.11.102
- Ghaffar, A., Ghosh, S., Li, F., Dong, X., Zhang, D., Wu, M., . . . Pan, B. (2015). Effect of biochar aging on surface characteristics and adsorption behavior of dialkyl phthalates. *Environmental Pollution*, 206, 502 - 509. doi:10.1016/j.envpol.2015.08.001
- Ghaffar, A., & Younis, M. N. (2014). Adsorption of organic chemicals on graphene coated biochars and its environmental implicationsAbstract. *Green Processing and Synthesis*, 3(6). doi:10.1515/gps-2014-0071
- Ghani, W. A. W. A. K., et al. (2013). Biochar production from waste rubber-wood-sawdust and its potential use in C sequestration: Chemical and physical characterization. *Industrial Crops and Products*, 44, 18-24.
- Ghani, W. A. W. A. K., & da Silva, G. (2014). Saw dust-derived Biochar: Characterization and CO₂ Adsorption/desorption Study. *Journal of Applied Sciences*, 14(13), 1450-1454. doi:10.3923/jas.2014.1450.1454
- Ghani, W. A. W. A. K., Mohd, A., da Silva, G., Bachmann, R. T., Taufiq-Yap, Y. H., Rashid, U., & Al-Muhtaseb, A. a. H. (2013). Biochar production from waste rubber-wood-sawdust and its potential use in C sequestration: Chemical and physical characterization. *Industrial Crops and Products*, 44, 18-24. doi:<https://doi.org/10.1016/j.indcrop.2012.10.017>
- Ghasemi, Y., Rasoul-Amini, S., Naseri, A. T., Montazeri-Najafabady, N., Mobasher, M. A., Dabbagh, F. J. A. B., & Microbiology. (2012). Microalgae biofuel potentials (Review). 48(2), 126-144. doi:10.1134/s0003683812020068
- Gheewala, S. H., Damen, B., & Shi, X. (2013). Biofuels: economic, environmental and social benefits and costs for developing countries in Asia. *Wiley Interdisciplinary Reviews: Climate Change*, 4(6), 497-511. doi:10.1002/wcc.241
- Ghezel-Ayagh, H., Jolly, S., Patel, D., & Steen, W. (2017). Electrochemical Membrane Technology for Carbon Dioxide Capture from Flue Gas. *Energy Procedia*, 108, 2-9. doi:<https://doi.org/10.1016/j.egypro.2016.12.183>
- Ghezelchi, M. H., Garcia-Perez, M., & Wu, H. (2015). Bioslurry as a Fuel. 7: Spray Characteristics of Bio-Oil and Bioslurry via Impact and Twin-Fluid Atomizers. *Energy & Fuels*, 29(12), 8058 - 8065. doi:10.1021/acs.energyfuels.5b02089
- Ghezzeehei, T. A., Sarkhot, D. V., & Berhe, A. A. (2014). Biochar can be used to recapture

- essential nutrients from dairy wastewater and improve soil quality. *Solid Earth*, 5, 953-962. Retrieved from <http://www.solid-earth.net/5/953/2014/se-5-953-2014.pdf>
- Ghislain, Thierry, e. a. (2014). *Characterization of biomass and biochar by LDI-FTICRMS*. Paper presented at the 62ND ASMS Conference on Mass spectrometry and allied topics. <https://hal.archives-ouvertes.fr/hal-01090823/>
- Ghoneim, A. M., & Ebid, A. I. (2014). Impact of rice-straw biochar on some selected soil properties and rice (*Oryza sativa L.*) grain yield. *International Journal of Agronomy and Agricultural Research*, 3(4), 14-22. Retrieved from <http://serv1.vipsmtp.com.md-75.webhostbox.net/innspub.net/wp-content/uploads/2014/05/IJAAR-V3No4-p14-22.pdf>
- Ghorbani, A., Rahimpour, H. R., Ghasemi, Y., Zoughi, S., & Rahimpour, M. R. (2014). A Review of Carbon Capture and Sequestration in Iran: Microalgal Biofixation Potential in Iran. *Renewable and Sustainable Energy Reviews*, 35, 73-100. doi:<https://doi.org/10.1016/j.rser.2014.03.013>
- Ghorbel, L., Rouissi, T., Brar, S. K., López-González, D., Ramirez, A. A., & Godbout, S. (2015). Value-added performance of processed cardboard and farm breeding compost by pyrolysis. *Waste Management*, 38, 164-173. doi:[10.1016/j.wasman.2015.01.009](https://doi.org/10.1016/j.wasman.2015.01.009)
- Ghosh, A., Khanra, S., Mondal, M., Halder, G., Tiwari, O. N., Saini, S., . . . Gayen, K. (2016). Progress toward isolation of strains and genetically engineered strains of microalgae for production of biofuel and other value added chemicals: A review. *Energy Conversion and Management*, 113, 104-118. doi:<https://doi.org/10.1016/j.enconman.2016.01.050>
- Ghosh, S., Fern Ow, L., & B., W. (2014). Influence of biochar and compost on soil properties and tree growth in a tropical urban environment. *International Journal of Environmental Science and Technology*, 12(4), 1303-1310. Retrieved from <https://link.springer.com/article/10.1007/s13762-014-0508-0>
- Ghoshal, S., & Zeman, F. (2010). Carbon dioxide (CO₂) capture and storage technology in the cement and concrete industry A2 - Maroto-Valer, M. Mercedes. In *Developments and Innovation in Carbon Dioxide (CO₂) Capture and Storage Technology* (Vol. 1, pp. 469-491): Woodhead Publishing.
- (2018). *Carbon Farming* [Retrieved from <https://www.podshipearth.com/carbon-farming>]
- Giammar, D. E., Bruant, R. G., & Peters, C. A. (2005). Forsterite dissolution and magnesite precipitation at conditions relevant for deep saline aquifer storage and sequestration of carbon dioxide. *Chemical Geology*, 217(3), 257-276. doi:<https://doi.org/10.1016/j.chemgeo.2004.12.013>
- Giannoukos, K., Rigby, S. P., Rochelle, C. A., Milodowski, A. E., & Hall, M. R. (2021). Carbonation rate and microstructural alterations of class G cement under geological storage conditions. *Applied Geochemistry*, 131, 105007. doi:<https://doi.org/10.1016/j.apgeochem.2021.105007>
- Gianopoulos, C. G., Chua, Z., Zhurov, V. V., Seipp, C. A., Wang, X., Custelcean, R., & Pinkerton, A. A. (2019). Direct air capture of CO₂ - topological analysis of the experimental electron density (QTAIM) of the highly insoluble carbonate salt of a 2,6-pyridine-bis(iminoguanidine), (PyBIGH₂)(CO₃)(H₂O)₄. *IUCrJ*, 6(1), 56-65. doi:[10.1107/S2052252518014616](https://doi.org/10.1107/S2052252518014616)
- Gibbins, J. (2020). Chapter 17 CCS – From an Oil Crisis to a Climate Crisis Response. In *Carbon Capture and Storage* (pp. 559-562): The Royal Society of Chemistry.
- Gibbs, H., K., et al. . (2008). Carbon payback times for crop-based biofuel expansion in the tropics: the effects of changing yield and technology. *Environmental Research Letters*, 3(3), 1-10. Retrieved from <http://stacks.iop.org/1748-9326/3/i=3/a=034001>
- Gibson, E. (2019). The new left-right divide on climate. *Newsroom*. Retrieved from <https://www.newsroom.co.nz/2019/11/22/913382/the-new-left-right-divide-on-climate#>

- Gielen, D. (2003). CO₂ removal in the iron and steel industry. *Energy Conversion and Management*, 44(7), 1027-1037. Retrieved from https://www.researchgate.net/publication/222782603_CO2_removal_in_the_iron_and_steel_industry
- Gilbert, A., & Sovacool, B. K. (2015). Emissions accounting for biomass energy with CCS. *Nature Climate Change*, 5, 495-496. Retrieved from <http://www.nature.com/nclimate/journal/v5/n6/full/nclimate2633.html>
- Giles, J. (2019). Why IKEA and others are going 'climate positive'. *GreenBiz*. Retrieved from <https://www.greenbiz.com/article/why-ikea-and-others-are-going-climate-positive>
- Giles, J. (2020). Can companies rely on regenerative agriculture's carbon removal impact? *GreenBiz*. Retrieved from <https://www.greenbiz.com/article/can-companies-rely-regenerative-agricultures-carbon-removal-impact>
- Giles, J. (2020). Trend: Carbon markets get real on removal. *Green Biz*. Retrieved from <https://www.greenbiz.com/article/trend-carbon-markets-get-real-removal>
- Giles, J. (2021). Digging into the complex, confusing and contentious world of soil carbon offsets. *GreenBiz*. Retrieved from <https://www.greenbiz.com/article/digging-complex-confusing-and-contentious-world-soil-carbon-offsets>
- Gilfillan, S. M. V., Lollar, B. S., Holland, G., Blagburn, D., Stevens, S., Schoell, M., . . . Ballentine, C. J. (2009). Solubility trapping in formation water as dominant CO₂ sink in natural gas fields. *Nature*, 458, 614. doi:10.1038/nature07852
<https://www.nature.com/articles/nature07852#supplementary-information>
- Gillman, G. P. (1980). The Effect of Crushed Basalt Scoria on the Cation Exchange Properties of a Highly Weathered Soil. *Soil Science Society of America Journal*, 44(3), 465-468. doi:10.2136/sssaj1980.03615995004400030005x
- Gillman, S. (2018). Recharging soils with carbon could make farms more productive. *HORIZON: The EU Research and Innovation Magazine*. Retrieved from https://horizon-magazine.eu/article/recharging-soils-carbon-could-make-farms-more-productive_en.html
- Gimhyeoksu, Gimwonrae, Yiyeongyu, Ogyongsig, Won-il, K., & Gimyehun. (2015). Immobilization of Lead by Biochar Bead in Agricultural Soil. 한국토양비료학회 대한민국 흙의날 제정 기념행사 및 춘계학술대회 논문 초록집 (*Korea Society of Soil Science and Fertilizer soil of the Republic of Korea enacted Day celebrations and Conference Papers chorokkip*), 189-190. Retrieved from <http://www.dbpia.co.kr/Journal/ArticleDetail/3673619>
- Ginzky, H. (2018). Marine Geo-Engineering. In M. Salomon & T. Markus (Eds.), *Handbook on Marine Environment Protection : Science, Impacts and Sustainable Management* (pp. 991-1011). Cham: Springer International Publishing.
- Ginzky, H., & Frost, R. (2014). Marine Geo-Engineering: Legally Binding Regulation under the London Protocol. *Carbon & Climate Law Review*, 8(2), 82-96. Retrieved from <http://www.jstor.org/stable/24323921>
- Giordano, L., Roizard, D., & Favre, E. (2018). Life cycle assessment of post-combustion CO₂ capture: A comparison between membrane separation and chemical absorption processes. *International Journal of Greenhouse Gas Control*, 68, 146-163. doi:<https://doi.org/10.1016/j.ijggc.2017.11.008>
- Giordano, M., Beardall, J., & Raven, J. A. (2005). CO₂ CONCENTRATING MECHANISMS IN ALGAE: Mechanisms, Environmental Modulation, and Evolution. 56(1), 99-131. doi:10.1146/annurev.arplant.56.032604.144052
- Girardin, C. A. J. (2021). Nature-based solutions can help cool the planet — if we act now. *Nature*, 191-194. Retrieved from <https://www.nature.com/articles/d41586-021-01241-2>
- Giriya Veni, V., Srinivasarao, C., Sammi Reddy, K., Sharma, K. L., & Rai, A. (2020). Chapter 26 - Soil health and climate change. In M. N. V. Prasad & M. Pietrzykowski (Eds.), *Climate Change and Soil Interactions* (pp. 751-767): Elsevier.
- Girling, W. (2020). Drax and Econic: next-generation carbon capture. *Chief Sustainability*

- Officer.* Retrieved from <https://www.csomagazine.com/sustainability/drax-and-economic-next-generation-carbon-capture>
- Gislason, S. R., Broecker, W. S., Gunnlaugsson, E., Snæbjörnsdóttir, S., Mesfin, K. G., Alfredsson, H. A., . . . Oelkers, E. H. (2014). Rapid solubility and mineral storage of CO₂ in basalt. *Energy Procedia*, 63, 4561-4574. doi:<https://doi.org/10.1016/j.egypro.2014.11.489>
- Gislason, S. R., & Oelkers, E. H. (2014). Carbon Storage in Basalt. *Science*, 344(6182), 373-374. doi:[10.1126/science.1250828](https://doi.org/10.1126/science.1250828)
- Gislason, S. R., Wolff-Boenisch, D., Stefansson, A., Oelkers, E. H., Gunnlaugsson, E., Sigurdardottir, H., . . . Fridriksson, T. (2010). Mineral sequestration of carbon dioxide in basalt: A pre-injection overview of the CarbFix project. *International Journal of Greenhouse Gas Control*, 4(3), 537-545. doi:<http://dx.doi.org/10.1016/j.ijggc.2009.11.013>
- Gitau, B. (2015). Suck it up: Carbon capture technologies may be able to remedy climate change. *Christian Science Monitor*. Retrieved from <http://www.csmonitor.com/Science/2015/0715/Suck-it-up-Carbon-capture-technologies-may-be-able-to-remedy-climate-change>
- Githinji, L. (2013). Effect of biochar application rate on soil physical and hydraulic properties of a sandy loam. *Archives of Agronomy and Soil Science*, 60(4), 457-470. Retrieved from <http://www.tandfonline.com/doi/pdf/10.1080/03650340.2013.821698>
- Gitz, V., Hourcade, J.-C., & Casis, P. (2006). The Timing of Biological Carbon Sequestration and Carbon Abatement in the Energy Sector Under Optimal Strategies Against Climate Risks. *The Energy Journal*, 27(3), 113-133. Retrieved from http://www.jstor.org/stable/23296993?cid=labsreccite&seq=1#page_scan_tab_contents
- Giuntoli, J., Agostini, A., Caserini, S., Lugato, E., Baxter, D., & Marelli, L. (2016). Climate change impacts of power generation from residual biomass. *Biomass and Bioenergy*, 89, 146-158. doi:<https://doi.org/10.1016/j.biombioe.2016.02.024>
- Gładysz, P., & Ziębik, A. (2016). Environmental analysis of bio-CCS in an integrated oxy-fuel combustion power plant with CO₂ transport and storage. *Biomass and Bioenergy*, 85, 109-118. doi:<https://doi.org/10.1016/j.biombioe.2015.12.008>
- Glaser, B., et al. (1998). Black carbon in soils: The use of benzenecarboxylic acids as specific markers. *Organic Geochemistry*, 29(4), 811 -819. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0146638098001946>
- Glaser, B., et al. (1999). Der Beitrag von pyrogenem Kohlenstoff zur organischen Substanz der Indianerschwarzerden (Terra Preta) Amazoniens. *Mitteilungen der Deutschen Bodenkundlichen Gesellschaft*, 91(1), 335-338.
- Glaser, B., et al. (2000). Black carbon in density fractions of anthropogenic soils of the brazilian amazon region. *Organic Geochemistry*, 31(7-8), 669-678.
- Glaser, B. (2007). Prehistorically modified soils of central amazonia: A model for sustainable agriculture in the twenty-first century. *Philosophical Transactions of the Royal Society B-Biological Sciences*, 362(1478), 187-196.
- Glaser, B., et al. (2014). Biochar organic fertilizers from natural resources as substitute for mineral fertilizers. *Agronomy for Sustainable Development*, 35(2), 667-678. doi:[10.1007/s13593-014-0251-4](https://doi.org/10.1007/s13593-014-0251-4)
- Glaser, B. (2014). *Soil Biogeochemistry*.
- Glaser, B. (2015). Biochar as soil amendment – Facts and myths. In *Terra Preta Sanitation 1*.
- Glaser, B., Haumaier, L., Guggenberge, G. r., & Zech, W. (1999). Black carbon in terra preta and oxisols of the brazilian amazon as estimated by benzenecarboxylic acids as specific markers. *Abstracts of Papers of the American Chemical Society*, 217.
- Glaser, B., Haumaier, L., Guggenberger, G., & Zech, W. (2001). The terra preta phenomenon: A model for sustainable agriculture in the humid tropics. *Naturwissenschaften*, 88(1),

- 37-41. Retrieved from <https://link.springer.com/article/10.1007/s001140000193>
- Glaser, B., Lehmann, J., & Zech, W. (2002). Ameliorating Physical and Chemical Properties of Highly Weathered Soils in the Tropics with Charcoal - a Review. *Biology and Fertility of Soils*, 35(4), 219-230. Retrieved from <https://link.springer.com/article/10.1007/s00374-002-0466-4>
- Glaser, B., Parr, M., Braun, C., & Kopolo, G. (2009). Biochar is carbon negative. *Nature Geoscience*, 2(1), 2. Retrieved from <http://dx.doi.org/10.1038/ngeo395>
- Glaser, R., Castello-Blindt, P. O., & Yin, J. (2013). Biomimetic Approaches to Reversible CO₂ Capture from Air. N-Methylcarbaminic Acid Formation in Rubisco-Inspired Models A2 - Suib, Steven L. In *New and Future Developments in Catalysis* (pp. 501-534). Amsterdam: Elsevier.
- Gleizer, S., Bar-On, Y. M., Ben-Nissan, R., & Milo, R. (2020). Engineering Microbes to Produce Fuel, Commodities, and Food from CO₂. *Cell Reports Physical Science*, 100223. doi:<https://doi.org/10.1016/j.xrcp.2020.100223>
- Glen, B. (2018). Grassland traps carbon but measurement tricky. Retrieved from <https://www.producer.com/2018/07/grassland-traps-carbon-but-measurement-tricky/>
- Glibert, P. M., Azanza, R., Burford, M., Furuya, K., Abal, E., Al-Azri, A., . . . Zhu, M. (2008). Ocean urea fertilization for carbon credits poses high ecological risks. *Marine Pollution Bulletin*, 56(6), 1049-1056. doi:<http://dx.doi.org/10.1016/j.marpolbul.2008.03.010>
- Glicksman, M., & Hemond, O. (2020). Taking carbon farming out to sea. *Medium*. Retrieved from <https://medium.com/@carbon180/taking-carbon-farming-out-to-sea-60a7f7626fa5>
- Glicksman, M., & Kosar, U. (2021). We can't just plant our way out of the climate crisis. (June 4). Retrieved from <https://carbon180.medium.com/we-cant-just-plant-our-way-out-of-the-climate-crisis-4383bc1fe9d2>
- GlobeNewswire. (2019). FuelCell Energy Announces New Carbon Capture Project with Drax Power Station. *Yahoo Finance*. Retrieved from <https://finance.yahoo.com/news/fuelcell-energy-announces-carbon-capture-120000326.html>
- Głodowska, M., Husk, B., Schwinghamer, T., & Smith, D. (2016). Biochar is a growth-promoting alternative to peat moss for the inoculation of corn with a pseudomonad. *Agronomy for Sustainable Development*, 36(1), 1-10. doi:[10.1007/s13593-016-0356-z](https://doi.org/10.1007/s13593-016-0356-z)
- Glover, M. (2009). Taking Biochar to Market: Some Essential Concepts for Commercial Success. In J. Lehmann & S. Joseph (Eds.), *Biochar for Environmental Management: Science and Technology* (pp. 375-392). London, UK: Earthscan.
- Glowacka, K. (2011). A review of the genetic study of the energy crop Miscanthus. *Biomass & Bioenergy*, 35(7), 2445-2454. Retrieved from https://www.researchgate.net/publication/293225913_A_review_of_the_genetic_study_of_the_energy_crop_Miscanthus
- Gnanadesikan, A., & Marinov, I. (2008). Export is not enough: nutrient cycling and carbon sequestration. *Marine Ecology Progress Series*, 364, 289-294. Retrieved from <http://www.int-res.com/abstracts/meps/v364/p289-294/>
- Gnanadesikan, A., Sarmiento, J. L., & Slater, R. D. (2003). Effects of patchy ocean fertilization on atmospheric carbon dioxide and biological production. *Global Biogeochemical Cycles*, 17(2), 1-17. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1029/2002GB001940/epdf>
- Gnanadesikan, A., Sarmiento, J. L., & Slater, R. D. (2003). Efficiency and Effects of Carbon Sequestration Through Ocean Fertilization: Results from a Model Study. In J. Gale & Y. Kaya (Eds.), *Greenhouse Gas Control Technologies - 6th International Conference* (pp. 855-859). Oxford: Pergamon.
- Gnansounou, E. (2010). Production and use of lignocellulosic bioethanol in Europe: Current situation and perspectives. *Bioresource Technology*, 101(13), 4842-4850. doi:<http://dx.doi.org/10.1016/j.biortech.2010.02.002>

- Gnansounou, E., Dauriat, A., Villegas, J., & Panichelli, L. (2009). Life cycle assessment of biofuels: Energy and greenhouse gas balances. *Bioresource Technology*, 100(21), 4919-4930. doi:<https://doi.org/10.1016/j.biortech.2009.05.067>
- Gnansounou, E., Pachón, E. R., Sinsin, B., Teka, O., Togbé, E., & Mahamane, A. (2020). Using agricultural residues for sustainable transportation biofuels in 2050: Case of West Africa. *Bioresource Technology*, 305, 123080. doi:<https://doi.org/10.1016/j.biortech.2020.123080>
- Go, A. W., Conag, A. T., Igdon, R. M. B., Toledo, A. S., & Malila, J. S. (2019). Potentials of agricultural and agro-industrial crop residues for the displacement of fossil fuels: A Philippine context. *Energy Strategy Reviews*, 23, 100-113. doi:<https://doi.org/10.1016/j.esr.2018.12.010>
- Godde, C. M., de Boer, I. J. M., Ermgassen, E. z., Herrero, M., van Middelaar, C. E., Muller, A., . . . Garnett, T. (2020). Soil carbon sequestration in grazing systems: managing expectations. *Climatic Change*, 161(3), 385-391. doi:[10.1007/s10584-020-02673-x](https://doi.org/10.1007/s10584-020-02673-x)
- Godec, M., Carpenter, S., & Coddington, K. (2017). Evaluation of Technology and Policy Issues Associated with the Storage of Carbon Dioxide via Enhanced Oil Recovery in Determining the Potential for Carbon Negative Oil. *Energy Procedia*, 114, 6563-6578. doi:<https://doi.org/10.1016/j.egypro.2017.03.1795>
- Godec, M., Koperna, G., & Gale, J. (2014). CO₂-ECBM: A Review of its Status and Global Potential. *Energy Procedia*, 63, 5858-5869. doi:<https://doi.org/10.1016/j.egypro.2014.11.619>
- Godec, M. L., Riistenberg, D., & Cyphers, S. (2017). Potential Issues and Costs Associated with Verifying CO₂ Storage During and After CO₂-EOR. *Energy Procedia*, 114, 7399-7414. doi:<https://doi.org/10.1016/j.egypro.2017.03.1870>
- Godfrey, R., Thomas, S., & Gaynor, K. (2014). *Biochar and Soil Mites: Behavioural Responses Vary with Dosage and Feedstock*. University of Toronto, Retrieved from <http://www.cgcs.utoronto.ca/Assets/CGCS+Digital+Assets/Robert+Godfrey.pdf>
- Godlewska, P., Schmidt, H. P., Ok, Y. S., & Oleszczuk, P. (2017). Biochar for composting improvement and contaminants reduction. A review. *Bioresource Technology*, 246, 193-202. doi:<https://doi.org/10.1016/j.biortech.2017.07.095>
- Goel, M. (2017). CO₂ Capture and Utilization for the Energy Industry: Outlook for Capability Development to Address Climate Change in India. In M. Goel & M. Sudhakar (Eds.), *Carbon Utilization: Applications for the Energy Industry* (pp. 3-33). Singapore: Springer Singapore.
- Goeppert, A., Czaun, M., May, R. B., Prakash, G. K. S., Olah, G. A., & Narayanan, S. R. (2011). Carbon Dioxide Capture from the Air Using a Polyamine Based Regenerable Solid Adsorbent. *Journal of the American Chemical Society*, 133(50), 20164-20167. doi:[10.1021/ja2100005](https://doi.org/10.1021/ja2100005)
- Goeppert, A., Czaun, M., Prakash, G. K. S., & Olah, G. A. (2012). Air as the renewable carbon source of the future: an overview of CO₂ capture from the atmosphere. *Energy & Environmental Science*, 5, 7833-7853. Retrieved from <http://pubs.rsc.org/en/content/articlelanding/2012/ee/c2ee21586a#!divAbstract>
- Goeppert, A., Czaun, M., Prakash, S., & Olah, G. A. (2012). Air as the renewable carbon source of the future: An overview of CO₂ capture from the atmosphere. *Energy Environ. Sci.*, 5, 7833.
- Goeppert, A., Olah, G. A., & Surya Prakash, G. K. (2018). Chapter 3.26 - Toward a Sustainable Carbon Cycle: The Methanol Economy. In *Green Chemistry* (pp. 919-962): Elsevier.
- Goeppert, A., Zhang, H., Czaun, M., May, R. B., Prakash, G. K. S., Olah, G. A., & Narayanan, S. R. (2014). Easily Regenerable Solid Adsorbents Based on Polyamines for Carbon Dioxide Capture from the Air. *ChemSusChem*, 7(5), 1386-1397. doi:[10.1002/cssc.201301114](https://doi.org/10.1002/cssc.201301114)

- Goering, L. (2017). Can carbon-sucking technologies hold back climate change? *Thomson Reuters Foundation News*. Retrieved from <http://news.trust.org/item/20171117105345-0i2yp>
- Goering, L. (2017). Carbon-sucking technology needed by 2030s, scientists warn. *Thomson Reuters Foundation News*. Retrieved from <http://news.trust.org/item/20171010175429-zazqr/>
- Goering, L. (2020). Analysis: Africa shrugs off net-zero emissions push without finance to follow. *Reuters*. Retrieved from <https://mobile.reuters.com/article/amp/idUSKBN27Z1EU>
- Goff, F., et al. (1997). *Preliminary Investigations on the Carbon Dioxide Sequestering Potential of Ultramafic Rocks*. Retrieved from <https://www.osti.gov/servlets/purl/563233>
- Goglio, P., Williams, A. G., Balta-Ozkan, N., Harris, N. R. P., Williamson, P., Huisingsh, D., . . . Tavoni, M. (2019). Advances and challenges of life cycle assessment (LCA) of greenhouse gas removal technologies to fight climate changes. *Journal of Cleaner Production*, 118896. doi:<https://doi.org/10.1016/j.jclepro.2019.118896>
- Gogoi, A., et al. (2012). Biochar: impact on climate change and soil health. *Madras Agricultural Journal*, 99(7/9), 411-419. Retrieved from <https://www.cabdirect.org/cabdirect/abstract/20123323313>
- Gohndrone, T. R. (2015). *Reaction kinetics and mechanism of the absorption of CO₂ in amine functionalized ionic liquids*. (Ph.D.). University of Notre Dame, Retrieved from <https://search.proquest.com/docview/1746943020?accountid=14496> (3732169)
- Gokila, B., & Baskar, K. (2015). Characterization of Prosopis Juliflora.L Biochar and its Influence of Soil Fertility on Maize in Alfisols. *International Journal of Plant, Animal and Environmental Sciences*, 5, 123-127. Retrieved from http://www.ijpaes.com/admin/php/uploads/761_pdf.pdf
- Gokila, B., & Baskar, K. (2015). Influence of Biochar as a Soil Amendment on Yield and Quality of Maize in Alfiosl of Thoothukudi District of Tamilnadu, India. *International Journal of Plant, Animal and Environmental Sciences*, 5(1), 152-155. Retrieved from http://www.ijpaes.com/admin/php/uploads/766_pdf.pdf
- Goldberg, D., Aston, L., Bonneville, A., Demirkanli, I., Evans, C., Fisher, A., . . . White, S. (2018). Geological storage of CO₂ in sub-seafloor basalt: the CarbonSAFE pre-feasibility study offshore Washington State and British Columbia. *Energy Procedia*, 146, 158-165. doi:<https://doi.org/10.1016/j.egypro.2018.07.020>
- Goldberg, D. S., Kent, D. V., & Olsen, P. E. (2010). Potential on-shore and off-shore reservoirs for CO₂ sequestration in Central Atlantic magmatic province basalts. *Proceedings of the National Academy of Sciences*, 107(4), 1327-1332. doi:[10.1073/pnas.0913721107](https://doi.org/10.1073/pnas.0913721107)
- Goldberg, D. S., Lackner, K. S., Han, P., Slagle, A. L., & Wang, T. (2013). Co-Location of Air Capture, Subseafloor CO₂ Sequestration, and Energy Production on the Kerguelen Plateau. *Environmental Science & Technology*, 47(13), 7521-7529. doi:[10.1021/es401531y](https://doi.org/10.1021/es401531y)
- Goldberg, D. S., Takahashi, T., & Slagle, A. L. (2008). Carbon dioxide sequestration in deep-sea basalt. *Proceedings of the National Academy of Sciences*, 105(29), 9920-9925. doi:[10.1073/pnas.0804397105](https://doi.org/10.1073/pnas.0804397105)
- Goldberg, J. S. (2015).
- Goldberg, S. (2017). Latest Carbon Capture Projects Look Encouraging. *Bloomberg View*. Retrieved from <https://www.bloomberg.com/view/articles/2017-08-08/latest-carbon-capture-projects-look-encouraging>
- Goldemberg, J. (2008). The Brazilian biofuels industry. *Biotechnology for Biofuels*, 1(1), 6. doi:[10.1186/1754-6834-1-6](https://doi.org/10.1186/1754-6834-1-6)
- Goldemberg, J., & Teixeira Coelho, S. (2013). Bioenergy: how much? *Environmental Research*

- Letters*, 8(1-3), 1-4. Retrieved from <http://iopscience.iop.org/article/10.1088/1748-9326/8/3/031005/pdf>
- Goldthorpe, S. (2017). Potential for Very Deep Ocean Storage of CO₂ Without Ocean Acidification: A Discussion Paper. *Energy Procedia*, 114, 5417-5429. doi:<https://doi.org/10.1016/j.egypro.2017.03.1686>
- Goldy, R., Andres, C., & Wendzel, V. (2015). *Second Year Results Using Biochar as a Soil Amendment in a High Tunnel, Polybag Growth System*. Retrieved from <http://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=1064&context=fvtrials#page=42>
- Goll, D. S., Ciais, P., Amann, T., Buermann, W., Chang, J., Eker, S., . . . Vicca, S. (2021). Potential CO₂ removal from enhanced weathering by ecosystem responses to powdered rock. *Nature Geoscience*. doi:[10.1038/s41561-021-00798-x](https://doi.org/10.1038/s41561-021-00798-x)
- Gollakota, S., & McDonald, S. (2012). CO₂ capture from ethanol production and storage into the Mt Simon Sandstone. *Greenhouse Gases: Science and Technology*, 2(5), 346-351. doi:[10.1002/ghg.1305](https://doi.org/10.1002/ghg.1305)
- Gollakota, S., & McDonald, S. (2014). Commercial-scale CCS Project in Decatur, Illinois – Construction Status and Operational Plans for Demonstration. *Energy Procedia*, 63, 5986-5993. doi:<https://doi.org/10.1016/j.egypro.2014.11.633>
- Golomb, D., & Pennell, S. (2010). 11 - Ocean sequestration of carbon dioxide (CO₂). In M. M. Maroto-Valer (Ed.), *Developments and Innovation in Carbon Dioxide (CO₂) Capture and Storage Technology* (Vol. 2, pp. 304-323): Woodhead Publishing.
- Goloran, J. B., Phillips, I. R., Condron, L. M., & Chen, C. (2015). Shifts in leaf nitrogen to phosphorus ratio of *Lolium rigidum* grown in highly alkaline bauxite-processing residue sand with differing age of rehabilitation and amendments. *Ecological Indicators*, 57, 32 - 40. doi:[10.1016/j.ecolind.2015.04.018](https://doi.org/10.1016/j.ecolind.2015.04.018)
- Gomez, J. D., et al. (2013). Biochar addition rate influences soil microbial abundance and activity in temperate soils. *European Journal of Soil Science*, 65(1), 28-39. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/ejss.12097/abstract>
- Gomez, L. D., Steele-King, C. G., & McQueen-Mason, S. J. (2008). Sustainable liquid biofuels from biomass: the writing's on the walls. *New Phytology*, 178(3), 473-485. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/18373653>
- Gómez Marín, N. (2014). *Aplicación de las tecnologías de pirólisis para valorización energética de biomasa y producción de biochar como sumidero de carbono (Application of pyrolysis technologies for energy recovery from biomass and production of biochar as a carbon sink)*. Unibersidad de Leon, Retrieved from <http://buleria.unileon.es/xmlui/handle/10612/3996>
- Gómez, N., Rosas, J. G., Cara, J., Martínez, O., Alburquerque, J. A., & Sánchez, M. E. (2014). Slow pyrolysis of relevant biomasses in the Mediterranean basin. Part 1. Effect of temperature on process performance on a pilot scale. *Journal of Cleaner Production*, 120, 181-190. doi:[10.1016/j.jclepro.2014.10.082](https://doi.org/10.1016/j.jclepro.2014.10.082)
- Gomez-Eyles, J. L., et al. . (2010). Effects of biochar and the earthworm Eisenia fetida on the bioavailabilityof polycyclic aromatic hydrocarbons and potentially toxic elements. *Environmental Pollution*, 159(2), 616-622. Retrieved from <http://acadiau.academia.edu/TomSizmur/Papers/1187335/>
Effects_of_biochar_and_the_earthworm_Eisenia_fetida_on_the_bioavailability_of_polycyclic_aromatic_hydrocarbons_and_potentially_toxic_elements
- Gómez-Muñoz, B., Case, S. D. C., & Jensen, L. S. (2016). Pig slurry acidification and separation techniques affect soil N and C turnover and N₂O emissions from solid, liquid and biochar fractions. *Journal of Environmental Management*, 168, 236-244. doi:<http://dx.doi.org/10.1016/j.jenvman.2015.12.018>
- Gomiero, T., Paoletti, M. G., & Pimentel, D. (2010). Biofuels: Efficiency, Ethics, and Limits to

- Human Appropriation of Ecosystem Services. *Journal of Agricultural and Environmental Ethics*, 23(5), 403-434. doi:10.1007/s10806-009-9218-x
- Gomollón-Bel, F. (2021). Alkali cations boost carbon dioxide reduction into feedstock chemical. *Chemistry World*. Retrieved from <https://www.chemistryworld.com/news/alkali-cations-boost-carbon-dioxide-reduction-into-feedstock-chemical/4013644.article>
- Gondim, R. S., et al. . (2015). Biochar to Climate Change Adaptation. *Inicio*, 19(3), 40. Retrieved from <http://www.fagro.edu.uy/agrociencia/index.php/directorio/article/view/1102>
- Gong, F., et al. (2019). Enhanced Biological Fixation of CO₂ Using Microorganisms. In M. Aresta, I. Karimi, & S. Kawi (Eds.), *An Economy Based on Carbon Dioxide and Water: Potential of Large Scale Carbon Dioxide Utilization* (pp. 359-378). Retrieved from https://link.springer.com/chapter/10.1007/978-3-030-15868-2_10
- Gong, P. H., Guan, C. T., Li, J., & Liu, C. (2014). Estimation and experiment of carbon sequestration by oysters attached to the enhancement artificial reefs in Laizhou Bay, Shandong, China. *Ying Yong Sheng Tai Xue Bao*, 25(10), 3032-3038. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/25796916>
- Gong, W., Liu, X., Xia, S., Liang, B., & Zhang, W. (2016). Abiotic reduction of trifluralin and pendimethalin by sulfides in black-carbon-amended coastal sediments. *Journal of Hazardous Materials*, 310, 125 - 134. doi:10.1016/j.jhazmat.2016.02.022
- González, M. E., Cea, M., Medina, J., González, A., Diez, M. C., Cartes, P., . . . Navia, R. (2015). Evaluation of biodegradable polymers as encapsulating agents for the development of a urea controlled-release fertilizer using biochar as support material. *Science of The Total Environment*, 505, 446 - 453. doi:10.1016/j.scitotenv.2014.10.014
- González, M. E., Cea, M., Sangaletti, N., González, A., Toro, C., Diez, M. C., . . . Navia, R. (2013). Biochar Derived from Agricultural and Forestry Residual Biomass: Characterization and Potential Application for Enzymes Immobilization. *Journal of Biobased Materials and Bioenergy*, 7(6), 724-732. Retrieved from <http://www.ingentaconnect.com/content/asp/jbmb/2013/00000007/00000006/art00010>
- González, M. E., González, A., Toro, C. A., Cea, M., Sepúlveda, N., Diez, M. C., & Navia, R. (2012). Biochar as a Renewable Matrix for the Development of Encapsulated and Immobilized Novel Added-Value Bioproducts. *Journal of Biobased Materials and Bioenergy*, 6(3), 237-248. Retrieved from https://www.researchgate.net/publication/260383463_Biochar_as_a_Renewable_Matrix_for_the_Development_of_Encapsulated_and_Immobilized_Novel_Added-Value_Bioproducts
- González, M. F., & Ilyina, T. (2016). Impacts of artificial ocean alkalization on the carbon cycle and climate in Earth system simulations. *Geophysical Research Letters*, 43(12), 6493-6502. doi:10.1002/2016GL068576
- González, M. F., Ilyina, T., Sonntag, S., & Schmidt, H. (2018). Enhanced Rates of Regional Warming and Ocean Acidification After Termination of Large-Scale Ocean Alkalization. *Geophysical Research Letters*, 45(14), 7120-7129. doi:doi:10.1029/2018GL077847
- González-Díaz, A., González-Díaz, M. O., Alcaráz-Calderón, A. M., Gibbins, J., & Lucquiaud, M. (2017). Priority projects for the implementation of CCS power generation with enhanced oil recovery in Mexico. *International Journal of Greenhouse Gas Control*, 64, 119-125. doi:<https://doi.org/10.1016/j.ijggc.2017.07.006>
- Goodall, C. (2010). *Ten Technologies to Save the Planet*: D+M Greystone.
- Goodell, J. (2020). Why Planting Trees Won't Save Us. *Rolling Stone*. Retrieved from <https://www.rollingstone.com/politics/politics-features/tree-planting-wont-stop-climate-crisis-1020500/>
- Goodwin, N. (2019). Carbon capture: a life-affirming force of action. *GreenBiz*. Retrieved from <https://www.greenbiz.com/article/carbon-capture-life-affirming-force-action>
- Gopinath, S., & Mehra, A. (2016). Carbon sequestration during steel production: Modelling the

- dynamics of aqueous carbonation of steel slag. *Chemical Engineering Research and Design*, 115, 173-181. doi:<https://doi.org/10.1016/j.cherd.2016.09.010>
- Gordillo, E. D., & Belghit, A. (2011). A downdraft high temperature steam-only solar gasifier of biomass char: A modelling study. *Biomass and Bioenergy*, 35(5), 2034 - 2043. Retrieved from <http://www.sciencedirect.com/science/article/B6V22-5282PDJ-1/2/3e8f035eefae57969ec5e644b1431556>
- Gore, E. (2020). House Appropriations Moves Much Needed Support for Clean Energy Industry. Retrieved from <https://www.edf.org/media/house-appropriations-moves-much-needed-support-clean-energy-industry>
- Gore, S., Renforth, P., & Perkins, R. (2018). The potential environmental response to increasing ocean alkalinity for negative emissions. *Mitigation and Adaptation Strategies for Global Change*. doi:10.1007/s11027-018-9830-z
- Goreau, T. (2020). Rock Powder with Biorock: Synergies & Co-Benefits. Retrieved from <http://www.soilcarbonalliance.org/2020/07/13/rock-powder-with-biorock-synergies-co-benefits/>
- Goreau, T., Larson, R. W., & Campe, J. (2015). *Geotherapy: Innovative Methods of Soil Fertility Restoration, Carbon Sequestration, and Reversing CO₂ Increase*.
- Goreau, T. J. (2015). Global Biogeochemical Restoration to Stabilize CO₂ at Safe Levels in Time to Avoid Severe Climate Change Impacts to Earth's Life Support Systems: Implications for the United Nations Framework Convention on Climate Change. In T. Goreau, R. Larson, & J. Campe (Eds.), *Geotherapy: Innovative Methods of Soil Fertility Restoration, Carbon Sequestration, and Reversing CO₂ Increase* (pp. 5-58).
- Gorsen, M. (2020). INSIGHT: Carbon Capture Tax Credits—A New Tool in the Climate Change Arsenal. Retrieved from <https://news.bloomberglaw.com/environment-and-energy/insight-carbon-capture-tax-credits-a-new-tool-in-the-climate-change-arsenal>
- Gosnell, H., et al. (2020). Climate change mitigation as a co-benefit of regenerative ranching: insights from Australia and the United States. *Interface Focus*, 10(5), 20200027. doi:doi:10.1098/rsfs.2020.0027
- Goswami, A. (2020). Why geoengineering is still a dangerous, techno-utopian dream. *Down To Earth*. Retrieved from <https://www.downtoearth.org.in/blog/climate-change/why-geoengineering-is-still-a-dangerous-techno-utopian-dream-74828>
- Gouda, N., et al. (2016). Production and characterization of bio oil and bio char from flax seed residue obtained from supercritical fluid extraction industry. *Journal of the Energy Institute*, 90(2), 265-275. doi:10.1016/j.joei.2016.01.003
- Gough, C. (2008). State of the art in carbon dioxide capture and storage in the UK: An experts' review. *International Journal of Greenhouse Gas Control*, 2(1), 155-168. doi:[https://doi.org/10.1016/S1750-5836\(07\)00073-4](https://doi.org/10.1016/S1750-5836(07)00073-4)
- Gough, C., & Boucher, P. (2013). Ethical attitudes to underground CO₂ storage: Points of convergence and potential faultlines. *International Journal of Greenhouse Gas Control*, 13, 156-167. doi:<https://doi.org/10.1016/j.ijggc.2012.12.005>
- Gough, C., Garcia-Freites, S., Jones, C., Mander, S., Moore, B., Pereira, C., . . . Welfle, A. (2018). Challenges to the use of BECCS as a keystone technology in pursuit of 1.5°C. *Global Sustainability*, 1, e5. doi:10.1017/sus.2018.3
- Gough, C., & Mander, S. (2012). Are We Nearly There Yet? A Review of Progress against CCS Roadmaps in the UK. *Energy & Environment*, 23, 367-374. Retrieved from <http://journals.sagepub.com/doi/pdf/10.1260/0958-305X.23.2-3.367>
- Gough, C., O'Keefe, L., & Mander, S. (2014). Public perceptions of CO₂ transportation in pipelines. *Energy Policy*, 70, 106-114. doi:<https://doi.org/10.1016/j.enpol.2014.03.039>
- Gough, C., & Shackley, S. (2006). Towards a Multi-Criteria Methodology for Assessment of Geological Carbon Storage Options. *Climatic Change*, 74(1), 141-174. doi:10.1007/s10584-006-0425-4

- Gough, C., & Upham, P. (2010). *Biomass energy with carbon capture and storage (BECCS): a review*. Retrieved from <http://www.tyndall.ac.uk/sites/default/files/twp147.pdf>
- Gough, C., & Upham, P. (2011). Biomass energy with carbon capture and storage (BECCS or Bio-CCS). *Greenhouse Gases: Science and Technology*, 1(4), 324-334. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/ghg.34/abstract>
- Gough, C., & Vaccari, F. P. (2015). *Synthesising existing knowledge on the feasibility of BECCS*. Retrieved from http://avoid-net-uk.cc.ic.ac.uk/wp-content/uploads/delightful-downloads/2015/07/Synthesising-existing-knowledge-on-the-feasibility-of-BECCS-AVOID-2_WPD1a_v1.pdf
- Gouvêa Taketani, R., et al. . (2013). Bacterial community composition of anthropogenic biochar and Amazonian anthroposols assessed by 16S rRNA gene 454 pyrosequencing. *Antonie van Leeuwenhoek*, 104(2), 233-242. Retrieved from <https://link.springer.com/article/10.1007/s10482-013-9942-0>
- Gov.UK. (2021). Role of biomass in achieving net zero: call for evidence. Retrieved from <https://www.gov.uk/government/consultations/role-of-biomass-in-achieving-net-zero-call-for-evidence>
- Graber, E. R. (2009, May 2009). *Biochar for 21st century challenges: Carbon sink, energy source and soil conditioner*. Paper presented at the Dahlia Gredinger International Symposium, Haifa, Israel.
- Graber, E. R., Frenkel, O., Jaiswal, A. K., & Elad, Y. (2014). How may biochar influence severity of diseases caused by soilborne pathogens? *Carbon Management*, 5(2), 169 - 183. doi:10.1080/17583004.2014.913360
- Graber, E. R., & Hadas, E. (2009). Potential Energy Generation and Carbon Savings from Waste Biomass Pyrolysis in Israel. *Annals of Environmental Science*, 3, 207-216. Retrieved from <http://openjournals.neu.edu/aes/journal/article/view/v3art6>
- Graber, E. R., Meller-Harel, Y., Kolton, M., Cytryn, E., Silber, A., Rav David, D., . . . Elad, Y. (2010). Biochar impact on development and productivity of pepper and tomato grown in fertigated soilless media. *Plant and Soil*, 337(1), 481-496. Retrieved from <http://www.springerlink.com/content/45g624l441843335/fulltext.pdf>
- Graber, E. R., Tsechansky, L., Gerst, Z., & Lew, B. (2011). High surface area biochar negatively impacts herbicide efficacy. *Plant and Soil*, 353(1), 95-106. doi:10.1007/s11104-011-1012-7
- Graber, E. R., Tsechansky, L., & Khanukov, J. (2011). Sorption, Volatilization, and Efficacy of the Fumigant 1,3-Dichloropropene in a Biochar-Amended Soil. *Soil Sci. Soc. Am. J.*, 75(4), 1365-1373. doi:10.2136/sssaj2010.0435
- Graber, E. R., Tsechansky, L., Mayzlish-Gati, E., Shema, R., & Kolai, H. (2015). A humic substances product extracted from biochar reduces Arabidopsis root hair density and length under P-sufficient and P-starvation conditions. *Plant and Soil*, 395(1), 21-30. doi:10.1007/s11104-015-2524-3
- Graf, A. (2019). Carbon Capture: Part of the Climate Problem or Solution? *The Globe Post*. Retrieved from <https://theglobeandmail.com/2019/08/14/carbon-capture-climate/>
- Graham, J. D. (2019). Carbon capture may go down in defeat as wind power takes hold. *Digital Journal*.
- Grainger, A., Iverson, L. R., Marland, G. H., & Prasad, A. (2019). Comment on “The global tree restoration potential”. *Science*, 366(6463), eaay8334. doi:10.1126/science.aay8334 %J Science
- Granatstein, D., et al. (2009). *Use of Biochar from the Pyrolysis of Waste Organic Material as a Soil Amendment*. Retrieved from Wenatchee: <http://www.ecy.wa.gov/pubs/0907062.pdf>
- Granda, C. B., Zhu, L., & Holtapple, M. T. (2007). Sustainable liquid biofuels and their environmental impact. *Environmental Progress*, 26(3), 233-250. doi:10.1002/ep.10209
- Grant, B., Smith, W. N., Desjardins, R., Lemke, R., & Li, C. (2004). Estimated N₂O and CO₂

- Emissions as Influenced by Agricultural Practices in Canada. *Climatic Change*, 65(3), 315-332. doi:10.1023/b:Clim.0000038226.60317.35
- Grant, N., Hawkes, A., Mittal, S., & Gambhir, A. (2021). Confronting mitigation deterrence in low-carbon scenarios. *Environmental Research Letters*, 16(6), 064099. doi:10.1088/1748-9326/ac0749
- Grassi, G., Cescatti, A., Matthews, R., Duveiller, G., Camia, A., Federici, S., . . . Vizzarri, M. (2019). On the realistic contribution of European forests to reach climate objectives. *Carbon Balance and Management*, 14(1), 8. doi:10.1186/s13021-019-0123-y
- Grassi, G., House, J., Dentener, F., Federici, S., den Elzen, M., & Penman, J. (2017). The key role of forests in meeting climate targets requires science for credible mitigation. *Nature Climate Change*, 7, 220. doi:10.1038/nclimate3227
- <https://www.nature.com/articles/nclimate3227#supplementary-information>
- Graves, C., Ebbesen, S. D., Mogensen, M., & Lackner, K. S. (2011). Sustainable hydrocarbon fuels by recycling CO₂ and H₂O with renewable or nuclear energy. *Renewable and Sustainable Energy Reviews*, 15(1), 1-23. doi:<http://doi.org/10.1016/j.rser.2010.07.014>
- Graves, D. (2013). A Comparison of Methods to Apply Biochar into Temperate Soils. In L. Natalia & R. Francois (Eds.), *Biochar and Soil Biota* (pp. 202-260).
- Gray, H. B. (2009). Powering the planet with solar fuel. *Nat. Chem.*, 1, 7.
- Gray, L. A., Bisonó León, A. G., Rojas, F. E., Veroneau, S. S., & Slocum, A. H. (2021). Caribbean-Wide, Negative Emissions Solution to Sargassum spp. Low-Cost Collection Device and Sustainable Disposal Method. *Phycology*, 1(1), 49-75. Retrieved from <https://www.mdpi.com/2673-9410/1/1/4>
- Green Plains, I. (2021). Green Plains Announces Additional Locations for World's Largest Carbon Capture and Sequestration Project. *Yahoo! Finance*.
- Greene, C. H., et al. (2016). Marine microalgae: Climate, energy, and food security from the sea. *Oceanography*, 29(4), 10-15.
- Greene, C. H., Huntley, M. E., Archibald, I., Gerber, L. N., Sills, D. L., Granados, J., . . . Walsh, M. J. (2017). Geoengineering, marine microalgae, and climate stabilization in the 21st century. *Earth's Future*, 5(3), 278-284. doi:10.1002/2016ef000486
- Gregory, S. J., Anderson, C. W. N., Camps Arbestain, M., & McManus, M. T. (2014). Response of plant and soil microbes to biochar amendment of an arsenic-contaminated soil. *Agriculture, Ecosystems & Environment*, 191, 133-141. doi:<http://dx.doi.org/10.1016/j.agee.2014.03.035>
- Gregory, S. J., Anderson, C. W. N., Camps-Arbestain, M., Biggs, P. J., Ganley, A. R. D., O'Sullivan, J. M., & McManus, M. T. (2015). Biochar in Co-Contaminated Soil Manipulates Arsenic Solubility and Microbiological Community Structure, and Promotes Organochlorine Degradation. *Plos One*, 10(4), e0125393. doi:10.1371/journal.pone.0125393.s005
- Greig, C., & Uden, S. (2021). The value of CCUS in transitions to net-zero emissions. *The Electricity Journal*, 34(7), 107004. doi:<https://doi.org/10.1016/j.tej.2021.107004>
- Greiner, T., et al. (2013). Seagrass restoration enhances "blue carbon" sequestration in coastal waters. *Plos One*, 14(8), e72469. Retrieved from <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0072469>
- Gresham, R. L. (2010). *Geologic Carbon Dioxide Sequestration and Subsurface Property Rights: A Legal and Economic Analysis*. (Ph.D. Dissertation/Thesis). Carnegie Mellon University, Retrieved from <https://search.proquest.com/docview/845642195?accountid=14496>
- Greydanus, S. (2011). Cadmium Adsorption of Industrially Feasible Biochars.
- Grierson, S., Strezov, V., Ellem, G., McGregor, R., & Herbertson, J. (2009). Thermal characterisation of microalgae under slow pyrolysis conditions. *Journal of Analytical and*

- Applied Pyrolysis*, 85(1-2), 118-123.
- Griffin, G. J., et al. (2015). Conversion of bagasse to char-water fuel by pyrolysis. In *Energy and Sustainability VI*.
- Griffioen, J. (2017). Enhanced weathering of olivine in seawater: The efficiency as revealed by thermodynamic scenario analysis. *Science of The Total Environment*, 575, 536-544. doi:<http://dx.doi.org/10.1016/j.scitotenv.2016.09.008>
- Griffith, D. (2015). *Characterization of Two Biochars Derived from Horse Muck and their Ability to Reduce Pathogen Transport in Soil*. University of Kentucky, Retrieved from http://uknowledge.uky.edu/bae_etds/33/
- Grignard, B., Gennen, S., Jérôme, C., Kleij, A. W., & Detrembleur, C. (2019). Advances in the use of CO₂ as a renewable feedstock for the synthesis of polymers. *Chemical Society Reviews*, 48(16), 4466-4514. doi:10.1039/C9CS00047J
- Grinberg, P., Sturgeon, R. E., Diehl, L. d. O., Bazzi, C. A., & Flores, E. M. M. (2014). Comparison of sample digestion techniques for the determination of trace and residual catalyst metal content in single-wall carbon nanotubes by inductively coupled plasma mass spectrometry. *Spectrochimica Acta Part B: Atomic Spectroscopy*. doi:10.1016/j.sab.2014.09.009
- Griscom, B. (2021). OPINION: The most promising – and proven – carbon capture technology is nature. Retrieved from <https://news.trust.org/item/20210917123229-wm4fc>
- Griscom, B. W., Adams, J., Ellis, P. W., Houghton, R. A., Lomax, G., Miteva, D. A., . . . Fargione, J. (2017). Natural climate solutions. *Proceedings of the National Academy of Sciences*, 114(44), 11645-11650. doi:10.1073/pnas.1710465114
- Grisé, M., et al. (2021). *Climate Control: International Legal Mechanisms for Managing the Geopolitical Risks of Geoengineering*. Retrieved from <https://www.rand.org/pubs/perspectives/PEA1133-1.html>
- Grönkvist, S., Möllersten, K., & Pingoud, K. (2006). Equal Opportunity for Biomass in Greenhouse Gas Accounting of CO₂ Capture and Storage: A Step Towards More Cost-Effective Climate Change Mitigation Regimes. *Mitigation and Adaptation Strategies for Global Change*, 11(5), 1083-1096. doi:10.1007/s11027-006-9034-9
- Gronnow, M. J., et al. (2012). Torrefaction/biochar production by microwave and conventional slow pyrolysis – comparison of energy properties. *GCB Bioenergy*, 5(2), 144-152. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/gcbb.12021/abstract>
- Gronwald, M., Don, A., Tiemeyer, B., & Helfrich, M. (2015). Effects of fresh and aged biochars from pyrolysis and hydrothermal carbonization on nutrient sorption in agricultural soils. *SOIL Discussions*, 2(1), 29 - 65. doi:10.5194/solid-2-29-2015-supplement
- Groot, H. (2016). *Biochar 101: An Introduction to an Ancient Product Offering Modern Opportunities*. Retrieved from http://www.dovetailinc.org/report_pdfs/2016/dovetailbiochar0316.pdf
- Grossman, J. M., O'Neill, B. E., Tsai, S. M., Liang, B. Q., Neves, E., Lehmann, J., & Thies, J. E. (2010). Amazonian Anthrosols Support Similar Microbial Communities that Differ Distinctly from Those Extant in Adjacent, Unmodified Soils of the Same Mineralogy. *Microbial Ecology*, 60(1), 192-205. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/20574826>
- Group, C. (2019). CO₂ Solutions Successfully Completes Commissioning of its First Commercial Carbon Capture Unit. *Yahoo! Finance*, (April 29). Retrieved from <https://finance.yahoo.com/news/co2-solutions-successfully-completes-commissioning-120000089.html>
- Group, C. C. A. (2021). *The Final Warning Bell: The Most Important Assessment of Humanity's* Retrieved from <https://www.ccag.earth/s/CCAG-The-Final-Warning-Bell-jayp.pdf>
- Group, D. (2018). Drax: Bioenergy carbon capture, storage pilot now underway. *Biomass*

- Magazine*. Retrieved from <http://biomassmagazine.com/articles/15780/drax-bioenergy-carbon-capture-storage-pilot-now-underway>
- Group, E., Biofuelwatch, & Stiftung, H. B. (2017). *The Big Bad Fix*. Retrieved from https://www.boell.de/sites/default/files/bigbadfix.pdf?dimension1=division_iup
- Group, T. T. C. (2010). *Roadmap for Terrestrial Carbon Science Research Needs for Carbon Management in Agriculture, Forestry and Other Land Uses*. Retrieved from http://www.terrestrialcarbon.org/site/DefaultSite/filesystem/documents/TCG_Roadmap%20for%20Terrestrial%20Carbon%20Science_100408.pdf
- Grover, H. (2021). Legislators told of possible low-emission cement production at Escalante Power Plant. *NM Political Report*. Retrieved from <https://nmpoliticalreport.com/2021/07/23/legislators-told-of-possible-low-emission-cement-production-at-escalante-power-plant/>
- Grubler, A., et al. (2018). A low energy demand scenario for meeting the 1.5 °C target and sustainable development goals without negative emission technologies. *Nature Energy*, 3, 521-527. Retrieved from <https://www.nature.com/articles/s41560-018-0172-6>
- Grundy, A. (2020). Drax's Will Gardiner on ending coal generation and the potential for providing inertia. Retrieved from <https://www.current-news.co.uk/blogs/current-chats-draxs-will-gardiner-on-ending-coal-generation-and-the-potential-for-providing-inertia>
- Grunwald, D., Kaiser, M., & Ludwig, B. (2016). Effect of biochar and organic fertilizers on C mineralization and macro-aggregate dynamics under different incubation temperatures. *Soil and Tillage Research*, 164, 11-17. doi:10.1016/j.still.2016.01.002
- Gruver, M. (2020). Wyoming lauds US carbon capture study; utility skeptical. *ABC News*. Retrieved from <https://abcnews.go.com/Technology/wireStory/wyoming-lauds-us-carbon-capture-study-utility-skeptical-72806148>
- Gu, H., & Bergman, R. (2015). *Life-cycle GHG emissions of electricity from syngas produced by pyrolyzing woody biomass*. Paper presented at the Society of Wood Science and Technology 58th International Convention, Jackson Lake Lodge, Grand Teton National Park, Wyoming, USA. http://www.fpl.fs.fed.us/documents/pdf2015/fpl_2015_gu001.pdf
- Gu, H., & Bergman, R. (2016). Life-cycle assessment of a distributed-scale thermochemical bioenergy conversion system. *Wood and Fiber Science*, 48(2), 1-13. Retrieved from [http://www.swst.org/publications/wfs/preprints/48\(2\)/WFS2415.pdf](http://www.swst.org/publications/wfs/preprints/48(2)/WFS2415.pdf)
- Gu, J., et al. (2016). Effects of biochar on the transformation and earthworm bioaccumulation of organic pollutants in soil. *Chemosphere*, 145, 431 - 437. doi:10.1016/j.chemosphere.2015.11.106
- Gu, J., Zhou, J., Ma, H., Ma, M., & Xing, M. (2015). Characteristics of camellia shell pyrolysis products and optimization of preparation parameters of activated carbon. *Transactions of the Chinese Society of Agricultural Engineering*, 31(21), 233-239. Retrieved from <http://www.ingentaconnect.com/content/tcsae/2015/00000031/00000021/art00031>
- Gu, X., Wang, Y., Lai, C., Qiu, J., Li, S., Hou, Y., . . . Zhang, S. (2014). Microporous bamboo biochar for lithium-sulfur batteries. *Nano Research*. doi:10.1007/s12274-014-0601-1
- Guadalupe, E. (2019). Engineered cyanobacteria turn carbon dioxide into petrol substitute. *Chemistry World*. Retrieved from <https://www.chemistryworld.com/news/engineered-cyanobacteria-turn-carbon-dioxide-into-petrol-substitute/3010847.article>
- Guan, C., Pan, Y., Ang, E. P. L., Hu, J., Yao, C., Huang, M.-H., . . . Huang, K.-W. (2018). Conversion of CO₂ from air into formate using amines and phosphorus-nitrogen PN3P-Ru(ii) pincer complexes. *Green Chemistry*. doi:10.1039/C8GC02186D
- Guan, X., et al. (2014). Studies on modified conditions of biochar and the mechanism for fluoride removal. *Desalination and Water Treatment*, 55(2), 440-447. doi:10.1080/19443994.2014.916230
- Guedim, Z. (2017). Net Power Natural gas Carbon Capture Demo is Almost Ready. *EdgyLabs*.

- Retrieved from <https://edgylabs.com/netpower-natural-gas-carbon-capture-demo-is-almost-ready/>
- Guenet, B., Gabrielle, B., Chenu, C., Arrouays, D., Balesdent, J., Bernoux, M., . . . Zhou, F. (2021). Can N₂O emissions offset the benefits from soil organic carbon storage? *Global Change Biology*, 27(2), 237-256. doi:<https://doi.org/10.1111/gcb.15342>
- Güereña, D., et al. (2012). Nitrogen dynamics following field application of biochar in a temperate North American maize-based production system. *Plant and Soil*, 365(1), 239-254. doi:[10.1007/s11104-012-1383-4](https://doi.org/10.1007/s11104-012-1383-4)
- Güereña, D. T., Kimetu, J., Riha, S., Neufeldt, H., & Lehmann, J. (2016). Maize productivity dynamics in response to mineral nutrient additions and legacy organic soil inputs of contrasting quality. *Field Crops Research*, 188, 113 - 120. doi:[10.1016/j.fcr.2015.12.017](https://doi.org/10.1016/j.fcr.2015.12.017)
- Güereña, D. T., Lehmann, J., Thies, J. E., Enders, A., Karanja, N., & Neufeldt, H. (2015). Partitioning the contributions of biochar properties to enhanced biological nitrogen fixation in common bean (*Phaseolus vulgaris*). *Biology and Fertility of Soils*, 51(4), 479-491. doi:[10.1007/s00374-014-0990-z](https://doi.org/10.1007/s00374-014-0990-z)
- Guggenberger, G., et al. (2008). Storage and mobility of black carbon in permafrost soils of the forest tundra ecotone in northern siberia. *Global Change Biology*, 14(6), 1367-1381. Retrieved from [http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2486.2008.01568.x/abstract](http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2486.2008.01568.x/)
- Guimarães, G. G. F., Paiva, D. M., Cantarutti, R. B., Mattieloa, E. M., & Reis, E. L. (2015). Volatilization of Ammonia Originating from Urea Treated with Oxidized Charcoal. *J. Braz. Chem. Soc.*, 1-8. Retrieved from <http://jbcs.sbn.org.br/imagebank/pdf/150147AR.pdf>
- Guinto, M. M. (2015). *Pili (Canarium ovatum) Shells Biochar as Home-Site Water Purification System For Water Contaminated with Insecticide (Malathion)*. Retrieved from http://www.biochar-international.org/sites/default/files/Full_report_Pili.pdf
- Gul, S. (2014). Sustaining soil carbon in bioenergy cropping systems of northern temperate regions. *CAB Reviews: Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources*, 9(026), 1-23. doi:[10.1079/pavsnnr20149026](https://doi.org/10.1079/pavsnnr20149026)
- Gul, S., Whalen, J. K., Thomas, B. W., Sachdeva, V., & Deng, H. (2015). Physico-chemical properties and microbial responses in biochar-amended soils: Mechanisms and future directions. *Agriculture, Ecosystems & Environment*, 206, 46 - 59. doi:[10.1016/j.agee.2015.03.015](https://doi.org/10.1016/j.agee.2015.03.015)
- Gulyás, M., Fuchs, M., Kocsis, I., & Füleky, G. (2014). Effect of the soil treated with biochar on the rye-grass in laboratory experimentAbstract. *Acta Universitatis Sapientiae, Agriculture and Environment*, 6(1). doi:[10.2478/ausae-2014-0009](https://doi.org/10.2478/ausae-2014-0009)
- Gulyás, M., Fuchs, M., Rétháti, G., Holes, A., Varga, Z., Kocsis, I., & Füleky, G. (2015). Effect of solid pyrolysis products on selected soil properties in a laboratory experiment. In.
- Gunasekara, W. A. K. M., & Ganhenegé, M. Y. U. (2015). *Utilization of Treated Sugarcane Bagasse for Heavy Metal Trapping*. Paper presented at the Proceedings Peradeniya University International Research Sessions.
- Gundale, M. J., & DeLuca, T. H. (2006). Temperature and source material influence ecological attributes of ponderosa pine and douglas-fir charcoal. *Forest Ecology and Management*, 231(1-3), 86-93. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0378112706003033>
- Gundale, M. J., & DeLuca, T. H. (2007). Charcoal effects on soil solution chemistry and growth of koeleria macrantha in the ponderosa pine/Douglas-fir ecosystem. *Biology and Fertility of Soils*, 43(3), 303-311. Retrieved from <https://www.frames.gov/catalog/187>
- Gundale, M. J., Nilsson, M.-C., Pluchon, N., & Wardle, D. A. (2015). The effect of biochar management on soil and plant community properties in a boreal forest Running Title: Biochar impacts in a boreal forest. *GCB Bioenergy*, 8(4), 777-789. doi:[10.1111/gcbb.12345](https://doi.org/10.1111/gcbb.12345)

gccb.12274

- Gundersen, C. B., Andersen, T., Vogt, R. D., & Allison, S. D. (2018). Growth response of environmental bacteria under exposure to nitramines from CO₂-capture. *International Journal of Greenhouse Gas Control*, 79, 248-251. doi:<https://doi.org/10.1016/j.ijggc.2018.11.003>
- Gunes, A., Inal, A., Sahin, O., Taskin, M. B., Atakol, O., & Yilmaz, N. (2015). Variations in mineral element concentrations of poultry manure biochar obtained at different pyrolysis temperatures, and their effects on crop growth and mineral nutrition. *Soil Use and Management*, n/a - n/a. doi:[10.1111/sum.12205](https://doi.org/10.1111/sum.12205)
- Gunes, A., Inal, A., Taskin, M. B., Sahin, O., Kaya, E. C., & Atakol, A. (2014). Effect of phosphorus-enriched biochar and poultry manure on growth and mineral composition of lettuce (*Lactuca sativa* L. cv.) grown in alkaline soil. *Soil Use and Management*. doi:[10.1111/sum.12114](https://doi.org/10.1111/sum.12114)
- Gunnarsson, I., Aradóttir, E. S., Oelkers, E. H., Clark, D. E., Arnarson, M. P., Sigfusson, B., . . . Gíslason, S. R. (2018). The rapid and cost-effective capture and subsurface mineral storage of carbon and sulfur at the CarbFix2 site. *International Journal of Greenhouse Gas Control*, 79, 117-126. doi:<https://doi.org/10.1016/j.ijggc.2018.08.014>
- Gunter, W. D. e. a. (2004). The role of hydrogeological and geochemical trapping in sedimentary basins for secure geological storage of carbon dioxide. *Geological Society, London, Special Publications*, 233(1), 129. Retrieved from <http://dx.doi.org/10.1144/GSL.SP.2004.233.01.09>
- Gunther, M. (2012). Rethinking Carbon Dioxide: From a Pollutant to an Asset. (February 23). Retrieved from http://e360.yale.edu/features/geoengineering_carbon_dioxide_removal_technology_from_pollutant_to_asset
- Guntzer, F., Keller, C., & Meunier, J.-D. (2012). Benefits of plant silicon for crops: a review. *Agronomy for Sustainable Development*, 32(1), 201-213. doi:[10.1007/s13593-011-0039-8](https://doi.org/10.1007/s13593-011-0039-8)
- Guo, F., & Fang, Z. (2014). Shape-controlled Synthesis of Activated Bio-chars by Surfactant-templated Ionothermal Carbonization in Acidic Ionic Liquid and Activation with Carbon Dioxide. *BioResources*, 9(2), 3369-3383. Retrieved from http://ojs.cnr.ncsu.edu/index.php/BioRes/article/view/BioRes_09_2_3369_Guo_Fang_Biochars_Carbonization_carbon_dioxide/2750
- Guo, J., & Chen, B. (2014). New Insights on the Molecular Mechanism for the Recalcitrance of Biochars: Interactive Effects of Carbon and Silicon Components. *Environmental Science & Technology*, 48(16), 9103-9112. doi:[10.1021/es405647e](https://doi.org/10.1021/es405647e)
- Guo, M., et al. . (2015). *SSSA Special Publication Agricultural and Environmental Applications of Biochar: Advances and Barriers*Introduction to Biochar as an Agricultural and Environmental Amendment. Soil Science Society of America, Inc.
- Guo, M. (2015). *SSSA Special Publication Agricultural and Environmental Applications of Biochar: Advances and Barriers*Pyrogenic Carbon in Terra Preta Soils: Soil Science Society of America, Inc.
- Guo, M., Song, W., & Buhain, J. (2015). Bioenergy and biofuels: History, status, and perspective. *Renewable and Sustainable Energy Reviews*, 42, 712-725. doi:<https://doi.org/10.1016/j.rser.2014.10.013>
- Guo, S., et al. (2015). 生物炭对水中Pb(II)和Zn(II)的吸附特征 (Adsorption of Pb(II),Zn(II) from aqueous solution by biochars). *Chinese Journal of Environmental Engineering*, 9(7), 3215-3222. Retrieved from http://www.cjee.ac.cn/teepc_cn/ch/reader/view_abstract.aspx?file_no=20150723
- Guo, W. J., et al. (2013). Adsorption of Cd²⁺ on biochar from aqueous solution. *European PubMed Central*, 39(4), 3716-3721. Retrieved from <http://europepmc.org/abstract/med/>

- Guo, X., et al. . (2014). Ameliorating effects of biochar application on degraded vegetable soil. *Journal of Southern Agriculture*, 45(1), 67-71. Retrieved from <https://www.cabdirect.org/cabdirect/abstract/20143395502>
- Guo, Y., Ashworth, P., Sun, Y., Yang, B., Yang, J., & Chen, J. (2019). The influence of narrative versus statistical evidence on public perception towards CCS in China: Survey results from local residents in Shandong and Henan provinces. *International Journal of Greenhouse Gas Control*, 84, 54-61. doi:<https://doi.org/10.1016/j.ijggc.2019.02.021>
- Guo, Y., Tang, H., Li, G., & Xie, D. (2013). Effects of Cow Dung Biochar Amendment on Adsorption and Leaching of Nutrient from an Acid Yellow Soil Irrigated with Biogas Slurry. *Water, Air, & Soil Pollution*, 225(1), 1820. doi:[10.1007/s11270-013-1820-x](https://doi.org/10.1007/s11270-013-1820-x)
- Guo, Y.-I., Wang, D.-d., Zheng, J.-Y., Zhao, S.-W., & Zhang, X.-C. (2015). Effect of Biochar on Soil Greenhouse Gas Emissions in Semi-arid Region. *Huan jing ke xue= Huanjing kexue / [bian ji, Zhongguo ke xue yuan huan jing ke xue wei yuan hui "Huan jing ke xue" bian ji wei yuan hui.]*, 36(9), 3393-3400. Retrieved from <http://europepmc.org/abstract/med/26717703>
- Guo, Y. S. (2015). *Poinsettia and Easter Lily Growth and Development Responses to Root Substrate Containing Biochar*. Texas A & M University, Retrieved from <http://oaktrust.tamu.edu/handle/1969.1/153944?show=full>
- Guocheng, L. (2014). 生物炭对水体和土壤环境中重金属铅的固持(*Biochar for water and soil environment of retaining Pb*). 中国海洋大学 (China Ocean University), Retrieved from <http://cdmd.cnki.com.cn/Article/CDMD-10423-1014203973.htm>
- Gupta, A., & Paul, A. (2019). Carbon capture and sequestration potential in India: A comprehensive review. *Energy Procedia*, 160, 848-855. doi:<https://doi.org/10.1016/j.egypro.2019.02.148>
- Gupta, D. (2021). Net zero emissions by 2050—a new approach needed. *Financial Express (India)*. Retrieved from <https://www.financialexpress.com/opinion/net-zero-emissions-by-2050-a-new-approach-needed/2265621/>
- Gupta, D. K. (2020). Role of Biochar in Carbon Sequestration and Greenhouse Gas Mitigation. In J. Singh, et al. (Ed.), *Biochar Applications in Agriculture and Environment Management* (pp. 141-166).
- Gupta, R. K., Dubey, M., Kharel, P., Zhengrong, G., & Fan, Q. H. (2015). Biochar activated by oxygen plasma for supercapacitors. *Journal of Power Sources*, 274, 1300 - 1305. doi:[10.1016/j.jpowsour.2014.10.169](https://doi.org/10.1016/j.jpowsour.2014.10.169)
- Gupta, S., Kashani, A., Mahmood, A. H., & Han, T. (2021). Carbon sequestration in cementitious composites using biochar and fly ash – Effect on mechanical and durability properties. *Construction and Building Materials*, 291, 123363. doi:<https://doi.org/10.1016/j.conbuildmat.2021.123363>
- Gupta, S., Kua, H. W., & Low, C. Y. (2018). Use of biochar as carbon sequestering additive in cement mortar. *Cement and Concrete Composites*, 87, 110-129. doi:<https://doi.org/10.1016/j.cemconcomp.2017.12.009>
- Gupta, V., Mobley, P., Tanthana, J., Cody, L., Barbee, D., Lee, J., . . . Lail, M. (2021). Aerosol emissions from water-lean solvents for post-combustion CO₂ capture. *International Journal of Greenhouse Gas Control*, 106, 103284. doi:<https://doi.org/10.1016/j.ijggc.2021.103284>
- Gurevich Messina, L. I., Bonelli, P. R., & Cukierman, A. L. (2015). Copyrolysis of peanut shells and cassava starch mixtures: Effect of the components proportion. *Journal of Analytical and Applied Pyrolysis*, 113, 508-517. doi:[10.1016/j.jaap.2015.03.017](https://doi.org/10.1016/j.jaap.2015.03.017)
- Gurtler, J. B., et al. (2013). Inactivation of *E. coli* O157:H7 in Cultivable Soil by Fast and Slow Pyrolysis-Generated Biochar. *Foodborne Pathogens and Disease*, 11(3), 215-223.

- Retrieved from <https://www.liebertpub.com/doi/abs/10.1089/fpd.2013.1631>
- Gurudayal, Bullock, J., Sranko, D. F., Towle, C. M., Lum, Y., Hettick, M., . . . Ager, J. (2017). Efficient solar-driven electrochemical CO₂ reduction to hydrocarbons and oxygenates. *Energy & Environmental Science*. doi:10.1039/C7EE01764B
- Gurwick, N. P., et al. (2012). *The Scientific Basis for Biochar as a Climate Change Mitigation Strategy: Does it Measure Up?* Retrieved from http://www.ucsusa.org/assets/documents/global_warming/Biochar-Climate-Change-Mitigation-Strategy-Does-It-Measure-Up.pdf
- Gurwick, N. P., et al. . (2013). A Systematic Review of Biochar Research, with a Focus on Its Stability in situ and Its Promise as a Climate Mitigation Strategy. *Plos One*, 8, 1-9. Retrieved from <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0075932>
- Gusca, J., & Blumberga, D. (2011). Simplified dynamic life cycle assessment model of CO₂ compression, transportation and injection phase within carbon capture and storage. *Energy Procedia*, 4, 2526-2532. doi:<https://doi.org/10.1016/j.egypro.2011.02.149>
- Güssow, K., Oschlies, A., Bickel, A., Rehdanz, K., & Rickels, W. (2010). Ocean iron fertilization: Time to lift the research taboo. In *Climate Change Geoengineering: Philosophical Perspectives, Legal Issues, and Governance Frameworks* (pp. 242-262).
- Güssow, K., Proelss, A., Oschlies, A., Rehdanz, K., & Rickels, W. (2010). Ocean iron fertilization: Why further research is needed. *Marine Policy*, 34(5), 911-918. doi:<http://dx.doi.org/10.1016/j.marpol.2010.01.015>
- Gustafsson, K. (2018). Spearheading negative emissions in Stockholm's multi-energy system. In M. Fridahl (Ed.), *Bioenergy with carbon capture and storage: From global potentials to domestic realities* (pp. 68-87).
- Gustafsson, K., Sadegh-Vaziri, R., Grönkvist, S., Levihn, F., & Sundberg, C. (2021). BECCS with combined heat and power: Assessing the energy penalty. *International Journal of Greenhouse Gas Control*, 108, 103248. doi:<https://doi.org/10.1016/j.ijggc.2020.103248>
- Gustafsson, M. (2013). *Pyrolysis for heat production - Biochar the primary byproduct.* (Master Thesis). University of Gävle, Retrieved from <http://www.diva-portal.org/smash/record.jsf?pid=diva2:655188>
- Gustafsson, O., Bucheli, T. D., Kukulska, Z., Andersson, M., Largeau, C., & Rouzaud, J. N. (2001). Evaluation of a protocol for the quantification of black carbon in sediments. *Global Biogeochemical Cycles*, 15(4), 881-890.
- Gustin, G. (2017). Death by 1,000 Cuts: Why the Forest Carbon Sink Is Disappearing. *Inside Climate News*, (September 28). Retrieved from <https://insideclimatenews.org/news/28092017/tropical-forest-logging-fires-carbon-sink-climate-change-study>
- Gustin, G. (2021). Politicians Are Considering Paying Farmers to Store Carbon. But Some Environmental and Agriculture Groups Say It's Greenwashing. *Inside Climate News*. Retrieved from <https://insideclimatenews.org/news/16042021/politicians-are-considering-paying-farmers-to-store-carbon-but-some-environmental-and-agriculture-groups-say-its-greenwashing/>
- Gustin, G. (2021). Trees Fell Faster in the Years Since Companies and Governments Promised to Stop Cutting Them Down. *Inside Climate News*. Retrieved from https://insideclimatenews.org/news/19052021/deforestation-climate-change-forest-trends-companies-governments/?utm_source=InsideClimate+News&utm_campaign=47014ccb88-&utm_medium=email&utm_term=0_29c928ffb5-47014ccb88-326466933
- Gutiérrez-Castorena, E. V., Gutiérrez-Castorena, M. d. C., & Ortiz-Solorio, C. A. (2015). Carbon capture and pedogenetic processes by change of moisture regime and conventional tillage in Aridisols. *Soil and Tillage Research*, 150, 114-123. doi:<https://doi.org/10.1016/j.still.2015.02.001>

- Gutknecht, V., Snæbjörnsdóttir, S. Ó., Sigfússon, B., Aradóttir, E. S., & Charles, L. (2018). Creating a carbon dioxide removal solution by combining rapid mineralization of CO₂ with direct air capture. *Energy Procedia*, 146, 129-134. doi:<https://doi.org/10.1016/j.egypro.2018.07.017>
- Gützloe, A., Thumm, U., & Lewandowski, I. (2014). Influence of climate parameters and management of permanent grassland on biogas yield and GHG emission substitution potential. *Biomass and Bioenergy*, 64, 175-189. doi:<https://doi.org/10.1016/j.biombioe.2014.03.024>
- Guzman, M. S., Rengasamy, K., Binkley, M. M., Jones, C., Ranaivoarisoa, T. O., Singh, R., . . . Bose, A. (2019). Phototrophic extracellular electron uptake is linked to carbon dioxide fixation in the bacterium *Rhodopseudomonas palustris*. *Nature Communications*, 10(1), 1355. doi:10.1038/s41467-019-09377-6
- Gwenzi, W., Chaukura, N., Mukome, F. N. D., Machado, S., & Nyamasoka, B. (2015). Biochar production and applications in sub-Saharan Africa: Opportunities, constraints, risks and uncertainties. *Journal of Environmental Management*, 150, 250-261. doi:10.1016/j.jenvman.2014.11.027
- Gwenzi, W., Musarurwa, T., Nyamugafata, P., Chaukura, N., Chaparadza, A., & Mbera, S. (2014). Adsorption of Zn²⁺ and Ni²⁺ in a binary aqueous solution by biosorbents derived from sawdust and water hyacinth (*Eichhornia crassipes*). *Water Science & Technology*, 70(8), 1419. doi:10.2166/wst.2014.391
- Gwenzi, W., Muzava, M., Mapanda, F., & Tauro, T. P. (2015). Comparative short-term effects of sewage sludge and its biochar on soil properties, maize growth and uptake of nutrients on a tropical clay soil in Zimbabwe. In.
- Gysi, A. P., et al. (2012). Mineralogical aspects of CO₂ sequestration during hydrothermal basalt alteration — An experimental study at 75 to 250°C and elevated pCO₂. *Chemical Geology*, 306-307, 146-159. Retrieved from https://www.researchgate.net/publication/236952193_Mineralogical_aspects_of_CO2_sequestration_during_hydrothermal_basalt_alteration_-_An_experimental_study_at_75_to_250C_and_elevated_pCO2
- Gysi, A. P., & Stefansson, A. (2008). Numerical modelling of CO₂-water-basalt interaction. *Mineralogical Magazine*, 72(1), 55-59. Retrieved from https://www.researchgate.net/profile/Alexander_Gysi/publication/263119633_Numerical_modelling_of_CO2-water-basalt_interaction/links/54adae130cf24aca1c6f6aaa.pdf
- Gysi, A. P., & Stefánsson, A. (2011). CO₂-water-basalt interaction. Numerical simulation of low temperature CO₂ sequestration into basalts. *Geochimica Et Cosmochimica Acta*, 75(17), 4728-4751. doi:<https://doi.org/10.1016/j.gca.2011.05.037>
- Gysi, A. P., & Stefánsson, A. (2012). CO₂-water-basalt interaction. Low temperature experiments and implications for CO₂ sequestration into basalts. *Geochimica Et Cosmochimica Acta*, 81, 129-152. doi:<https://doi.org/10.1016/j.gca.2011.12.012>
- Gysi, A. P., & Stefánsson, A. (2012). Mineralogical aspects of CO₂ sequestration during hydrothermal basalt alteration — An experimental study at 75 to 250°C and elevated pCO₂. *Chemical Geology*, 306-307, 146-159. doi:<https://doi.org/10.1016/j.chemgeo.2012.03.006>
- Haas, T. J., Nimlos, M. R., & Donohoe, B. S. (2009). Real-Time and Post-reaction Microscopic Structural Analysis of Biomass Undergoing Pyrolysis. *Energy Fuels*, 23(7), 3810-3817. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/ef900201b>
- Haberl, H. (2015). Competition for land: A sociometabolic perspective. *Ecological Economics*, 119, 424-431. doi:<https://doi.org/10.1016/j.ecolecon.2014.10.002>
- Haberl, H. (2016). The Growing Role of Biomass for Future Resource Supply—Prospects and Pitfalls. In J. Dewulf, S. De Meester, & R. A. F. Alvarenga (Eds.), *Sustainability Assessment of Renewables-Based Products* (pp. 1-18).

- Haberl, H., Beringer, T., Bhattacharya, S. C., Erb, K.-H., & Hoogwijk, M. (2010). The global technical potential of bio-energy in 2050 considering sustainability constraints. *Current Opinion in Environmental Sustainability*, 2(5–6), 394-403. doi:<http://dx.doi.org/10.1016/j.cosust.2010.10.007>
- Haberl, H., Erb, K.-H., Krausmann, F., Bondeau, A., Lauk, C., Müller, C., . . . Steinberger, J. K. (2011). Global bioenergy potentials from agricultural land in 2050: Sensitivity to climate change, diets and yields. *Biomass and Bioenergy*, 35(12), 4753-4769. doi:<http://dx.doi.org/10.1016/j.biombioe.2011.04.035>
- Haberl, H., Sprinz, D., Bonazountas, M., Cocco, P., Desaubies, Y., Henze, M., . . . Searchinger, T. (2012). Correcting a fundamental error in greenhouse gas accounting related to bioenergy. *Energy Policy*, 45(Supplement C), 18-23. doi:<https://doi.org/10.1016/j.enpol.2012.02.051>
- Haberland, G. T., & Lombardi, K. C. (2013). Organic Matter and Carbon in a Cambisoil After Incorporation of Biochar for Eucalyptus benthamii. *Functions of Natural Organic Matter in Changing Environment*, 1017-1020. Retrieved from http://download.springer.com/static/pdf/196/chp%253A10.1007%252F978-94-007-5634-2_188.pdf?originUrl=http%3A%2F%2Flink.springer.com%2Fchapter%2F10.1007%2F978-94-007-5634-2_188&token2=exp=1487291283~acl=%2Fstatic%2Fpdf%2F196%2Fchp%25253A10.1007%25252F978-94-007-5634-2_188.pdf%3ForiginUrl%3Dhttp%253A%252F%252Flink.springer.com%252Fchapter%252F10.1007%252F978-94-007-5634-2_188*~hmac=ce8d6e4b6d9f66e589c55f4b50fea056120768da79977fd939c072233d1573e4
- Hacatoglu, K., James McLellan, P., & Layzell, D. B. (2011). Feasibility study of a Great Lakes bioenergy system. *Bioresource Technology*, 102(2), 1087-1094. doi:<10.1016/j.biortech.2010.08.063>
- Hadfield, M. G. (2011). Expected and observed conditions during the SAGE iron addition experiment in Subantarctic waters. *Deep Sea Research Part II: Topical Studies in Oceanography*, 58(6), 764-775. doi:<https://doi.org/10.1016/j.dsrr.2010.10.016>
- Hadi, A., et al. (2014). *DESAIN INSTALASI PIROLISIS LIMBAH PERTANIAN DALAM RANGKA MINIMALISASI EMISI GAS RUMAH KACA DARI LAHAN BASAH (DESIGN INSTALLATION PYROLYSIS OF AGRICULTURAL WASTE MINIMIZATION IN ORDER TO GREENHOUSE GAS EMISSIONS FROM WETLAND)*. Paper presented at the Prosiding Seminar Nasional Sains Dan Teknologi Fakultas Teknik (Proceedings of the National Seminar on Science and Technology, Faculty of Engineering).
- Hadi, A., et al. (2015). Wetlands Wastes Management Can Minimize CH₄ and N₂O in Indonesia. *Journal of Wetlands Environmental Management*, 3(1), 35-40. Retrieved from <http://ijwem.unlam.ac.id/index.php/ijwem/article/view/45>
- Hadi Mosleh, M., Sedighi, M., Babaei, M., & Turner, M. (2019). 16 - Geological sequestration of carbon dioxide. In T. M. Letcher (Ed.), *Managing Global Warming* (pp. 487-500): Academic Press.
- Hadjittofi, L., Charalambous, S., & Pashalidis, I. (2016). Removal of trivalent samarium from aqueous solutions by activated biochar derived from cactus fibres. *Journal of Rare Earths*, 34(1), 99 - 104. doi:[10.1016/s1002-0721\(14\)60584-6](10.1016/s1002-0721(14)60584-6)
- Hadjittofi, L., & Pashalidis, I. (2014). Uranium sorption from aqueous solutions by activated biochar fibres investigated by FTIR spectroscopy and batch experiments. *Journal of Radioanalytical and Nuclear Chemistry*. doi:<10.1007/s10967-014-3868-5>
- Hadjittofi, L., & Pashalidis, I. (2015). Thorium removal from acidic aqueous solutions by activated biochar derived from cactus fibres. In.
- Hadjittofi, L., Prodromou, M., & Pashalidis, I. (2014). Activated Biochar Derived from Cactus Fibres – Preparation, Characterization and Application on Cu(II) Removal from Aqueous Solutions. *Bioresource Technology*, 159, 460-464. Retrieved from <http://>

www.sciencedirect.com/science/article/pii/S0960852414003782

- Ha-Duong, M. (2015). Unmanaged solid and liquid wastes from rice husk gasification. *HAL-IMAGES, la collection des images scientifiques de l'ENPC (HAL-IMAGES, the collection of scientific images ENPC)*. Retrieved from <https://hal.inria.fr/HAL-IMAGE/mehdihal-01101170v1>
- Ha-Duong, M., Nadaï, A., & Campos, A. S. (2009). A survey on the public perception of CCS in France. *International Journal of Greenhouse Gas Control*, 3(5), 633-640. doi:<https://doi.org/10.1016/j.ijggc.2009.05.003>
- Haefele, S. M., et al. . (2011). Effects and fate of biochar from rice residues in rice-based systems. *Field Crops Research*, 121(3), 430-440. doi:[Field Crops Research](#)
- Hagemann, N., Joseph, S., Schmidt, H.-P., Kammann, C. I., Harter, J., Borch, T., . . . Kappler, A. (2017). Organic coating on biochar explains its nutrient retention and stimulation of soil fertility. *Nature Communications*, 8(1), 1089. doi:[10.1038/s41467-017-01123-0](https://doi.org/10.1038/s41467-017-01123-0)
- Hagner, M., Hallman, S., Jauhainen, L., Kemppainen, R., Rämö, S., Tiilikala, K., & Setälä, H. (2015). Birch (*Betula spp.*) wood biochar is a potential soil amendment to reduce glyphosate leaching in agricultural soils. *Journal of Environmental Management*, 164, 46 - 52. doi:[10.1016/j.jenvman.2015.08.039](https://doi.org/10.1016/j.jenvman.2015.08.039)
- Hahn, A., Szarka, N., & Thrän, D. (2020). German Energy and Decarbonization Scenarios: "Blind Spots" With Respect to Biomass-Based Carbon Removal Options. *Frontiers in Energy Research*, 8(130). doi:[10.3389/fenrg.2020.00130](https://doi.org/10.3389/fenrg.2020.00130)
- Hahn, A., Szarka, N., & Thrän, D. (2020). German Energy and Decarbonization Scenarios: "Blind Spots" With Respect to Biomass-Based Carbon Removal Options. *Frontiers in Energy Research*, 8(130). doi:[10.3389/fenrg.2020.00130](https://doi.org/10.3389/fenrg.2020.00130)
- Haider, G., Koyro, H.-W., Azam, F., Steffens, D., Müller, C., & Kammann, C. (2014). Biochar but not humic acid product amendment affected maize yields via improving plant-soil moisture relations. *Plant and Soil*. doi:[10.1007/s11104-014-2294-3](https://doi.org/10.1007/s11104-014-2294-3)
- Haider, M. B., Jha, D., Balathanigaimani, M. S., & Kumar, R. (2018). Modelling and simulation of CO₂ removal from shale gas using deep eutectic solvents. *Journal of Environmental Chemical Engineering*. doi:<https://doi.org/10.1016/j.jece.2018.10.061>
- Haije, W., & Geerlings, H. (2011). Efficient production of solar fuel using large scale production technologies. *Environ. Sci. Technol.*, 45, 8609.
- Haiken Sclaric, S. M. (2021). *A Bioengineering Roadmap for Negative Emissions Technologies*. (M.Sc.). MIT, Retrieved from <https://www.media.mit.edu/posts/a-bioengineering-roadmap-for-negative-emissions-technologies-master-s-thesis/>
- Haikola, S., Anshelm, J., & Hansson, A. (2021). Limits to climate action - Narratives of bioenergy with carbon capture and storage. *Political Geography*, 88, 102416. doi:<https://doi.org/10.1016/j.polgeo.2021.102416>
- Haikola, S., Hansson, A., & Anshelm, J. (2019). From polarization to reluctant acceptance–bioenergy with carbon capture and storage (BECCS) and the post-normalization of the climate debate. *Journal of Integrative Environmental Sciences*, 16(1), 1-25. doi:[10.1080/1943815X.2019.1579740](https://doi.org/10.1080/1943815X.2019.1579740)
- Haikola, S., Hansson, A., & Fridahl, M. (2018). Views of BECCS Among Modelers and Policymakers. In M. Fridahl (Ed.), *Bioenergy with carbon capture and storage: From global potentials to domestic realities* (pp. 17-29).
- Haikola, S., Hansson, A., & Fridahl, M. (2019). Map-makers and navigators of politicised terrain: Expert understandings of epistemological uncertainty in integrated assessment modelling of bioenergy with carbon capture and storage. *Futures*, 114, 102472. doi:<https://doi.org/10.1016/j.futures.2019.102472>
- Hailey, L. E., & Percival, G. C. (2015). The Influence of long term flooding on tree biology and approaches to flood stress alleviation and management. *Arboricultural Journal*, 37(3),

135 - 149. doi:10.1080/03071375.2015.1075333

- Hair, C. (2021). Direct Air Capture of CO₂ Is Suddenly a Carbon Offset Option. *Scientific American*. Retrieved from <https://www.scientificamerican.com/article/direct-air-capture-of-co2-is-suddenly-a-carbon-offset-option/>
- Hakala, K., Kontturi, M., & Pahkala, K. (2009). Field biomass as global energy source. *Agricultural and Food Science*, 18(3-4), 347-365. Retrieved from <https://journal.fi/afs/article/view/5950/5148>
- Halder, G., Khan, A. A., & Dhawane, S. (2015). Fluoride sorption onto a steam activated biochar derived from Cocos nucifera shell. *CLEAN - Soil, Air, Water*, n/a - n/a. doi:10.1002/clen.201400649
- Halder, P., et al. (2015). Stakeholders' Perceptions of Bioenergy—Global Coverage and Policy Implications. In B. S. Reddy & S. Ulgiati (Eds.), *Energy Security and Development* (pp. 377-391): Springer.
- Hale, B., & Dilling, L. (2011). Geoengineering, Ocean Fertilization, and the Problem of Permissible Pollution. *Science, Technology, & Human Values*, 36(2), 190-212. Retrieved from <http://journals.sagepub.com/doi/pdf/10.1177/0162243910366150>
- Hale, L., & Crowley, D. (2014). *DNA Extraction from Biochar Amended Soils*. Paper presented at the ASA, CSSA, SSSA 2014 Annual Meeting. <https://dl.sciencesocieties.org/publications/meetings/download/pdf/2014am/86318>
- Hale, L., & Crowley, D. (2015). DNA extraction methodology for biochar-amended sand and clay. *Biology and Fertility of Soils*. doi:10.1007/s00374-015-1020-5
- Hale, L., Luth, M., & Crowley, D. (2015). Biochar characteristics relate to its utility as an alternative soil inoculum carrier to peat and vermiculite. *Soil Biology and Biochemistry*, 81, 228 - 235. doi:10.1016/j.soilbio.2014.11.023
- Hale, L., Luth, M., Kenney, R., & Crowley, D. (2014). Evaluation of pinewood biochar as a carrier of bacterial strain Enterobacter cloacae UW5 for soil inoculation. *Applied Soil Ecology*, 84, 192 - 199. doi:10.1016/j.apsoil.2014.08.001
- Hale, M. S., Rivkin, R. B., Matthews, P., Agawin, N. S. R., & Li, W. K. W. (2006). Microbial response to a mesoscale iron enrichment in the NE subarctic Pacific: Heterotrophic bacterial processes. *Deep Sea Research Part II: Topical Studies in Oceanography*, 53(20–22), 2231-2247. doi:<http://dx.doi.org/10.1016/j.dsr2.2006.05.039>
- Hale, S. E., et al. (2011). The effects of chemical, biological and physical aging as well as soil addition on the sorption of pyrene to activated carbon and biochar. *Environmental Science and Technology*, 45(24), 10445–10453. doi:10.1021/es202970x
- Hale, S. E., et al. (2015). Sorption of the monoterpenes α-pinene and limonene to carbonaceous geosorbents including biochar. *Chemosphere*, 119, 881 - 888. doi:10.1016/j.chemosphere.2014.08.052
- Hale, S. E., et al. (2016). A synthesis of parameters related to the binding of neutral organic compounds to charcoal. *Chemosphere*, 144, 65 - 74. doi:10.1016/j.chemosphere.2015.08.047
- Hale, S. E., Lehmann, J., Rutherford, D., Zimmerman, A. R., Bachmann, R. T., Shitumbanuma, V., . . . Cornelissen, G. (2012). Quantifying the Total and Bioavailable Polycyclic Aromatic Hydrocarbons and Dioxins in Biochars. *Environ. Sci. Technol.*, 46, 2830-2838. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/es203984k>
- Halim, R., Gladman, B., Danquah, M. K., & Webley, P. A. (2011). Oil extraction from microalgae for biodiesel production. *Bioresource Technology*, 102(1), 178-185. doi:<https://doi.org/10.1016/j.biortech.2010.06.136>
- Hall, D. J. M., & Bell, R. W. (2015). Biochar and Compost Increase Crop Yields but the Effect is Short Term on Sandplain Soils of Western Australia. *Pedosphere*, 25(5), 720 - 728. doi:10.1016/s1002-0160(15)30053-9

- Hall, D. O. (1997). Biomass Energy in Industrialised Countries—A View of the Future. *Forest Ecology and Management*, 91(1), 17-45. Retrieved from https://www.researchgate.net/publication/223282193_Biomass_Energy_in_Industrialised_Countries-A_View_of_the_Future
- Hall, D. O., & House, J. I. (1995). Biomass: a modern and environmentally acceptable fuel. *Solar Energy Materials and Solar Cells*, 38(1), 521-542. doi:[http://dx.doi.org/10.1016/0927-0248\(94\)00242-8](http://dx.doi.org/10.1016/0927-0248(94)00242-8)
- Hall, J., Matos, S., Severino, L., & Beltrão, N. (2009). Brazilian biofuels and social exclusion: established and concentrated ethanol versus emerging and dispersed biodiesel. *Journal of Cleaner Production*, 17, S77-S85. doi:<http://dx.doi.org/10.1016/j.jclepro.2009.01.003>
- Hall, J. A., & Safi, K. (2001). The impact of in situ Fe fertilisation on the microbial food web in the Southern Ocean. *Deep Sea Research Part II: Topical Studies in Oceanography*, 48(11–12), 2591-2613. doi:[http://dx.doi.org/10.1016/S0967-0645\(01\)00010-8](http://dx.doi.org/10.1016/S0967-0645(01)00010-8)
- Hall, J. M., Van Holt, T., Daniels, A. E., Balthazar, V., & Lambin, E. F. (2012). Trade-offs between tree cover, carbon storage and floristic biodiversity in reforesting landscapes. *Landscape Ecology*, 27(8), 1135-1147. doi:[10.1007/s10980-012-9755-y](https://doi.org/10.1007/s10980-012-9755-y)
- Hall, K. E., Calderon, M. J., Spokas, K. A., Cox, L., Koskinen, W. C., Novak, J., & Cantrell, K. (2014). Phenolic Acid Sorption to Biochars from Mixtures of Feedstock Materials. *Water, Air, & Soil Pollution*, 225(7). doi:[10.1007/s11270-014-2031-9](https://doi.org/10.1007/s11270-014-2031-9)
- Hall, K. E., Calderón, M. J., Spokas, K. A., Cox, L., Koskinen, W. C., Novak, J., & Cantrell, K. (2015). *Effect of biochar on the fate and behavior of allelochemicals in soil*. Paper presented at the 13th IUPAC International Congress of Pesticide Chemistry Crop, Environment, and Public Health Protection: Technologies for a Changing World 2014. http://digital.csic.es/handle/10261/117147?mode=full&submit_simple>Show+full+item+record
- Hall, K. E., Ray, C., Ki, S. J., Spokas, K. A., & Koskinen, W. C. (2015). Pesticide sorption and leaching potential on three Hawaiian soils. *Journal of Environmental Management*. doi:[10.1016/j.jenvman.2015.04.046](https://doi.org/10.1016/j.jenvman.2015.04.046)
- Hall, P. J., Wilson, J. A. G., & Rennie, A. (2014). CO₂-derived fuels for energy in carbon dioxide utilisation. In P. Styring, E. A. Quadrelli, & K. Armonstrong (Eds.), *Closing the Carbon Cycle* (pp. 33-44).
- Hallgren, W., Schlosser, C. A., Monier, E., Kicklighter, D., Sokolov, A., & Melillo, J. (2013). Climate impacts of a large-scale biofuels expansion. *Geophysical Research Letters*, 40(8), 1624-1630. doi:[10.1002/grl.50352](https://doi.org/10.1002/grl.50352)
- Hallin, I. L., Douglas, P., Doerr, S. H., & Bryant, R. (2015). The effect of addition of a wettable biochar on soil water repellency. *European Journal of Soil Science*, 66(6), 1063 - 1073. doi:[10.1111/ejss.12300](https://doi.org/10.1111/ejss.12300)
- Hallowell, J. R., & Hallowell, B. (2015).
- Halmann, M., & Steinfeld, A. (2009). Hydrogen production and CO₂ fixation by flue-gas treatment using methane tri-reforming or coke/coal gasification combined with lime carbonation. *International Journal of Hydrogen Energy*, 34(19), 8061-8066. doi:<https://doi.org/10.1016/j.ijhydene.2009.08.031>
- Halouani, K. (2015). *Biomass-Energy from Carbonization to Fuel Cell*. Paper presented at the Mediterranean Agricultural Wastes: Environmentally Sustainable Resource for an Innovative Renewable Energy Technology (E. www.researchgate.net/profile/Kamel_Halouani/publication/270278839_Biomass-Energy_from_carbonization_to_fuel_cell/links/54a5b0af0cf257a63608d6f0.pdf)
- Halwachs, M., Kampichler, G., Kern, S., & Hofbauer, H. (2010). *Valorisation of Low Grade Biomass by Using Low Temperature Pyrolysis*. Paper presented at the 18th European

Biomass Conference and Exhibition.

- Hamaguchi, M., Saari, J., & Vakkilainen, E. (2013). Biochar and Bio-oil as Additional Revenue Streams in South American Kraft Pulp Mills. *Bioresources.com*, 8(3), 3399-3414. Retrieved from <http://ojs.cnr.ncsu.edu/index.php/BioRes/article/viewFile/3737/2143>
- Hamer, U., Marschner, B., Brodowski, S., & Amelung, W. (2004). Interactive priming of black carbon and glucose mineralisation. *Organic Geochemistry*, 35(7), 823-830. Retrieved from <http://www.sciencedirect.com/science/article/pii/S014663800400052X>
- Hamid, S. B. A., Chowdhury, Z. Z., & Zain, S. M. (2014). Base Catalytic Approach: A Promising Technique for the Activation of Biochar for Equilibrium Sorption Studies of Copper, Cu(II) Ions in Single Solute System. *Materials*, 7, 2815-2832.
- Hamilton, L. (2011). Latest research on the magic pudding of biochar. *Australian Forest Grower*, 34, 40-41. Retrieved from <http://search.informit.com.au/documentSummary;dn=594312546675433;res=IELHSS>
- Hamilton, S. K., Kurzman, A. L., Arango, C., Jin, L., & Robertson, G. P. (2007). Evidence for carbon sequestration by agricultural liming. *Global Biogeochemical Cycles*, 21(2), n/a-n/a. doi:10.1029/2006GB002738
- Hamilton, S. K., Kurzman, A. L., Arango, C., Jin, L., & Robertson, G. P. (2007). Evidence for carbon sequestration by agricultural liming. *Global Biogeochemical Cycles*, 21(2). doi:<https://doi.org/10.1029/2006GB002738>
- Hammad, H. M., Fasihuddin Nauman, H. M., Abbas, F., Ahmad, A., Bakhat, H. F., Saeed, S., . . . Cerdà, A. (2020). Carbon sequestration potential and soil characteristics of various land use systems in arid region. *Journal of Environmental Management*, 110254. doi:<https://doi.org/10.1016/j.jenvman.2020.110254>
- Hammar, T., Stendahl, J., Sundberg, C., Holmström, H., & Hansson, P.-A. (2019). Climate impact and energy efficiency of woody bioenergy systems from a landscape perspective. *Biomass and Bioenergy*, 120, 189-199. doi:<https://doi.org/10.1016/j.biombioe.2018.11.026>
- Hammed, T. B., & Sridhar, M. K. C. (2014). A closed drum carboniser for converting lignocellulosic residues to biochar pellets: A Nigerian study. In.
- Hammer, D., Keller, C., McLaughlin, M. J., & Hamon, R. E. (2006). Fixation of metals in soil constituents and potential remobilization by hyperaccumulating and non-hyperaccumulating plants: Results from an isotopic dilution study. *Environmental Pollution*, 143, 407-415.
- Hammer, E. C., Balogh-Brunstad, Z., Jakobsen, I., Olsson, P. A., Stipp, S. L. S., & Rillig, M. C. (2014). A mycorrhizal fungus grows on biochar and captures phosphorus from its surfaces. *Soil Biology and Biochemistry*, 77, 252 - 260. doi:10.1016/j.soilbio.2014.06.012
- Hammer, E. C., Forstreuter, M., Rillig, M. C., & Kohler, J. (2015). Biochar increases arbuscular mycorrhizal plant growth enhancement and ameliorates salinity stress. *Applied Soil Ecology*, 96, 114 - 121. doi:10.1016/j.apsoil.2015.07.014
- Hammes, K., & M.W.I., S. (2009). Changes of Biochar in Soil. In *Biochar for Environmental Management: Science and Technology* (pp. 169-182). London, UK: Earthscan.
- Hammes, K., Smernik, R. J., Skjemstad, J. O., & Schmidt, M. W. I. (2008). Characterisation and evaluation of reference materials for black carbon analysis using elemental composition, colour, BET surface area and C-13 NMR spectroscopy. *Applied Geochemistry*, 23(8), 2113-2122.
- Hammes, K., Torn, M. S., Lapenas, A. G., & Schmidt, M. W. I. (2008). Centennial black carbon turnover observed in a russian steppe soil. *Biogeosciences*, 5(5), 1339-1350.
- Hammon, J., & Shackley, S. (2010). *Towards a public communication and engagement strategy for carbon dioxide capture and storage projects in Scotland*. Retrieved from <https://www.era.lib.ed.ac.uk/bitstream/handle/1842/16476/wp-2010-08.pdf?>

- sequence=1&isAllowed=y
- Hammond, J., et al. (2013). Biochar field testing in the UK: outcomes and implications for use. *Carbon Management*, 4(2), 159-170. Retrieved from <http://www.tandfonline.com/doi/abs/10.4155/cmt.13.3>
- Hammond, J., et al. (2016). The legality of biochar use: Regulatory requirements and risk assessment. In *Biochar in European Soils and Agriculture: Science and Practice*.
- Hammond, J., Shackley, S., Sohi, S., & Brownsort, P. (2011). Prospective life cycle carbon abatement for pyrolysis biochar systems in the UK. *Energy Policy*, 39(5), 2646-2655. doi:<http://dx.doi.org/10.1016/j.enpol.2011.02.033>
- Hampel, M. (2020). Alberta group models CO₂ injection system off the coast of Canada.
- Hamza, U. D., Nasri, N. S., Amin, N. S., Mohammed, J., & Zain, H. M. (2015). Characteristics of oil palm shell biochar and activated carbon prepared at different carbonization times. *Desalination and Water Treatment*, 1 - 8. doi:[10.1080/19443994.2015.1042068](https://doi.org/10.1080/19443994.2015.1042068)
- Hamzah, Z., et al. (2013). Characterization of physicochemical properties of biochar from different agricultural residues. *Advances in Environmental Biology*, 7(12), 3752-3757.
- Hamze, e. a. (2014). *How Does Biochar Affect the Pore Size Distribution, S-Index and Saturated Hydraulic Conductivity of a Sandy Soil?* Iowa State University, Retrieved from https://scisoc.confex.com/scisoc/2014am/webprogram/Handout/Paper88882/conference_poster_4.pdf
- Han, A. (2021). Rep. Matsui and husband donate to support climate research. Retrieved from https://giving.ucdavis.edu/impacts-giving/rep-matsui-and-husband-donate-support-climate-research?utm_source=Aggie%20Connections&utm_medium=email&utm_campaign=expect%20greater
- Han, G. M., Meng, J., Zhang, W. M., & Chen, W. F. (2013). Effect of Biochar on Microorganisms Quantity and Soil Physicochemical Property in Rhizosphere of Spinach (*Spinacia oleracea L.*). *Applied Mechanics and Materials*, 295-298, 210-219. Retrieved from <https://www.scientific.net/AMM.295-298.210>
- Han, L., Xue, S., Zhao, S., Yan, J., Qian, L., & Chen, M. (2015). Biochar Supported Nanoscale Iron Particles for the Efficient Removal of Methyl Orange Dye in Aqueous Solutions. *Plos One*, 10(7), e0132067. doi:[10.1371/journal.pone.0132067.s001](https://doi.org/10.1371/journal.pone.0132067.s001)
- Han, X., et al. (2015). Removal of Methylene Blue from Aqueous Solution using Porous Biochar Obtained by KOH Activation of Peanut Shell Biochar. *BioResources*, 10(2), 2836-2849. Retrieved from http://ojs.cnr.ncsu.edu/index.php/BioRes/article/view/BioRes_10_2_2836_Han_Methylene_Blue_Removal_Biochar/3450
- Han, X., et al. . (2016). Mitigating methane emission from paddy soil with rice-straw biochar amendment under projected climate change. *Scientific Reports*, 6. doi:[10.1038/srep24731](https://doi.org/10.1038/srep24731)
- Han, Y., Cao, J., An, Z., Chow, J. C., Watson, J. G., & Jin, Z. (2007). Evaluation of the thermal/optical reflectance method for quantification of elemental carbon in sediments. *Chemosphere*, 69(4), 526-533.
- Han, Y., Cao, X., Ouyang, X., Sohi, S. P., & Chen, J. (2016). Adsorption kinetics of magnetic biochar derived from peanut hull on removal of Cr (VI) from aqueous solution: Effects of production conditions and particle size. *Chemosphere*, 145, 336 - 341. doi:[10.1016/j.chemosphere.2015.11.050](https://doi.org/10.1016/j.chemosphere.2015.11.050)
- Han, Z., Sani, B., Akkanen, J., Abel, S., Nybom, I., Karapanagioti, H. K., & Werner, D. (2015). A critical evaluation of magnetic activated carbon's potential for the remediation of sediment impacted by polycyclic aromatic hydrocarbons. *Journal of Hazardous Materials*, 286, 41 - 47. doi:[10.1016/j.jhazmat.2014.12.030](https://doi.org/10.1016/j.jhazmat.2014.12.030)
- Han, Z., Sani, B., Mrozik, W., Obst, M., Beckingham, B., Karapanagioti, H. K., & Werner, D.

- (2015). Magnetite impregnation effects on the sorbent properties of activated carbons and biochars. *Water Research*, 70, 394 - 403. doi:10.1016/j.watres.2014.12.016
- Hanak, D. P., Anthony, E. J., & Manovic, V. (2015). A review of developments in pilot-plant testing and modelling of calcium looping process for CO₂ capture from power generation systems. *Energy & Environmental Science*, 8(8), 2199-2249. doi:10.1039/C5EE01228G
- Hanak, D. P., Biliyok, C., Anthony, E. J., & Manovic, V. (2015). Modelling and comparison of calcium looping and chemical solvent scrubbing retrofits for CO₂ capture from coal-fired power plant. *International Journal of Greenhouse Gas Control*, 42(Supplement C), 226-236. doi:<https://doi.org/10.1016/j.ijggc.2015.08.003>
- Hanak, D. P., Jenkins, B. G., Kruger, T., & Manovic, V. (2017). High-efficiency negative-carbon emission power generation from integrated solid-oxide fuel cell and calciner. *Applied Energy*, 205, 1189-1201. doi:<https://doi.org/10.1016/j.apenergy.2017.08.090>
- Hanak, D. P., & Manovic, V. (2017). Calcium looping combustion for high-efficiency low-emission power generation. *Journal of Cleaner Production*, 161(Supplement C), 245-255. doi:<https://doi.org/10.1016/j.jclepro.2017.05.080>
- Hanak, D. P., & Manovic, V. (2018). Combined heat and power generation with lime production for direct air capture. *Energy Conversion and Management*, 160, 455-466. doi:<https://doi.org/10.1016/j.enconman.2018.01.037>
- Hanaoka, T., & Okumura, Y. (2014). Effect of metal content on CO₂ gasification behavior of K- and Fe-loaded bio-chars. *Journal of Thermal Science and Technology*, 9(2), 1-12. doi:10.1299/jtst.2014jtst0006
- Hanasaki, N., Fujimori, S., Yamamoto, T., Yoshikawa, S., Masaki, Y., Hijioka, Y., . . . Kanae, S. (2013). A global water scarcity assessment under Shared Socio-economic Pathways – Part 2: Water availability and scarcity. *Hydrology and Earth Systems Sciences*, 17(7), 2393-2413. doi:10.5194/hess-17-2393-2013
- Handå, A., McClimans, T. A., Reitan, K. I., Knutsen, Ø., Tangen, K., & Olsen, Y. (2014). Artificial upwelling to stimulate growth of non-toxic algae in a habitat for mussel farming. *Aquaculture Research*, 45(11), 1798-1809. doi:<https://doi.org/10.1111/are.12127>
- Handler, R. M., Shonnard, D. R., Kalnes, T. N., & Lupton, F. S. (2014). Life cycle assessment of algal biofuels: Influence of feedstock cultivation systems and conversion platforms. *Algal Research*, 4, 105-115. doi:<https://doi.org/10.1016/j.algal.2013.12.001>
- Handy, R. (2017). Back in Texas, Perry touts technology to keep fossil fuels, climate viable. *Houston Chronicle*. Retrieved from <http://www.houstonchronicle.com/business/article/Back-in-Texas-Perry-touts-technology-to-keep-11072397.php>
- Hanes, S. (2020). Investors say agroforestry isn't just climate friendly — it's also profitable. *Mongabay*. Retrieved from <https://news.mongabay.com/2020/07/investors-find-agroforestry-isnt-just-climate-friendly-it-can-also-be-profitable/>
- Hangs, R. D., Ahmed, H. P., & Schoenau, J. J. (2015). Influence of Willow Biochar Amendment on Soil Nitrogen Availability and Greenhouse Gas Production in Two Fertilized Temperate Prairie Soils. *BioEnergy Research*. doi:10.1007/s12155-015-9671-5
- Hangx, S. J. T., & Spiers, C. J. (2009). Coastal spreading of olivine to control atmospheric CO₂ concentrations: A critical analysis of viability. *International Journal of Greenhouse Gas Control*, 3(6), 757-767. doi:<http://dx.doi.org/10.1016/j.ijggc.2009.07.001>
- Hanley, S. (2020). Argonne National Lab Breakthrough Turns Carbon Dioxide Into Ethanol. *Clean Technica*. Retrieved from <https://cleantecnica.com/2020/08/08/argonne-national-lab-breakthrough-turns-carbon-dioxide-into-ethanol/>
- Hanna, R., Abdulla, A., Xu, Y., & Victor, D. G. (2021). Emergency deployment of direct air capture as a response to the climate crisis. *Nature Communications*, 12(1), 368. doi:10.1038/s41467-020-20437-0
- Hannah, V. C., Sofie, S., Lark, R. M., & Sacha, J. M. (2021). To till or not to till in a temperate

- ecosystem? Implications for climate change mitigation. *Environmental Research Letters*. Retrieved from <http://iopscience.iop.org/article/10.1088/1748-9326/abe74e>
- Hannan, E., Boyd, P. W., Silvoso, M., & Lancelot, C. (2001). Modeling the bloom evolution and carbon flows during SOIREE: Implications for future in situ iron-enrichments in the Southern Ocean. *Deep Sea Research Part II: Topical Studies in Oceanography*, 48(11–12), 2745-2773. doi:[http://dx.doi.org/10.1016/S0967-0645\(01\)00016-9](http://dx.doi.org/10.1016/S0967-0645(01)00016-9)
- Hannula, I. (2015). Co-production of synthetic fuels and district heat from biomass residues, carbon dioxide and electricity: Performance and cost analysis. *Biomass and Bioenergy*, 74, 26-46. doi:<http://dx.doi.org/10.1016/j.biombioe.2015.01.006>
- Hänsel, M. C., Drupp, M. A., Johansson, D. J. A., Nesje, F., Azar, C., Freeman, M. C., . . . Sterner, T. (2020). Climate economics support for the UN climate targets. *Nature Climate Change*, 10(8), 781-789. doi:[10.1038/s41558-020-0833-x](https://doi.org/10.1038/s41558-020-0833-x)
- Hansen, A. C., & Berlinia, A. (2018). Bioenergy Development in Sweden—Frameworks for Success. In W. Leal Filho, D. M. Pociovalișteanu, P. R. Borges de Brito, & I. Borges de Lima (Eds.), *Towards a Sustainable Bioeconomy: Principles, Challenges and Perspectives* (pp. 457-481). Cham: Springer International Publishing.
- Hansen, J., et al. (2016). *Young People's Burden: Requirement of Negative CO₂ Emissions*. Retrieved from <https://arxiv.org/ftp/arxiv/papers/1609/1609.05878.pdf>
- Hansen, J. (2017). Young people's burden: requirement of negative CO₂ emissions. *Earth Systems Dynamics*, 8, 577-616. Retrieved from <https://www.earth-syst-dynam.net/8/577/2017/>
- Hansen, J. (2018). Rock Dust in Farming: A Potential Strategy to Help Close the Climate Gap. Retrieved from http://www.columbia.edu/~jeh1/mailings/2018/20180219_RockDustInFarming_NewsRelease.pdf
- Hansen, V., et al. (2014). Gasification biochar as a valuable by-product for carbon sequestration and soil amendment. *Biomass and Bioenergy*, 72, 300-308. doi:[10.1016/j.biombioe.2014.10.013](https://doi.org/10.1016/j.biombioe.2014.10.013)
- Hansen, V. (2014). *Gasification biochar as soil amendment for carbon sequestration and soil quality*. Paper presented at the DTU Sustain Conference. <http://forskningsbasen.deff.dk/Share.external?sp=S30645b87-0a80-48ba-85c4-42d97de646f4&sp=Sdtu>
- Hansen, V., Hauggaard-Nielsen, H., Petersen, C. T., & Müller-Stöver, D. S. (2015). *Straw gasification biochar increases plant available water capacity and plant growth in coarse sandy soil*. Paper presented at the Joint International Biochar Symposium 2015. <http://www.forskningsdatabasen.dk/en/catalog/2291868842>
- Hansen, V., Müller-Stöver, D., Munkholm, L. J., Peltre, C., Hauggaard-Nielsen, H., & Jensen, L. S. (2016). The effect of straw and wood gasification biochar on carbon sequestration, selected soil fertility indicators and functional groups in soil: An incubation study. *Geoderma*, 269, 99 - 107. doi:[10.1016/j.geoderma.2016.01.033](https://doi.org/10.1016/j.geoderma.2016.01.033)
- Hansen, V., Müller-Stöver, D. S., Petersen, C. T., Hauggaard-Nielsen, H., Ahrenfeldt, J., & Jensen, L. S. (2016). *Session 61: Biokuls relevans i dansk sammenhæng (Session 61: Biokuls relevance in the Danish context)*. Paper presented at the Plantekongres. <http://www.forskningsdatabasen.dk/en/catalog/2291868840>
- Hansing, A. A. (2018). European and Swedish Point Sources of Biogenic Carbon Dioxide. In M. Fridahl (Ed.), *Bioenergy with carbon capture and storage: From global potentials to domestic realities* (pp. 31-43).
- Hanssen, S. V., Daioglou, V., Steinmann, Z. J. N., Frank, S., Popp, A., Brunelle, T., . . . Van Vuuren, D. P. (2019). Biomass residues as twenty-first century bioenergy feedstock—a comparison of eight integrated assessment models. *Climatic Change*. doi:[10.1007/s10584-019-02539-x](https://doi.org/10.1007/s10584-019-02539-x)
- Hansson, A. (2012). Colonizing the future: the case of CCS. In N. Markusson, S. Shackley,

- & B. Evar (Eds.), *The Social Dynamics of Carbon Capture and Storage* (pp. 74-90). Retrieved from [https://doi.org/10.1016/j.enpol.2009.02.018](https://books.google.com/books?id=_jZypdxp7DIC&dq=The+Social+Dynamics+of+Carbon+Capture+and+Storage&lr=Hansson, A., & Bryngelsson, M. (2009). Expert opinions on carbon dioxide capture and storage –A framing of uncertainties and possibilities. <i>Energy Policy</i>, 37(6), 2273-2282. doi:<a href=)
- Hansson, A., Fridahl, M., Haikola, S., Yanda, P., Pauline, N., Mabhuye, E. J. E., Development, & Sustainability. (2019). Preconditions for bioenergy with carbon capture and storage (BECCS) in sub-Saharan Africa: the case of Tanzania. *Environment, Development and Sustainability*, 22, 6851–6875. doi:[10.1007/s10668-019-00517-y](https://doi.org/10.1007/s10668-019-00517-y)
- Hansson, A., Haikola, S., Fridahl, M., Yanda, P., Mabhuye, E., & Pauline, N. (2020). Biochar as multi-purpose sustainable technology: experiences from projects in Tanzania. *Environment, Development and Sustainability*. doi:[10.1007/s10668-020-00809-8](https://doi.org/10.1007/s10668-020-00809-8)
- Hanusch, J. M., Kerschgens, I. P., Huber, F., Neuburger, M., & Gademann, K. (2019). Pyrrolizidines for direct air capture and CO₂ conversion. *Chemical Communications*, 55(7), 949-952. doi:[10.1039/C8CC08574A](https://doi.org/10.1039/C8CC08574A)
- Haque, A., Tang, C. K., Islam, S., Ranjith, P. G., & Bui, H. H. (2014). Biochar Sequestration in Lime-Slag Treated Synthetic Soils: A Green Approach to Ground Improvement. *Journal of Materials in Civil Engineering*, 06014024. doi:[10.1061/\(asce\)mt.1943-5533.0001113](https://doi.org/10.1061/(asce)mt.1943-5533.0001113)
- Haque, F., Santos, R. M., & Chiang, Y. W. (2020). CO₂ sequestration by wollastonite-amended agricultural soils – An Ontario field study. *International Journal of Greenhouse Gas Control*, 97, 103017. doi:<https://doi.org/10.1016/j.ijggc.2020.103017>
- Haque, F., Santos, R. M., Dutta, A., Thimmanagari, M., & Chiang, Y. W. (2019). Co-Benefits of Wollastonite Weathering in Agriculture: CO₂ Sequestration and Promoted Plant Growth. *ACS omega*, 4(1), 1425-1433. doi:[10.1021/acsomega.8b02477](https://doi.org/10.1021/acsomega.8b02477)
- Haque, T. (2021). Blue Carbon Can Help Climate Change "Code Red". Retrieved from <https://www.nrdc.org/experts/carolina-herrera/blue-carbon-can-help-climate-change-code-red>
- Hara, Y., Obata, H., Doi, T., Hongo, Y., Gamo, T., Takeda, S., & Tsuda, A. (2009). Rare earth elements in seawater during an iron-induced phytoplankton bloom of the western subarctic Pacific (SEEDS-II). *Deep Sea Research Part II: Topical Studies in Oceanography*, 56(26), 2839-2851. doi:<http://dx.doi.org/10.1016/j.dsrr.2009.06.009>
- Hardie, M., et al. . (2013). Does biochar influence soil physical properties and soil water availability? *Plant and Soil*, 376(1), 347-361. Retrieved from <http://link.springer.com/article/10.1007/s11104-013-1980-x>
- Hardie, M., et al. (2014). *Effect of biochar application on soil water availability and hydraulic conductivity*. Paper presented at the Conference: Soil Science Australia National Soil Science Conference. <http://www.soilscience2014.com.au/proceedings/Hardie.pdf>
- Hardie, M. A., Oliver, G., Clothier, B. E., Bound, S. A., Green, S. A., & Close, D. C. (2015). Effect of Biochar on Nutrient Leaching in a Young Apple Orchard. *Journal of Environment Quality*, 44(4), 1273. doi:[10.2134/jeq2015.02.0068](https://doi.org/10.2134/jeq2015.02.0068)
- Hardin, B. (2020). Compulsory Licensing of Climate Engineering Patents: How Embracing Technology- and Research-Sharing Strategies Brings Us One Step Closer to Solving Climate Change. *Arkansas Law Review*, 73(3), 612-629. Retrieved from <https://scholarworks.uark.edu/alr/vol73/iss3/4/>
- Hardman-Mountford, N. J., Polimene, L., Hirata, T., Brewin, R. J. W., & Aiken, J. (2013). Impacts of light shading and nutrient enrichment geo-engineering approaches on the productivity of a stratified, oligotrophic ocean ecosystem. *Journal of The Royal Society Interface*, 10(89). doi:[10.1098/rsif.2013.0701](https://doi.org/10.1098/rsif.2013.0701)
- Hardy, K., Knight, J. D., & Farrell, R. (2015). Examining biochar as a carrier for Rhizobium Spp. on pea crop. In.

- Hariharan, S., Leopold, C., Werner, M. R., & Mazzotti, M. (2017). A Two-step CO₂ Mineralization Process. *Energy Procedia*, 114, 5404-5408. doi:<https://doi.org/10.1016/j.egypro.2017.03.1684>
- Harikishore Kumar Reddy, D., & Lee, S.-M. (2014). Magnetic biochar composite: Facile synthesis, characterization and application for heavy metal removal. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 454, 96-103. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0927775714003549>
- Haring, V., et al. (2015). *Management of land use systems for enhanced food security: conflicts, controversies and resolutions*. Paper presented at the Tropentag.
- Harish, B. S., Janaki Ramaiah, M., & Babu Uppuluri, K. (2015). Bioengineering strategies on catalysis for the effective production of renewable and sustainable energy. *Renewable and Sustainable Energy Reviews*, 51, 533 - 547. doi:10.1016/j.rser.2015.06.030
- Harper, A. B., Powell, T., Cox, P. M., House, J., Huntingford, C., Lenton, T. M., . . . Shu, S. (2018). Land-use emissions play a critical role in land-based mitigation for Paris climate targets. *Nature Communications*, 9(1), 2938. doi:10.1038/s41467-018-05340-z
- Harrabin, R. (2017). Sci-fi forest tracks carbon impact. *BBC News*. Retrieved from <http://www.bbc.com/news/science-environment-39472425>
- Harris, M. (2017). The entrepreneurs turning carbon dioxide into fuels. *The Guardian*. Retrieved from <https://www.theguardian.com/sustainable-business/2017/sep/14/entrepreneurs-turn-carbon-dioxide-into-fuels-artificial-photosynthesis>
- Harris, R. (2020). 'Unlocking new tech': \$1.9 billion for low-emission energy projects. *The Sydney Morning Herald*.
- Harris, Z. M., Milner, S., & Taylor, G. (2018). Chapter 5 - Biogenic Carbon—Capture and Sequestration. In P. Thornley & P. Adams (Eds.), *Greenhouse Gas Balances of Bioenergy Systems* (pp. 55-76): Academic Press.
- Harrison, A. L., Tutolo, B. M., & DePaolo, D. J. (2019). The Role of Reactive Transport Modeling in Geologic Carbon Storage. *Elements*, 15(2), 93-98. doi:10.2138/gselements.15.2.93
- Harrison, B., & Falcone, G. (2014). Carbon capture and sequestration versus carbon capture utilisation and storage for enhanced oil recovery. *Acta Geotechnica*, 9(1), 29-38. doi:<http://dx.doi.org/10.1007/s11440-013-0235-6>
- Harrison, D. P. (2013). A method for estimating the cost to sequester carbon dioxide by delivering iron to the ocean. *International Journal of Global Warming*, 5(3), 231-254.
- Harrison, D. P. (2017). Global negative emissions capacity of ocean macronutrient fertilization. *Environmental Research Letters*, 12(3), 1-11. Retrieved from <http://stacks.iop.org/1748-9326/12/i=3/a=035001>
- Harrison, P. J. (2006). SERIES (subarctic ecosystem response to iron enrichment study): A Canadian–Japanese contribution to our understanding of the iron–ocean–climate connection. *Deep Sea Research Part II: Topical Studies in Oceanography*, 53(20), 2006-2011. doi:<https://doi.org/10.1016/j.dsrr.2006.08.001>
- Harsanti, E. S. e. a. (2016). Evaluation of the effects of activated carbon on POP insecticide residues in mustard in Central Java, Indonesia. In *Biochar for future food security: learning from experiences and identifying research priorities*.
- Harsono, S. S., et al. (2011). *Life Cycle Analysis of Biochar from Palm Oil empty Fruit Bunches*. Paper presented at the Tropentag 2011, October 5 - 7, "Development on the margin", Bonn, Germany.
- Harsono, S. S., et al. (2013). Energy balances, greenhouse gas emissions and economics of biochar production from palm oil empty fruit bunches. *Resources, Conservation and Recycling*, 77, 108–115.
- Hartatik, W., Wibowo, H., & Purwani, J. (2015). Biochar and Tithoganic Application for Improving Soybean (*Glycine max* L.) Productivity on Typic Kanhapludults in Lampung Timur

- (translated from Indonesian language). *Jurnal Tanah dan Iklim (Journal of Soil and Climate)*, 39(1), 51-62. Retrieved from <http://balittanah.litbang.pertanian.go.id/ind/dokumentasi/lainnya/wiwik%20vol39.pdf>
- Harter, J., et al. (2013). Linking N₂O emissions from biochar-amended soil to the structure and function of the N-cycling microbial community. *The ISME Journal*, 8, 660-674. Retrieved from <http://www.nature.com/ismej/journal/v8/n3/full/ismej2013160a.html>
- Harter, J., Weigold, P., El-Hadidi, M., Huson, D. H., Kappler, A., & Behrens, S. (2016). Soil biochar amendment shapes the composition of N₂O-reducing microbial communities. *Science of The Total Environment*, 562, 379-390. doi:<http://dx.doi.org/10.1016/j.scitotenv.2016.03.220>
- Hartley, W., Dickinson, N. M., Riby, P., & Lepp, N. W. (2009). Arsenic mobility in brownfield soils amended with green waste compost or biochar and planted with Miscanthus. *Environmental Pollution*, 157, 2654-2662.
- Hartmann, J. (2009). Bicarbonate-fluxes and CO₂-consumption by chemical weathering on the Japanese Archipelago — Application of a multi-lithological model framework. *Chemical Geology*, 265(3), 237-271. doi:<https://doi.org/10.1016/j.chemgeo.2009.03.024>
- Hartmann, J., et al. (2013). Enhancing Chemical Weathering as a Geoengineering Strategy to Reduce Atmospheric Carbon Dioxide, Supply Nutrients, and Mitigate Ocean Acidification. *Reviews of Geophysics*, 51(2), 113-149. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/rog.20004/pdf>
- Hartmann, J., Jansen, N., Dürr, H. H., Kempe, S., & Köhler, P. (2009). Global CO₂-consumption by chemical weathering: What is the contribution of highly active weathering regions? *Global and Planetary Change*, 69(4), 185-194. doi:<http://dx.doi.org/10.1016/j.gloplacha.2009.07.007>
- Hartmann, J., & Kempe, S. (2008). What is the maximum potential for CO₂ sequestration by "stimulated" weathering on the global scale? *Naturwissenschaften*, 95(12), 1159-1164. doi:[10.1007/s00114-008-0434-4](https://doi.org/10.1007/s00114-008-0434-4)
- Harvey, C. (2017). How Dirt Can Clean the Air. *Scientific American*. Retrieved from <https://www.scientificamerican.com/article/how-dirt-can-clean-the-air/>
- Harvey, C. (2017). How Much CO₂ Will the World Need to Remove from the Air? *Scientific American*, (November 30). Retrieved from <https://www.scientificamerican.com/article/how-much-co2-will-the-world-need-to-remove-from-the-air/>
- Harvey, C. (2018). Cement Producers Are Developing a Plan to Reduce CO₂ Emissions. *Scientific American*. Retrieved from <https://www.scientificamerican.com/article/cement-producers-are-developing-a-plan-to-reduce-co2-emissions/>
- Harvey, C. (2018). Tree Farms Will Not Save Us from Global Warming. *Scientific American*. Retrieved from <https://www.scientificamerican.com/article/tree-farms-will-not-save-us-from-global-warming/>
- Harvey, F. (2009, March 2). Black is the New Green. *The Financial Times*. Retrieved from <http://www.ft.com/cms/s/2/67843ec0-020b-11de-8199-000077b07658.html>
- Harvey, F. (2021). Planting Trees To Fight Climate Change Is Great. Then Again, So Is Eating. *Mother Jones*. Retrieved from <https://www.motherjones.com/environment/2021/08/oxfam-study-planting-trees-carbon-offsets-climate-change-food-insecurity/>
- Harvey, L. D. D. (2008). Mitigating the atmospheric CO₂ increase and ocean acidification by adding limestone powder to upwelling regions. *Journal of Geophysical Research: Oceans*, 113(C4). doi:[10.1029/2007JC004373](https://doi.org/10.1029/2007JC004373)
- Harvey, M., & Pilgrim, S. (2011). The new competition for land: Food, energy, and climate change. *Food Policy*, 36(Supplement 1), S40-S51. doi:<http://dx.doi.org/10.1016/j.foodpol.2010.11.009>
- Harvey, M. J., Law, C. S., Smith, M. J., & Ziolkowski, L. (2004). The SOLAS air-sea gas

- exchange experiment (SAGE) 2004. *Deep Sea Research Part II Topical Studies in Oceanography*, 58(6), 753-763. Retrieved from https://www.researchgate.net/publication/222122729_The_SOLAS_air-sea_gas_exchange_experiment_SAGE_2004
- Harvey, O. R., et al. (2011). Metal Interactions at the Biochar-Water Interface: Energetics and Structure-Sorption Relationships Elucidated by Flow Adsorption Microcalorimetry. *Environmental Science and Technology*, 45(13), 5550-5556. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/es104401h>
- Hasegawa, T., Sands, R. D., Brunelle, T., Cui, Y., Frank, S., Fujimori, S., & Popp, A. (2020). Food security under high bioenergy demand toward long-term climate goals. *Climatic Change*. doi:10.1007/s10584-020-02838-8
- Hashimoto, S., Toda, S., Suzuki, K., Kato, S., Narita, Y., Kurihara, M. K., . . . Uematsu, M. (2009). Production and air-sea flux of halomethanes in the western subarctic Pacific in relation to phytoplankton pigment concentrations during the iron fertilization experiment (SEEDS II). *Deep Sea Research Part II: Topical Studies in Oceanography*, 56(26), 2928-2935. doi:<http://dx.doi.org/10.1016/j.dsr2.2009.07.003>
- Hasib, S. B. (2015). *Influence of Biochar, Vermicompost and Wheat Straw on Phosphate Sorption in Bajoa and Sara Soil Series*. Khulna University, Retrieved from http://www.researchgate.net/profile/Md_Sadiqul_Amin/publication/271531283_INFLUENCE_OF_BIOCHAR_VERMICOMPOST_AND_WHEAT_STRAW_ON_PHOSPHATE_SORPTION_IN_BAOJA_AND_SARA_SOIL_SERIES/links/54cc4a060cf298d6565a5e6b.pdf
- Haskell, G. (2017). On saving forests, the world's largest carbon sinks. Retrieved from <https://www.greenbiz.com/article/saving-forests-worlds-largest-carbon-sinks>
- Hass, A., & Gonzalez, J. M. (2014). *Fertilizers: Components, Uses in Agriculture and Environmental Impacts, Chapter 4 : Biochar*.
- Hassan, A., & Kaewsichan, L. (2016). Removal of Pb(II) from Aqueous Solutions Using Mixtures of Bamboo Biochar and Calcium Sulphate, and Hydroxyapatite and Calcium Sulphate. In.
- Hassby, O. (2014). *Biokol för renig av kväve och fosfor ur dagvatten i Segeåns avrinningsområde (Biochar for removal of nitrogen and phosphorus from stormwater catchment Segeåns)*. Lund University, Retrieved from <http://lup.lub.lu.se/luur/download?func=downloadFile&recordId=4467062&fileId=4467068>
- Hassler, C. S., Schoemann, V., Nichols, C. M., Butler, E. C. V., & Boyd, P. W. (2011). Saccharides enhance iron bioavailability to Southern Ocean phytoplankton. *Proceedings of the National Academy of Sciences*, 108(3), 1076-1081. doi:10.1073/pnas.1010963108
- Hastings, A., et al. (2013). Biofuel Crops and Greenhouse Gases. In B. P. Singh (Ed.), *Biofuel Crop Sustainability* (pp. 383-395).
- Hastings, A., & Smith, P. (2020). Achieving Net Zero Emissions Requires the Knowledge and Skills of the Oil and Gas Industry. *Frontiers in Climate*, 2(22). doi:10.3389/fclim.2020.601778
- Haszeldine, R. S. (2016). Can CCS and NET enable the continued use of fossil carbon fuels after CoP21? *Oxford Review of Economic Policy*, 32(2), 304-322. doi:10.1093/oxrep/grw013
- Haszeldine, R. S. (2020). Chapter 18 Getting CO₂ Storage Right – Arithmetically and Politically. In *Carbon Capture and Storage* (pp. 563-567): The Royal Society of Chemistry.
- Haszeldine, R. S., Flude, S., Johnson, G., & Scott, V. (2018). Negative emissions technologies and carbon capture and storage to achieve the Paris Agreement commitments. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, 376(2119). doi:10.1098/rsta.2016.0447
- Hauck, J., et al. . (2016). Iron fertilisation and century-scale effects of open ocean dissolution of

- olivine in a simulated CO₂ removal experiment. *Environmental Research Letters*, 11(2), 024007. Retrieved from <http://stacks.iop.org/1748-9326/11/i=2/a=024007>
- Haug, T. A., Kleiv, R. A., & Munz, I. A. (2010). Investigating dissolution of mechanically activated olivine for carbonation purposes. *Applied Geochemistry*, 25(10), 1547-1563. doi:<https://doi.org/10.1016/j.apgeochem.2010.08.005>
- Haugan, P. M. (2003). On the Production and Use of Scientific Knowledge About Ocean Sequestration A2 - Gale, J. In Y. Kaya (Ed.), *Greenhouse Gas Control Technologies - 6th International Conference* (pp. 719-724). Oxford: Pergamon.
- Haugen, H. A., Aagaard, P., Thyberg, B., Kjærstad, J., Langlet, D., Melaaen, M. C., . . . Bjørnsen, D. (2011). CCS in the Skagerrak/Kattegat area. *Energy Procedia*, 4, 2324-2331. doi:<https://doi.org/10.1016/j.egypro.2011.02.123>
- Haus, J., Lindmüller, L., Dymala, T., Jarolin, K., Feng, Y., Hartge, E.-U., . . . Werther, J. (2020). Increasing the efficiency of chemical looping combustion of biomass by a dual-stage fuel reactor design to reduce carbon capture costs. *Mitigation and Adaptation Strategies for Global Change*, 25(6), 969-986. doi:[10.1007/s11027-020-09917-2](https://doi.org/10.1007/s11027-020-09917-2)
- Hausfather, Z. (2018). Analysis: How 'natural climate solutions' can reduce the need for BECCS. *CarbonBrief*. Retrieved from <https://www.carbonbrief.org/analysis-how-natural-climate-solutions-can-reduce-the-need-for-beccs>
- Hausfather, Z. (2020). UNEP: Net-zero pledges provide an 'opening' to close growing emissions 'gap'. *Carbon Brief*. Retrieved from <https://www.carbonbrief.org/unep-net-zero-pledges-provide-an-opening-to-close-growing-emissions-gap>
- Havercroft, I. (2019). *Lessons and Perceptions: Adopting a Commercial Approach to CCS Liability*. Retrieved from <https://www.globalccsinstitute.com/resources/publications-reports-research/adopting-a-commercial-approach-to-ccs-liability/>
- Havlík, P., Schneider, U. A., Schmid, E., Bottcher, H., Fritz, S., Skalsky, R., . . . Obersteiner, M. (2011). Global land-use implications of first and second generation biofuel targets. *Energy Policy*, 39(10), 5690-5702. doi:[10.1016/j.enpol.2010.03.030](https://doi.org/10.1016/j.enpol.2010.03.030)
- Hawes, C. (2019). New CO₂ capture technology is not the magic bullet against climate change. *The Conversation*, (April 17). Retrieved from <https://theconversation.com/new-co-capture-technology-is-not-the-magic-bullet-against-climate-change-115413>
- Hawthorne, I., Johnson, M. S., Jassal, R. S., Black, T. A., Grant, N. J., & Smukler, S. M. (2017). Application of biochar and nitrogen influences fluxes of CO₂, CH₄ and N₂O in a forest soil. *Journal of Environmental Management*, 192(Supplement C), 203-214. doi:<https://doi.org/10.1016/j.jenvman.2016.12.066>
- Hay, G. (2021). Breakdown: Net zero goals demand zero tolerance. *Reuters*. Retrieved from [https://www.reuters.com/article/us-climate-change-companies-breakingview/breakdown-netzero-goals-demand-zero-tolerance-idUSKBN2CR1JH](https://www.reuters.com/article/us-climate-change-companies-breakingview/breakdown-net-zero-goals-demand-zero-tolerance-idUSKBN2CR1JH)
- Haya, B. (2019). *RB's U.S. Forest Projects offset protocol underestimates leakage –Preliminary results*. Retrieved from https://gspp.berkeley.edu/assets/uploads/research/pdf/Policy_Brief-US_Forest_Projects-Leakage-Haya_1.pdf
- Haya, B., Cullenward, D., Strong, A. L., Grubert, E., Heilmayr, R., Sivas, D. A., & Wara, M. (2020). Managing uncertainty in carbon offsets: insights from California's standardized approach. *Climate Policy*, 1-15. doi:[10.1080/14693062.2020.1781035](https://doi.org/10.1080/14693062.2020.1781035)
- Hayashi, K. (2016). The role of biochar and prospects for its use in rice production in Southeast Asia. In *Biochar for future food security: learning from experiences and identifying research priorities*.
- Hayes, B. H. (2014). *Mechanical and cultural practices to reduce skinning in sweetpotato*. Mississippi State University, Retrieved from <http://gradworks.umi.com/15/54/1554943.html>
- Hayes, M. H. B. (2006). Biochar and biofuels for a brighter future. *Nature*, 443(7108), 144-144.

- Hayes, M. H. B. (2013). Relationships Between Biochar and Soil Humic Substances. In *Functions of Natural Organic Matter in Changing Environment* (pp. 959-963).
- Haykiri-Acma, H., Yaman, S., & Kucukbayrak, S. (2015). Does carbonization avoid segregation of biomass and lignite during co-firing? Thermal analysis study. *Fuel Processing Technology*. doi:10.1016/j.fuproc.2015.03.017
- Hazarika, S. (2014). *Replacing slash-and-burn with slash-and-char can improve the quality of Jhum field soils*. Paper presented at the National Seminar on Shifting Cultivation (Jhum) in the 21st Century: Fitness and Improvement. www.researchgate.net/profile/Samarendra_Hazarika/publication/270162740_Replacing_slash-and-burn_with_slash-and-char_can_improve_the_quality_of_Jhum_field_soils/links/54a21c260cf257a636037c18.pdf
- Hazendonk, P., Bryson Brown, M., Byrne, J., Harrison, T., Mueller, R., Peacock, K., . . . McNaughton, R. (2014). Regional Renewable Energy Cooperatives. *American Geophysical Union, San Francisco*. Retrieved from <https://researchspace.auckland.ac.nz/handle/2292/25020>
- He, G., Wang, K., Zhong, Q., Zhang, G., van den Bosch, C. K., & Wang, J. (2021). Agroforestry reclamations decreased the CO₂ budget of a coastal wetland in the Yangtze estuary. *Agricultural and Forest Meteorology*, 296, 108212. doi:<https://doi.org/10.1016/j.agrformet.2020.108212>
- He, H., Qian, T.-T., Liu, W.-J., Jiang, H., & Yu, H.-Q. (2014). Biological and chemical phosphorus solubilization from pyrolytical biochar in aqueous solution. *Chemosphere*. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0045653514006730>
- He, L., Fan, S., Müller, K., Hu, G., Huang, H., Zhang, X., . . . Wang, H. (2015). Biochar reduces the bioavailability of di-(2-ethylhexyl) phthalate in soil. *Chemosphere*, 142, 24-27. doi:10.1016/j.chemosphere.2015.05.064
- He, L., Liu, Y., Zhao, J., Bi, Y., Zhao, X., Wang, S., & Xing, G. (2015). Comparison of straw-biochar-mediated changes in nitrification and ammonia oxidizers in agricultural oxisols and cambosols. *Biology and Fertility of Soils*. doi:10.1007/s00374-015-1059-3
- He, Q., Xi, J., Wang, W., Meng, L., Yan, S., & Zhang, Y. (2017). CO₂ absorption using biogas slurry: Recovery of absorption performance through CO₂ vacuum regeneration. *International Journal of Greenhouse Gas Control*, 58, 103-113. doi:<http://dx.doi.org/10.1016/j.ijggc.2017.01.010>
- He, T., Liu, D., Yuan, J., Luo, J., Lindsey, S., Bolan, N., & Ding, W. (2018). Effects of application of inhibitors and biochar to fertilizer on gaseous nitrogen emissions from an intensively managed wheat field. *Science of The Total Environment*, 628-629, 121-130. doi:<https://doi.org/10.1016/j.scitotenv.2018.02.048>
- He, Y., Trumbore, S. E., Torn, M. S., Harden, J. W., Vaughn, L. J. S., Allison, S. D., & Randerson, J. T. (2016). Radiocarbon constraints imply reduced carbon uptake by soils during the 21st century. 353(6306), 1419-1424. doi:10.1126/science.aad4273 %J Science
- He, Z., Wang, S., Mahoutian, M., & Shao, Y. (2020). Flue gas carbonation of cement-based building products. *Journal of CO₂ Utilization*, 37, 309-319. doi:<https://doi.org/10.1016/j.jcou.2020.01.001>
- Headlee, W. L., Brewer, C. E., & Hall, R. B. (2013). Biochar as a Substitute for Vermiculite in Potting Mix for Hybrid Poplar. *BioEnergy Research*, 7(1), 120-131. Retrieved from <https://link.springer.com/article/10.1007/s12155-013-9355-y>
- Healey, P., Scholes, R., Lefale, P., & Yanda, P. (2021). Governing Net Zero Carbon Removals to Avoid Entrenching Inequities. *Frontiers in Climate*, 3(38). doi:10.3389/fclim.2021.672357
- Heaton, E. A., Dohleman, F. G., & Long, S. P. (2008). Meeting US biofuel goals with less land: the potential of Miscanthus. *Global Change Biology*, 14(9), 2000-2014. doi:10.1111/j.1365-2402.2008.01701.x

j.1365-2486.2008.01662.x

- Heck, D. W. (2015). *Supressividade a Fusarium oxysporum f. sp. cubense por produtos orgânicos (Suppressiveness to Fusarium oxysporum f. sp. cubense for organic products)*. Retrieved from <http://repositorio.unesp.br/handle/11449/132112>
- Heck, V. (2016). Collateral transgression of planetary boundaries due to climate engineering by terrestrial carbon dioxide removal. *Earth System Dynamics*, 7, 783-796. Retrieved from <https://www.earth-syst-dynam.net/7/783/2016/esd-7-783-2016.pdf>
- Heck, V., Gerten, D., Lucht, W., & Boysen, L. R. (2016). Is extensive terrestrial carbon dioxide removal a 'green' form of geoengineering? A global modelling study. *Global and Planetary Change*, 137, 123-130. doi:<http://dx.doi.org/10.1016/j.gloplacha.2015.12.008>
- Heck, V., Gerten, D., Lucht, W., & Popp, A. (2018). Biomass-based negative emissions difficult to reconcile with planetary boundaries. *Nature Climate Change*. doi:[10.1038/s41558-017-0064-y](https://doi.org/10.1038/s41558-017-0064-y)
- Hedin, R. S., & Hedin, B. C. (2015). Increasing Oceanic Carbon Fixation Through Fe Fertilization: Opportunity for Mine Water? *Mine Water and the Environment*, 34(1), 105-111. doi:[10.1007/s10230-014-0305-5](https://doi.org/10.1007/s10230-014-0305-5)
- Heffernan, O. (2017). Geoengineering fears make scrutiny of ocean seeding test vital. *New Scientist*. Retrieved from <https://www.newscientist.com/article/2133372-geoengineering-fears-make-scrutiny-of-ocean-seeding-test-vital/>
- Heffron, R. J., et al. (2018). Three layers of energy law for examining CO₂ transport for carbon-capture and storage. *Journal of World Energy Law & Business*, 11(2), 93-120.
- Heggenstaller, A. H., Anex, R. P., Liebman, M., Sundberg, D. N., & Gibson, L. R. (2008). Productivity and Nutrient Dynamics in Bioenergy Double-Cropping Systems All rights reserved. No part of this periodical may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage and retrieval system, without permission in writing from the publisher. *Agronomy Journal*, 100(6), 1740-1748. doi:[10.2134/agronj2008.0087](https://doi.org/10.2134/agronj2008.0087)
- Heggenstaller, A. H., Liebman, M., & Anex, R. P. (2009). Growth Analysis of Biomass Production in Sole-Crop and Double-Crop Corn Systems All rights reserved. No part of this periodical may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage and retrieval system, without permission in writing from the publisher. Permission for printing and for reprinting the material contained herein has been obtained by the publisher. *Crop Science*, 49(6), 2215-2224. doi:[10.2135/cropsci2008.12.0709](https://doi.org/10.2135/cropsci2008.12.0709)
- Heggenstaller, A. H., Moore, K. J., Liebman, M., & Anex, R. P. (2009). Nitrogen Influences Biomass and Nutrient Partitioning by Perennial, Warm-Season Grasses All rights reserved. No part of this periodical may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage and retrieval system, without permission in writing from the publisher. *Agronomy Journal*, 101(6), 1363-1371. doi:[10.2134/agronj2008.0225x](https://doi.org/10.2134/agronj2008.0225x)
- Hei, L., Wang, H., Wu, Q. T., & Yu, W. P. (2015). Safe Utilization of Municipal Sewage Sludge in Agriculture and Forestry. *Applied Mechanics and Materials*, 768, 542 - 552. doi:[10.4028/www.scientific.net/AMM.768.542](https://doi.org/10.4028/www.scientific.net/AMM.768.542)
- Heidel, K. R. (2017).
- Heidenreich, S., & Foscolo, P. U. (2015). New concepts in biomass gasification. *Progress in Energy and Combustion Science*, 46, 72-95. doi:<http://dx.doi.org/10.1016/j.pecs.2014.06.002>
- Heilmayr, R., Echeverría, C., & Lambin, E. F. (2020). Impacts of Chilean forest subsidies on forest cover, carbon and biodiversity. *Nature Sustainability*, 3(9), 701-709. doi:[10.1038/s41893-020-0547-0](https://doi.org/10.1038/s41893-020-0547-0)

- Heirloom. (2021). Announcing Heirloom. Retrieved from <https://medium.com/@heirloomcarbon/announcing-heirloom-275d16a06df6>
- Heiskanen, J., Tammeorg, P., & Dumroese, R. K. (2013). Growth of Norway spruce seedlings after transplanting into silty soil amended with biochar: a bioassay in a growth chamber. *Journal of Forest Science*, 59, 125–129. Retrieved from <http://www.agriculturejournals.cz/publicFiles/87793.pdf>
- Heitkötter, J., & Marschner, B. (2015). Interactive effects of biochar ageing in soils related to feedstock, pyrolysis temperature, and historic charcoal production. *Geoderma*, 245-246, 56 - 64. doi:10.1016/j.geoderma.2015.01.012
- Hejazi, M. I., Voisin, N., Liu, L., Bramer, L. M., Fortin, D. C., Hathaway, J. E., . . . Zhou, Y. (2015). 21st century United States emissions mitigation could increase water stress more than the climate change it is mitigating. *Proceedings of the National Academy of Sciences*, 112(34), 10635-10640. doi:10.1073/pnas.1421675112
- Helander, H. (2014). *Emissions and Energy Use Efficiency of Household Biochar Production during Cooking in Kenya*. Uppsala University, Retrieved from <http://www.diva-portal.org/smash/record.jsf?pid=diva2:722263>
- Heldebrant, D. J., & Kothandaraman, J. (2020). Chapter 3 Solvent-based Absorption. In *Carbon Capture and Storage* (pp. 36-68): The Royal Society of Chemistry.
- Heller, M. C., Keoleian, G. A., & Volk, T. A. (2003). Life cycle assessment of a willow bioenergy cropping system. *Biomass & Bioenergy*, 25, 147-165. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.459.6944&rep=rep1&type=pdf>
- Hemes, K. S., Chamberlain, S. D., Eichelmann, E., Knox, S. H., & Baldocchi, D. D. (2018). A Biogeochemical Compromise: The High Methane Cost of Sequestering Carbon in Restored Wetlands. *Geophysical Research Letters*, 45(12), 6081-6091. doi:doi:10.1029/2018GL077747
- Hemings, E. B., et al. (2011). *Kinetic Analysis of Biochar Formation During Biomass Pyrolysis*. Paper presented at the XXXIV Meeting of the Italian Section of the Combustion Institute. <http://www.combustion-institute.it/proceedings/XXXIV-ASCI/papers/34proci2011.III6.pdf>
- Hemwong, S., & Cadisch, G. (2014). Effects of Biochar Amendment on Soil Fertility and Lowland Rice Yield in Nakhon Phanom Province Northeast Thailand. *Journal Phanom University*, 45-48. Retrieved from <http://www.mcc.cmu.ac.th/Seminar/pdf/p255508005.pdf>
- Henderson, G., Rickaby, R., & Bouman, H. (2008). Decreasing Atmospheric CO₂ by Increasing Ocean Alkalinity [Press release]. Retrieved from https://www.earth.ox.ac.uk/~gideonh/reports/Cquestrate_report.pdf
- Henderson, H. (2020). IGI Scientists Make E. coli That Can Take Carbon Dioxide From the Air — And Use It [Press release]. Retrieved from <https://innovativegenomics.org/news/dave-savage-engineering-carbon-sequestration/>
- Hendriks, C. A., & Blok, K. (1995). Underground storage of carbon dioxide. *Energy Conversion and Management*, 36(6), 539-542. doi:[https://doi.org/10.1016/0196-8904\(95\)00062-I](https://doi.org/10.1016/0196-8904(95)00062-I)
- Henjes, J., Assmy, P., Klaas, C., & Smetacek, V. (2007). Response of the larger protozooplankton to an iron-induced phytoplankton bloom in the Polar Frontal Zone of the Southern Ocean (EisenEx). *Deep Sea Research Part I: Oceanographic Research Papers*, 54(5), 774-791. doi:<https://doi.org/10.1016/j.dsr.2007.02.005>
- Hennacy, J. H., & Jonikas, M. C. (2020). Prospects for Engineering Biophysical CO₂ Concentrating Mechanisms into Land Plants to Enhance Yields. *Annual Review of Plant Biology*, 71(1), 461-485. doi:10.1146/annurev-arplant-081519-040100
- Henrion, L., et al. (2021). Bendable concrete and other CO₂-infused cement mixes could dramatically cut global emissions *The Conversation*. Retrieved from <https://theconversation.com/bendable-concrete-and-other-co2-infused-cement-mixes-could->

- dramatically-cut-global-emissions-152544?
utm_medium=email&utm_campaign=Science%20weekly%20Feb%2017%202021&utm_content=Science%20weekly%20Feb%2017%202021+CID_c32aecfb1669bd26c2cce2a2e964b501&utm_source=campaign_monitor_us&utm_term=full%20extent%20of%20carbon%20emissions%20from%20different%20curing%20methods
- Henry, D. (2017). Senators push bill to fund carbon capture projects. *The Hill*. Retrieved from <http://thehill.com/policy/energy-environment/327487-senators-push-bill-to-fund-carbon-capture-projects>
- Henry, R. C., et al. (2018). Food supply and bioenergy production within the global cropland planetary boundary. *Plos One*, 13(3), 1-17. Retrieved from <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0194695>
- Hepburn, C., Adlen, E., Beddington, J., Carter, E. A., Fuss, S., Mac Dowell, N., . . . Williams, C. K. (2019). The technological and economic prospects for CO₂ utilization and removal. *Nature*, 575(7781), 87-97. doi:10.1038/s41586-019-1681-6
- Hepple, R. P., & Benson, S. M. (2005). Geologic storage of carbon dioxide as a climate change mitigation strategy: performance requirements and the implications of surface seepage. *Environmental Geology*, 47(4), 576-585. doi:10.1007/s00254-004-1181-2
- Herath, H. M. S. K., et al. . (2014). Experimental evidence for sequestering C with biochar by avoidance of CO₂ emissions from original feedstock and protection of native soil organic matter. *Global Change Biology Bioenergy*, 7(3), 512-526. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/gcbb.12183/abstract>
- Herath, H. M. S. K., et al. . (2014). Fate of biochar in chemically- and physically-defined soil organic carbon pools. *Organic Geochemistry*, 73, 35-46. doi:10.1016/j.orggeochem.2014.05.001
- Herath, H. M. S. K., Camps-Arbestain, M., & Hedley, M. (2013). Effect of biochar on soil physical properties in two contrasting soils: An Alfisol and an Andisol. *Geoderma*, 209–210, 188–197. Retrieved from <http://www.sciencedirect.com/science/article/pii/S001670613002164>
- Herath, I., et al. . (2014). *The addition of biochar to serpentine soils reduces metals release and phytotoxicity to tomato plants*. Paper presented at the Conference Paper June 1014. http://www.researchgate.net/profile/Indika_Herath4/publication/277313807_The_addition_of_biochar_to_serpentine_soils_reduces_metals_release_and_phytotoxicity_to_tomato_plants/links/5567761408aec2268300fd5f.pdf
- Herath, I., et al. . (2015). Bioenergy-derived waste biochar for reducing mobility, bioavailability, and phytotoxicity of chromium in anthropized tannery soil. *Journal of Soils and Sediments*, 17(3), 731-740. doi:10.1007/s11368-015-1332-y
- Herath, I., et al. (2015). Rice Husk Derived Engineered Biochar for Glyphosate Removal in Aqueous Media. *Journal of Environmental Indicators*, 9, 41. Retrieved from <http://scholar.uwindsor.ca/cgi/viewcontent.cgi?article=1024&context=icei2015>
- Herath, I., et al. . (2016). Mechanistic modeling of glyphosate interaction with rice husk derived engineered biochar. *Microporous and Mesoporous Materials*, 225, 280 - 288. doi:10.1016/j.micromeso.2016.01.017
- Herath, I., Kumarathilaka, P., Navaratne, A., Rajakaruna, N., & Vithanage, M. (2014). Immobilization and phytotoxicity reduction of heavy metals in serpentine soil using biochar. *Journal of Soils and Sediments*, 15(1), 126-138. doi:10.1007/s11368-014-0967-4
- Herath, I., Mayakaduwa, S. S., & Vithanage, M. (2015). *Potential of Different Biochars for Glyphosate Removal in Water; Implications for Water Safety*. Paper presented at the 6th International Conference on Structural Engineering and Construction Management 2015. http://www.civil.mrt.ac.lk/conference/ICSECM_2015/book_3/Extract/SECM-15-095.pdf

- Herath, I., & Vithanage, M. (2014). *Biochar Derived from a Bioenergy Production Industry for Immobilization and Phytotoxicity Reduction of Cr in Tannery Waste Polluted Soils*. Paper presented at the 2nd CLEAR. http://www.researchgate.net/profile/Indika_Herath4/publication/277322334_Biochar_Derived_from_a_Bioenergy_Production_Industry_for_Immobilization_and_Phytotoxicity_Reduction_of_Cr_in_Tannery_Waste_Polluted_Soils/links/55677c9308aefc861d38a1d.pdf
- Herath, I., Wickremasinghe, S., Rajakaruna, N., Navaratne, A., & Vithanage, M. (2015). *Effects of Biochar the Immobilization and Phytotoxicity Reduction of Heavy Metals in Serpentine Soil*. University of Peradeniya , Sri Lanka, Retrieved from <http://www.dlib.pdn.ac.lk/archive/handle/1/4585>
- Herbert, L., Hosek, I., & Kripalani, R. (2012). *THE CHARACTERIZATION AND COMPARISON OF BIOCHAR PRODUCED FROM A DECENTRALIZED REACTOR USING FORCED AIR AND NATURAL DRAFT PYROLYSIS*. California Polytechnic State University, San Luis Obispo.
- Hergoualc'h, K., Blanchart, E., Skiba, U., Hénault, C., & Harmand, J.-M. (2012). Changes in carbon stock and greenhouse gas balance in a coffee (*Coffea arabica*) monoculture versus an agroforestry system with *Inga densiflora*, in Costa Rica. *Agriculture, Ecosystems & Environment*, 148, 102-110. doi:<https://doi.org/10.1016/j.agee.2011.11.018>
- Hernández-Morcillo, M., Burgess, P., Mirck, J., Pantera, A., & Plieninger, T. (2018). Scanning agroforestry-based solutions for climate change mitigation and adaptation in Europe. *Environmental Science & Policy*, 80, 44-52. doi:<https://doi.org/10.1016/j.envsci.2017.11.013>
- Hernandez-Soriano, M. C., Kerré, B., Goos, P., Hardy, B., Dufey, J., & Smolders, E. (2015). Long-term effect of biochar on the stabilization of recent carbon: soils with historical inputs of charcoal. *GCB Bioenergy*, n/a - n/a. doi:[10.1111/gcbb.12250](https://doi.org/10.1111/gcbb.12250)
- Hertel, T. W., Golub, A. A., Jones, A. D., O'Hare, M., Plevin, R. J., & Kammen, D. M. (2010). Effects of US Maize Ethanol on Global Land Use and Greenhouse Gas Emissions: Estimating Market-mediated Responses. *BioScience*, 60(3), 223-231. doi:[10.1525/bio.2010.60.3.8](https://doi.org/10.1525/bio.2010.60.3.8)
- Hertwich, E. G., Aaberg, M., Singh, B., & Strømman, A. H. (2008). Life-cycle Assessment of Carbon Dioxide Capture for Enhanced Oil Recovery. *Chinese Journal of Chemical Engineering*, 16(3), 343-353. doi:[https://doi.org/10.1016/S1004-9541\(08\)60085-3](https://doi.org/10.1016/S1004-9541(08)60085-3)
- Herzog, H. (1999). *Understanding Sequestration as a Means of Carbon Management*. Retrieved from https://sequestration.mit.edu/pdf/understand_sequestration.pdf
- Herzog, H. (2001). What Future for Carbon Capture and Sequestration. *Environmental Science and Policy*, 35(7), 148-153. Retrieved from https://sequestration.mit.edu/pdf/EST_web_article.pdf
- Herzog, H. (2003). *Assessing the Feasibility of Capturing CO₂ from the Air*.
- Herzog, H. (2009). Carbon Dioxide Capture and Storage. In D. Helm & C. Hepburn (Eds.), *The Economics and Politics of Climate Change* (pp. 263-283).
- Herzog, H. (2015). Pumping CO₂ underground can help fight climate change. Why is it stuck in second gear? *The Conversation*. Retrieved from <https://theconversation.com/pumping-co2-underground-can-help-fight-climate-change-why-is-it-stuck-in-second-gear-37572>
- Herzog, H. (2016). *Lessons Learned from CCS Demonstration and Large Pilot Projects*. Retrieved from <https://sequestration.mit.edu/bibliography/CCS%20Demos.pdf>
- Herzog, H., Caldeira, K., & Reilly, J. (2003). An Issue of Permanence: Assessing the Effectiveness of Temporary Carbon Storage. *Climatic Change*, 59(3), 293-310. doi:[10.1023/A:1024801618900](https://doi.org/10.1023/A:1024801618900)

- Herzog, H., Drake, E., & Adams, E. (1997). *CO Capture, Reuse, and Storage Technologies 2 for Mitigating Global Climate Change*. Retrieved from
- Herzog, H., & Eide, J. (2013). Rethinking CCS-Moving forward in times of uncertainty. *Mining Report*, 1, 44-50. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/mire.201300040/abstract>
- Herzog, H., Eliasson, B., & Kaarstad, O. (2000). Capturing Greenhouse Gases. *Scientific American*, 282(2), 72-79.
- Herzog, H. J. (2001). Peer Reviewed: What Future for Carbon Capture and Sequestration? *Environmental Science & Technology*, 35(7), 148A-153A. doi:10.1021/es012307j
- Herzog, H. J. (2011). Scaling up carbon dioxide capture and storage: From megatons to gigatons. *Energy Economics*, 33(4), 597-604. doi:<https://doi.org/10.1016/j.eneco.2010.11.004>
- Herzog, H. J. (2015). *CCS at a Crossroads*. Retrieved from <https://sequestration.mit.edu/bibliography/ccs-crossroads.pdf>
- Herzog, H. J., & Golomb, D. (2004). Carbon Capture and Storage from Fossil Fuel Use. In C. J. Cleveland (Ed.), *Encyclopedia of Energy* (pp. 277-287). Retrieved from https://sequestration.mit.edu/pdf/encyclopedia_of_energy_article.pdf
- Hess, J. R., Wright, C. T., & Kenney, K. L. (2007). Cellulosic biomass feedstocks and logistics for ethanol production. *Biofuels, Bioproducts and Biorefining*, 1(3), 181-190. doi:doi:10.1002/bbb.26
- Hester, T. (2017). *Direct Air Capture Governance and Environmental Intervention Principles*. Retrieved from http://www.law.northwestern.edu/research-faculty/searlecenter/events/roundtable/documents/Hester_NW_NET_Presentation_0511917.pdf
- Hester, T. (2017). Remaking the World to Save It: Applying U.S. Environmental Laws to Climate Engineering Projects. *Ecology Law Quarterly*, 38(4), 1-53. Retrieved from <https://scholarship.law.berkeley.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1982&context=elq>
- Hester, T. (2018). Legal Pathways to Negative Emissions Technologies and Direct Air Capture of Greenhouse Gases. *Environmental Law Reporter*, 48, 10413-10432. Retrieved from <https://www.law.uh.edu/faculty/thester/Legal%20Pathways%20to%20Broad%20Use%20of%20NETs%20and%20DAC%20by%20Hester.pdf>
- Hester, T. (2018). The paradox of regulating negative emissions technologies under US environmental laws. *Global Sustainability*, 1, 1-7. Retrieved from https://www.cambridge.org/core/services/aop-cambridge-core/content/view/6DD090D1CA8831B899E3A46955E5EB1A/S2059479818000017a.pdf/paradox_of_regulating_negative_emissions_technologies_under_us_environmental_laws.pdf
- Hester, T., & Gerrard, M. B. (2018). Going Negative: The Next Horizon in Climate Engineering Law. *Natural Resource and Environment*, 32(4), 3-7. Retrieved from <https://search.proquest.com/docview/2039214127?pq-origsite=gscholar>
- Hestrin, R., Torres-Rojas, D., Dynes, J. J., Hook, J. M., Regier, T. Z., Gillespie, A. W., . . . Lehmann, J. (2019). Fire-derived organic matter retains ammonia through covalent bond formation. *Nature Communications*, 10(1), 664. doi:10.1038/s41467-019-08401-z
- Hetland, J., Yowargana, P., Leduc, S., & Kraxner, F. (2016). Carbon-negative emissions: Systemic impacts of biomass conversion: A case study on CO₂ capture and storage options. *International Journal of Greenhouse Gas Control*, 49, 330-342. doi:<http://dx.doi.org/10.1016/j.ijggc.2016.03.017>
- Heuberger, C. F., & Mac Dowell, N. (2020). Chapter 12 CCS in Electricity Systems. In *Carbon Capture and Storage* (pp. 392-425): The Royal Society of Chemistry.

- Heyne, S., & Harvey, S. (2013). Assessment of the energy and economic performance of second generation biofuel production processes using energy market scenarios. *Applied Energy*, 101, 203-212. doi:<http://dx.doi.org/10.1016/j.apenergy.2012.03.034>
- Heyward, C. (2013). Situating and Abandoning Geoengineering: A Typology of Five Responses to Dangerous Climate Change. *PS: Political Science & Politics*, 46(1), 23-27. doi:[10.1017/S1049096512001436](https://doi.org/10.1017/S1049096512001436)
- Heyward, C. (2019). 21 - Normative issues of geoengineering technologies. In T. M. Letcher (Ed.), *Managing Global Warming* (pp. 639-657): Academic Press.
- Hezir, J. S., et al. (2019). *Carbon Removal: Comparing Historical Federal Research Investments with the National Academies' Recommended Future Funding Levels*. Retrieved from <https://t.co/3ie1rFz8oE>
- Hiar, C. (2021). Direct Air Capture of CO₂ Is Suddenly a Carbon Offset Option. *Scientific American*. Retrieved from <https://www.scientificamerican.com/article/direct-air-capture-of-co2-is-suddenly-a-carbon-offset-option/>
- Hickel, J. (2017). Regenerative Agriculture: Our Best Shot At Cooling The Planet? *Countercurrents.org*. Retrieved from <https://www.countercurrents.org/2017/01/10/regenerative-agriculture-our-best-shot-at-cooling-the-planet/>
- Hicks Pries, C. E., Castanha, C., Porras, R., & Torn, M. S. (2017). The whole-soil carbon flux in response to warming. *Science*, 355(6332), 1420-1423. doi:[10.1126/science.aal1319](https://doi.org/10.1126/science.aal1319)
- Hidayat, A., Rochmadi, Wijaya, K., & Budiman, A. (2015). *AIP Conference Proceedings Reaction kinetics of free fatty acids esterification in palm fatty acid distillate using coconut shell biochar sulfonated catalyst*. Paper presented at the INTERNATIONAL CONFERENCE OF CHEMICAL AND MATERIAL ENGINEERING (ICCME) 2015: Green Technology for Sustainable Chemical Products and Processes, Semarang, Indonesia. <http://scitation.aip.org/content/aip/proceeding/aipcp/10.1063/1.4938341>
- Hidayat, A., Rochmadi, Wijaya, K., & Budiman, A. (2016). *Removal of free fatty acid in Palm Fatty Acid Distillate using sulfonated carbon catalyst derived from biomass waste for biodiesel production*. Paper presented at the IOP Conference Series: Materials Science and Engineering. <http://iopscience.iop.org/article/10.1088/1757-899X/105/1/012026/meta>
- Hidayat, A., Rochmadi, Wijaya, K., Nurdiauwati, A., Kurniawan, W., Hinode, H., . . . Budiman, A. (2015). Esterification of Palm Fatty Acid Distillate with High Amount of Free Fatty Acids Using Coconut Shell Char Based Catalyst. *Energy Procedia*, 75, 969 - 974. doi:[10.1016/j.egypro.2015.07.301](https://doi.org/10.1016/j.egypro.2015.07.301)
- Hidayat, B. (2015). Remediasi Tanah Tercemar Logam Berat Dengan Menggunakan Biochar (Soil Remediation Contaminated with Heavy Metals Biochar). *Pertanian Tropik (Tropical Agriculture)*, 2(1), 31-41. Retrieved from <http://202.0.107.5/index.php/tropik/article/view/10101>
- Hiew, W. J., & Ghosh, U. K. (2015). *Application of biochar produced from palm shells for the separation of crystal violet from aqueous solution by adsorption*. Paper presented at the Asia Pacific Confederation of Chemical Engineering Congress. <http://search.informit.com.au/documentSummary;dn=715081667926011;res=IELENG>
- Higgins, J. L., Kudo, I., Nishioka, J., Tsuda, A., & Wilhelm, S. W. (2009). The response of the virus community to the SEEDS II mesoscale iron fertilization. *Deep Sea Research Part II: Topical Studies in Oceanography*, 56(26), 2788-2795. doi:<https://doi.org/10.1016/j.dsro.2009.06.005>
- Higman, C. (2010). Gasification processes and synthesis gas treatment technologies for carbon dioxide (CO₂) capture A2 - Maroto-Valer, M. Mercedes. In *Developments and Innovation in Carbon Dioxide (CO₂) Capture and Storage Technology* (Vol. 1, pp. 243-279): Woodhead Publishing.

- Hijikata, N., Yamauchi, N., Ishiguro, M., Ushijima, K., & Funamizu, N. (2015). Suitability of biochar as a matrix for improving the performance of composting toilets. *Waste Management & Research*, 33(4), 313-321. doi:10.1177/0734242x15572179
- Hilaire, J., Minx, J. C., Callaghan, M. W., Edmonds, J., Luderer, G., Nemet, G. F., . . . del Mar Zamora, M. (2019). Negative emissions and international climate goals—learning from and about mitigation scenarios. *Climatic Change*. doi:10.1007/s10584-019-02516-4
- Hilber, I., Blum, F., Leifeld, J., Schmidt, H.-P., & Bucheli, T. D. (2012). Quantitative determination of PAHs in biochar a prerequisite to assure its quality and safe application. *Journal of Agricultural and Food Chemistry*, 60(12), 3042-3305. doi:10.1021/jf205278v
- Hilber, I., Bucheli, T. D., Wyss, G. S., & Schulin, R., J. (2009). Assessing the Phytoavailability of Dieldrin Residues in Charcoal-Amended Soil Using Tenax Extraction. *Journal of Agricultural and Food Chemistry*, 57(10), 4293-4298. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/jf900224e>
- Hilbers, T. J., Wang, Z., Pecha, B., Westerhof, R. J. M., Kersten, S. R. A., Pelaez-Samaniego, M. R., & Garcia-Perez, M. (2015). Cellulose-Lignin interactions during slow and fast pyrolysis. *Journal of Analytical and Applied Pyrolysis*, 114, 197-207. doi:10.1016/j.jaap.2015.05.020
- Hill, A., Di, H., Cameron, K., & Podolyan, A. (2014). Comparison of dicyandiamide and biochar for reducing nitrate leaching under winter forage grazing in Canterbury, New Zealand. *New Zealand Journal of Agricultural Research*, 1 - 10. doi:10.1080/00288233.2014.983614
- Hill, J., Nelson, E., Tilman, D., Polasky, S., & Tiffany, D. (2006). Environmental, economic, and energetic costs and benefits of biodiesel and ethanol biofuels. *Proceedings of the National Academy of Sciences*, 103(30), 11206-11210. doi:10.1073/pnas.0604600103
- Hill, J. S. (2019). UK's National Grid says net zero carbon "achievable" by 2050. *Renew Economy*(July 16). Retrieved from [https://reneweconomy.com.au/uks-national-grid-says-netzero-carbon-achievable-by-2050/](https://reneweconomy.com.au/uks-national-grid-says-net-zero-carbon-achievable-by-2050/)
- Hill, R., Bellgrove, A., Macreadie, P. I., Petrou, K., Beardall, J., Steven, A., & Ralph, P. J. (2015). Can macroalgae contribute to blue carbon? An Australian perspective. *Limnology and Oceanography*, 60(5), 1689-1706. doi:10.1002/lno.10128
- Hiller, D. A., & Brummer, G. W. (1997). Electron microprobe studies on soil samples with varying heavy metal contamination. *Zeitschrift Fur Pflanzenernahrung Und Bodenkunde*, 160, 47-55.
- Hiller, E., Fargasova, A., Zemanova, L., & Bartal, M. (2007). Influence of wheat ash on the MCPA immobilization in agricultural soils. *Bulletin of Environmental Contamination and Toxicology*, 79, 478-481.
- Hiller, J. (2021). Exxon floats \$100 bln carbon storage project requiring public, private financing. *Reuters*. Retrieved from <https://www.reuters.com/business/sustainable-business/exxon-proposes-massive-carbon-capture-storage-project-houston-2021-04-19/>
- Hills, C. D., Tripathi, N., & Carey, P. J. (2021). Managed pathways for CO₂ mineralisation: analogy with nature and potential contribution to CCUS-led reduction targets. *Faraday Discussions*, 230(0), 152-171. doi:10.1039/D0FD00142B
- Hills, T. P., Sceats, M. G., & Fennell, P. S. (2020). Chapter 10 Applications of CCS in the Cement Industry. In *Carbon Capture and Storage* (pp. 315-352): The Royal Society of Chemistry.
- Hilscher, A., Heister, K., Siewert, C., & Knicker, K. (2009). Mineralization and structural changes during the initial phases of microbial degradation of pyrogenic plant residues in soil. *Organic Geochemistry*, 40.
- Hilscher, A., & Knicker, H. (2011). Degradation of grass-derived pyrogenic organic material, transport of the residues within a soil column and distribution in soil organic matter

- fractions during a 28 month microcosm experiment. *Organic Geochemistry*, 241, 79-87. Retrieved from <http://www.sciencedirect.com/science/article/B6V7P-518TY9X-1/2/f0fdec1f68220503e8a3fc4d636055c7>
- Hilz, J., Helbig, M., Haaf, M., Daikeler, A., Ströhle, J., & Epple, B. (2017). Long-term pilot testing of the carbonate looping process in 1MWth scale. *Fuel*, 210, 892-899. doi:<https://doi.org/10.1016/j.fuel.2017.08.105>
- Himken, M., Lammel, J., Neukirchen, D., Czypionka-Krause, U., & Olfs, H.-W. (1997). Cultivation of Miscanthus under West European conditions: Seasonal changes in dry matter production, nutrient uptake and remobilization. *Plant and Soil*, 189(1), 117-126. doi:[10.1023/a:1004244614537](https://doi.org/10.1023/a:1004244614537)
- Hina, K. (2013). *Application of Biochar Technologies to Wastewater Treatment*. (PhD in Soil Science). Massey University, Retrieved from http://muir.massey.ac.nz/bitstream/handle/10179/4288/02_whole.pdf?sequence=1
- Hina, K., Bishop, P., Camps Arbestain, M., Calvelo-Pereira, R., Macia-Agullo, J. A., Hindmarsh, J., . . . Hedley, M. J. (2010). Producing biochars with enhanced surface activity through alkaline pretreatment of feedstocks. *Australian Journal of Soil Research*, 48(7), 606-617. Retrieved from <http://www.publish.csiro.au/sr/sr10015>
- Hina, K., Hedley, M., Camps-Arbestain, M., & Hanly, J. (2013). Comparison of pine bark, biochar and zeolite as sorbents for NH₄⁺-N removal from water†. *CLEAN Soil Air Water*, 43(1), 86-91. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/clen.201300682/abstract>
- Hirano, A., Ueda, R., Hirayama, S., & Ogushi, Y. (1997). CO₂ fixation and ethanol production with microalgal photosynthesis and intracellular anaerobic fermentation. *Energy*, 22(2), 137-142. doi:[https://doi.org/10.1016/S0360-5442\(96\)00123-5](https://doi.org/10.1016/S0360-5442(96)00123-5)
- Hirons, M. (2021). Governing natural climate solutions: prospects and pitfalls. *Current Opinion in Environmental Sustainability*, 52, 36-44. doi:<https://doi.org/10.1016/j.cosust.2021.06.012>
- Hiscock, W. T., & Millero, F. J. (2005). Nutrient and carbon parameters during the Southern Ocean iron experiment (SOFeX). *Deep Sea Research Part I: Oceanographic Research Papers*, 52(11), 2086-2108. doi:<https://doi.org/10.1016/j.dsr.2005.06.010>
- Hise, A. M., Characklis, G. W., Kern, J., Gerlach, R., Viamajala, S., Gardner, R. D., & Vadlamani, A. (2016). Evaluating the relative impacts of operational and financial factors on the competitiveness of an algal biofuel production facility. *Bioresource Technology*, 220, 271-281. doi:<https://doi.org/10.1016/j.biortech.2016.08.050>
- Hmid, A., Al Chami, Z., Sillen, W., De Vocht, A., & Vangronsveld, J. (2014). Olive mill waste biochar: a promising soil amendment for metal immobilization in contaminated soils. *Environmental Science and Pollution Research*, 22(2), 1444-1456. doi:[10.1007/s11356-014-3467-6](https://doi.org/10.1007/s11356-014-3467-6)
- Hmid, A., Mondelli, D., Fiore, S., Fanizzi, F. P., Al Chami, Z., & Dumontet, S. (2014). Production and characterization of biochar from three-phase olive mill waste through slow pyrolysis. *Biomass and Bioenergy*, 71, 330 - 339. doi:[10.1016/j.biombioe.2014.09.024](https://doi.org/10.1016/j.biombioe.2014.09.024)
- Hnottavange-Telleen, K., Chabora, E., Finley, R. J., Greenberg, S. E., & Marsteller, S. (2011). Risk management in a large-scale CO₂ geosequestration pilot project, Illinois, USA. *Energy Procedia*, 4, 4044-4051. doi:<https://doi.org/10.1016/j.egypro.2011.02.346>
- Ho, S.-H., Ye, X., Hasunuma, T., Chang, J.-S., & Kondo, A. (2014). Perspectives on engineering strategies for improving biofuel production from microalgae — A critical review. *Biotechnology Advances*, 32(8), 1448-1459. doi:<https://doi.org/10.1016/j.biotechadv.2014.09.002>
- Ho, Y.-C., & Show, K.-Y. (2015). A Perspective in Renewable Energy Production from Biomass Pyrolysis - Challenges and Prospects. *Current Organic Chemistry*, 19(5), 423-436. Retrieved from <http://www.ingentaconnect.com/content/ben/coc/2015/00000019/00000005/art00006>

- Hochman, G., et al. (2012). Biofuel and Food-Commodity Prices. *Agriculture*, 2, 272-281. Retrieved from <http://www.mdpi.com/2077-0472/2/3/272/pdf>
- Hockaday, W. C., Grannas, A. M., Kim, S., & Hatcher, P. G. (2007). The transformation and mobility of charcoal in a fire-impacted watershed. *Geochimica Et Cosmochimica Acta*, 71(14), 3432-3445. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0016703707001950>
- Hodgson, R. (2018). Backers warn Europe needs CCS to meet Paris goals. *ENDS Europe*. Retrieved from <https://www.endseurope.com/article/53440/backers-warn-europe-needs-ccs-to-meet-paris-goals>
- Hodgson, R. (2021). Tree-tracking start-ups surge as climate pledges take root. *Financial Times*. Retrieved from <https://www.ft.com/content/cba58ffa-9fef-45f5-a99c-7497cd07edf7>
- Hodor-Lee, A. (2021). Four environmental experts weigh in on the peril and promise of a 'geoengineered' Earth. Retrieved from <https://www.documentjournal.com/2021/02/in-a-warming-world-an-engineered-climate-edges-towards-reality/>
- Hoefnagels, R., Smeets, E., & Faaij, A. (2010). Greenhouse gas footprints of different biofuel production systems. *Renewable and Sustainable Energy Reviews*, 14(7), 1661-1694. doi:<https://doi.org/10.1016/j.rser.2010.02.014>
- Hoffman, J., Pate, R. C., Drennen, T., & Quinn, J. C. (2017). Techno-economic assessment of open microalgae production systems. *Algal Research*, 23, 51-57. doi:<https://doi.org/10.1016/j.algal.2017.01.005>
- Hoffman, T. C. (2015). *Pyrolysis for Estrogens Removal from Wastewater Solids*. Marquette University, Retrieved from http://epublications.marquette.edu/theses_open/294/
- Hoffmann, L. J., Peeken, I., Lochte, K., Assmy, P., & Veldhuis, M. (2006). Different reactions of Southern Ocean phytoplankton size classes to iron fertilization. *Limnology and Oceanography*, 51(3), 1217-1229. doi:[10.4319/lo.2006.51.3.1217](https://doi.org/10.4319/lo.2006.51.3.1217)
- Hoffner, E. (2019). \$85 million initiative to scale up agroforestry in Africa announced. *Mongabay*. Retrieved from <https://news.mongabay.com/2019/10/85-million-initiative-to-scale-up-agroforestry-in-africa-announced/>
- Hofmann, M., Mathesius, S., Kriegler, E., Vuuren, D. P. v., & Schellnhuber, H. J. (2019). Strong time dependence of ocean acidification mitigation by atmospheric carbon dioxide removal. *Nature Communications*, 10(1), 5592. doi:[10.1038/s41467-019-13586-4](https://doi.org/10.1038/s41467-019-13586-4)
- Hoge, F. E., Wayne Wright, C., Swift, R. N., Yungel, J. K., Berry, R. E., & Mitchell, R. (1998). Fluorescence signatures of an iron-enriched phytoplankton community in the eastern equatorial Pacific Ocean. *Deep Sea Research Part II: Topical Studies in Oceanography*, 45(6), 1073-1082. doi:[https://doi.org/10.1016/S0967-0645\(98\)00020-4](https://doi.org/10.1016/S0967-0645(98)00020-4)
- Hoglund, R. (2020). *Removing Carbon Now: How can companies and individuals fund negative emissions technologies in a safe and effective way to help solve the climate crisis?* Retrieved from <https://oxfamlibrary.openrepository.com/handle/10546/621034>
- Höhl, M., Ahimbisibwe, V., Stanturf, J. A., Elsasser, P., Kleine, M., & Bolte, A. (2020). Forest Landscape Restoration—What Generates Failure and Success? *Forests*, 11(9), 938. Retrieved from <https://www.mdpi.com/1999-4907/11/9/938>
- Hohlwegler, P. (2019). Moral Conflicts of several "Green" terrestrial Negative Emission Technologies regarding the Human Right to Adequate Food – A Review. *Adv. Geosci.*, 49, 37-45. doi:[10.5194/adgeo-49-37-2019](https://doi.org/10.5194/adgeo-49-37-2019)
- Holden, E. (2019). 2020 candidate John Delaney pitches vastly unusual climate change plan. *The Guardian*. Retrieved from <https://www.theguardian.com/us-news/2019/may/23/2020-candidate-john-delaney-pitches-vastly-unusual-climate-change-plan>
- Holder, M. (2017). CCS: Inside Norway's world-leading carbon capture testing facility. Retrieved from <https://www.businessgreen.com/bg/feature/3015702/ccs-inside-norways-world->

- leading-carbon-capture-testing-facility
- Holder, M. (2018). Offset reset? Climeworks secures 'historic' first contracts for CO₂-sucking system. *Business Green*. Retrieved from <https://www.businessgreen.com/bg/news-analysis/3026886/climeworks-secures-historic-first-contracts-for-co2-sucking-system>
- Holder, M. (2020). MPs table fresh legislation to 'close gaps' in UK Climate Change Act. *Business Green*. Retrieved from <https://www.businessgreen.com/news/4019582/mps-table-fresh-legislation-close-gaps-uk-climate-change-act>
- Holl, K. D., & Brancalion, P. H. S. (2020). Tree planting is not a simple solution. *Science*, 368(6491), 580-581. doi:10.1126/science.aba8232
- Holland, J., & Miléř, T. (2015). Climate and Flows of Substances – How the Earth's climate system works, why and how the climate is changing. In.
- Höller, S., & Viebahn, P. (2016). Facing the uncertainty of CO₂ storage capacity in China by developing different storage scenarios. *Energy Policy*, 89(Supplement C), 64-73. doi:<https://doi.org/10.1016/j.enpol.2015.10.043>
- Hollow, M. C. (2021). Can an Army of Mechanical Trees Save the Planet? *Leaf Score*. Retrieved from <https://www.leafscore.com/blog/can-an-army-of-mechanical-trees-save-the-planet/>
- Holloway, S. (2009). Storage capacity and containment issues for carbon dioxide capture and geological storage on the UK continental shelf. *Proceedings of the Institution of Mechanical Engineers, Part A: Journal of Power and Energy*, 223(3), 239-248. doi:10.1243/09576509jpe650
- Holm, T. R., Machesky, M. L., & Scott, J. W. (2014). *Sorption of Polycyclic Aromatic Hydrocarbons (PAHs) to Biochar and Estimates of PAH Bioavailability*. Retrieved from <https://www.ideals.illinois.edu/handle/2142/72653>
- Holmes, G., & Corless, A. (2014). *Direct Air Capture of CO₂ - an Overview of Carbon Engineering's Technology and Pilot Plant Development*. Paper presented at the 47th American Geophysical Union Fall Meeting, San Francisco, CA. <https://agu.confex.com/agu/fm14/meetingapp.cgi#ModuleSessionsByDay/0>
- Holmes, G., & Keith, D. W. (2012). An air-liquid contactor for large-scale capture of CO₂ from air. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, 370(1974), 4380-4403. doi:10.1098/rsta.2012.0137
- Holmes, G., Nold, K., Walsh, T., Heidel, K., Henderson, M. A., Ritchie, J., . . . Keith, D. W. (2013). Outdoor Prototype Results for Direct Atmospheric Capture of Carbon Dioxide. *Energy Procedia*, 37, 6079-6095. doi:<http://dx.doi.org/10.1016/j.egypro.2013.06.537>
- Holmgren, K. M., Berntsson, T., & Lönnqvist, T. (2018). Profitability and Greenhouse Gas Emissions of Gasification-based Biofuel Production - analysis of sector specific policy instruments and comparison to conventional biomass conversion technologies. *Energy*. doi:<https://doi.org/10.1016/j.energy.2018.09.105>
- Holmgren, S., D'Amato, D., & Giurca, A. (2020). Bioeconomy imaginaries: A review of forest-related social science literature. *Ambio*, 49(12), 1860-1877. doi:10.1007/s13280-020-01398-6
- Holthus, P. (2017). Oceans overlooked as source of climate change solutions. *Eco-Business*. Retrieved from <http://www.eco-business.com/opinion/oceans-overlooked-as-source-of-climate-change-solutions/>
- Holtsmark, B. (2012). Harvesting in boreal forests and the biofuel carbon debt. *Climatic Change*, 112(2), 415-428. doi:10.1007/s10584-011-0222-6
- Holtsmark, B. (2013). The outcome is in the assumptions: analyzing the effects on atmospheric CO₂ levels of increased use of bioenergy from forest biomass. *GCB Bioenergy*, 5(4), 467-473. doi:doi:10.1111/gcbb.12015
- Holtsmark, B. (2015). A comparison of the global warming effects of wood fuels and fossil fuels taking albedo into account. *GCB Bioenergy*, 7(5), 984-997. Retrieved from <http://>

- onlinelibrary.wiley.com/doi/10.1111/gcbb.12200/abstract
- Holtsmark, B. (2015). Quantifying the global warming potential of CO₂ emissions from wood fuels. *GCB Bioenergy*, 7(2), 195-206. doi:10.1111/gcbb.12110
- Holz, C. (2018). *Modelling 1.5°C-Compliant Mitigation Scenarios Without Carbon Dioxide Removal*. Retrieved from https://www.boell.de/sites/default/files/radical_realism_for_climate_justice_volume_44_8.pdf?dimension1=ds_radicalrealism
- Holz, C., et al. (2018). Ratcheting ambition to limit warming to 1.5 °C—trade-offs between emission reductions and carbon dioxide removal. *Environmental Research Letters*, 13(8), 1-12. Retrieved from <http://iopscience.iop.org/10.1088/1748-9326/aac0c1>
- Homagain, K., Shahi, C., Luckai, N., & Sharma, M. (2014). Biochar-based bioenergy and its environmental impact in Northwestern Ontario Canada: A review. *Journal of Forestry Research*, 25(4), 737-748. doi:10.1007/s11676-014-0522-6
- Homagain, K., Shahi, C., Luckai, N., & Sharma, M. (2015). Life cycle environmental impact assessment of biochar-based bioenergy production and utilization in Northwestern Ontario, Canada. *Journal of Forestry Research*, 26(4), 799-809. doi:10.1007/s11676-015-0132-y
- Homagain, K., Shahi, C., Luckai, N., & Sharma, M. (2016). Life cycle cost and economic assessment of biochar-based bioenergy production and biochar land application in Northwestern Ontario, Canada. *Forest Ecosystems*, 3(1), 21. doi:10.1186/s40663-016-0081-8
- Hone, D. (2017). Blog. Retrieved from <https://blogs.shell.com/2017/02/16/carbon-storage-or-use/>
- Honegger, M. (2018). *Carbon dioxide removal-the need to marry financial incentives with sustainable development*.
- Honegger, M., et al. (2018). *Carbon Removal and Solar Geoengineering: Potential implications for delivery of the Sustainable Development Goals*. Retrieved from https://www.c2g2.net/wp-content/uploads/C2G2-Geoeng-SDGs_20180521.pdf
- Honegger, M., Burns, W., & Morrow, D. R. (2021). Is carbon dioxide removal ‘mitigation of climate change’? *Review of European, Comparative & International Environmental Law*, n/a(n/a). doi:<https://doi.org/10.1111/reel.12401>
- Honegger, M., Michaelowa, A., & Poralla, M. (2020). *Net-Zero Emissions: the role of Carbon Dioxide Removal in the Paris Agreement*. Retrieved from [http://negative-emissions.info/2020/09/28/netzero-paris-agreement/](http://negative-emissions.info/2020/09/28/net-zero-paris-agreement/)
- Honegger, M., Michaelowa, A., & Roy, J. (2020). Potential implications of carbon dioxide removal for the sustainable development goals. *Climate Policy*, 1-21. doi:10.1080/14693062.2020.1843388
- Honegger, M., Poralla, M., Michaelowa, A., & Ahonen, H.-M. (2021). Who Is Paying for Carbon Dioxide Removal? Designing Policy Instruments for Mobilizing Negative Emissions Technologies. *Frontiers in Climate*, 3(50). doi:10.3389/fclim.2021.672996
- Honegger, M., & Reiner, D. (2017). The political economy of negative emissions technologies: consequences for international policy design. *Climate Policy*, 18, 306-321. doi:<http://www.tandfonline.com/action/showCitFormats?doi=10.1080/14693062.2017.1413322>
- Honegger, M., & Reiner, D. (2018). *Global Policy Instruments to Mobilize Carbon Dioxide Removal*. Retrieved from https://www.perspectives.cc/fileadmin/Publications/Global_Policy_Instruments_to_Mobilize_Carbon_Dioxide_Removal.pdf
- Hong, B., Simoni, L. D., Bennett, J. E., Brennecke, J. F., & Stadtherr, M. A. (2016). Simultaneous Process and Material Design for Aprotic N-Heterocyclic Anion Ionic Liquids in Postcombustion CO₂ Capture. *Ind. Eng. Chem. Res.*, 55, 8432-8449. Retrieved from <https://pubs.acs.org/doi/10.1021/acs.iecr.6b01919>
- Hong, S., Yin, G., Piao, S., Dybzinski, R., Cong, N., Li, X., . . . Chen, A. (2020). Divergent

- responses of soil organic carbon to afforestation. *Nature Sustainability*, 3(9), 694-700. doi:10.1038/s41893-020-0557-y
- Hong, W. Z., et al. (2015). Effects of pyrolysis conditions on the properties of biochar and its adsorption to N and P from aqueous solution. *Environmental Science*, 35(9), 2805-2512. Retrieved from http://www.actasc.cn/hjkxxb/ch/reader/view_abstract.aspx?file_no=20141030006
- Hongbin, C., et al. . (2015). Carbonization temperature optimization experiment of pilot-scale continuous biomass carbonization equipment with internal heating. *Transactions of the Chinese Society of Agricultural Engineering*, 31(16), 235-240. Retrieved from <http://web.b.ebscohost.com/abstract?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=10026819&AN=109052443&h=5j2pLNjQAauK3MWSxFoc0sVepkals8GP67yUbB0UJ3%2f%2fHhu9xerKg%2fIT7bduufDxsrmmlFaL87d8d3he6ZRSQ%3d%3d&crl=c&resultNs=AdminWebAuth&resultLoc>
- Hood, M. (2020). 'Net zero' climate targets? Read the fine print. *Phys.org*. Retrieved from <https://phys.org/news/2020-12-net-climate-fine.html>
- Hoogwijk, M., Faaij, A., de Vries, B., & Turkenburg, W. (2009). Exploration of regional and global cost-supply curves of biomass energy from short-rotation crops at abandoned cropland and rest land under four IPCC SRES land-use scenarios. *Biomass and Bioenergy*, 33(1), 26-43. doi:<https://doi.org/10.1016/j.biombioe.2008.04.005>
- Hoogwijk, M., Faaij, A., Eickhout, B., de Vries, B., & Turkenburg, W. (2005). Potential of biomass energy out to 2100, for four IPCC SRES land-use scenarios. *Biomass and Bioenergy*, 29(4), 225-257. doi:<http://dx.doi.org/10.1016/j.biombioe.2005.05.002>
- Hoogwijk, M., Faaij, A., van den Broek, R., Berndes, G., Gielen, D., & Turkenburg, W. (2003). Exploration of the ranges of the global potential of biomass for energy. *Biomass and Bioenergy*, 25(2), 119-133. doi:[http://dx.doi.org/10.1016/S0961-9534\(02\)00191-5](http://dx.doi.org/10.1016/S0961-9534(02)00191-5)
- Hooi, K. K., et al. (2009). Laboratory - Scale Pyrolysis of Oil Palm Pressed Fruit Fibres. *Journal of Oil Palm Research*, 21, 577-587. Retrieved from <http://jopr.mpob.gov.my/>
- Hopkins, A. (2017). Biofuel breakthroughs bring 'negative emissions' a step closer. *The Conversation*. Retrieved from <https://phys.org/news/2017-08-biofuel-breakthroughs-negative-emissions-closer.html>
- Horák, J. (2015). Testing Biochar As a Possible Way To Ameliorate Slightly Acidic Soil At The Research Field Located In The Danubian LowlandAbstract. *Acta Horticulturae et Regiotectuare*, 18(1), 20-24. doi:10.1515/ahr-2015-0005
- Horák, J., & Igaz, D. (2015). Impact of Biochar Amendment on Soil PH of Orthic Luvisol at the Research Site Located in Western Slovakia. *Journal of International Scientific Publications*, 9, 66-73. Retrieved from <http://www.scientific-publications.net/get/1000011/1432800959622187.pdf>
- Hori, M. (2011). Nuclear carbonization and gasification of biomass for effective removal of atmospheric CO₂. *Progress in Nuclear Energy*, 53(7), 1022-1026. doi:<https://doi.org/10.1016/j.pnucene.2011.04.027>
- Hori, M., et al. (2018). Blue Carbon: Characteristics of the Ocean's Sequestration and Storage Ability of Carbon Dioxide. In T. Kuwae & M. Hori (Eds.), *Blue Carbon in Shallow Coastal Ecosystems: Carbon Dynamics, Policy, and Implementation* (pp. 1-31).
- Horn, S. (2017). Biochar 101: Climate Savior or False Hope? *Desmog*. Retrieved from <https://www.desmogblog.com/biochar-101-climate-savior-or-false-hope>
- Horn, S. (2017). Biochar Lobby's Protocol Receives Blistering Peer Review, Casts Doubts on Serving as Climate Solution. *Desmog Blog*. Retrieved from <https://www.desmogblog.com/biochar-lobby-protocol-peer-review-climate-solution>
- Horn, S. (2017). Biochar: A Geoengineering 'Shock Doctrine'. *Desmog Blog*. Retrieved from

- https://www.desmogblog.com/biochar-geoengineering-shock-doctrine
- Horn, S. (2017). Cool Planet: The Biochar Big Leagues and 'Shoddy Science'. Retrieved from https://www.desmogblog.com/cool-planet-biochar-shoddy-science
- Horn, S. (2017). How the Biochar Lobby Pushed for Offsets, Tar Sands, and Fracking Reclamation Using Unsettled Science. Retrieved from https://www.desmogblog.com/biochar-lobby-offsets-tar-sands-fracking-reclamation-unsettled-science
- Horn, S. (2017). Is Deploying Biochar as a Climate Geoengineering Tool Scientifically Premature? *Desmog Blog*. Retrieved from https://www.desmogblog.com/biochar-climate-geoengineering-scientifically-premature
- Hornigold, T. (2017). What It Would Take to Suck CO₂ Back Out of the Atmosphere. *Singularity Hub*. Retrieved from https://singularityhub.com/2017/10/19/why-we-need-negative-emissions-tech-but-its-no-silver-bullet/#sm.0000deohc7nxjcplvua229cubqqla
- Horschig, T., Welfle, A., Billig, E., & Thrän, D. (2019). From Paris agreement to business cases for upgraded biogas: Analysis of potential market uptake for biomethane plants in Germany using biogenic carbon capture and utilization technologies. *Biomass and Bioenergy*, 120, 313-323. doi:https://doi.org/10.1016/j.biombioe.2018.11.022
- (2020, August 6). *The Climate Fix Podcast: Industrial Carbon Removal with Elba Horta from Puro.earth* [Retrieved from https://puro.earth/articles/the-climate-fix-podcast-industrial-carbon-removal-with-elba--529?utm_source=newsletter&utm_medium=email&utm_campaign=newsletter-26&utm_content=20200820]
- Horton, J., et al. (2016). Implications of the Paris Agreement for Carbon Dioxide Removal and Solar Geoengineering. Retrieved from https://www.belfercenter.org/publication/implications-paris-agreement-carbon-dioxide-removal-and-solar-geoengineering
- Horton, P., Long, S. P., Smith, P., Banwart, S. A., & Beerling, D. J. (2021). Technologies to deliver food and climate security through agriculture. *Nature Plants*, 7(3), 250-255. doi:10.1038/s41477-021-00877-2
- Hoshi, T. (2001). *Growth Promotion of Tea Trees by Putting Bamboo Charcoal in Soil*. Paper presented at the 2001 International Conference on O-Cha Culture and Science, Tokai University, Shizuoka, Japan. http://www.fb.u-tokai.ac.jp/WWW/hoshi/cha/
- Hossain, M. K., et al. . (2011). Influence of pyrolysis temperature on production and nutrient properties of wastewater sludge biochar. *Journal of Environmental Management*, 92(1), 223-228. doi:10.1016/j.jenvman.2010.09.008
- Hossain, M. K., et al. . (2015). Wastewater sludge and sludge biochar addition to soils for biomass production from Hyparrhenia hirta. *Ecological Engineering*, 82, 345 - 348. doi:10.1016/j.ecoleng.2015.05.014
- Hossain, M. K., Strezov, V., & Nelson, P. F. (2015). Comparative assessment of the effect of wastewater sludge biochar on growth, yield and metal bioaccumulation of cherry tomato. *Pedosphere*, 25(5), 680-685. Retrieved from http://pedosphere.issas.ac.cn/trqen/ch/reader/view_abstract.aspx?file_no=20150505
- Hossain, M. K., Strezov, V., Yin Chan, K., & Nelson, P. F. (2010). Agronomic properties of wastewater sludge biochar and bioavailability of metals in production of cherry tomato (*Lycopersicon esculentum*). *Chemosphere*, 78(9), 1167-1171. doi:http://dx.doi.org/10.1016/j.chemosphere.2010.01.009
- Hottle, R. D. (2013). *Quantifying the impact of biochar on plant productivity and changes to soil physical and chemical properties on a maize soybean rotation in the U.S.* (Doctor of Philosophy). Ohio State University, Retrieved from https://etd.ohiolink.edu/ap:10:0::NO:10:P10_ACCESSION_NUM:osu1374064522
- Hou, C., Wu, Y., Wang, T., Wang, X., & Gao, X. (2019). Preparation of Quaternized Bamboo Cellulose and Its Implication in Direct Air Capture of CO₂. *Energy & Fuels*, 33(3),

1745-1752. doi:10.1021/acs.energyfuels.8b02821

- Hou, C. L., Wu, Y. S., Jiao, Y. Z., Huang, J., Wang, T., Fang, M. X., & Zhou, H. (2017). Integrated direct air capture and CO₂ utilization of gas fertilizer based on moisture swing adsorption. *Journal of Zhejiang University-Science A*, 18(10), 819-830. doi:10.1631/jzus.A1700351
- Hou, J., Suo, Q., Liang, H., Han, X., & Liu, C. (2015). Effects of carbonization conditions on biochar yield from Artemisia ordosica. *Journal of Northwest A & F University - Natural Science Edition*, 2015(01), 169-174. Retrieved from http://en.cnki.com.cn/Article_en/CJFDTotal-XBNY201501026.htm
- Hou, R., Li, T., Fu, Q., Liu, D., Li, M., Zhou, Z., . . . Yan, J. (2020). Effects of biochar and straw on greenhouse gas emission and its response mechanism in seasonally frozen farmland ecosystems. *CATENA*, 194, 104735. doi:<https://doi.org/10.1016/j.catena.2020.104735>
- Hou, X., Meng, L., Li, L., Pan, G., & Li, B. (2015). Biochar amendment to soils impairs developmental and reproductive performances of a major rice pest Nilaparvata lugens (Homopera: Delphacidae). *Journal of Applied Entomology*, 139(10), 727-733. doi:10.1111/jen.12218
- Hou, Y.-h., Wang, L., Fu, X.-h., & Le, Y.-q. (2015). Response of Straw and Straw Biochar Returning to Soil Carbon Budget and Its Mechanism. *Huan jing ke xue= Huanjing kexue / [bian ji, Zhongguo ke xue yuan huan jing ke xue wei yuan hui "Huan jing ke xue" bian ji wei yuan hui.]*, 36(7), 2655-2661. Retrieved from <http://europemc.org/abstract/med/26489338>
- Houben, D. (2013). *Heavy metal mobility in contaminated soils as affected by plants, amendments and biochar: Implications for phytostabilization.* (Doctor in Science). Earth and Life Institute, Retrieved from http://scholar.google.com/scholar_url?hl=en&q=http://dial.academielouvain.be/vital/access/services/Download/boreal:123342/PDF_01&sa=X&scisig=AAGBfm2q5XEyza46TxQMyUh39svpLriyg&oi=scholaralrt
- Houben, D., et al. . (2014). Phosphorus availability in an acidic Belgian Luvisol amended with biochar. In.
- Houben, D., Evrard, L., & Sonnet, P. (2013). Mobility, bioavailability and pH-dependent leaching of cadmium, zinc and lead in a contaminated soil amended with biochar. *Chemosphere*, 92(11), 1450-1457. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0045653513004852>
- Houben, D., & Sonnet, P. (2015). Impact of biochar and root-induced changes on metal dynamics in the rhizosphere of Agrostis capillaris and Lupinus albus. *Chemosphere*, 139, 644-651. doi:10.1016/j.chemosphere.2014.12.036
- Houben, D., Sonnet, P., & Cornelis, J.-T. (2013). Biochar from Miscanthus: a potential silicon fertilizer. *Plant and Soil*, 374(1), 871-882. Retrieved from <https://link.springer.com/article/10.1007/s11104-013-1885-8>
- Houghton, R. A. (2013). The emissions of carbon from deforestation and degradation in the tropics: past trends and future potential. *Carbon Management*, 4(5), 539-546. doi:10.4155/cmt.13.41
- Houghton, R. A., Byers, B., & Nassikas, A. A. (2015). A role for tropical forests in stabilizing atmospheric CO₂. *Nature Climate Change*, 5, 1022. doi:10.1038/nclimate2869
- Houghton, R. A., & Nassikas, A. A. (2018). Negative emissions from stopping deforestation and forest degradation, globally. *Global Change Biology*, 24(1), 350-359. doi:doi:10.1111/gcb.13876
- Houlton, B. (2020). An effective climate change solution may lie in rocks beneath our feet. *The Conversation*. Retrieved from <https://theconversation.com/an-effective-climate-change-solution-may-lie-in-rocks-beneath-our-feet-142462>
- Houlton, B. (2021). Biden must pay farmers to store more carbon. *The Hill*. Retrieved from

<https://thehill.com/opinion/energy-environment/553615-biden-must-pay-farmers-to-store-more-carbon>

- Houlton, B. J., & Boudinot, G. (2021). Rock dust could put a drain on atmospheric carbon — will this technology work? *The Hill*. Retrieved from <https://thehill.com/opinion/energy-environment/573084-rock-dust-could-put-a-drain-on-atmospheric-carbon-will-this>
- House, J. I., et al. (2002). Maximum impacts of future reforestation or deforestation on atmospheric CO₂. *8*(11), 1047-1052. doi:10.1046/j.1365-2486.2002.00536.x
- House, K. Z., Baclig, A. C., Ranjan, M., Van Nierop, E. A., Wilcox, J., & Herzog, H. J. (2011). Economic and energetic analysis of capturing CO₂ from ambient air. *Proc. Natl. Acad. Sci. U.S.A.*, *108*, 20428.
- House, K. Z., Baclig, A. C., Ranjan, M., van Nierop, E. A., Wilcox, J., & Herzog, H. J. (2011). Economic and energetic analysis of capturing CO₂ from ambient air. *Proceedings of the National Academy of Sciences*, *108*(51), 20428-20433. doi:10.1073/pnas.1012253108
- House, K. Z., House, C. H., Schrag, D. P., & Aziz, M. J. (2007). Electrochemical Acceleration of Chemical Weathering as an Energetically Feasible Approach to Mitigating Anthropogenic Climate Change. *Environmental Science & Technology*, *41*(24), 8464-8470. doi:10.1021/es0701816
- House, K. Z., House, C. H., Schrag, D. P., & Aziz, M. J. (2009). Electrochemical acceleration of chemical weathering for carbon capture and sequestration. *Energy Procedia*, *1*(1), 4953-4960. doi:<https://doi.org/10.1016/j.egypro.2009.02.327>
- House, K. Z., Schrag, D. P., Harvey, C. F., & Lackner, K. S. (2006). Permanent carbon dioxide storage in deep-sea sediments. *Proceedings of the National Academy of Sciences*, *103*(33), 12291-12295. doi:10.1073/pnas.0605318103
- Housley, C., Kachenko, A. G., & Singh, B. (2015). Effects of Eucalyptus saligna biochar-amended media on the growth of Acmena smithii, Viola var. hybrida, and Viola x wittrrockiana. *The Journal of Horticultural Science and Biotechnology*, *90*(2), 187-194. doi:10.1080/14620316.2015.11513171
- Howell, S. (2020). Study questions benefits of spending on carbon capture. *Chemistry World*. Retrieved from <https://www.chemistryworld.com/news/study-questions-benefits-of-spending-on-carbon-capture/4010987.article>
- Howlett, D. S., Mosquera-Losada, M. R., Nair, P. K. R., Nair, V. D., & Rigueiro-Rodríguez, A. (2011). Soil Carbon Storage in Silvopastoral Systems and a Treeless Pasture in Northwestern Spain. *Journal of Environmental Quality*, *40*(3), 825-832. doi:<https://doi.org/10.2134/jeq2010.0145>
- Hrvoje, K., et al. (2011). *Biochar addition to the soil limits initial development of red clover (Trifolium pratense L.)*. Paper presented at the Proceedings of 47th Croatian and 7th International Symposium on Agriculture, Opatija. Croatia.
- Hu, B., Zhang, Y., Li, Y., Teng, Y., & Yue, W. (2020). Can bioenergy carbon capture and storage aggravate global water crisis? *Science of The Total Environment*, *714*, 136856. doi:<https://doi.org/10.1016/j.scitotenv.2020.136856>
- Hu, G., Li, Y., Ye, C., Liu, L., & Chen, X. (2018). Engineering Microorganisms for Enhanced CO₂ Sequestration. *Trends in Biotechnology*. doi:<https://doi.org/10.1016/j.tibtech.2018.10.008>
- Hu, H., Jiang, B., Zhang, J., & Chen, X. (2015). Adsorption of perrhenate ion by bio-char produced from Acidosasa edulis shoot shell in aqueous solution. *RSC Adv.*, *5*(127), 104769-104778. doi:10.1039/c5ra20235c
- Hu, H., Wu, Y., & E, Y. (2016). Mechanism Research on Beta-d-Glucoside Pyrolysis by Py-GC/MS. *National Academy Science Letters*, *39*(2), 71 - 75. doi:10.1007/s40009-016-0427-3
- Hu, J., et al. . (2014). Biochar and Glomus caledonium Influence Cd Accumulation of Upland Kangkong (*Ipomoea aquatica* Forsk.) Intercropped with Alfred Stonecrop (*Sedum alfredii* Hance). *Scientific Reports*, *4*, 1-7. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/>

- articles/PMC3985079/pdf/srep04671.pdf
- Hu, L., Cao, L., & Zhang, R. (2013). Bacterial and fungal taxon changes in soil microbial community composition induced by short-term biochar amendment in red oxidized loam soil. *World Journal of Microbiology and Biotechnology*, 30(3), 1085-1092. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/24136343>
- Hu, L.-c., Chen, L.-n., Yin, Y., Huang, Z.-q., & Dai, J.-y. (2015). Preliminary Study on the Structural Characteristics of Residue from Rice Straw Burning in Field. In.
- Hu, Q., Shao, J., Yang, H., Yao, D., Wang, X., & Chen, H. (2015). Effects of binders on the properties of bio-char pellets. *Applied Energy*, 157, 508-516. doi:10.1016/j.apenergy.2015.05.019
- Hu, Q., Yang, H., Yao, D., Zhu, D., Wang, X., Shao, J., & Chen, H. (2016). The densification of bio-char: Effect of pyrolysis temperature on the qualities of pellets. *Bioresource Technology*, 200, 521 - 527. doi:10.1016/j.biortech.2015.10.077
- Hu, T., Xu, T.-F., Tian, H.-L., Zhou, B., & Yang, Y.-Z. (2021). A study of CO₂ injection well selection in the naturally fractured undulating formation in the Jurong Oilfield, China. *International Journal of Greenhouse Gas Control*, 109, 103377. doi:<https://doi.org/10.1016/j.ijggc.2021.103377>
- Hu, W. (2014). 生物炭对湿地土壤吸附五氯酚和磷的影响研究 (Influence of PCP and phosphorus naringin biochar wetland soil adsorption). In.
- Hu, X., Ding, Z., Zimmerman, A. R., Wang, S., & Gao, B. (2015). Batch and column sorption of arsenic onto iron-impregnated biochar synthesized through hydrolysis. *Water Research*, 68, 206 - 216. doi:10.1016/j.watres.2014.10.009
- Hu, Y., & Ahn, H. (2017). Techno-economic Analysis of a Natural Gas Combined Cycle Power Plant Integrated with a Ca-looping Process for Post-combustion Capture. *Energy Procedia*, 105, 4555-4560. doi:<https://doi.org/10.1016/j.egypro.2017.03.978>
- Hu, Y., Schäfer, G., Duplay, J., & Kuhn, N. J. (2018). Bioenergy crop induced changes in soil properties: A case study on Miscanthus fields in the Upper Rhine Region. *Plos One*, 13(7), e0200901. doi:10.1371/journal.pone.0200901
- Hu, Y.-f., Li, R.-l., & Yang, Y.-y. (2015). Effects of biochar on CO₂ and N₂O emissions and microbial properties of tea garden soils. *Yingyong Shengtai Xuebao*, 26(7), 1954-1960. Retrieved from <http://web.b.ebscohost.com/abstract?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=10019332&AN=108688702&h=bR%2fFs9NPRFiOqUJy96Cq%2fe2Y%2ffXm5%2b0TY7y%2b2w3edF8t49hfA1tTOIPvrSg1ZTyhp%2b4mlwhUhXb2nq%2fD3HuHMA%3d%3d&crl=c&resultNs=AdminWebA>
- Hu, Y.-L., Wu, F.-P., Zeng, D.-H., & Chang, S. X. (2014). Wheat straw and its biochar had contrasting effects on soil C and N cycling two growing seasons after addition to a Black Chernozemic soil planted to barley. *Biology and Fertility of Soils*, 50(8), 1291-1299. doi:10.1007/s00374-014-0943-6
- Hua, L., Lu, Z., Ma, H., & Jin, S. (2014). Effect of biochar on carbon dioxide release, organic carbon accumulation, and aggregation of soil. *Environmental Progress & Sustainable Energy*, 33(3), 941-946. doi:10.1002/ep.11867
- Hua, L., Wu, W., Liu, Y., McBride, M. B., & Chen, Y. (2009). Reduction of nitrogen loss and cu and zn mobility during sludge composting with bamboo charcoal amendment. *Environmental Science and Pollution Research*, 16(1), 1-9. Retrieved from <https://link.springer.com/article/10.1007/s11356-008-0041-0>
- Hua, Z., et al. (2013). Effect of biochar on carbon dioxide release, organic carbon accumulation, and aggregation of soil. *Environmental Progress & Sustainable Energy*, 33(3), 941-946. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/ep.11867/full>
- Huang, B., et al. . (2015).

- Huang, D., Liu, L., Zeng, G., Xu, P., Huang, C., Deng, L., . . . Wan, J. (2017). The effects of rice straw biochar on indigenous microbial community and enzymes activity in heavy metal-contaminated sediment. *Chemosphere*, 174, 545-553. doi:<http://doi.org/10.1016/j.chemosphere.2017.01.130>
- Huang, H., Guo, R., Wang, T., Hu, X., Garcia, S., Fang, M., . . . Maroto-Valer, M. M. (2019). Carbonation curing for wollastonite-Portland cementitious materials: CO₂ sequestration potential and feasibility assessment. *Journal of Cleaner Production*, 211, 830-841. doi:<https://doi.org/10.1016/j.jclepro.2018.11.215>
- Huang, H., Wang, Y.-X., Tang, J.-C., Tang, J.-C., & Zhu, W.-Y. (2014). [Properties of maize stalk biochar produced under different pyrolysis temperatures and its sorption capability to naphthalene]. *Huan jing ke xue= Huanjing kexue / [bian ji, Zhongguo ke xue yuan huan jing ke xue wei yuan hui "Huan jing ke xue" bian ji wei yuan hui.]*, 35(5), 1884-1890. Retrieved from <http://europepmc.org/abstract/med/25055682>
- Huang, M., et al. (2013). Quantifying the effect of biochar amendment on soil quality and crop productivity in Chinese rice paddies. *Field Crops Research*, 154, 172-177. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0378429013002803>
- Huang, M., et al. . (2014). Fertilizer nitrogen uptake by rice increased by biochar application. *Biology and Fertility of Soils*, 50(6), 997-1000. Retrieved from <https://link.springer.com/article/10.1007/s00374-014-0908-9>
- Huang, T., Zhou, X., Yang, H., Liao, G., & Zeng, F. (2017). CO₂ flooding strategy to enhance heavy oil recovery. *Petroleum*, 3(1), 68-78. doi:<https://doi.org/10.1016/j.petlm.2016.11.005>
- Huang, W. H., & Chen, B. L. (2010). Interaction mechanisms of organic contaminants with burned straw ash charcoal. *Journal of Environmental Sciences-China*, 22, 1586-1594.
- Huang, W.-k., Ji, H.-l., Gheysen, G., Debode, J., & Kyndt, T. (2015). Biochar-amended potting medium reduces the susceptibility of rice to root-knot nematode infections. *BMC Plant Biology*, 15(126), 1-15. doi:<10.1186/s12870-015-0654-7>
- Huang, X., Terrer, C., Dijkstra, F. A., Hungate, B. A., Zhang, W., & van Groenigen, K. J. (2020). New soil carbon sequestration with nitrogen enrichment: a meta-analysis. *Plant and Soil*, 454(1), 299-310. doi:<10.1007/s11104-020-04617-x>
- Huang, X.-d., & Xue, D. (2014). Effects of bamboo biochar addition on temperature rising, dehydration and nitrogen loss during pig manure composting. *Yingyong Shengtai Xuebao*, 25. Retrieved from <http://web.a.ebscohost.com/abstract?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=10019332&AN=95692213&h=JrgPNfDA%2bUbG%2fmGP%2bhcc%2bOAEsbFEMPwKaPdfzbB08uuQsALy%2fQv%2b9FHMvfQn3SIHSiiXXH1RbA7T%2fW2w43Y9w%3d%3d&crl=c>
- Huang, Y., Anderson, M., Lyons, G. A., McRoberts, W. C., Wang, Y., McIlveen-Wright, D. R., . . . Hewitt, N. J. (2014). Techno-economic Analysis of BioChar Production and Energy Generation from Poultry Litter Waste. *Energy Procedia*, 61, 714-717. doi:<10.1016/j.egypro.2014.11.949>
- Huang, Y., Anderson, M., McIlveen-Wright, D., Lyons, G. A., McRoberts, W. C., Wang, Y. D., . . . Hewitt, N. J. (2015). Biochar and renewable energy generation from poultry litter waste: A technical and economic analysis based on computational simulations. *Applied Energy*, 160, 656-663. doi:<10.1016/j.apenergy.2015.01.029>
- Huang, Y., Wei, L., Crandall, Z., Julson, J., & Gu, Z. (2015). Combining Mo-Cu/HZSM-5 with a two-stage catalytic pyrolysis system for pine sawdust thermal conversion. *Fuel*, 150, 656 - 663. doi:<10.1016/j.fuel.2015.02.071>
- Huang, Y.-F., et al. (2015). Microwave pyrolysis of rice straw to produce biochar as an adsorbent for CO₂ capture. *Energy*, 84, 75-82. doi:<10.1016/j.energy.2015.02.026>
- Huang, Y.-F., Chiueh, P.-T., Syu, F.-S., & Lo, S.-L. (2012). Life cycle assessment of biochar

- cofiring with coal. *Bioresource Technology*, 131, 166-171. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0960852412019815>
- Huang, Z., Jiang, D., Lu, L., & Ren, Z. J. (2016). Ambient CO₂ capture and storage in bioelectrochemically mediated wastewater treatment. *Bioresource Technology*, 215, 380-385. doi:<https://doi.org/10.1016/j.biortech.2016.03.084>
- Hubau, W., Lewis, S. L., Phillips, O. L., Affum-Baffoe, K., Beeckman, H., Cuní-Sánchez, A., . . . Zemagho, L. (2020). Asynchronous carbon sink saturation in African and Amazonian tropical forests. *Nature*, 579(7797), 80-87. doi:[10.1038/s41586-020-2035-0](https://doi.org/10.1038/s41586-020-2035-0)
- Huber, T., Misra, M., & MOHANTY, A. K. (2015). Biochar and its Size Effects on Polyamide 6/Biochar Composites. *American Society for Composites*. Retrieved from <http://www.dpi-proceedings.com/index.php/ASC30/article/view/1490>
- Huber, T., Misra, M., & Mohanty, A. K. (2015). *The effect of particle size on the rheological properties of polyamide 6/biochar composites*. Paper presented at the PROCEEDINGS OF PPS-30: The 30th International Conference of the Polymer Processing Society – Conference Papers, Cleveland, Ohio, USA. <http://scitation.aip.org/content/aip/proceeding/aipcp/10.1063/1.4918500>
- Huck, J. M., Lin, L.-C., Berger, A. H., Shahrok, M. N., Martin, R. L., Bhowm, A. S., . . . Smit, B. (2014). Evaluating different classes of porous materials for carbon capture. *Energy & Environmental Science*, 7(12), 4132-4146. doi:[10.1039/C4EE02636E](https://doi.org/10.1039/C4EE02636E)
- Hudiburg, T. W., et al. (2016). Impacts of a 32-billion-gallon bioenergy landscape on land and fossil fuel use in the US. *Nature Energy*, 1, 1-7. Retrieved from <http://www.life.illinois.edu/delucia/2014%20Publications/nenergy20155.pdf>
- Hudiburg, T. W., Davis, S. C., Parton, W., & Delucia, E. H. (2015). Bioenergy crop greenhouse gas mitigation potential under a range of management practices. *GCB Bioenergy*, 7(2), 366-374. doi:[10.1111/gcbb.12152](https://doi.org/10.1111/gcbb.12152)
- Hudiburg, T. W., Law, B. E., Wirth, C., & Luyssaert, S. (2011). Regional carbon dioxide implications of forest bioenergy production. *Nature Climate Change*, 1(8), 419-423. doi:<http://www.nature.com/nclimate/journal/v1/n8/abs/nclimate1264.html#supplementary-information>
- Huesemann, M. H. (2008). Ocean fertilization and other climate change mitigation strategies: an overview. *Marine Ecology Progress Series*, 364, 243-250. Retrieved from <http://www.int-res.com/abstracts/meps/v364/p243-250/>
- Huff, M. D., Kumar, S., & Lee, J. W. (2014). Comparative analysis of pinewood, peanut shell, and bamboo biomass derived biochars produced via hydrothermal conversion and pyrolysis. *Journal of Environmental Management*, 146, 303-308. doi:[10.1016/j.jenvman.2014.07.016](https://doi.org/10.1016/j.jenvman.2014.07.016)
- Huff, M. D., & Lee, J. W. (2016). Biochar-surface oxygenation with hydrogen peroxide. *Journal of Environmental Management*, 165, 17 - 21. doi:[10.1016/j.jenvman.2015.08.046](https://doi.org/10.1016/j.jenvman.2015.08.046)
- Huffman, J. (2018). *H.R.5627 - Farmers CARE Act/Farmers Conserving Agricultural Resources through EQIP Ac.* Retrieved from <https://www.congress.gov/bill/115th-congress/house-bill/5627/text?>
q=%7B%22search%22%3A%5B%22carbon+sequestration%22%5D%7D&r=3
- Huggins, T., etc. . (2014). Biochar as a Sustainable Electrode Material for Electricity Production in Microbial Fuel Cells. *Bioresource Technology*, 157, 114-119. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0960852414000832>
- Huggins, T., Latorre, A., Biffinger, J., & Ren, Z. (2016). Biochar Based Microbial Fuel Cell for Enhanced Wastewater Treatment and Nutrient Recovery. *Sustainability*, 8(2), 169. doi:[10.3390/su8020169](https://doi.org/10.3390/su8020169)
- Huggins, T. M., Haeger, A., Biffinger, J. C., & Ren, Z. J. (2016). Granular biochar compared with activated carbon for wastewater treatment and resource recovery. *Water Research*, 94,

- 225 - 232. doi:10.1016/j.watres.2016.02.059
- Huggins, T. M., Pietron, J. J., Wang, H., Ren, Z. J., & Biffinger, J. C. (2015). Graphitic biochar as a cathode electrocatalyst support for microbial fuel cells. *Bioresource Technology*, 195, 147 - 153. doi:10.1016/j.biortech.2015.06.012
- Hughes, A. D., Black, K. D., Campbell, I., Davidson, K., Kelly, M. S., & Stanley, M. S. (2012). Does seaweed offer a solution for bioenergy with biological carbon capture and storage? *Greenhouse Gases: Science and Technology*, 2(6), 402-407. doi:10.1002/ghg.1319
- Hughes, E., & Benemann, J. R. (1997). Biological fossil CO₂ mitigation. *Energy Conversion and Management*, 38, S467-S473. doi:[https://doi.org/10.1016/S0196-8904\(96\)00312-3](https://doi.org/10.1016/S0196-8904(96)00312-3)
- Hughes, G. (2017). *The Bottomless Pit: The Economics of Carbon Capture and Storage* (GWPF Report 25). Retrieved from <https://www.thegwpf.org/content/uploads/2017/07/CCS-Hughes2017.pdf>
- Hughes, J. K., Lloyd, A. J., Huntingford, C., Finch, J. W., & Harding, R. J. (2010). The impact of extensive planting of Miscanthus as an energy crop on future CO₂ atmospheric concentrations. *GCB Bioenergy*, 2(2), 79-88. doi:10.1111/j.1757-1707.2010.01042.x
- Hughes, S. R., López-Núñez, J. C., Jones, M. A., Moser, B. R., Cox, E. J., Lindquist, M., . . . Brunner, L. (2014). Sustainable conversion of coffee and other crop wastes to biofuels and bioproducts using coupled biochemical and thermochemical processes in a multi-stage biorefinery concept. *Applied Microbiology and Biotechnology*, 98(20), 8413 - 8431. doi:10.1007/s00253-014-5991-1
- Hui, J.-z., et al. (2014). Effects of Biochar on Soil Nutrients and Nitrogen Leaching in Anthropogenic-Alluvial Soil. *Chinese Journal of Agrometeorology*, 35(2), S14-S15. doi:10.3969/j.issn.1000-6362.2014.02.006
- Huijgen, W. J. J., et al. (2006). Energy Consumption and Net CO₂ Sequestration of Aqueous Mineral Carbonation. *Industrial Engineering and Chemistry Research*, 45(26), 184-194. Retrieved from <https://pubs.acs.org/doi/abs/10.1021/ie060636k>
- Huijgen, W. J. J., & Comans, R. N. J. (2005). *Mineral CO₂ Sequestration by Carbonation of Industrial Residues: Literature Review and Selection of Residue*. Retrieved from <https://www.osti.gov/etdeweb/biblio/20767394>
- Huijgen, W. J. J., & Comans, R. N. J. (2005). Mineral CO₂ Sequestration by Steel Slag Carbonation. *Environmental Science & Technology*, 39(24), 9676-9682. doi:10.1021/es050795f
- Huijgen, W. J. J., Comans, R. N. J., & Witkamp, G.-J. (2007). Cost evaluation of CO₂ sequestration by aqueous mineral carbonation. *Energy Conversion and Management*, 48(7), 1923-1935. doi:<https://doi.org/10.1016/j.enconman.2007.01.035>
- Huijgen, W. J. J., Witkamp, G.-J., & Comans, R. N. J. (2006). Mechanisms of aqueous wollastonite carbonation as a possible CO₂ sequestration process. *Chemical Engineering Science*, 61(13), 4242-4251. doi:<https://doi.org/10.1016/j.ces.2006.01.048>
- Huisingsh, D., Zhang, Z., Moore, J. C., Qiao, Q., & Li, Q. (2015). Recent advances in carbon emissions reduction: policies, technologies, monitoring, assessment and modeling. *Journal of Cleaner Production*, 103, 1-12. doi:<http://dx.doi.org/10.1016/j.jclepro.2015.04.098>
- Hulatt, C. J., & Thomas, D. N. (2011). Productivity, carbon dioxide uptake and net energy return of microalgal bubble column photobioreactors. *Bioresource Technology*, 102(10), 5775-5787. doi:<https://doi.org/10.1016/j.biortech.2011.02.025>
- Hume, D. (2018). Ocean Storage of CO₂. *The Maritime Executive*, (July 29). Retrieved from <https://www.maritime-executive.com/features/ocean-storage-of-co2>
- Humpenöder, F., et al. (2014). Investigating afforestation and bioenergy CCS as climate change mitigation strategies. *Environmental Research Letters*, 9, 1-13. Retrieved from <http://iopscience.iop.org/article/10.1088/1748-9326/9/6/064029/pdf>

- Humphrey, V., Zscheischler, J., Ciais, P., Gudmundsson, L., Sitch, S., & Seneviratne, S. I. (2018). Sensitivity of atmospheric CO₂ growth rate to observed changes in terrestrial water storage. *Nature*, 560(7720), 628-631. doi:10.1038/s41586-018-0424-4
- Hung, Z.-S. (2014). Life-cycle Assessment of Mechanical Heat Treatment Process for the Municipal Solid Waste. In.
- Hunsberger, C., Bolwig, S., Corbera, E., & Creutzig, F. (2014). Livelihood impacts of biofuel crop production: Implications for governance. *Geoforum*, 54, 248-260. doi:<https://doi.org/10.1016/j.geoforum.2013.09.022>
- Hunt, A. J., Sin, E. H. K., Marriott, R., & Clark, J. H. (2010). Generation, Capture, and Utilization of Industrial Carbon Dioxide. *ChemSusChem*, 3(3), 306-322. doi:<https://doi.org/10.1002/cssc.200900169>
- Hunt, J., et al. (2010). *The Basics of Biochar : A Natural Soil Amendment*. Retrieved from <http://www.ctahr.hawaii.edu/oc/freepubs/pdf/SCM-30.pdf>
- Huntley, M. E., Johnson, Z. I., Brown, S. L., Sills, D. L., Gerber, L., Archibald, I., . . . Greene, C. H. (2015). Demonstrated large-scale production of marine microalgae for fuels and feed. *Algal Research*, 10, 249-265. doi:<https://doi.org/10.1016/j.algal.2015.04.016>
- Huntley, M. E., & Redalje, D. G. (2007). CO₂ Mitigation and Renewable Oil from Photosynthetic Microbes: A New Appraisal. *Mitigation and Adaptation Strategies for Global Change*, 12(4), 573-608. doi:10.1007/s11027-006-7304-1
- Huntley, M. E. Z., et al. (2015). Demonstrated large-scale production of marine microalgae for fuels and feed. *Algal Research*, 10, 249-265. Retrieved from https://www.researchgate.net/publication/275972624_Demonstrated_large-scale_production_of_marine_microalgae_for_fuels_and_feed
- Hunziker, M. (1995). The spontaneous reafforestation in abandoned agricultural lands: perception and aesthetic assessment by locals and tourists. *Landscape and Urban Planning*, 31(1), 399-410. doi:[https://doi.org/10.1016/0169-2046\(95\)93251-J](https://doi.org/10.1016/0169-2046(95)93251-J)
- Hunziker, R. (2021). Direct Air Capture and Big Oil. *Dissident Voice*. Retrieved from <https://dissidentvoice.org/2021/03/direct-air-capture-and-big-oil/>
- HuoLiang, K., et al. . (2011). Cosorption of phenanthrene and mercury(II) from aqueous solution by soybean stalk-based biochar. *Journal of Agricultural and Food Chemistry*, 59, 12116-12123. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/jf202924a>
- Husebye, J., Brunsvold, A. L., Roussanaly, S., & Zhang, X. (2012). Techno Economic Evaluation of Amine based CO₂ Capture: Impact of CO₂ Concentration and Steam Supply. *Energy Procedia*, 23, 381-390. doi:<https://doi.org/10.1016/j.egypro.2012.06.053>
- Husna, N., & Imanudin, M. S. (2015). *Penilaian Status Kesehatan Tanah Daerah Rawa Pasang Surut dan Upaya Pemulihhan Studi Kasus Delta Telang II (Soil Health Assessment of Tidal Swamps and Recovery Efforts, Case Study Delta Telang II)*. Paper presented at the Prosiding Seminar Nasional Lahan Suboptimal (Proceedings of the National Seminar on Land Suboptimal) 2015.
- Hussain, D., Dzombak, D. A., Jaramillo, P., & Lowry, G. V. (2013). Comparative lifecycle inventory (LCI) of greenhouse gas (GHG) emissions of enhanced oil recovery (EOR) methods using different CO₂ sources. *International Journal of Greenhouse Gas Control*, 16, 129-144. doi:<https://doi.org/10.1016/j.ijggc.2013.03.006>
- Hussain, F., Shah, S. Z., Zhou, W., & Iqbal, M. (2017). Microalgae screening under CO₂ stress: Growth and micro-nutrients removal efficiency. *Journal of Photochemistry and Photobiology B: Biology*, 170, 91-98. doi:<https://doi.org/10.1016/j.jphotobiol.2017.03.021>
- Hussain, K., et a. (2010). Economically Effective Potential of Algae for Biofuel Production. *World Applied Sciences Journal*, 9(11), 1313-1323. Retrieved from [http://www.idosi.org/wasj/wasj9\(11\)/15.pdf](http://www.idosi.org/wasj/wasj9(11)/15.pdf)
- Hussain, M., Farooq, M., Nawaz, A., Al-Sadi, A. M., Solaiman, Z. M., Alghamdi, S. S., . . .

- Siddique, K. H. M. (2016). Biochar for crop production: potential benefits and risks. *Journal of Soils and Sediments*, 17(3), 685-716. doi:10.1007/s11368-016-1360-2
- Hussin, F., & Aroua, M. K. (2019). Recent Trends in the Development of Adsorption Technologies for Carbon Dioxide Capture: A Brief Literature and Patent Reviews (2014-2018). *Journal of Cleaner Production*, 119707. doi:<https://doi.org/10.1016/j.jclepro.2019.119707>
- Hutt, R. (2019). Scientists in Iceland are turning carbon dioxide into rock. *World Economic Forum*.
- Hwang, H., Oh, S., Choi, I.-G., & Choi, J. W. (2014). Catalytic effects of magnesium on the characteristics of fast pyrolysis products – Bio-oil, bio-char, and non-condensed pyrolytic gas fractions. *Journal of Analytical and Applied Pyrolysis*, 113, 27-34. doi:10.1016/j.jaap.2014.09.028
- HX, C., ZL, D., W, G., & QZ, Z. (2011). Effects of biochar amendment on cropland soil bulk density, cation exchange capacity, and particulate organic matter content in the North China Plain. *Ying Yong Sheng Tai Xue Bao*, 22(11), 2930-2934. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/22303671>
- Hyland, C., & Sarmah, A. K. (2014). Chapter 25 - Advances and Innovations in Biochar Production and Utilization for Improving Environmental Quality. In *Bioenergy Research: Advances and Applications* (pp. 435-446). Amsterdam: Elsevier.
- Hylander, L. D., Günther, F., & Hansson, K. (2010). *Climate saving soils with biochar*. Paper presented at the NJF seminar 430, Climate Change and Agricultural Production in the Baltic Sea Region, Uppsala universitet Teknisk-naturvetenskapliga vetenskapsområdet, Sweden.
- Hyseni, S. (2017). Carbon Capture and Storage as a Method to Mitigate Climate Change. *Inquiries*, 9(2).
- Ianson, D., Volker, C., Denman, K. L., Kunze, E., & Steiner, N. (2012). The effect of vertical and horizontal dilution on fertilized patch experiments. *Global Biogeochemical Cycles*, 26(3), 1944-9224. doi:10.1029/2010gb004008
- Ibarrola, R., Shackley, S., & Hammond, J. (2011). Pyrolysis biochar systems for recovering biodegradable materials: A life cycle carbon assessment. *Waste Management*, 32(5), 859-868. doi:10.1016/j.wasman.2011.10.005
- Ibrahim, F. G., Torre, R. M., Moya, B. L., & de Godos Crespo, I. (2020). Chapter 18 - Carbon dioxide capture from carbon dioxide-rich gases by microalgae. In G. Soreanu & É. Dumont (Eds.), *From Biofiltration to Promising Options in Gaseous Fluxes Biotreatment* (pp. 373-396): Elsevier.
- Ibrahim, M., et al. (2019). Carbon Mineralization by Reaction with Steel-Making Waste: A Review. *Processes*, 7(2), 1-21. Retrieved from <https://www.mdpi.com/2227-9717/7/2/115>
- ICavoski, I., et al. (2015). Alternative solutions for soil fertility management to overcome the challenges of the Mediterranean organic agriculture: Tomato plant case study. *Soil, Land Care & Environmental Research*, 54(2), 1-9. Retrieved from http://www.publish.csiro.au/view/journals/dsp_journals_pip_abstract_scholar1.cfm?nid=84&pid=SR15067
- Ichriani, G. I., et al. . (2016). Utilization of oil palm empty bunches waste as biochar-microbes for improving availability of soil nutrients. *Journal of Degraded and Mining Lands Management*, 3(2), 517-520. Retrieved from <http://jdmlm.ub.ac.id/index.php/jdmlm/article/view/163>
- Idrees, M., Rangari, V., & Jeelani, S. (2018). Sustainable packaging waste-derived activated carbon for carbon dioxide capture. *Journal of CO₂ Utilization*, 26, 380-387. doi:<https://doi.org/10.1016/j.jcou.2018.05.016>
- Idris, J., et al. (2015). Improved yield and higher heating value of biochar from oil palm biomass at low retention time under self-sustained carbonization. *Journal of Cleaner Production*,

- 104, 475-479. doi:10.1016/j.jclepro.2015.05.023
- Idris, J., et al. (2015). Production of Biochar with High Mineral Content from Oil Biomass. *The Malaysian Journal of Analytical Sciences*, 18(3), 700-704. Retrieved from http://www.ukm.my/mjas/v18_n3/Juferi_18_3_26.pdf
- Idris, J., Shirai, Y., Andou, Y., Mohd Ali, A. A., Othman, M. R., Ibrahim, I., . . . Hassan, M. A. (2016). Successful scaling-up of self-sustained pyrolysis of oil palm biomass under pool-type reactor. *Waste Management & Research*, 34(2), 176 - 180. doi:10.1177/0734242x15616472
- Idris, J. B. (2015). *Study on Biochar Production from Empty Fruit Bunch Biomass Under Self-Sustained Carbonization for the Development of Yamasen Carbonization Oven*. Kyushu Institute of Technology, Retrieved from https://ds.lib.kyutech.ac.jp/dspace/bitstream/10228/5384/1/sei_kou_236.pdf
- Idrus, S., et al. (2015). Effect of Diameter at Breast Height of Leucaena Leucocephala on Bio Char Production in Tube Furnace Pyrolysis. *Jurnal Teknologi*, 76(11), 43-47. doi:10.11113/jt.v76.5908
- Igalavithana, A. D., et al. (2015). The Effects of Biochar Amendment on Soil Fertility. In M. Guo, et al. (Ed.), *Agricultural and Environmental Applications of Biochar: Advances and Barriers* (pp. 123-144): Soil Science Society of America, Inc.
- Igalavithana, A. D., Mandal, S., Niazi, N. K., Vithanage, M., Parikh, S. J., Mukome, F. N. D., . . . Ok, Y. S. (2017). Advances and future directions of biochar characterization methods and applications. *Critical Reviews in Environmental Science and Technology*, 47(23), 2275-2330. doi:10.1080/10643389.2017.1421844
- Igaz. (2015). *The Impact of Biochar on the Soil Water Characteristics*. Paper presented at the In 15th International Multidisciplinary Scientific GeoConference SGEM. <http://www.citeulike.org/group/18367/article/13927962>
- Ignaciuk, A., Vöhringer, F., Ruijs, A., & van Ierland, E. C. (2006). Competition between biomass and food production in the presence of energy policies: a partial equilibrium analysis. *Energy Policy*, 34(10), 1127-1138. doi:<http://dx.doi.org/10.1016/j.enpol.2004.09.010>
- Iizuka, A., Fujii, M., Yamasaki, A., & Yanagisawa, Y. (2004). Development of a New CO₂ Sequestration Process Utilizing the Carbonation of Waste Cement. *Industrial & Engineering Chemistry Research*, 43(24), 7880-7887. doi:10.1021/ie0496176
- Illingworth, J., Williams, P. T., & Rand, B. (2013). Characterisation of biochar porosity from pyrolysis of biomass flax fibre. *Journal of the Energy Institute*, 86(2), 63-70. Retrieved from <http://eprints.whiterose.ac.uk/77991/>
- Ilyina, T., Wolf-Gladrow, D., Munhoven, G., & Heinze, C. (2013). Assessing the potential of calcium-based artificial ocean alkalinization to mitigate rising atmospheric CO₂ and ocean acidification. *Geophysical Research Letters*, 40(22), 5909-5914. doi:10.1002/2013GL057981
- Im, J.-K., Boateng, L. K., Flora, J. R. V., Her, N., Zoh, K.-D., Son, A., & Yoon, Y. (2013). Enhanced ultrasonic degradation of acetaminophen and naproxen in the presence of powdered activated carbon and biochar adsorbents. *Separation and Purification Technology*, 123, 96-105. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1383586613007211>
- Imanishi, T., & Sakawa, M. (2003). Cultivation of pleurotus ostreatus using charcoal. *Japanese Society of Mushroom Science and Technology*, 21(6), 616-625. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4250492/>
- Imbus, S. W., Orr, F. M., Kuuskraa, V. A., Kheshgi, H., Bennaceur, K., Gupta, N., . . . Benson, S. M. (2006). *Critical Issues in CO₂ Capture and Storage: Findings of the SPE Advanced Technology Workshop (ATW) on Carbon Sequestration*. <https://www.onepetro.org/conference-paper/SPE-102968-MS>

- Imhof, P. T., Chiu, P. C., & Guo, Q. (2015). Enhancing Nitrogen Removal in Stormwater Treatment Facilities for Transportation. In.
- Imparato, V., et al. (2015). *Green use of black gasification biochar: microbial community diversity and function in a Danish study loam soil amended with straw gasification biochar - a field study*. Paper presented at the International Biochar Symposium. http://pure.au.dk/portal/files/90407725/Poster_biochar_130515.pdf
- Imran, & Khan, A. A. (2015). Biochar application and shoot cutting duration (days) influenced growth, yield and yield contributing parameters of *Brassica napus* L. *Journal of Biology, Agriculture and Healthcare*, 5(5), 1-6. Retrieved from <http://www.iiste.org/Journals/index.php/JBAH/article/view/20620/21554>
- Imran, & Khan, A. A. (2015). Phenological characteristics of *Brassica napus* L. as influenced by biochar application and shoot cutting duration (days). *Civil and Environmental Research*, 7(3), 104-107. Retrieved from <http://www.cabdirect.org/abstracts/20153381738.html>
- Inal, A., Gunes, A., Sahin, O., Taskin, M. B., & Kaya, E. C. (2015). Impacts of biochar and processed poultry manure, applied to a calcareous soil, on the growth of bean and maize. *Soil Use and Management*, 31(1), 106-113. doi:10.1111/sum.12162
- Inamori, Y. (1988). *Experimental methods of environmental microbiology* (Vol. 178). Tokyo: Kodansha.
- Indrawan, N., Thapa, S., Bhoi, P. R., Huhnke, R. L., & Kumar, A. (2018). Electricity power generation from Co-gasification of municipal solid wastes and biomass: Generation and emission performance. *Energy*. doi:<https://doi.org/10.1016/j.energy.2018.07.169>
- Industrial, C. (2020). A New Negative Emissions Method and Our First Customer. Retrieved from <https://charmindustrial.com/blog/2020/5/17/a-new-negative-emissions-method-and-our-first-customer>
- Industry, E. B. (2020). *Biochar-based carbon sinks to mitigate climate change*. Retrieved from <http://www.biochar-industry.com/why/>
- Ingall, E. D., Diaz, J. M., Longo, A. F., Oakes, M., Finney, L., Vogt, S., . . . Brandes, J. A. (2013). Role of biogenic silica in the removal of iron from the Antarctic seas. *Nature Communications*, 4, 1981. doi:10.1038/ncomms2981
<http://www.nature.com/articles/ncomms2981#supplementary-information>
- Ingerson, A. (2011). Carbon storage potential of harvested wood: summary and policy implications. *Mitigation and Adaptation Strategies for Global Change*, 16(3), 307-323. Retrieved from <http://link.springer.com/article/10.1007%2Fs11027-010-9267-5>
- Inglis, J. L., MacLean, B. J., Pryce, M. T., & Vos, J. G. (2012). Electrocatalytic pathways towards sustainable fuel production from water and CO₂. *Coord. Chem. Rev.*, 256, 2571.
- Ingold, M., et al. (2011). *Influence of Biochar and Tannin Amendments to Goat Manure on Gaseous C and N Emissions*. Paper presented at the Tropentag 2011, October 5 - 7, "Development on the margin", Bonn, Germany.
- Initiative, C. C. G. (2019). *Evidence Brief: Governing Nature-Based Solutions to Carbon Dioxide Removal*. Retrieved from <https://www.c2g2.net/project/policy-brief-governing-nature-based-solutions-to-carbon-dioxide-removal/>
- Initiative, C. C. G. (2019). *Governing Emerging Marine Climate Techniques*. Retrieved from https://www.c2g2.net/wp-content/uploads/c2g_policybrief_marine.pdf
- Initiative, C. C. G. (2019). *Governing Large-scale Carbon Dioxide Removal*. Retrieved from https://www.c2g2.net/wp-content/uploads/C2G2_CDR-Brief-hyperlink.pdf
- Initiative, C. C. G. (2019). *Governing Marine Carbon Dioxide Removal*. Retrieved from https://www.c2g2.net/wp-content/uploads/c2g_policybrief_marine-CDR.pdf
- Initiative, C. C. G. (2019). *Governing Marine Carbon Dioxide Removal and Solar Radiation Modification*. Retrieved from https://www.c2g2.net/wp-content/uploads/c2g_evidencebrief_marine.pdf

- Initiative, C. D. (2020). An Interview with Professor Jelle Bijma about enhanced weathering. Retrieved from <https://www.carbon-drawdown.de/blog/2020-11-15-negative-emissions-only-nature-based-solutions-can-master-the-job>
- Initiative, C. D. (2020). Let's do something with enhanced weathering. Retrieved from <https://www.carbon-drawdown.de/blog/2020-9-14-lets-do-something-with-enhanced-weathering>
- Initiative, C. D. (2021). Introducing "Project Carbdown": Our first "enhanced weathering" field trial aims to remove CO₂ from the atmosphere. Retrieved from <https://www.carbon-drawdown.de/blog/2021-01-14-introducing-project-carbdown>
- Initiative, E. F. (2018). *Advancing Large Scale Carbon Management: Expansion of the 45Q Tax Credit*. Retrieved from https://static1.squarespace.com/static/58ec123cb3db2bd94e057628/t/5b0604f30e2e7287abb8f3c1/1527121150675/45Q_EFI_5.23.18.pdf
- Initiative, E. F. (2019). *Clearing the Air: A Federal RD&D Initiative and Management Plan for Carbon Dioxide Removal Technologies*. Retrieved from <https://www.dropbox.com/s/2y36ngfrcbpv37f/EFI%20Clearing%20the%20Air%20Full%20Report.pdf?dl=0>
- Initiative, O. a. G. C. (2018). OGCI Climate Investments announces progression of the UK's first commercial full-chain Carbon Capture, Utilization and Storage Project. Retrieved from <https://oilandgasclimateinitiative.com/climate-investments-announces-progression-of-the-uks-first-commercial-full-chain-carbon-capture-utilization-and-storage-project/>
- Initiative, V. C. M. I. (2021). Major global initiative to bring rigour and transparency to net zero and carbon neutral claims. Retrieved from [https://vcmintegrity.org/major-global-initiative-to-bring-rigour-and-transparency-to-netzero-and-carbon-neutral-claims/](https://vcmintegrity.org/major-global-initiative-to-bring-rigour-and-transparency-to-net-zero-and-carbon-neutral-claims/)
- Inoue, T. (2018). Carbon Sequestration in Mangroves. In T. Kuwae & M. Hori (Eds.), *Blue Carbon in Shallow Coastal Ecosystems: Carbon Dynamics, Policy, and Implementation* (pp. 73-99).
- Institute, E. F. (2020). *Uncharted Waters: Exploring the Options for Carbon Dioxide Removal in Coastal and Ocean Environments*. Retrieved from <https://energyfuturesinitiative.org/s/Uncharted-Waters-Final-121020.pdf>
- Institute, G. C. (2015). Transporting CO₂. Retrieved from <https://www.globalccsinstitute.com/resources/publications-reports-research/transporting-co2/>
- Institute, G. C., & Brinckerhoff, P. (2011). *Accelerating the Uptake of CCS: Industrial Use of Captured Carbon Dioxide*. Retrieved from <https://www.globalccsinstitute.com/sites/www.globalccsinstitute.com/files/publications/14026/accelerating-uptake-ccs-industrial-use-captured-carbon-dioxide.pdf>
- Institute, I. G. C. (2012). *Tracking Progress in Carbon Capture and Storage: International Energy Agency/Global CCS Institute Report to the Third CLEAN Energy Ministerial 2012*. Retrieved from <https://www.iea.org/publications/freepublications/publication/IEAandGlobalCCSInstituteTrackingProgressinCarbonCaptureandStorageReporttoCEM3FINAL.PDF>
- Credit for carbon oxide sequestration, (2019).
- Institute, R. (2014). Dig Deeper: Regenerative Organic Agriculture and Climate Change. Retrieved from <http://rodaleinstitute.org/regenerative-organic-agriculture-and-climate-change/>
- Institute, T. C. (2014). *Modelling Bio-sequestration to Reduce Greenhouse Gas Emissions* (SH43584). Retrieved from http://www.climateinstitute.org.au/verve/_resources/ModellingBiosequestrationToReduceGHGEmissions_JacobsSKM_April2014.pdf
- Institute, T. C. (2014). *Moving Below Zero: Understanding Bioenergy with Carbon Capture & Storage*. Retrieved from <http://hub.globalccsinstitute.com/sites/default/files/publications/147943/moving-below-zero-understanding-bioenergy-carbon-capture-storage.pdf>
- International, B. (2020). Sweden's first bioenergy carbon capture and storage pilot inaugurated.

- Retrieved from <https://bioenergyinternational.com/heat-power/swedens-first-bioenergy-carbon-capture-and-storage-pilot-inaugurated>
- International, F. o. t. E. (2021). *Chasing Carbon Unicorns: The deception of carbon markets and “net zero”* Retrieved from [https://www.foei.org/resources/publications/chasing-carbon-unicorns-carbon-markets-netzero-report](https://www.foei.org/resources/publications/chasing-carbon-unicorns-carbon-markets-net-zero-report)
- Inthapanya, S., & Preston, T. (2013). Biochar marginally increases biogas production but decreases methane content of the gas in continuous-flow biodigesters charged with cattle manure. *Livestock Research for Rural Development*, 25(11). Retrieved from <http://www.lrrd.org/lrrd25/11/sang25189.htm>
- Inthapanya, S., Preston, T. R., & Leng, R. A. (2012). Biochar increases biogas production in a batch digester charged with cattle manure. *Livestock Research for Rural Development*, 24. Retrieved from <http://lrrd.cipav.org.co/lrrd24/12/sang24212.htm>
- Inyang, M., et al. (2013). Synthesis, characterization, and dye sorption ability of carbon nanotube-biochar nanocomposites.
- Inyang, M., et al. (2014). Sorption and cosorption of lead and sulfapyridine on carbon nanotube-modified biochars. *Environmental Science and Pollution Research*, 22(3), 1868-1876. doi:10.1007/s11356-014-2740-z
- Inyang, M., & Dickenson, E. (2015). The potential role of biochar in the removal of organic and microbial contaminants from potable and reuse water: A review. *Chemosphere*, 134, 232 - 240. doi:10.1016/j.chemosphere.2015.03.072
- Inyang, M., Gao, B., Pullammanappallil, P., Ding, W. C., & Zimmerman, A. R. (2010). Biochar from anaerobically digested sugarcane bagasse. *Bioresource Technology*, 101(22), 8868-8872. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0960852410010692>
- Inyang, M. I., Gao, B., Yao, Y., Xue, Y., Zimmerman, A., Mosa, A., . . . Cao, X. (2015). A Review of Biochar as a Low-Cost Adsorbent for Aqueous Heavy Metal Removal. *Critical Reviews in Environmental Science and Technology*, 46(4), 406-433. doi:10.1080/10643389.2015.1096880
- Ioelovich, M. (2015). Bioenergetics - Current State and Perspectives. *Science and Life of Israel*. Retrieved from http://www.researchgate.net/profile/M_Ioelovich/publication/282730678_Bioenergetics_-Current_State_and_Perspectives/links/561a287e08ae044edb1a8bb.pdf
- Ioelovich, M. (2015). Recent Findings and the Energetic Potential of Plant Biomass as a Renewable Source of Biofuels – A Review. *BioResources*, 10(1), 1879-1914. Retrieved from http://ojs.cnr.ncsu.edu/index.php/BioRes/article/view/BioRes_10_1_Ioelovich_Review_Plant_Biomass_Renewable_Source_Biofuels/3356
- IPAC CO2 Research, I. (2011). *Public Awareness and Acceptance of Carbon Capture and Storage in Canada*. Retrieved from <http://cmcghg.com/wp-content/uploads/2015/03/CMC-IPAC-National-Survey-on-attitudes-toward-CCS.pdf>
- IPCC. (2019). *IPCC Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, and Greenhouse gas fluxes in Terrestrial Ecosystems*. Retrieved from <https://www.ipcc.ch/srccl-report-download-page/>
- Ippolito, J., Spokas, K., Novak, J., Lentz, R. D., Stromberger, M., Ducey, T., & Johnson, M. (2015). USDA Biochar Research: Land Application Advances to Reap Its Multifunctional Abilities. *American Geophysical Union, Fall Meeting*. Retrieved from <http://adsabs.harvard.edu/abs/2014AGUFM.B54A..03I>
- Ippolito, J. A., et al. (2012). Macroscopic and Molecular Investigations of Copper Sorption by a Steam-Activated Biochar. *Journal of Environmental Quality*, 41(4), 1150-1156. doi:10.2134/jeq2011.0113
- Ippolito, J. A., et al. (2012). Switchgrass Biochar Affects Two Aridisols. *Journal of Environmental*

Quality, 41, 1123- 1130. doi:10.2134/jeq2011.0100

- Ippolito, J. A., et al. (2015). Biochar elemental composition and factors influencing nutrient retention. In *Biochar for Environmental Management: Science and Technology and Implementation*.
- Ippolito, J. A., et al. (2015). Hardwood biochar and manure co-application to a calcareous soil. *Chemosphere*, 142, 84-91. doi:10.1016/j.chemosphere.2015.05.039
- Ippolito, J. A., Ducey, T. F., Cantrell, K. B., Novak, J. M., & Lentz, R. D. (2015). Designer, acidic biochar influences calcareous soil characteristics. *Chemosphere*, 142, 184-191. doi:10.1016/j.chemosphere.2015.05.092
- Ippolito, J. A., et al., Grob, J., & Donnelly. (2015). Anatomy of a field trial: Wood-based biochar and compost influences a Pacific Northwest soil. *Biochar Journal*. Retrieved from <http://eprints.nwslr.ars.usda.gov/1595/>
- Ippolito, J. A., Laird, D. A., & Busscher, W. J. (2012). Environmental Benefits of Biochar. *Journal of Environmental Quality Special Section*, 41, 967-972. Retrieved from <https://www.crops.org/publications/jeq/view/biochar/q12-0151.pdf>
- Iqbal, H., Garcia-Perez, M., & Flury, M. (2015). Effect of biochar on leaching of organic carbon, nitrogen, and phosphorus from compost in bioretention systems. *Science of The Total Environment*, 521-522, 37 - 45. doi:10.1016/j.scitotenv.2015.03.060
- Iranmanesh, S., et al. . (2014). Adsorption of naphthenic acids on high surface area activated carbons. *Journal of Environmental Science and Health, Part A: Toxic/Hazardous Substances and Environmental*, 49(8), 913-922. doi:10.1080/10934529.2014.894790
- Irfan, U. (2017). Will Carbon Capture and Storage Ever Work? *Scientific American*. Retrieved from <https://www.scientificamerican.com/article/will-carbon-capture-and-storage-ever-work/>
- Irfan, U. (2017). World must pull CO₂ from the sky to meet Paris goals. *ClimateWire*, (March 24). Retrieved from <http://www.eenews.net/climatewire/2017/03/24/stories/1060052028>
- Irfan, U. (2018). Sucking CO₂ out of the atmosphere, explained. *Vox*. Retrieved from <https://www.vox.com/energy-and-environment/2018/10/24/18001538/climate-change-co2-removal-negative-emissions-cdr-carbon-dioxide>
- Iriarte-Velasco, U., Sierra, I., Cepeda, E. A., Bravo, R., & Ayastuy, J. L. (2015). Methylene blue adsorption by chemically activated waste pork bones. *Coloration Technology*, 131(4), 322 - 332. doi:10.1111/cote.12160
- Irshad, M. (2015). Reducing Heavy Metals Extractions from Contaminated Soils using Organic and Inorganic Amendments - A Review. *Polish Journal of Environmental Studies*, 24(3), 1423-1426. doi:10.15244/pjoes/26970
- Irving, A. D., Connell, S. D., & Russell, B. D. (2011). Restoring Coastal Plants to Improve Global Carbon Storage: Reaping What We Sow. *Plos One*, 6(3), e18311. doi:10.1371/journal.pone.0018311
- Isaac, D. T., et al. (2014). *Utilizing Biochar to Mitigate Nitrate Leaching and Increase Crop Yield in South Central WA*. Paper presented at the AAAS 2015 Annual Meeting Innovations, Information, and Imaging.
- Isabela, B., Pei-Hao, L., Neil, S., Joana Portugal, P., Ajay, G., & Peter, S. (2019). A deep dive into the modelling assumptions for biomass with carbon capture and storage (BECCS): A transparency exercise. *Environmental Research Letters*. Retrieved from <http://iopscience.iop.org/10.1088/1748-9326/ab5c3e>
- Ishak, C. F., & Abdullah, R. (2014). *In-situ immobilization of selected heavy metals in soil using agricultural wastes and industrial by-products*. Paper presented at the Proc. Of MACRO-FTTC Joint Int. Seminar on Management and Remediation Technologies of Rural Soils Contaminated by Heavy Metals and Radioactive Materials.
- Ishii, T., & Kadoya, K. (1994). Effects of charcoal as a soil conditioner on citrus growth and

- vesicular-arbuscular mycorrhizal development. *Journal of the Japanese Society for Horticultural Science*, 63, 529-535.
- Ishimoto, Y., et al. (2017). *Putting Costs of Direct Air Capture in Context*. Retrieved from <http://ceassessment.org/wp-content/uploads/2017/06/WPS-DAC.pdf>
- Islam, T., et al. (2011). Maize Yield and Associated Soil Quality Changes in Cassava + Maize intercropping System After 3 Years of Biochar Application. *J. Agric. Food. Tech.*, 1, 112-115. Retrieved from [http://www.textroad.com/pdf/JAFT/J.%20Agric.%20Food.%20Tech.,%201\(7\)%20112-115,%202011.pdf](http://www.textroad.com/pdf/JAFT/J.%20Agric.%20Food.%20Tech.,%201(7)%20112-115,%202011.pdf)
- Islami, T., et al. . (2011). Biochar for sustaining productivity of cassava based cropping systems in the degraded lands of East Java, Indonesia. *Journal of Tropical Agriculture*, 49, 40-46. Retrieved from <http://jtropag.in/index.php/ojs/article/viewFile/1035/286>
- Islami, T., Guritno, B., & Utomo, W. H. (2012). *Farm Yard Manure Biochar for Sustainable Cassava Production in the Degraded Lands of East Java, Indonesia*. <http://karyailmiah.fp.ub.ac.id/fp/wp-content/uploads/2012/10/Cassava-Biochar-China-workshop1.doc>
- Islami, T., Kurniawan, S., & Utomo, W. H. (2013). Yield stability of cassava (*Manihot esculenta* Crantz) planted in intercropping system after 3 years of biochar application. *American-Eurasian Journal of Sustainable Agriculture*, 7, 349-355.
- Ismadji, S., Tong, D. S., Soetaredjo, F. E., Ayucitra, A., Yu, W. H., & Zhou, C. H. (2016). Bentonite hydrochar composite for removal of ammonium from Koi fish tank. *Applied Clay Science*, 119, 146 - 154. doi:10.1016/j.clay.2015.08.022
- Ismail, I. S., Singh, G., Smith, P., Kim, S., Yang, J.-H., Joseph, S., . . . Vinu, A. (2020). Oxygen functionalized porous Activated biocarbons with high surface Area derived from grape marc for enhanced capture of CO₂ at elevated-pressure. *Carbon*. doi:<https://doi.org/10.1016/j.carbon.2020.01.008>
- Ismail, N., et al. (2015). Microwave Plasma Gasification of Oil Palm Biochar. In. Ismail, N., & Ani, F. N. (2014). *Syngas Production from Microwave Gasification of Oil Palm Biochars*. Retrieved from <http://akademiarbaru.com/wvcarmaea/docu/173.pdf>
- Israel, A., Gavrieli, J., Glazer, A., & Friedlander, M. (2005). Utilization of flue gas from a power plant for tank cultivation of the red seaweed *Gracilaria cornea*. *Aquaculture*, 249(1), 311-316. doi:<https://doi.org/10.1016/j.aquaculture.2005.04.058>
- Israelsson, P. H., Chow, A. C., & Eric Adams, E. (2009). An updated assessment of the acute impacts of ocean carbon sequestration by direct injection. *Energy Procedia*, 1(1), 4929-4936. doi:<http://dx.doi.org/10.1016/j.egypro.2009.02.324>
- Isson, T. T., & Planavsky, N. J. (2018). Reverse weathering as a long-term stabilizer of marine pH and planetary climate. *Nature*, 560(7719), 471-475. doi:10.1038/s41586-018-0408-4
- Itaoka, K., et al. (2012). *Understanding How Individuals Perceive Carbon Dioxide. IMplications for Acceptance of Carbon Dioxide Capture and Storage*. Retrieved from http://www.ieaghg.org/docs/General_Docs/3rd_SRN/DowdSaito_Perceptions_of_CO2SECURED.pdf
- Itchon, G. S., Miso, A. U., & Gensch, R. (2012). *The Effectivity of the Terra Preta Sanitation (TPS) Process in the Elimination of Parasite Eggs in Fecal Matter: A Field Trial of Terra Preta Sanitation in Mindanao, Philippines*. Paper presented at the 4th International Dry Toilet Conference. http://www.drytoilet.org/dt2012/full_papers/5/Gina_S_Itchon.pdf
- Ito, Y., et al. (2009). Estimations of quantities of carbon storage by seaweed and seagrass beds. *Japan Fisheries Engineering*, 46, 135-146.
- IUCN. (2020). IUCN Global Standard for NbS. Retrieved from <https://www.iucn.org/theme/nature-based-solutions/resources/iucn-global-standard-nbs>
- IUCN. (2020). Land degradation and climate change. *Issues Brief*. Retrieved from <https://www.iucn.org/resources/issues-briefs/land-degradation-and-climate-change>

- Iulianelli, A., & Ghasemzadeh, K. (2022). Chapter 16 - Enhanced carbon dioxide capture by membrane contactors in presence of nanofluids. In M. R. Rahimpour, M. A. Makarem, M. R. Kiani, & M. A. Sedghamiz (Eds.), *Nanofluids and Mass Transfer* (pp. 399-411): Elsevier.
- Iwamoto, Y., Narita, Y., Tsuda, A., & Uematsu, M. (2009). Single particle analysis of oceanic suspended matter during the SEEDS II iron fertilization experiment. *Marine Chemistry*, 113(3), 212-218. doi:<https://doi.org/10.1016/j.marchem.2009.02.002>
- Iwuozo, S. A. (2015). *Incidence of greenhouse gas emissions from soils under different corn management practices*. TENNESSEE STATE UNIVERSITY, Retrieved from <http://gradworks.umi.com/15/85/1585626.html>
- Iyer, G., Clarke, L., Edmonds, J., Fawcett, A., Fuhrman, J., McJeon, H., & Waldhoff, S. (2021). The Role of Carbon Dioxide Removal in Net-zero Emissions Pledges. *Energy and Climate Change*, 100043. doi:<https://doi.org/10.1016/j.egycc.2021.100043>
- Izaret, J. M., et al. (2020). We Need True Net Zero, and It Needs Early Adopter. Retrieved from <https://www.bcg.com/publications/2020/mitigating-climate-change>
- Izikowitz, D. (2021). Carbon Purchase Agreements, Dactories, and Supply-Chain Innovation: What Will It Take to Scale-Up Modular Direct Air Capture Technology to a Gigatonne Scale. *Frontiers in Climate*, 3(24). doi:[10.3389/fclim.2021.636657](https://doi.org/10.3389/fclim.2021.636657)
- Jaafar, N. M., Clode, P. L., & Abbott, L. K. (2014). Microscopy Observations of Habitable Space in Biochar for Colonization by Fungal Hyphae From Soil. *Journal of Integrative Agriculture*, 13(3), 483–490. Retrieved from <http://www.sciencedirect.com/science/article/pii/S2095311913607030>
- Jaafar, N. M., Clode, P. L., & Abbott, L. K. (2015). Biochar-Soil Interactions in Four Agricultural Soils. *Pedosphere*, 25(5), 729 - 736. doi:[10.1016/s1002-0160\(15\)30054-0](https://doi.org/10.1016/s1002-0160(15)30054-0)
- Jaafar, N. M., Clode, P. L., & Abbott, L. K. (2015). Soil Microbial Responses to Biochars Varying in Particle Size, Surface and Pore Properties. *Pedosphere*, 25(5), 770-780. doi:[10.1016/s1002-0160\(15\)30058-8](https://doi.org/10.1016/s1002-0160(15)30058-8)
- Jablonowski, N. D., et al., & I. (2012). Biochar-mediated 14C-atrazine mineralization in atrazine-adapted soils from Belgium and Brazil. *Journal of Agricultural and Food Chemistry*, 61(3), 512-516. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/jf303957a>
- Jackson, R., & Lashof, D. (2020). We all must work together to make direct air carbon capture affordable, accessible [Opinion]. *Houston Chronicle*. Retrieved from <https://www.houstonchronicle.com/opinion/outlook/article/We-all-must-work-together-to-make-direct-air-15017895.php>
- Jackson, R. B., Jobbágy, E. G., Avissar, R., Roy, S. B., Barrett, D. J., Cook, C. W., . . . Murray, B. C. (2005). Trading Water for Carbon with Biological Carbon Sequestration. *Science*, 310(5756), 1944-1947. doi:[10.1126/science.1119282](https://doi.org/10.1126/science.1119282)
- Jackson, R. B., Solomon, E. I., Canadell, J. G., Cagnello, M., & Field, C. B. (2019). Methane removal and atmospheric restoration. *Nature Sustainability*. doi:[10.1038/s41893-019-0299-x](https://doi.org/10.1038/s41893-019-0299-x)
- Jacob-Lopes, E., et al. . (2008). Biomass production and carbon dioxide fixation by Aphanothece microscopica N??geli in a bubble column photobioreactor. *Biochemical Engineering Journal*, 40(1), 27-34. Retrieved from <http://cepac.cheme.cmu.edu/pasi2008/slides/franco/library/readings/biomass.pdf>
- Jacob-Lopes, E., Scoparo, C. H. G., Lacerda, L. M. C. F., & Franco, T. T. (2009). Effect of light cycles (night/day) on CO₂ fixation and biomass production by microalgae in photobioreactors. *Chemical Engineering and Processing: Process Intensification*, 48(1), 306-310. doi:<https://doi.org/10.1016/j.cep.2008.04.007>
- Jacobs, A., Rauber, R., & Ludwig, B. (2009). Impact of reduced tillage on carbon and nitrogen storage of two Haplic Luvisols after 40 years. *Soil and Tillage Research*, 102(1),

- 158-164. doi:<https://doi.org/10.1016/j.still.2008.08.012>
- Jacobs, L. M. (2020). Carbon Removal Advocates Face Opportunity and Challenge: Public Support, If Not Understanding. *Morning Consult*. Retrieved from <https://morningconsult.com/2020/12/03/carbon-removal-public-support-polling/>
- Jacobs, W. B., & Craig, M. (2017). Legal Pathways to Widespread Carbon Capture and Sequestration. *Environmental Law Reporter*, 47, 1022-1047.
- Jacobsen, R. (2017). Debunking 3 Soil Carbon Myths. Retrieved from <http://www.centerforcarbonremoval.org/blog-posts/?author=58a5e067d2b857364786f073>
- Jacobson, M. Z. (2001). Strong radiative heating due to the mixing state of black carbon in atmospheric aerosols. *Nature*, 409(6821), 695-697. Retrieved from <http://www.nature.com/nature/journal/v409/n6821/abs/409695a0.html>
- Jacobson, M. Z. (2019). The Health and Climate Impacts of Carbon Capture and Direct Air Capture. *Energy & Environmental Science*. doi:10.1039/C9EE02709B
- Jacobson, R. (2019). The case for investing in direct air capture just got clearer. *GreenBiz*. Retrieved from <https://www.greenbiz.com/article/case-investing-direct-air-capture-just-got-clearer>
- Jacobson, R., Deich, N., & Wong, J. (2018). Federal policy update: carbon removal pathways supported in 2018 Farm Bill. Retrieved from <http://www.centerforcarbonremoval.org/blog-posts/2018/7/6/federal-policy-update-carbon-removal-pathways-supported-in-2018-senate-farm-bill>
- Jacobson, R., & Lucas, M. (2018). Carbontech: A trillion dollar opportunity. *Medium*. Retrieved from <https://medium.com/@carbon180/carbontech-a-trillion-dollar-opportunity-154a9c62cf1c>
- Jacobson, R., & Sanchez, D. L. (2019). Opportunities for Carbon Dioxide Removal Within the United States Department of Agriculture. 1(2). doi:10.3389/fclim.2019.00002
- Jacquet, S. H. M., Savoye, N., Dehairs, F., Strass, V. H., & Cardinal, D. (2008). Mesopelagic carbon remineralization during the European Iron Fertilization Experiment. *Global Biogeochemical Cycles*, 22(1). doi:doi:10.1029/2006GB002902
- Jacquot, J. (2008). Can a Kind of Ancient Charcoal Put the Brakes on Global Warming? In.
- Jacquot, J. E. (2008). Giving Geo-Engineering Another Go: Dumping Limestone into the Oceans to Fight Acidification. *Treehugger*. Retrieved from <https://www.treehugger.com/clean-technology/giving-geo-engineering-another-go-dumping-limestone-into-the-oceans-to-fight-acidification.html>
- Jaffé, R., Ding, Y., Niggemann, J., Vähäalto, A. V., Stubbins, A., Spencer, R. G. M., . . . Dittmar, T. (2013). Global Charcoal Mobilization from Soils via Dissolution and Riverine Transport to the Oceans. *Science*, 340(6130), 345-347. doi:10.1126/science.1231476
- Jaffé, R., et al., & Y. L. (2013). Global Charcoal Mobilization from Soils via Dissolution and Riverine Transport to the Oceans. *Science*, 340, 345-347.
- Jahangiri, H. R., & Zhang, D. (2012). Ensemble based co-optimization of carbon dioxide sequestration and enhanced oil recovery. *International Journal of Greenhouse Gas Control*, 8, 22-33. doi:<https://doi.org/10.1016/j.ijggc.2012.01.013>
- Jain, N., Bhatia, A., & Prasad, R. (2015). Biomass burning and options for its management. *Indian Farming*, 64(1). Retrieved from <http://epubs.icar.org.in/ejournal/index.php/IndFarm/article/view/49722>
- Jain, S., et al. . (2015). Reduction in bioavailability of Pb in Bacopa monnieri by Biochar amendments. In.
- Jain, S., et al. (2016). Impact of biochar amendment on enzymatic resilience properties of mine spoils. *Science of The Total Environment*, 544, 410 - 421. doi:10.1016/j.scitotenv.2015.11.011
- Jain, S., Baruah, B. P., & Khare, P. (2014). Kinetic leaching of high sulphur mine rejects

- amended with biochar: Buffering implication. *Ecological Engineering*, 71, 703 - 709. doi:10.1016/j.ecoleng.2014.08.003
- Jaiswal, A. K., et al. (2013). Rhizoctonia solani suppression and plant growth promotion in cucumber as affected by biochar pyrolysis temperature, feedstock and concentration. *Soil Biology and Biochemistry*, 69, 110-118. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0038071713003957>
- Jaiswal, A. K., Frenkel, O., Elad, Y., LEW, B., & Graber, E. R. (2014). Non-monotonic influence of biochar dose on bean seedling growth and susceptibility to Rhizoctonia solani: the "Shifted Rmax-Effect". *Plant and Soil*. doi:10.1007/s11104-014-2331-2
- Jaju, M. M., Nader, F. H., Roure, F., & Matenco, L. (2016). Optimal aquifers and reservoirs for CCS and EOR in the Kingdom of Saudi Arabia: an overview. *Arabian Journal of Geosciences*, 9(12), 604. doi:10.1007/s12517-016-2600-x
- James, G., Sabatini, D. A., Chiou, C. T., Rutherford, D., Scott, A. C., & Karapanagioti, H. K. (2005). Evaluating phenanthrene sorption on various wood chars. *Water Research*, 39(4), 549-558.
- James, H. (2008). Target Atmospheric CO₂: Where Should Humanity Aim? *The Open Atmospheric Science Journal*, 2. Retrieved from <http://www.bentham-open.org/pages/content.php?TOASCJ/2008/00000002/00000001/217TOASCJ.SGM>
- James, M. S. (2015). *Effects of Biochar-Based Seed Coatings on Seed Germination and Seedling Vigor of California Brome (*Bromus carinatus* L.) and Blue Wildrye (*Elymus glaucus* L.)*. Oregon State University, Retrieved from <http://ir.library.oregonstate.edu/xmlui/handle/1957/56618?show=full>
- James, R. A., et al. (2016). *Characterization of biochar from rice hulls and wood chips produced in a top-lit updraft biomass gasifier*. Paper presented at the ASABE Annual International Meeting. <https://ncsu.pure.elsevier.com/en/publications/characterization-of-biochar-from-rice-hulls-and-wood-chips-produc>
- Jamieson, T., Sager, E., & Guéguen, C. (2013). Characterization of biochar-derived dissolved organic matter using UV-visible absorption and excitation-emission fluorescence spectroscopies. *Chemosphere*, 103, 197-204.
- Jana, K., & De, S. (2014). Biomass integrated gasification combined cogeneration with or without CO₂ capture - A comparative thermodynamic study. *Renewable Energy*, 72, 243-252. doi:10.1016/j.renene.2014.07.027
- Jandl, R., Lindner, M., Vesterdal, L., Bauwens, B., Baritz, R., Hagedorn, F., . . . Byrne, K. A. (2007). How strongly can forest management influence soil carbon sequestration? *Geoderma*, 137(3–4), 253-268. doi:<http://dx.doi.org/10.1016/j.geoderma.2006.09.003>
- Janik, L. J., Skjemstad, J. O., Shepherd, K. D., & Spouncer, L. R. (2007). The prediction of soil carbon fractions using mid-infrared-partial least square analysis. *Australian Journal of Soil Research*, 45(2), 73-81.
- Janin, A., & Harrington, J. (2015). *Performances of lab-scale anaerobic bioreactors at low temperature using Yukon native microorganisms*. Paper presented at the Proceedings of Mine Water Solutions in Extreme Environments.
- Janković, B. (2015). Devolatilization kinetics of swine manure solid pyrolysis using deconvolution procedure. Determination of the bio-oil/liquid yields and char gasification. *Fuel Processing Technology*, 138, 1 - 13. doi:10.1016/j.fuproc.2015.04.027
- Jankowska, E., Sahu, A. K., & Oleskowicz-Popiel, P. (2017). Biogas from microalgae: Review on microalgae's cultivation, harvesting and pretreatment for anaerobic digestion. *Renewable and Sustainable Energy Reviews*, 75, 692-709. doi:<https://doi.org/10.1016/j.rser.2016.11.045>
- Jankowski, T. (2021). How to improve your carbon removal idea. In *Carbon Removal Updates #122*.

- Jankowski, T. (2021). NASDAQ for Carbon Removal. In *Carbon Removal Updates #121*.
- Jansson, C., Wullschleger, S. D., Kalluri, U. C., & Tuskan, G. A. (2010). Phytosequestration: Carbon Biosequestration by Plants and the Prospects of Genetic Engineering. *BioScience*, 60(9), 685-696. doi:10.1525/bio.2010.60.9.6
- Jantz, P., Goetz, S., & Laporte, N. (2014). Carbon stock corridors to mitigate climate change and promote biodiversity in the tropics. *Nature Clim. Change*, 4(2), 138-142. doi:10.1038/nclimate2105
<http://www.nature.com/nclimate/journal/v4/n2/abs/nclimate2105.html#supplementary-information>
- Janus, A., Pelfrêne, A., Heymans, S., Deboffe, C., Douay, F., & Waterlot, C. (2015). Elaboration, characteristics and advantages of biochars for the management of contaminated soils with a specific overview on Miscanthus biochars. *Journal of Environmental Management*, 162, 275 - 289. doi:10.1016/j.jenvman.2015.07.056
- Japan CCS Co., L. (Producer). (2020). Japan-Asian CCUS Forum. Retrieved from <https://www.youtube.com/watch?v=DVtImtnWWRg&feature=youtu.be>
- Jaradat, A. A. (2013). Sustainable Production of Grain Crops for Biofuels. In B. P. Singh (Ed.), *Biofuel Crop Sustainability* (pp. 31-52).
- Jaramillo, M. G.-., Cox, L., Knicker, H. E., Cornejo, J., Spokas, K. A., & Hermosín, M. (2014). Characterization and Selection of Biochar for an Efficient Retention of Tricyclazole in a Flooded Alluvial Paddy Soil. *Journal of Hazardous Materials*. doi:10.1016/j.jhazmat.2014.10.052
- Jaramillo, P., Griffin, W. M., & McCoy, S. T. (2009). Life Cycle Inventory of CO₂ in an Enhanced Oil Recovery System. *Environmental Science & Technology*, 43(21), 8027-8032. doi:10.1021/es902006h
- Jarvis, J. M., Page-Dumroese, D. S., Anderson, N. M., Corilo, Y., & Rodgers, R. P. (2014). Characterization of Fast Pyrolysis Products Generated from Several Western USA Woody Species. *Energy & Fuels*, 28(10), 6438 - 6446. doi:10.1021/ef501714j
- Jarvis, S. M., & Samsatli, S. (2018). Technologies and infrastructures underpinning future CO₂ value chains: A comprehensive review and comparative analysis. *Renewable and Sustainable Energy Reviews*, 85, 46-68. doi:<https://doi.org/10.1016/j.rser.2018.01.007>
- Jassal, R. S., Johnson, M. S., Molodovskaya, M., Black, T. A., Jollymore, A., & Sveinson, K. (2015). Nitrogen enrichment potential of biochar in relation to pyrolysis temperature and feedstock quality. *Journal of Environmental Management*, 152, 140 - 144. doi:10.1016/j.jenvman.2015.01.021
- Jastrow, J. D., Amonette, J. E., & Bailey, V. L. (2007). Mechanisms controlling soil carbon turnover and their potential application for enhancing carbon sequestration. *Climatic Change*, 80(1), 5-23. doi:10.1007/s10584-006-9178-3
- Jatav, H. S. (2017). Role of Biochar: In agriculture sector its implication and perspective. *International Journal of Chemical Studies*, 5(2). Retrieved from https://www.academia.edu/31927461/Role_of_Biochar_In_agriculture_sector_its_implication_and_perspective_email_work_card=abstract-read-more
- Javed, M., Zahoor, M., Mazari, S. A., Qureshi, S. S., Sabzoi, N., Jatoi, A. S., & Mubarak, N. M. (2021). An overview of effect of process parameters for removal of CO₂ using biomass-derived adsorbents. *Biomass Conversion and Biorefinery*. doi:10.1007/s13399-021-01548-0
- Javedan, H. (2017). *Regulation for Underground Storage of CO₂ Passed by U.S. States*. Retrieved from https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwj1ysCGov7uAhUYX80KHYyVBAUQFjABegQIAxAD&url=https%3A%2F%2Fsequestration.mit.edu%2Fpdf%2FUS_Stat

- e_Regulations_Underground_CO2_Storage.pdf&usg=AOvVaw3exqlJ9B4U73uBQIMyIBqD
- Jay, C. N., Fitzgerald, J. D., Hipps, N. A., & Atkinson, C. J. (2015). Why short-term biochar application has no yield benefits: evidence from three field-grown crops. *Soil Use and Management*, n/a - n/a. doi:10.1111/sum.12181
- Jay, D. (2020). Seven Reasons to Question Carbon Capture. *Geoengineering Monitor*. Retrieved from <http://www.geoengineeringmonitor.org/2020/03/carbon-capture-is-the-fossil-fuel-giants-plan-to-keep-extracting/>
- Jayawardhana, Y., Kumarathilaka, P., L.Weerasundara, Mowjood, M., Herath, G., Kawamoto, K., . . . Vithanage, M. (2015). *Detection of benzene in landfill leachate from Gohagoda dumpsite and its removal using municipal solid waste derived biochar*. Paper presented at the 6th International Conference on Structural Engineering and Construction Management 2015. http://www.civil.mrt.ac.lk/conference/ICSECM_2015/book_3/Extract/SECM-15-096.pdf
- Jean-Baptiste, P., & Ducroux, R. (2003). Potentiel des méthodes de séparation et stockage du CO₂ dans la lutte contre l'effet de serre. *Comptes Rendus Geoscience*, 335(6), 611-625. doi:[https://doi.org/10.1016/S1631-0713\(03\)00086-5](https://doi.org/10.1016/S1631-0713(03)00086-5)
- Jedrum, S., et al. (2014). Soil Amendments Effect on Yield and Quality of Jasmine Rice Grown on Typic Natraqualfs, Northeast Thailand. *International Journal of Soil Science*, 9(2), 37-54. Retrieved from <http://web.a.ebscohost.com/abstract?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=18164978&AN=95651084&h=INXITGn%2by8ioMwAEJMtaXQ09H%2fC%2bGEi63Zq0pZrWjpP8786Rhf3B3OjZQuom8dYyZ7oAu%2fbAWk4RH39Y6IVZRA%3d%3d&crl=c>
- Jefferson-Brown, N. (2020). Drax power station hosts free virtual tours. *The Press (York, UK)*. Retrieved from <https://www.yorkpress.co.uk/news/18457428.drax-power-station-hosts-free-virtual-tours/>
- Jeffery, L., et al. (2020). *Options for supporting Carbon Dioxide Removal*. Retrieved from <https://newclimate.org/2020/07/28/options-for-supporting-carbon-dioxide-removal-discussion-paper/>
- Jeffery, S., et al. (2011). A quantitative review of the effects of biochar application to soils on crop productivity using meta-analysis. *Agriculture, Ecosystems & Environment*, 144(1), 175-187. doi:10.1016/j.agee.2011.08.015
- Jeffery, S., et al. (2013). A comment on 'Biochar and its effects on plant productivity and nutrient cycling: a meta-analysis': on the importance of accurate reporting in supporting a fast-moving research field with policy implications. *GCB Bioenergy*, 6(3), 176-179. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/gcbb.12076/abstract>
- Jeffery, S., et al. (2013). The way forward in biochar research: targeting trade-offs between the potential wins. *Global Change Biology*, 7(1), 1-13. Retrieved from The way forward in biochar research: targeting trade-offs between the potential wins
- Jeffery, S., et. al. (2015). Biochar application does not improve the soil hydrological function of a sandy soil. *Geoderma*, 251-252, 47 - 54. doi:10.1016/j.geoderma.2015.03.022
- Jegajeevagan, K., Mabilde, L., Gebremikael, M. T., Ameloot, N., De Neve, S., Leinweber, P., & Sleutel, S. (2016). Artisanal and controlled pyrolysis-based biochars differ in biochemical composition, thermal recalcitrance, and biodegradability in soil. *Biomass and Bioenergy*, 84, 1 - 11. doi:10.1016/j.biombioe.2015.10.025
- Jegannathan, K. R., Chan, E.-S., & Ravindra, P. (2009). Harnessing biofuels: A global Renaissance in energy production? *Renewable & Sustainable Energy Reviews*, 13, 2163 - 2168.
- Jemtland, T. (2019). Positive test results from the carbon capture and storage pilot in Oslo. Retrieved from <https://www.fortum.com/about-us/blog-podcast/forthedoers-blog/positive->

test-results-carbon-capture-and-storage-pilot-oslo

- Jenkins, B. M., et al. (1997). Combustion of residual biosolids from a high solids anaerobic digestion/aerobic composting process. *Biomass and Bioenergy*, 12(5), 367-381. Retrieved from <http://www.sciencedirect.com/science/article/pii/S096195349700086X>
- Jenkins, L. M. (2020). Carbon Removal Advocates Face Opportunity and Challenge: Public Support, if Not Understanding. *Morning Consult*. Retrieved from <https://morningconsult.com/2020/12/03/carbon-removal-public-support-poling/>
- Jenkins, M. (2018). Cutting forests contributes to climate change. But restoring nature—in all kinds of landscapes—is a powerful tool in the race to stop climate change. *The Nature Conservacy*. Retrieved from <https://www.nature.org/en-us/explore/magazine/magazine-articles/carbon-capture/>
- Jenkins, M., Souvanhnachit, M., Rattanavong, S., Maokhamphou, B., Sotoukee, T., Pavelic, P., . . . Downs, T. (2015). *Enhancing productivity and livelihoods among smallholder irrigators through biochar and fertilizer amendments*. Paper presented at the International Water Management Institute.
- Jeong, C. Y., Dodla, S. K., & Wang, J. J. (2015). Fundamental and molecular composition characteristics of biochars produced from sugarcane and rice crop residues and by-products. *Chemosphere*, 142, 4-13. doi:10.1016/j.chemosphere.2015.05.084
- Jeong, D., Jie, W., Adelodun, A. A., Kim, S., & Jo, Y. (2019). Electrospun melamine-blended activated carbon nanofibers for enhanced control of indoor CO₂. *Journal of Applied Polymer Science*, 136(28), 1-8. doi:10.1002/app.47747
- Jeong, M. L., Gillis, J. M., & Hwang, J. Y. (2003). Carbon Dioxide Mitigation by Microalgal Photosynthesis. *Bulletin of the Korean Chemical Society*, 24(12), 1763-1766. Retrieved from http://inis.iaea.org/search/search.aspx?orig_q=RN:46117829
- Jeong-Potter, C., & Farrauto, R. (2021). Feasibility Study of Combining Direct Air Capture of CO₂ and Methanation at Isothermal Conditions with Dual Function Materials. *Applied Catalysis B: Environmental*, 282, 119416. doi:<https://doi.org/10.1016/j.apcatb.2020.119416>
- Jessen, K., Kovscek, A. R., & Orr, F. M. (2005). Increasing CO₂ storage in oil recovery. *Energy Conversion and Management*, 46(2), 293-311. doi:<https://doi.org/10.1016/j.enconman.2004.02.019>
- Jessica, S., Nico, B., Florian, H., David, K., Alexander, P., & Elmar, K. (2021). Carbon dioxide removal technologies are not born equal. *Environmental Research Letters*. Retrieved from <http://iopscience.iop.org/article/10.1088/1748-9326/ac0a11>
- Jha, P., et al. (2010). Biochar in agriculture – prospects and related implications. *Current Science*, 99(9), 1218-1225. Retrieved from <http://www.ias.ac.in/currsci/10nov2010/1218.pdf>
- Ji, G., & Zhao, M. (2017). Membrane Separation Technology in Carbon Capture. In Y. Yun (Ed.), *Recent Advances in Carbon Capture and Storage* (pp. Ch. 03). Rijeka: InTech.
- Ji, L., Yu, H., Wang, X., Grigore, M., French, D., Gözükara, Y. M., . . . Zeng, M. (2017). CO₂ sequestration by direct mineralisation using fly ash from Chinese Shenfu coal. *Fuel Processing Technology*, 156, 429-437. doi:<https://doi.org/10.1016/j.fuproc.2016.10.004>
- Jia, J., et al. (2012). Effects of biochar application on vegetable production and emissions of N₂O and CH₄. *Soil Science and Plant Nutrition*, 58(4), 503-509. doi:10.1080/00380768.2012.686436
- Jia, J., et al. (2013). Effects of biochar application on vegetable production and emissions of N₂O and CH₄ (Environment). *Soil Science and Plant Nutrition*, 58(4), 503-509. Retrieved from <https://www.tandfonline.com/doi/abs/10.1080/00380768.2012.686436>
- Jia, M., et al. (2013). Effects of pH and metal ions on oxytetracycline sorption to maize-straw-derived biochar. *Bioresource Technology*, 136, 87-93. Retrieved from <https://>

www.ncbi.nlm.nih.gov/pubmed/23567668

- Jia, X., Yuan, W., & Ju, X. (2015). Short Report: Effects of Biochar Addition on Manure Composting and Associated N₂O Emissions. *Journal of Sustainable Bioenergy Systems*, 05(02), 56 - 61. doi:10.4236/jsbs.2015.52005
- Jianfu, X., et al. . (2015). Review on management-induced nitrous oxide emissions from paddy ecosystems. *Transactions of the Chinese Society of Agricultural Engineering*, 31(11), 1-9. Retrieved from <http://web.a.ebscohost.com/abstract?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=10026819&AN=103236484&h=El8dy1164g%2ftoFxZ%2fMJ66k3yE6VliJqMeq%2bMVjPFV7ui9CVfT2YmG1fSmYB5ZutruXa4WI295ubbJnr%2fKGO4Hg%3d%3d&crl=c&resultNs=AdminWebAuth&resultL>
- Jiang, H., & Lee, C.-T. A. (2019). On the role of chemical weathering of continental arcs in long-term climate regulation: A case study of the Peninsular Ranges batholith, California (USA). *Earth and Planetary Science Letters*, 525, 115733. doi:<https://doi.org/10.1016/j.epsl.2019.115733>
- Jiang, J., et al. . (2012). Immobilization of Cu(II), Pb(II) and Cd(II) by the Addition of Rice Straw Derived Biochar to a Simulated Polluted Ultisol. *Journal of Hazardous Materials*, 229-230, 145-150.
- Jiang, J., et al. (2013). Highly ordered macroporous woody biochar with ultra-high carbon content as supercapacitor electrodes. *Electrochimica Acta*, 113, 481-489. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0013468613018859>
- Jiang, J., et al. . (2015). Rice Straw-Derived Biochar Properties and Functions as Cu(II) and Cyromazine Sorbents as Influenced by Pyrolysis Temperature. *Pedosphere*, 25(5), 781 - 789. doi:10.1016/s1002-0160(15)30059-x
- Jiang, J., Yuan, M., Xu, R., & Bish, D. L. (2015). Mobilization of phosphate in variable-charge soils amended with biochars derived from crop straws. *Soil and Tillage Research*, 146, 139 - 147. doi:10.1016/j.still.2014.10.009
- Jiang, K., & Ashworth, P. (2021). The development of Carbon Capture Utilization and Storage (CCUS) research in China: A bibliometric perspective. *Renewable and Sustainable Energy Reviews*, 138, 110521. doi:<https://doi.org/10.1016/j.rser.2020.110521>
- Jiang, M., Medlyn, B. E., Drake, J. E., Duursma, R. A., Anderson, I. C., Barton, C. V. M., . . . Ellsworth, D. S. (2020). The fate of carbon in a mature forest under carbon dioxide enrichment. *Nature*, 580(7802), 227-231. doi:10.1038/s41586-020-2128-9
- Jiang, R., Gao, M., Mao, X., & Wang, D. (2019). Advancements and potentials of molten salt CO₂ capture and electrochemical transformation (MSCC-ET) process. *Current Opinion in Electrochemistry*, 17, 38-46. doi:<https://doi.org/10.1016/j.coelec.2019.04.011>
- Jiang, S., Huang, L., Nguyen, T. A. H., Ok, Y. S., Rudolph, V., Yang, H., & Zhang, D. (2015). Copper and zinc adsorption by softwood and hardwood biochars under elevated sulphate-induced salinity and acidic pH conditions. *Chemosphere*, 142, 64-71. doi:10.1016/j.chemosphere.2015.06.079
- Jiang, T. Y., et al. (2013). Effects of different temperatures biochar on adsorption of Pb(II) on variable charge soils. *Huan Jing Ke Xue*, 34(4), 1598-1604. Retrieved from [https://www.ncbi.nlm.nih.gov/pubmed/23798148](http://www.ncbi.nlm.nih.gov/pubmed/23798148)
- Jiang, T.-Y., Jiang, J., Xu, R.-K., & Li, Z. (2012). Adsorption of Pb(II) on variable charge soils amended with rice-straw derived biochar. *Chemosphere*, 89(3), 249-256. Retrieved from [https://www.ncbi.nlm.nih.gov/pubmed/22591849](http://www.ncbi.nlm.nih.gov/pubmed/22591849)
- Jiang, X., Denef, K., Stewart, C. E., & Cotrufo, M. F. (2015). Controls and dynamics of biochar decomposition and soil microbial abundance, composition, and carbon use efficiency during long-term biochar-amended soil incubations. *Biology and Fertility of Soils*, 52(1), 1-14. doi:10.1007/s00374-015-1047-7
- Jiang, Y. F., Sun, H., Yves, U. J., Li, H., & Hu, X. F. (2015). Impact of biochar produced from

- post-harvest residue on the adsorption behavior of diesel oil on loess soil. *Environmental Geochemistry and Health*, 38(1), 243-253. doi:10.1007/s10653-015-9712-1
- Jiang, Y.-F., Hu, X.-F., & Yves, U. (2014). *Effectiveness and mechanisms of naphthalene adsorption by biochar pyrolyzed from wheat straw*. Paper presented at the The 2014 Congress on Advances in Civil, Environmental, and Materials Research. http://www.i-asm.org/publication_conf/acem14/4.EST/M5D.4.ES302_491F.pdf
- Jiang, Z., et al. (2010). Turning carbon dioxide into fuel. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, 368(1923), 3343-3364. doi:doi:10.1098/rsta.2010.0119
- Jiang, Z., Yang, S., Pang, Q., Xu, Y., Chen, X., Sun, X., . . . Yu, W. (2021). Biochar improved soil health and mitigated greenhouse gas emission from controlled irrigation paddy field: Insights into microbial diversity. *Journal of Cleaner Production*, 318, 128595. doi:<https://doi.org/10.1016/j.jclepro.2021.128595>
- Jiang, Z. X., H., Z., Li, F. M., & Wang, Z. Y. (2013). Research progress on biochar carbon sequestration technology. *Huan Jing Ke Xue*, 34, 3327-3333.
- Jiangm Jin Ping, e. a. (2013). Characteristics of Straw Biochar and its Influence on the Forms of Arsenic in Heavy Metal Polluted Soil. *Applied Mechanics and Materials*, 409 - 410, 133-138.
- JiangZhou, L., et al. (2015). Effects of biochar addition on nutrient leaching loss of typical tobacco-planting soils in Yunnan Province, China. *Journal of Agricultural Resources and Environment*, 32(1), 48-53. Retrieved from <http://www.cabdrect.org/abstracts/20153202412.html>
- Jiao, F. (2021). Carbon dioxide removal can help solve the climate crisis and boost our economy *The Philadelphia Inquirer*. Retrieved from <https://www.inquirer.com/opinion/commentary/carbon-capture-dioxide-environment-20210617.html>
- Jiao, N. (2021). Developing Ocean Negative Carbon Emission Technology to Support National Carbon Neutralization. *Bulletin of Chinese Academy of Sciences (Chinese Version)* 36(2), 179-187. Retrieved from <https://bulletinofcas.researchcommons.org/journal/vol36/iss2/8/>
- Jiao, N., Herndl, G. J., Hansell, D. A., Benner, R., Kattner, G., Wilhelm, S. W., . . . Azam, F. (2010). Microbial production of recalcitrant dissolved organic matter: long-term carbon storage in the global ocean. *Nature Reviews Microbiology*, 8(8), 593-599. Retrieved from <http://dx.doi.org/10.1038/nrmicro2386>
- Jickells, T. D., An, Z. S., Andersen, K. K., Baker, A. R., Bergametti, G., Brooks, N., . . . Torres, R. (2005). Global Iron Connections Between Desert Dust, Ocean Biogeochemistry, and Climate. *Science*, 308(5718), 67-71. doi:10.1126/science.1105959 %J Science
- Jien, S.-H., et al. (2015). Stabilization of Organic Matter by Biochar Application in Compost-amended Soils with Contrasting pH Values and Textures. *Sustainability*, 7(10), 13317-13333. doi:10.3390/su71013317
- Jien, S.-H., & Wang, C.-S. (2013). Effects of biochar on soil properties and erosion potential in a highly weathered soil? *CATENA*, 110, 225–233. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0341816213001604>
- Jimenez-Cordero, D., Heras, F., Alonso-Morales, N., Gilarranz, M. A., & Rodriguez, J. J. (2015). Ozone as oxidation agent in cyclic activation of biochar. *Fuel Processing Technology*, 139, 42-48. doi:10.1016/j.fuproc.2015.08.016
- Jin, D., Hoagland, P., & Buesseler, K. O. (2020). The value of scientific research on the ocean's biological carbon pump. *Science of The Total Environment*, 141357. doi:<https://doi.org/10.1016/j.scitotenv.2020.141357>
- Jin, D. F., Xu, Y. Y., Zhang, M., Jung, Y. S., & Ok, Y. S. (2016). Comparative evaluation for the sorption capacity of four carbonaceous sorbents to phenol. *Chemical Speciation &*

Bioavailability, 28(1-4), 18 - 25. doi:10.1080/09542299.2015.1136570

- Jin, E. (2014). *Life cycle assessment of two catalysts used in the biofuel syngas cleaning process and analysis of variability in gasification*. OKLAHOMA STATE UNIVERSITY, Retrieved from <http://gradworks.umi.com/15/67/1567339.html>
- Jin, H. (2010). *Characterization Of Microbial Life Colonizing Biochar And Biochar-Amended Soils*. Retrieved from <http://ecommons.library.cornell.edu/handle/1813/17077>
- Jin, H., et al. (2014). Distillers dried grains with soluble (DDGS) bio-char based activated carbon for Supercapacitors with organic electrolyte tetraethylammonium tetrafluoroborate. *Journal of Environmental Chemical Engineering*, 2(3), 1404-1409. doi:10.1016/j.jece.2014.05.019
- Jin, H., et al. . (2014). A high-performance carbon derived from corn stover via microwave and slow pyrolysis for supercapacitors. *Journal of Analytical and Applied Pyrolysis*, 110, 18-23. doi:10.1016/j.jaat.2014.07.010
- Jin, H., Capareda, S., Chang, Z., Gao, J., Xu, Y., & Zhang, J. (2014). Biochar pyrolytically produced from municipal solid wastes for aqueous As(V) removal: adsorption property and its improvement with KOH activation. *Bioresource Technology*. doi:10.1016/j.biortech.2014.06.103
- Jin, H., Hanif, M. U., Capareda, S., Chang, Z., Huang, H., & Ai, Y. (2016). Copper(II) removal potential from aqueous solution by pyrolysis biochar derived from anaerobically digested algae-dairy-manure and effect of KOH activation. *Journal of Environmental Chemical Engineering*, 4(1), 365 - 372. doi:10.1016/j.jece.2015.11.022
- Jin, J., Kang, M., Sun, K., Pan, Z., Wu, F., & Xing, B. (2016). Properties of biochar-amended soils and their sorption of imidacloprid, isoproturon, and atrazine. *Science of The Total Environment*, 550, 504 - 513. doi:10.1016/j.scitotenv.2016.01.117
- Jin, W., Singh, K., & Zondlo, J. (2015). Co-processing of pyrolysis vapors with bio-chars for ex-situ upgrading. *Renewable Energy*, 83, 638 - 645. doi:10.1016/j.renene.2015.04.067
- Jin, X., & Gruber, N. (2003). Offsetting the radiative benefit of ocean iron fertilization by enhancing N₂O emissions. *Geophysical Research Letters*, 30(24). doi:10.1029/2003gl018458
- Jin, X., Gruber, N., Frenzel, H., Doney, S. C., & McWilliams, J. C. (2008). The impact on atmospheric CO₂ of iron fertilization induced changes in the ocean's biological pump. *Biogeosciences*, 5(2), 385-406. doi:10.5194/bg-5-385-2008
- Jin, Y., Liang, X., He, M., Liu, Y., Tian, G., & Shi, J. (2015). Manure biochar influence upon soil properties, phosphorus distribution and phosphatase activities: A microcosm incubation study. *Chemosphere*, 142, 128-135. doi:10.1016/j.chemosphere.2015.07.015
- Jindo, K., et al. (2012). Biochar influences the microbial community structure during manure composting with agricultural wastes. *Science of The Total Environment*.
- Jindo, K., et al. . (2016). Influence of biochar addition on the humic substances of composting manures. *Waste Management*, 49, 545-552. doi:10.1016/j.wasman.2016.01.007
- Jindo, K., Mizumoto, H., Sawada, Y., Sanchez-Monedero, M. A., & Sonoki, T. (2014). Physical and chemical characterizations of biochars derived from different agricultural residues. *Biogeosciences Discussions*, 11(8), 11727 - 11746. doi:10.5194/bgd-11-11727-2014
- Jindo, K., Suto, K., Matsumoto, K., García, C., Sonoki, T., & Sanchez-Monedero, M. A. (2012). Chemical and biochemical characterisation of biochar-blended composts prepared from poultry manure. *Bioresource Technology*, 110, 396-404. doi:<https://doi.org/10.1016/j.biortech.2012.01.120>
- Jing, X.-R., et al. (2014). Enhanced adsorption performance of tetracycline in aqueous solutions by methanol-modified biochar. *Chemical Engineering Journal*, 248, 168-174. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1385894714002800>
- Jinnah, S., Morrow, D., & Nicholson, S. (2021). Splitting Climate Engineering Governance: How

- Problem Structure Shapes Institutional Design. *Global Policy*, 12(S1), 8-19. doi:<https://doi.org/10.1111/1758-5899.12900>
- Jiwani, M., et al. (2015). *Traditional Natural Farming System in the Production of Bario Rice (Adan Rice) by Lun Bwang Community in the Highland of Borneo Sarawak, East Malaysia and Potential for Using Biochar, Paddy Straw and Buffalo Dung Bokashi*. Paper presented at the Proceeding - Kuala Lumpur International Agriculture, Forestry and Plantation. http://kliafp.com/wp-content/uploads/2015/09/KLIAFP2015_AG_37_ch3589qmFu.pdf
- Jo, H. Y., Kim, J. H., Lee, Y. J., Lee, M., & Choh, S.-J. (2012). Evaluation of factors affecting mineral carbonation of CO₂ using coal fly ash in aqueous solutions under ambient conditions. *Chemical Engineering Journal*, 183, 77-87. doi:<https://doi.org/10.1016/j.cej.2011.12.023>
- Jo, S. B., Lee, S. C., Chae, H. J., Cho, M. S., Lee, J. B., Baek, J.-I., & Kim, J. C. (2016). Regenerable potassium-based alumina sorbents prepared by CO₂ thermal treatment for post-combustion carbon dioxide capture. *Korean Journal of Chemical Engineering*, 33(11), 3207-3215. doi:[10.1007/s11814-016-0162-y](https://doi.org/10.1007/s11814-016-0162-y)
- Jobin, M., & Siegrist, M. (2020). Support for the Deployment of Climate Engineering: A Comparison of Ten Different Technologies. *Risk Analysis*, 40(5), 1058-1078. doi:<https://doi.org/10.1111/risa.13462>
- Johannessen, S., C. , & Robie, W. M. (2016). Geoengineering with seagrasses: is credit due where credit is given? *Environmental Research Letters*, 11(11), 113001. Retrieved from <http://stacks.iop.org/1748-9326/11/i=11/a=113001>
- Johansson, C. L., et al. (2015). The complexity of biosorption treatments for oxyanions in a multi-element mine effluent. *Journal of Environmental Management*, 151, 386 - 392. doi:[10.1016/j.jenvman.2014.11.031](https://doi.org/10.1016/j.jenvman.2014.11.031)
- Johansson, C. L., PAUL, N. A., Nys, R. d., & Roberts, D. A. (2016). Simultaneous biosorption of selenium, arsenic and molybdenum with modified algal-based biochars. *Journal of Environmental Management*, 165, 117 - 123. doi:[10.1016/j.jenvman.2015.09.021](https://doi.org/10.1016/j.jenvman.2015.09.021)
- Johansson, D. J. A., & Azar, C. (2007). A scenario based analysis of land competition between food and bioenergy production in the US. *Climatic Change*, 82(3), 267-291. doi:[10.1007/s10584-006-9208-1](https://doi.org/10.1007/s10584-006-9208-1)
- John, R. P., Anisha, G. S., Nampoothiri, K. M., & Pandey, A. (2011). Micro and macroalgal biomass: A renewable source for bioethanol. *Bioresource Technology*, 102(1), 186-193. doi:<https://doi.org/10.1016/j.biortech.2010.06.139>
- Johnsen, K. H., Wear, D., Oren, R., Teskey, R. O., Sanchez, F., Will, R., . . . Dougherty, P. M. (2001). Meeting Global Policy Commitments: Carbon Sequestration and Southern Pine Forests. *Journal of Forestry*, 99(4), 14-21. doi:[10.1093/jof/99.4.14](https://doi.org/10.1093/jof/99.4.14)
- Johnson, D. (2015). A Greener Revolution and a No-Regrets Carbon Capture Mechanism for New Mexico. In: New Mexico State University, Institute for Sustainable Agricultural Research.
- Johnson, G. R. (2010). *Effects of biochar-amended soil on the water quality of greenroof runoff*.
- Johnson, K. S., Chavez, F. P., & Friederich, G. E. (1999). Continental-shelf sediment as a primary source of iron for coastal phytoplankton. *Nature*, 398(6729), 697-700. Retrieved from <http://dx.doi.org/10.1038/19511>
- Johnson, K. S., Coale, K. H., Elrod, V. A., & Tindale, N. W. (1994). Iron photochemistry in seawater from the equatorial Pacific. *Marine Chemistry*, 46(4), 319-334. doi:[https://doi.org/10.1016/0304-4203\(94\)90029-9](https://doi.org/10.1016/0304-4203(94)90029-9)
- Johnson, K. S., & Karl, D. M. (2002). Is Ocean Fertilization Credible and Creditable? *Science*, 296(5567), 467-468. doi:[10.1126/science.296.5567.467b](https://doi.org/10.1126/science.296.5567.467b)
- Johnson, L. (2021). U of A scientist co-leads expert U.S. panel on removing carbon from

- atmosphere. *Edmonton Journal*. Retrieved from <https://edmontonjournal.com/news/local-news/u-of-a-scientist-co-leads-expert-u-s-panel-on-removing-carbon-from-atmosphere>
- Johnson, M. S., et al. (2006). Organic Carbon Fluxes within and Streamwater Exports from Headwater Catchments in the Southern Amazon. *Hydrological Processes*, 20(12), 2599-2614. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/hyp.6218/abstract>
- Johnson, M. S., et al. (2007). Storm Pulses of Dissolved CO₂ in a Forested Headwater Amazonian Stream Explored Using Hydrograph Separation. *Water Resources Research*, 43(11), 1-8. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1029/2007WR006359/epdf>
- Johnson, M. S., et al. (2017). Biochar influences on soil CO₂ and CH₄ fluxes in response to wetting and drying cycles for a forest soil. *Scientific Reports*, 7(1), 6780. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/28755008>
- Johnson, M. S., Lehmann, J., & Couto, E. G. (2008). A Simple, Direct Method to Measure Dissolved CO₂ Using Soda Lime. *Oecologia Brasileira*, 12, 85-91.
- Johnson, N. (2019). Can we stop stupid politics from ruining carbon farming? *Grist*. Retrieved from <https://grist.org/article/can-we-stop-stupid-politics-from-ruining-carbon-farming/>
- Johnson, N. (2020). So-called ‘negative emissions’ might actually work, at least in California. *Grist*. Retrieved from <https://grist.org/climate/so-called-negative-emissions-might-actually-work-at-least-in-california/>
- Johnson, N., Parker, N., & Ogden, J. (2014). How negative can biofuels with CCS take us and at what cost? Refining the economic potential of biofuel production with CCS using spatially-explicit modeling. *Energy Procedia*, 63, 6770-6791. doi:<http://dx.doi.org/10.1016/j.egypro.2014.11.712>
- Johnson, N., Parker, N., & Ogden, J. (2014). How negative can biofuels with CCS take us and at what cost? Refining the economic potential of biofuel production with CCS using spatially-explicit modeling. In T. Dixon, H. Herzog, & S. Twinning (Eds.), *12th International Conference on Greenhouse Gas Control Technologies, Ghgt-12* (Vol. 63, pp. 6770-6791). Amsterdam: Elsevier Science Bv.
- Johnson, N. C., Thomas, B., Maher, K., Rosenbauer, R. J., Bird, D., & Brown, G. E. (2014). Olivine dissolution and carbonation under conditions relevant for in situ carbon storage. *Chemical Geology*, 373, 93-105. doi:<https://doi.org/10.1016/j.chemgeo.2014.02.026>
- Johnson, S. K. (2017). The Big Geoengineering Question: Where to Store All That Carbon. *Medium*. Retrieved from <https://medium.com/@SJvatn/>
- Johnsson, F., Reiner, D., Itaoka, K., & Herzog, H. (2009). Stakeholder attitudes on carbon capture and storage — An international comparison. *Energy Procedia*, 1(1), 4819-4826. doi:<http://dx.doi.org/10.1016/j.egypro.2009.02.309>
- Johnston, G. (2021). World’s first large-scale direct air capture and storage plant begins construction in Iceland. *World Architecture News*. Retrieved from <https://www.worldarchitecturenews.com/article/1705341/worlds-first-large-scale-direct-air-capture-storage-plant-begins-construction-iceland>
- Johnston, I. (2017). Carbon dioxide must be removed from the atmosphere to avoid extreme climate change, say scientists. *The Independent*. Retrieved from <http://www.independent.co.uk/news/science/carbon-dioxide-remove-atmosphere-climate-change-greenhouse-gas-scientists-jim-hansen-a7847426.html>
- Johnston, M., et al. (2009). Resetting global expectations from agricultural biofuels. *Environmental Research Letters*, 4(1), 014004. Retrieved from <http://stacks.iop.org/1748-9326/4/i=1/a=014004>
- Johny, N., Murali, T. R., Mathew, P. S. M., Raj, A. A., & Sukesh, O. P. (2019). Experiment on carbon dioxide removal from flue gas. *Materials Today: Proceedings*, 11, 1094-1101. doi:<https://doi.org/10.1016/j.matpr.2018.12.044>

- Jones, A., & Haywood, J. M. (2017). Sea-spray geoengineering in the HadGEM2-ES earth-system model: radiative impact and climate response. *Atmospheric Chemistry and Physics*, 12, 10887-10898. Retrieved from <https://www.atmos-chem-phys.net/12/10887/2012/acp-12-10887-2012.pdf>
- Jones, A. C., & Sherlock, M. F. (2021). The Tax Credit for Carbon Sequestration (Section 45Q). *In Focus*. Retrieved from <https://fas.org/sgp/crs/misc/IF11455.pdf>
- Jones, B. E. H., Haynes, R. J., & Phillips, I. R. (2010). Effect of amendment of bauxite processing sand with organic materials on its chemical, physical and microbial properties. *Journal of Environmental Management*, 91, 2281-2288.
- Jones, C. D., Ciais, P., Davis, S. J., Friedlingstein, P., Gasser, T., Peters, G. P., . . . Wiltshire, A. (2016). Simulating the Earth system response to negative emissions. *Environmental Research Letters*, 11(9), 11. doi:10.1088/1748-9326/11/9/095012
- Jones, C. D., Frölicher, T. L., Koven, C., MacDougall, A. H., Matthews, H. D., Zickfeld, K., . . . Burger, F. A. (2019). The Zero Emissions Commitment Model Intercomparison Project (ZECMIP) contribution to C4MIP: quantifying committed climate changes following zero carbon emissions. *Geosci. Model Dev.*, 12(10), 4375-4385. doi:10.5194/gmd-12-4375-2019
- Jones, C. S., & Mayfield, S. P. (2012). Algae biofuels: versatility for the future of bioenergy. *Current Opinion in Biotechnology*, 23(3), 346-351. doi:<https://doi.org/10.1016/j.copbio.2011.10.013>
- Jones, C. W. (2011). CO₂ Capture from Dilute Gases as a Component of Modern Global Carbon Management. *Annual Review of Chemical and Biomolecular Engineering*, 2(1), 31-52. Retrieved from <http://www.annualreviews.org/doi/pdf/10.1146/annurev-chembioeng-061010-114252>
- Jones, D. L., Edwards-Jones, G., & Murphy, D. V. (2011). Biochar mediated alterations in herbicide breakdown and leaching in soil. *Soil Biology and Biochemistry*, 45, 804-813. doi:10.1016/j.soilbio.2010.12.015
- Jones, D. L., Murphy, D. V., Khalid, M., & Ahmad, W. (2011). Short-term biochar-induced increase in soil CO₂ release is both biotically and abiotically mediated. *Soil Biology and Biochemistry*, 43(8), 1723-1731. doi:10.1016/j.soilbio.2011.04.018
- Jones, D. L., & Quilliam, R. S. (2014). Metal contaminated biochar and wood ash negatively affect plant growth and soil quality after land application. *Journal of Hazardous Materials*, 276, 362-370. doi:10.1016/j.jhazmat.2014.05.053
- Jones, D. L., Rousk, J., Edwards-Jones, G., DeLuca, T. H., & Murphy, D. V. (2012). Biochar-mediated changes in soil quality and plant growth in a three year field trial. *Soil Biology and Biochemistry*, 45(Supplement C), 113-124. doi:<https://doi.org/10.1016/j.soilbio.2011.10.012>
- Jones, I. S. F. (2011). Contrasting micro- and macro-nutrient nourishment of the ocean. *Marine Ecology Progress Series*, 425, 281-296. Retrieved from <http://www.int-res.com/abstracts/meps/v425/p281-296/>
- Jones, I. S. F. (2014). The cost of carbon management using ocean nourishment. *International Journal of Climate Change Strategies and Management*, 6(4), 391-400. doi:doi:10.1108/IJCCSM-11-2012-0063
- Jones, I. S. F., & Otaegui, D. (1997). Photosynthetic greenhouse gas mitigation by ocean nourishment. *Energy Conversion and Management*, 38, S367-S372. doi:[https://doi.org/10.1016/S0196-8904\(96\)00296-8](https://doi.org/10.1016/S0196-8904(96)00296-8)
- Jones, J. (2021). Calgary private equity firm JOG shifts to carbon-capture opportunities. *The Globe & Mail (Toronto)*. Retrieved from <https://www.theglobeandmail.com/business/commentary/article-calgary-private-equity-firm-jog-shifts-to-carbon-capture-opportunities/>
- Jones, K., Ramakrishnan, G., Uchimiya, M., & Orlov, A. (2015). New Applications of X-ray

- Tomography in Pyrolysis of Biomass: Biochar Imaging. *Energy & Fuels*, 29(3), 1626-1634. doi:10.1021/ef5027604
- Jones, K., Ramakrishnan, G., Uchimiya, M., Orlov, A., Castaldi, M. J., LeBlanc, J., & Hiradate, S. (2015). Fate of Higher-Mass Elements and Surface Functional Groups during the Pyrolysis of Waste Pecan Shell. *Energy & Fuels*, 29(12), 8095 - 8101. doi:10.1021/acs.energyfuels.5b02428
- Jones, N. (2008). Sucking carbon out of the air. *Nature*(December 17). Retrieved from <http://www.nature.com/news/2008/081217/full/news.2008.1319.html>
- Jones, N. (2018). Safeguarding Against Environmental Injustice: 1.5°C Scenarios, Negative Emissions, and Unintended Consequences. *Carbon & Climate Law Review*, 12(1). doi:10.21552/cclr/2018/1/6
- Jones, S., Bardos, R. P., Kidd, P. S., Mench, M., de Leij, F., Hutchings, T., . . . Menger, P. (2016). Biochar and compost amendments enhance copper immobilisation and support plant growth in contaminated soils. *Journal of Environmental Management*, 171, 101 - 112. doi:10.1016/j.jenvman.2016.01.024
- Joos, F., Sarmiento, J. L., & Siegenthaler, U. (1991). Estimates of the Effect of Southern-Ocean Iron Fertilization on Atmospheric CO₂ Concentrations. *Nature*, 349(6312), 772-775. doi:10.1038/349772a0
- Joos, L., Huck, J. M., Van Speybroeck, V., & Smit, B. (2016). Cutting the cost of carbon capture: a case for carbon capture and utilization. *Faraday Discussions*, 192, 391-414. doi:10.1039/c6fd00031b
- Jope, A. (2021). Why we're putting our climate plans to a shareholder vote. Retrieved from <https://www.unilever.com/news/news-and-features/Feature-article/2021/why-we-are-putting-our-climate-plans-to-a-shareholder-vote.html#:~:text=For%20Unilever%2C%20net%20zero%20by,or%20carbon%20capture%20and%20storage>
- Jorat, M. E., Goddard, M. A., Manning, P., Lau, H. K., Ngeow, S., Sohi, S. P., & Manning, D. A. C. (2020). Passive CO₂ removal in urban soils: Evidence from brownfield sites. *Science of The Total Environment*, 703, 135573. doi:<https://doi.org/10.1016/j.scitotenv.2019.135573>
- Jordal, K., & Preston Aragonès, M. (2021). *Europe needs robust accounting for Carbon Dioxide Removal*. Retrieved from <https://zeroemissionsplatform.eu/europe-needs-robust-accounting-for-carbon-dioxide-removal/>
- Jordan, G., et al. , & t. (2011). *Agronomic Effects of Biochar and Polyphenols as Compost Additives to Irrigated Raphanus sativus in Oman*. Paper presented at the Tropentag 2011, October 5 - 7, "Development on the margin", Bonn, Germany.
- Jørgensen, U., Dalgaard, T., & Kristensen, E. S. (2005). Biomass energy in organic farming—the potential role of short rotation coppice. *Biomass and Bioenergy*, 28(2), 237-248. doi:<https://doi.org/10.1016/j.biombioe.2004.08.006>
- Jorio, L. (2018). Is sucking CO₂ from the air the answer to global warming? *SWI*. Retrieved from https://www.swissinfo.ch/eng/negative-emissions-_is-sucking-co2-from-the-air-the-answer-to-global-warming-/44547682
- Jorsensen, U., Dalgaard, T., & Kristensen, E. S. (2005). Biomass energy in organic farming - The potential role of short rotation coppice. *Biomass Bioenergy*, 28, 237-248. Retrieved from https://www.researchgate.net/publication/233721466_Biomass_energy_in_organic_farming_-_The_potential_role_of_short_rotation_coppice
- Jose, S., & Bardhan, S. J. A. S. (2012). Agroforestry for biomass production and carbon sequestration: an overview. *86*(2), 105-111. doi:10.1007/s10457-012-9573-x
- Joseph, S., et al. (2009). Developing a Biochar Classification and Test Methods. In L. Johannes

- & J. Stephen (Eds.), *Biochar for Environmental Management: Science and Technology* (pp. 107-126). London, UK: Earthscan.
- Joseph, S. (2009). Socio-economic Assessment and Implementation of Small Scale Biochar Projects. In *Biochar for Environmental Management: Science and Technology* (pp. 359-374). London, UK: Earthscan.
- Joseph, S., et al. (2015). Effects of Enriched Biochars Containing Magnetic Iron Nanoparticles on Mycorrhizal Colonisation, Plant Growth, Nutrient Uptake and Soil Quality Improvement. *Pedosphere*, 25(5), 749 - 760. doi:10.1016/s1002-0160(15)30056-4
- Joseph, S., et al. (2015). The Electrochemical Properties of Biochars and How They Affect Soil Redox Properties and Processes. *Agronomy*, 5(3), 322 - 340. doi:10.3390/agronomy5030322
- Joseph, S., et al. (2015). Feeding Biochar to Cows: An Innovative Solution for Improving Soil Fertility and Farm Productivity. *Pedosphere*, 25(5), 666–679. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1002016015300473>
- Joseph, S., Gruber, E. R., Chia, C., Munroe, P., Donne, S., Thomas, T., . . . Hook, J. (2013). Shifting paradigms: development of high-efficiency biochar fertilizers based on nano-structures and soluble components. *Carbon Management*, 4(3), 323-343. Retrieved from <http://www.tandfonline.com/doi/abs/10.4155/cmt.13.23>
- Joseph, S., et al. , & Solaiman, Z. M. (2015). Effects of enriched biochars containing magnetic iron nanoparticles on mycorrhizal colonisation, plant growth, nutrient uptake and soil quality improvement. *Pedosphere*, 25(5), 749-760. Retrieved from http://pedosphere.issas.ac.cn/trqen/ch/reader/view_abstract.aspx?file_no=20150513
- Joseph, S. D., et al. (2007, 12/2007). *Biochar for Carbon Sequestration, Reduction of Greenhouse Gas Emissions and Enhancement of Soil Fertility; A Review of the Materials Science*. Paper presented at the Australian Combustion Symposium, Sydney, Australia.
- Joseph, S. D., et al. (2010). An investigation into the reactions of biochar in soil. *Australian Journal of Soil Research*, 48(7), 501-515. Retrieved from https://www.researchgate.net/publication/202860264_An_Investigation_into_the_Reactions_of_Biochar_in_Soil
- Josephs, L. (2020). United Airlines turns to CO₂ removal technology to offset emissions Retrieved from <https://www.cnbc.com/amp/2020/12/10/united-airlines-turns-to-co2-removal-technology-to-offset-emissions-.html>
- Joshi, E., et al. . (2013). Biochar - The Future of Agriculture. *Popular Kheti*, 1(1), 41-48. Retrieved from http://www.popularkheti.com/web_documents/pk-119.pdf
- Joshi, K. (2021). New report highlights limitations of CCS after stumbles at flagship project. Retrieved from <https://reneweconomy.com.au/new-report-highlights-limitations-of-ccs-after-stumbles-at-flagship-project/>
- Jospe, C. (2017). Ready, set, go! Restoring the Carbon Balance is possible it just needs more _____. Retrieved from <http://carbonalist.com/2017/05/restoring-the-carbon-balance/>
- Jospe, C. (2017). Successful Decarbonization Requires a Radically Different Mindset. Blog Retrieved from <http://carbonalist.com/2017/05/successful-decarbonization-requires-a-radically-different-mindset/>
- Jospe, C. (2017). What does sucking CO₂ from the atmosphere have to do with energy? *New York Energy Week*. Retrieved from <http://nyenergyweek.com/what-does-sucking-co2-from-the-atmosphere-have-to-do-with-energy/>
- Jospe, C. (2017). What is Direct Air Capture? (part 1). Blog Retrieved from <http://carbonalist.com/2017/05/what-is-direct-air-capture-pt1/>
- Jospe, C. (2019). How does Nori get Supply? *Medium*. Retrieved from <https://medium.com/nori-carbon-removal/how-does-nori-get-supply-ff9b566bae24>
- Jospe, C. (2020). Ecosystem service markets: explained with a fruit metaphor. *Medium*. Retrieved from <https://medium.com/nori-carbon-removal/ecosystem-service-markets->

explained-with-a-fruit-metaphor-3b3a9376db9f

- Josse, J. C., & Benedek, A. (2015).
- Jossi, F. (2018). An FAQ on 45Q: What federal carbon storage tax credit means for Midwest. *Energy News Network*. Retrieved from <https://energynews.us/2018/07/10/midwest/an-faq-on-45q-what-federal-carbon-storage-tax-credit-means-for-midwest/>
- Jouiad, M., Al-Nofeli, N., Khalifa, N., Benyettou, F., & Yousef, L. F. (2014). Characteristics of slow pyrolysis biochars produced from rhodes grass and fronds of edible date palm. *Journal of Analytical and Applied Pyrolysis*, 111, 183-190. doi:10.1016/j.jaat.2014.10.024
- Judd, B., Harrison, D. P., & Jones, I. S. F. (2008). *Engineering Ocean Nourishment*. Paper presented at the Proceedings of the World Congress on Engineering.
- Judd, L. A., et al. (2014). *Changes in Root Growth and Physical Properties in Substrates Containing Charred or Uncharred Wood Aggregates*. Paper presented at the Proceedings of the 2014 Annual Meeting of the International Plant Propagators Society.
- Judd, L. A., et al. . (2015). *Comparison of Charred and Uncharred Wood Aggregates in Horticultural Substrates*. Paper presented at the SNA Research Conference. <http://www.ncsu.edu/project/woodsubstrates/documents/research/comparison-charred-uncharred.pdf>
- Juhola, A. J. (1975). Iodine Adsorption and Structure of Activated Chars. *Carbon*, 13(5), 437 - 432. Retrieved from <http://www.sciencedirect.com/science/article/pii/0008622375900160>
- Julcour, C., Bourgeois, F., Bonfils, B., Benhamed, I., Guyot, F., Bodénan, F., . . . Gaucher, É. C. (2015). Development of an attrition-leaching hybrid process for direct aqueous mineral carbonation. *Chemical Engineering Journal*, 262(Supplement C), 716-726. doi:<https://doi.org/10.1016/j.cej.2014.10.031>
- Jun, W., et al. (2015). Effects of pyrolysis temperature and time on the speciation and bioaccumulation of heavy metals derived from sludge. *Journal of South China Agricultural University*, 36(5), 54-60. Retrieved from <http://jglobal.jst.go.jp/en/public/201602250439347743>
- Jun, Z., Chen, Q., & You, C.-F. (2016). Biochar effect on water evaporation and hydraulic conductivity in sandy soil. *Pedosphere*, 26(2), 265-272. Retrieved from http://pedosphere.issas.ac.cn/trqen/ch/reader/view_abstract.aspx?file_no=20160212&flag=1
- Jung, C. (2015). *Application of Various Adsorbents to Remove Micro-Pollutants in Aquatic System*. University of South Carolina, Retrieved from <http://scholarcommons.sc.edu/etd/2959/>
- Jung, C., Boateng, L. K., Flora, J. R. V., Oh, J., Braswell, M. C., Son, A., & Yoon, Y. (2015). Competitive adsorption of selected non-steroidal anti-inflammatory drugs on activated biochars: Experimental and molecular modeling study. *Chemical Engineering Journal*, 264, 1 - 9. doi:10.1016/j.cej.2014.11.076
- Jung, C., Oh, J., & Yoon, Y. (2015). Removal of acetaminophen and naproxen by combined coagulation and adsorption using biochar: influence of combined sewer overflow components. *Environmental Science and Pollution Research*. doi:10.1007/s11356-015-4191-6
- Jung, C., Phal, N., Oh, J., Chu, K. H., Jang, M., & Yoon, Y. (2015). Removal of humic and tannic acids by adsorption-coagulation combined systems with activated biochar. *Journal of Hazardous Materials*, 300, 808 - 814. doi:10.1016/j.jhazmat.2015.08.025
- Jung, J.-Y., Huh, C., Kang, S.-G., Seo, Y., & Chang, D. (2013). CO₂ transport strategy and its cost estimation for the offshore CCS in Korea. *Applied Energy*, 111, 1054-1060. doi:<https://doi.org/10.1016/j.apenergy.2013.06.055>
- Jung, K.-W., & Ahn, K.-H. (2016). Fabrication of porosity-enhanced MgO/biochar for removal of phosphate from aqueous solution: Application of a novel combined electrochemical modification method. *Bioresource Technology*, 200, 1029 - 1032. doi:10.1016/

j.biortech.2015.10.008

- Jung, K.-W., Hwang, M.-J., Ahn, K.-H., & Ok, Y.-S. (2015). Kinetic study on phosphate removal from aqueous solution by biochar derived from peanut shell as renewable adsorptive media. *International Journal of Environmental Science and Technology*. doi:10.1007/s13762-015-0766-5
- Jung, K.-W., Hwang, M.-J., Jeong, T.-U., & Ahn, K.-H. (2015). A novel approach for preparation of modified-biochar derived from marine macroalgae: Dual purpose electro-modification for improvement of surface area and metal impregnation. *Bioresource Technology*. doi:10.1016/j.biortech.2015.05.052
- Jung, K.-W., Jeong, T.-U., Hwang, M.-J., Kim, K., & Ahn, K.-H. (2015). Phosphate adsorption ability of biochar/Mg-Al assembled nanocomposites prepared by aluminum-electrode based electro-assisted modification method with MgCl₂ as electrolyte. *Bioresource Technology*, 198, 603 - 610. doi:10.1016/j.biortech.2015.09.068
- Jung, K.-W., Kim, K., Jeong, T.-U., & Ahn, K.-H. (2016). Influence of pyrolysis temperature on characteristics and phosphate adsorption capability of biochar derived from waste-marine macroalgae (*Undaria pinnatifida* roots). *Bioresource Technology*, 200, 1024 - 1028. doi:10.1016/j.biortech.2015.10.016
- Jung, S., Park, Y.-K., & Kwon, E. E. (2019). Strategic use of biochar for CO₂ capture and sequestration. *Journal of CO₂ Utilization*, 32, 128-139. doi:<https://doi.org/10.1016/j.jcou.2019.04.012>
- Jung, W., Lee, J. S., Yoon, H., Kim, T., & Kim, Y. H. (2018). Water membrane for carbon dioxide separation. *Separation and Purification Technology*, 203, 268-273. doi:<https://doi.org/10.1016/j.seppur.2018.04.054>
- Jungbluth, N., Chudacoff, M., Dauriat, A., Dinkel, F., Doka, G., Faist Emmenegger, M., . . . Sutter, J. (2007). *Life Cycle Inventories of Bioenergy*.
- Jungbluth, N., & Dones, R. (2007). *Sachbilanzen von Energiesystemen: Grundlagen für den ökologischen Vergleich von Energiesystemen und den Einbezug von Energiesystemen in Ökobilanzen für die Schweiz*.
- Jungbluth, N., Tuchschnid, M., & Dones, R. *Sachbilanzen von Energiesystemen: Grundlagen für den ökologischen Vergleich von Energiesystemen und den Einbezug von Energiesystemen in Ökobilanzen für die Schweiz*.
- Jung-Eun, J. (2014). Implications of Current Developments in International Liability for the Practice of Marine Geo-engineering Activities. *Asian Journal of International Law*, 4, 235-260. Retrieved from <https://advance.lexis.com/document/?pdmfid=1516831&crid=361076da-2b50-42a5-b638-d8acb312fecc&pddocfullpath=%2Fshared%2Fdocument%2Fanalytical-materials%2Furn%3AcontentItem%3A5HWK-WF40-02GX-P0MD-00000-00&pddocid=urn%3AcontentItem%3A5HWK-WF40-02GX-P0MD-00000-00&pdcontentcomponentid=400009&pdteaserkey=sr0&pditab=allpods&ecomp=wp79k&earg=sr0&prid=5eb0d24b-0d26-4db8-a121-eebdad667c34>
- Junna, S. (2014). Effects of wheat straw biochar on carbon mineralization and guidance for large-scale soil quality improvement in the coastal wetland. *Ecological Engineering*, 62, 43–47.
- Jusop, S.-., Rabileh, M. A., Panhwar, Q. A., Rosnani, A. B., & Anuar, A. R. (2014). Effects of Biochar and/or Dolomitic Limestone Application on the Properties of Ultisol Cropped to Maize under Glasshouse Conditions. *Canadian Journal of Soil Science*, 95(1), 37-47. doi:10.4141/cjss-2014-067
- Kaal, J., et al. . (2012). Molecular characterization of *Ulex europaeus* biochar obtained from laboratory heat treatment experiments – A pyrolysis–GC/MS study. *Journal of Analytical and Applied Pyrolysis*, 95, 205-212. Retrieved from <https://www.sciencedirect.com/>

science/article/pii/S0165237012000290

- Kaal, J., Brodowski, S., Baldock, J. A., Nierop, K. G. J., & Cortizas, A. M. (2008). Characterisation of aged black carbon using pyrolysis-GC/MS, thermally assisted hydrolysis and methylation (THM), direct and cross-polarisation C-13 nuclear magnetic resonance (DP/CP NMR) and the benzenopolycarboxylic acid (BPCA) method. *Organic Geochemistry*, 39, 1415-1426. Retrieved from [https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwiW_p6LIP7qAhVnJTQIHUDkA7kQFjABegQIBRAB&url=https%3A%2F%2Fdspace.library.uu.nl%2Fbitstream%2Fhandl e%2F1874%2F31582%2FOrganic%2520Geochemistry%252039%2520\(2008\)%252010.pdf%3Bsequence%3D1&usg=AOvVaw3zSDY9xi2PCS4ELVFj5bqb](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwiW_p6LIP7qAhVnJTQIHUDkA7kQFjABegQIBRAB&url=https%3A%2F%2Fdspace.library.uu.nl%2Fbitstream%2Fhandl e%2F1874%2F31582%2FOrganic%2520Geochemistry%252039%2520(2008)%252010.pdf%3Bsequence%3D1&usg=AOvVaw3zSDY9xi2PCS4ELVFj5bqb)
- Kaal, J., Martinez-Cortizas, A., Nierop, K. G. J., & Buurman, P. (2008). A detailed pyrolysis-GC/MS analysis of a black carbon-rich acidic colluvial soil (Atlantic ranker) from NW Spain. *Applied Geochemistry*, 23(8), 2395-2405. Retrieved from <https://www.sciencedirect.com/science/article/abs/pii/S0883292708001686>
- Kaal, J., & Rumpel, C. (2009). Can Pyrolysis-GC/MS be used to estimate the degree of thermal alteration of black carbon? *Organic Geochemistry*, 40, 1179-1187.
- Kaal, J., Schneider, M. P. W., & Schmidt, M. W. I. (2012). Rapid molecular screening of black carbon (biochar) thermosequences obtained from chestnut wood and rice straw: A pyrolysis-GC/MS study. *Biomass and Bioenergy*, 45, 115-129. Retrieved from <https://www.sciencedirect.com/science/article/pii/S0961953412002292>
- Kabir, M., Chowdhury, A., & Rasul, M. (2015). Pyrolysis of Municipal Green Waste: A Modelling, Simulation and Experimental Analysis. *Energies*, 8(8), 7522 - 7541. doi:10.3390/en8087522
- Kabir, M. J., Kabir, M. J., Ashwath, N., & Chowdhury, A. A. (2014). *Optimisation of Biofuel Production from Municipal Green Waste (MGW) Pyrolysis using ASPEN plus Simulation Model*. Paper presented at the Proceedings of 12th International Conference on Sustainable Energy technologies. Hong Kong : Faculty of Construction and Environment & Research Institute for Sustainable Urban Development, The Hong Kong Polytechnic University, 2013. p.- T. <http://acquire.cqu.edu.au:8080/vital/access/manager/Repository/cqu:11088?sort=type\>
- Kadota, M., & Niimi, Y. (2004). Effects of charcoal with pyroligneous acid and barnyard manure on bedding plants. *Scientia Horticulturae*, 101, 327-332.
- Kagimbo, F. M., Weatherley, A., & Suter, H. (2012). *The effectiveness of lignite coal and biochar in reducing nitrogen (N) losses from cattle feedlot manure*. Paper presented at the Third RUFORUM Biennial Meeting 24 - 28 September 2012, Entebbe, Uganda. <http://www.ruforum.org/system/files/Kagimbo%20671.pdf>
- Kahn, B. (2021). Billionaires' Favorite Climate Solution Is a Dangerous Distraction. *Gizmodo*. Retrieved from <https://earther.gizmodo.com/billionaires-favorite-climate-solution-is-a-dangerous-1846288073/amp>
- Kainaat, W., & Rizwana, A. Q. (2015). Evaluation of Biochar as Fertilizer for the Growth of Some Seasonal Vegetables. *Journal of Bioresource Management*, 2(1), 41-46. Retrieved from http://corescholar.libraries.wright.edu/jbm/vol2/iss1/1/?utm_source=corescholar.libraries.wright.edu%2Fjbm%2Fvol2%2Fiss1%2F1&utm_medium=PDF&utm_campaign=PDFCoverPages
- Kaiqi, S., Tao, W., & Jiefeng, Y. (2014). *Progress in Sustainable Energy Technologies: Generating Renewable EnergyMicrowave Enhanced Pyrolysis Of Gumwood*. Cham: Springer International Publishing.
- Kaiser, J. (2000). Panel Estimates Possible Carbon 'Sinks'. *Science*, 288(5468), 942-943. doi:10.1126/science.288.5468.942
- Kaj-Ivar van der, W., Andries, F. H., & Detlef, P. v. V. (2021). Costs of avoiding net negative

- emissions under a carbon budget. *Environmental Research Letters*. Retrieved from <http://iopscience.iop.org/article/10.1088/1748-9326/ac03d9>
- Kakizawa, M., Yamasaki, A., & Yanagisawa, Y. (2001). A new CO₂ disposal process via artificial weathering of calcium silicate accelerated by acetic acid. *Energy*, 26(4), 341-354. doi:[https://doi.org/10.1016/S0360-5442\(01\)00005-6](https://doi.org/10.1016/S0360-5442(01)00005-6)
- Kalde, A., et al. . (2015). *Determining the Reactivity of Biochar-Agglomerates to Replace Fossil Coal in Electric Arc Furnace Steelmaking*. Paper presented at the 23rd European Biomass Conference and Exhibition. http://www.researchgate.net/profile/Thorsten_Demus/publication/280223582_DETERMINING_THE_REACTIVITY_OF_BIOCHAR-AGGLOMERATES_TO_REPLACE_FOSSIL_COAL_IN_ELECTRIC_ARC_FURNACE_STEELMAKING/links/55adfc4a08aee079921e4b1d.pdf
- Kalinke, C., Mangrich, A. S., Marcolino-Junior, L. H., & Bergamini, M. F. (2015). Carbon Paste Electrode Modified with Biochar for Sensitive Electrochemical Determination of Paraquat. *Electroanalysis*, n/a - n/a. doi:[10.1002/elan.201500640](https://doi.org/10.1002/elan.201500640)
- Kaliyan, N., Morey, R. V., & Tiffany, D. G. (2015). Economic and environmental analysis for corn stover and switchgrass supply logistics. *Bioenergy Res*, 8. doi:[10.1007/s12155-015-9609-y](https://doi.org/10.1007/s12155-015-9609-y)
- Kallenbach, C. M., & Stuart Grandy, A. (2015). Land-use legacies regulate decomposition dynamics following bioenergy crop conversion. *GCB Bioenergy*, 7(6), 1232-1244. doi:[10.1111/gcbb.12218](https://doi.org/10.1111/gcbb.12218)
- Kalnbalkite, A., Zihare, L., & Blumberga, D. (2017). Methodology for estimation of carbon dioxide storage in bioproducts. *Energy Procedia*, 128, 533-538. doi:<https://doi.org/10.1016/j.egypro.2017.09.002>
- Kalyan, Y., Mok-Ryun, Y., Jae-Kyu, Y., & Yoon-Young, C. (2013). Adsorption of TNT and RDX Contaminants by Ambrosia trifida L. var. trifida Derived Biochar. *Research Journal of Chemistry and Environment*, 17(4), 62-71. Retrieved from http://www.chemenviron.net/chemistry_back_issue/chem_2013_4/10.pdf
- Kamali, M., Sweygers, N., Al-Salem, S., Appels, L., Aminabhavi, T. M., & Dewil, R. (2022). Biochar for soil applications-sustainability aspects, challenges and future prospects. *Chemical Engineering Journal*, 428, 131189. doi:<https://doi.org/10.1016/j.cej.2021.131189>
- Kamara, A. (2014). Effects of Biochar Derived from Maize Stover and Rice Straw on the Early Growth of their Seedlings. *American Journal of Agriculture and Forestry*, 2(5), 232. doi:[10.11648/j.ajaf.20140205.14](https://doi.org/10.11648/j.ajaf.20140205.14)
- Kamara, A., Kamara, A., Mansaray, M. M., & Sawyerr, P. A. (2014). Effects of biochar derived from maize stover and rice straw on the germination of their seeds. In.
- Kamara, A., Sorie Kamara, H., & Saimah Kamara, M. (2015). Effect of Rice Straw Biochar on Soil Quality and the Early Growth and Biomass Yield of Two Rice Varieties. *Agricultural Sciences*, 06(08), 798 - 806. doi:[10.4236/as.2015.68077](https://doi.org/10.4236/as.2015.68077)
- Kambo, H. S. (2014). *Steam gasification of rapeseed, wood, sewage sludge and miscanthus biochars for the production of a hydrogen-rich syngas*. University of Guelph, Retrieved from <https://dspace.lib.uoguelph.ca/xmlui/handle/10214/8304?show=full>
- Kambo, H. S., & Dutta, A. (2015). A comparative review of biochar and hydrochar in terms of production, physico-chemical properties and applications. *Renewable and Sustainable Energy Reviews*, 45, 359 - 378. doi:[10.1016/j.rser.2015.01.050](https://doi.org/10.1016/j.rser.2015.01.050)
- Kameyama, K., Miyamoto, T., Iwata, Y., & Shiono, T. (2016). Effects of Biochar Produced From Sugarcane Bagasse at Different Pyrolysis Temperatures on Water Retention of a Calcaric Dark Red Soil. *Soil Science*, 181(1), 20 - 28. doi:[10.1097/SS.0000000000000123](https://doi.org/10.1097/SS.0000000000000123)

- Kameyama, K., Miyamoto, T., Iwata, Y., & Shiono, T. (2016). Influences of feedstock and pyrolysis temperature on the nitrate adsorption of biochar. *Soil Science and Plant Nutrition*, 1 - 5. doi:10.1080/00380768.2015.1136553
- Kameyama, K., Miyamoto, T., & Shiono, T. (2013). Influence of biochar incorporation on TDR-based soil water content measurements. *European Journal of Soil Science*.
- Kameyama, K., Shinogi, Y., Miyamoto, T., & Agarie, K. (2010). Estimation of net carbon sequestration potential with farmland application of bagasse charcoal: life cycle inventory analysis through a pilot sugarcane bagasse carbonisation plant. *Australian Journal of Soil Research*, 48, 586-592.
- Kamm, J. (2004). A new class of plants for a biofuel feedstock energy crop. *Applied Biochemistry and Biotechnology*, 113(1), 55-70. doi:10.1385/abab:113:1-3:055
- Kammann, C., et al. (2010). Biokohle: Ein Weg zur dauerhaften Kohlenstoff-Sequestrierung? Retrieved from http://klimawandel.hlug.de/fileadmin/dokumente/klima/inklim_a/infoblatt_biokohle.pdf
- Kammann, C., et al. (2010). C-Sequestrierungspotential und Eignung von Torfersatzstoffen, hergestellt aus Produkten der Landschaftspflege und Biochar - Abschlussbericht. Retrieved from <http://www.kompost.ch/aktuell/xmedia/TuBS-Abschlussbericht-31Jan2011.pdf>
- Kammann, C., et al. (2012). Biochar and Hydrochar Effects on Greenhouse Gas (Carbon Dioxide, Nitrous Oxide, and Methane) Fluxes from Soils. *Journal of Environmental Quality*, 41, 1052-1066. doi:10.2134/jeq2011.0132
- Kammann, C., et al. , Glaser, B., & Schmidt, H.-P. (2016). Combining biochar and organic amendments. In *Biochar in European Soils and Agriculture: Science and Practice*.
- Kammann, C., & Graber, E. R. (2015). Biochar effects on plant ecophysiology. In J. Lehmann & S. Joseph (Eds.), *Biochar for Environmental Management: Science and Technology and Implementation*.
- Kammann, C., Ippolito, J., Hagemann, N., Borchard, N., Cayuela, M. L., Estavillo, J. M., . . . Wrage-Mönnig, N. (2017). Biochar as a tool to reduce the agricultural greenhouse-gas burden – knowns, unknowns and future research needs. *Journal of Environmental Engineering and Landscape Management*, 25(2), 114-139. doi:10.3846/16486897.2017.1319375
- Kammann, C. I., et al. (2011). Influence of biochar on drought tolerance of Chenopodium quinoa Willd and on soil–plant relations. *Plant and Soil*, 345(1), 195-210. doi:10.1007/s11104-011-0771-5
- Kammann, C. I., Schmidt, H.-P., Messerschmidt, N., Linsel, S., Steffens, D., Müller, C., . . . Joseph, S. (2015). Plant growth improvement mediated by nitrate capture in co-composted biochar. *Supplementary information to MS*. Retrieved from <http://www.nature.com/srep/2015/150609/srep11080/extref/srep11080-s1.doc>
- Kan, T., Strezov, V., & Evans, T. J. (2016). Lignocellulosic biomass pyrolysis: A review of product properties and effects of pyrolysis parameters. *Renewable and Sustainable Energy Reviews*, 57, 1126 - 1140. doi:10.1016/j.rser.2015.12.185
- Kan, Z.-R., He, C., Liu, Q.-Y., Liu, B.-Y., Virk, A. L., Qi, J.-Y., . . . Zhang, H.-L. (2020). Carbon mineralization and its temperature sensitivity under no-till and straw returning in a wheat-maize cropping system. *Geoderma*, 377, 114610. doi:<https://doi.org/10.1016/j.geoderma.2020.114610>
- Kan, Z.-R., Virk, A. L., He, C., Liu, Q.-Y., Qi, J.-Y., Dang, Y. P., . . . Zhang, H.-L. (2020). Characteristics of carbon mineralization and accumulation under long-term conservation tillage. *CATENA*, 193, 104636. doi:<https://doi.org/10.1016/j.catena.2020.104636>
- Kanawade, R. B., Vaidya, P. D., Subramanian, K., Kulkarni, V. V., & Kenig, E. Y. (2016). Kinetics of Carbon Dioxide Removal by n-Propyl- and n-Butylmonoethanolamine in Aqueous

- Solutions. *Energy & Fuels*, 30(6), 5077-5082. doi:10.1021/acs.energyfuels.6b00527
- Kandji, S. T., et al. (2006). Opportunities for linking climate change adaptation and mitigation through agroforestry systems. In D. P. Garrity, et al. (Ed.), *World Agroforestry into the Future* (pp. 113-121).
- Kane, D. (2015). *Carbon Sequestration Potential on Agricultural Lands: A Review of Current Science and Available Practices*. Retrieved from <https://sustainableagriculture.net/publications/>
- Kang, S. W., et al. (2016). Effect of Biochar Application on Rice Yield and Greenhouse Gas Emission under Different Nutrient Conditions from Paddy Soil - See more at: <http://ascelibrary.org/doi/10.1061/%28ASCE%29EE.1943-7870.0001083#sthash.ZRISebgh.dpuf>. *Journal of Environmental Engineering*, 142(10), 1-7. Retrieved from <http://ascelibrary.org/doi/10.1061/%28ASCE%29EE.1943-7870.0001083>
- Kanig, M. (2015). Evaluation of statistical methods for comparison of Biokohlekomposten with small samples using the example of the growth of crops under greenhouse conditions (translated from German). In.
- Kannan, P., et al. (2013). Biochar an alternate option for crop residues and solid waste disposal and climate change mitigation. *African Journal of Agricultural Research*, 8(21), 2403-2412. Retrieved from <http://www.academicjournals.org/AJAR/PDF/pdf2013/6Jun/Kannan%20et%20al.pdf>
- Kansha, Y., Ishizuka, M., Mizuno, H., & Tsutsumi, A. (2017). Design of energy-saving carbon dioxide separation process using fluidized bed. *Applied Thermal Engineering*, 126, 134-138. doi:<https://doi.org/10.1016/j.applthermaleng.2017.07.156>
- Kanthle, A. K., Lenka, N. K., Lenka, S., & Tedia, K. (2016). Biochar impact on nitrate leaching as influenced by native soil organic carbon in an Inceptisol of central India. *Soil and Tillage Research*, 157, 65 - 72. doi:10.1016/j.still.2015.11.009
- Kantola, I. B., et al. (2017). Potential of global croplands and bioenergy crops for climate change mitigation through deployment for enhanced weathering. *Biology Letters*, 13(4), 1-7. Retrieved from <http://rsbl.royalsocietypublishing.org/content/13/4/20160714>
- Kappler, A., Wuestner, M. L., Ruecker, A., Harter, J., Halama, M., & Behrens, S. (2014). Biochar as an Electron Shuttle between Bacteria and Fe(III) Minerals. *Environmental Science & Technology Letters*, 1(8), 339 - 344. doi:10.1021/ez5002209
- Karagoez, S. (2009). Energy Production from the Pyrolysis of Waste Biomasses. *International Journal of Energy Research*, 33(6), 576-581.
- Karagöz, S., et al. . (2003). Low-Temperature Hydrothermal Treatment of Biomass: Effect of Reaction Parameters on Products and Boiling Point Distributions. *Energy Fuels*, 18(1), 234–241. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/ef030133g>
- Karakoyun, N., et al. . (2011). Hydrogel–Biochar composites for effective organic contaminant removal from aqueous media. *Desalination*, 280(1-3), 319-325. doi:10.1016/j.desal.2011.07.014
- Karami, N., et al. (2011). Efficiency of green waste compost and biochar soil amendments for reducing lead and copper mobility and uptake to ryegrass. *Journal of Hazardous Materials*, 191(1-3), 41-48. doi:10.1016/j.jhazmat.2011.04.025
- Karaosmanolu, F., Işıığür-Ergüdenler, A., & Sever, A. (2000). Biochar from the Straw-Stalk of Rapeseed Plant. *Energy Fuels*, 14(2), 336–339. Retrieved from <http://pubs.acs.org/doi/full/10.1021/ef9901138>
- Karayannis, V., Charalampides, G., & Lakioti, E. (2014). Socio-economic Aspects of CCS Technologies. *Procedia Economics and Finance*, 14, 295-302. doi:[http://dx.doi.org/10.1016/S2212-5671\(14\)00716-3](http://dx.doi.org/10.1016/S2212-5671(14)00716-3)
- Karer, J., Wawra, A., Zehetner, F., Dunst, G., Wagner, M., Pavel, P.-B., . . . Soja, G. (2015).

- Effects of Biochars and Compost Mixtures and Inorganic Additives on Immobilisation of Heavy Metals in Contaminated Soils. *Water, Air, & Soil Pollution*, 226(10), 1-12. doi:10.1007/s11270-015-2584-2
- Kargar, M., Clark, O. G., Hendershot, W. H., Jutras, P., & Prasher, S. O. (2015). Immobilization of Trace Metals in Contaminated Urban Soil Amended with Compost and Biochar. *Water, Air, & Soil Pollution*, 226(6), 1-12. doi:10.1007/s11270-015-2450-2
- Karhu, K., Mattila, T., Bergström, I., & Regina, K. (2011). Biochar addition to agricultural soil increased CH₄ uptake and water holding capacity – Results from a short-term pilot field study. *Agriculture, Ecosystems & Environment*, 140(1), 309-313. doi:<https://doi.org/10.1016/j.agee.2010.12.005>
- Karim, A., Kumar, M., Mohapatra, S., Panda, C., & Singh, A. (2015). Banana Peduncle Biochar: Characteristics and Adsorption of Hexavalent Chromium from Aqueous Solution. *International Research Journal of Pure and Applied Chemistry*, 7(1), 1 - 10. doi:10.9734/irjpac/2015/16163
- Karim, A. A., Kumar, M., Mohapatra, S., Panda, C. R., & Singh, A. (2015). Effect of rice husk biochar on selected soil properties in tropical Alfisols. *International Research Journal of Pure & Applied Chemistry*, 54(3), A-I. doi:10.9734/irjpac/2015/16163
- Karimaie, H., Nazarian, B., Aurdal, T., Nøkleby, P. H., & Hansen, O. (2017). Simulation Study of CO₂ EOR and Storage Potential in a North Sea Reservoir. *Energy Procedia*, 114, 7018-7032. doi:<https://doi.org/10.1016/j.egypro.2017.03.1843>
- Kärki, J., Tsupari, E., & Arasto, A. (2013). CCS Feasibility Improvement in Industrial and Municipal Applications by Heat Utilisation. *Energy Procedia*, 37, 2611-2621. doi:<https://doi.org/10.1016/j.egypro.2013.06.145>
- Kärki, J., Tsupari, E., Thomasson, T., Arasto, A., Pikkarainen, T., Tähtinen, M., . . . Korpinen, T. (2017). Achieving Negative Emissions with the Most Promising Business Case for Bio-CCS in Power and CHP Production. *Energy Procedia*, 114, 5994-6002. doi:<https://doi.org/10.1016/j.egypro.2017.03.1734>
- Karl, D. M., & Letelier, R. M. (2008). Nitrogen fixation-enhanced carbon sequestration in low nitrate, low chlorophyll seascapes. *Marine Ecology Progress Series*, 364, 257-268. Retrieved from <http://www.int-res.com/abstracts/meps/v364/p257-268/>
- Karlen, D. L., Lal, R., Follett, R. F., Kimble, J. M., Hatfield, J. L., Miranowski, J. M., . . . Rice, C. W. (2009). Crop Residues: The Rest of the Story. *Environmental Science & Technology*, 43(21), 8011-8015. doi:10.1021/es9011004
- Karmee, S. K. (2016). Liquid biofuels from food waste: Current trends, prospect and limitation. *Renewable and Sustainable Energy Reviews*, 53, 945 - 953. doi:10.1016/j.rser.2015.09.041
- Karp, A., & Shield, I. (2008). Bioenergy from plants and the sustainable yield challenge. *New Phytologist*, 179(1), 15-32. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/j.1469-8137.2008.02432.x/abstract>
- Kartha, S., & Dooley, K. (2016). *The Risks of Relying on Tomorrow's 'Negative Emissions' to Guide Today's Mitigation Action*. Retrieved from <https://www.sei-international.org/mediamanager/documents/Publications/Climate/SEI-WP-2016-08-Negative-emissions.pdf>
- Karunaratna, T. A. S. S., Mohotti, K. M., Mohotti, A. J., Sangakkara, U. R., & Suriyagoda, L. D. B. (2015). *Short Term Impacts of Biochar Incorporated Soil on Early Growth of Selected Perennial and Annual Crops*. Paper presented at the iPURSE2014. http://www.dlib.pdn.ac.lk/archive/handle/1/5119?mode=full&submit_simple>Show+full+item+record
- Karve, P., et al. (2011). *Biochar for Carbon Reduction, Sustainable Agriculture and Soil Management (BIOCHARM)*. Retrieved from <http://www.biochar.org.uk/abstract.php?>

id=37

- Kasozi, G. N., Zimmerman, A. R., Nkedi-Kizza, P., & Gao, B. (2010). Catechol and Humic Acid Sorption onto a Range of Laboratory-Produced Black Carbons (Biochars). *Environmental Science & Technology*, 44, 6189-6195.
- Kaspersen, B. S., Christensen, T. B., Fredenslund, A. M., Møller, H. B., Butts, M. B., Jensen, N. H., & Kjaer, T. (2016). Linking climate change mitigation and coastal eutrophication management through biogas technology: Evidence from a new Danish bioenergy concept. *Science of The Total Environment*, 541(Supplement C), 1124-1131. doi:<https://doi.org/10.1016/j.scitotenv.2015.10.015>
- Kassim, M. A., & Meng, T. K. (2017). Carbon dioxide (CO₂) biofixation by microalgae and its potential for biorefinery and biofuel production. *Science of The Total Environment*, 584-585, 1121-1129. doi:<https://doi.org/10.1016/j.scitotenv.2017.01.172>
- Kasting, J. F. (2019). The Goldilocks Planet? How Silicate Weathering Maintains Earth "Just Right". *Elements*, 15(4), 235-240. doi:10.2138/gselements.15.4.235 %J Elements
- Kastner, J. R., et al. (2012). Catalytic esterification of fatty acids using solid acid catalysts generated from biochar and activated carbon. *Catalysis Today*, 190(1), 122-132. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0920586112000612>
- Kastner, J. R., Mani, S., & Juneja, A. (2014). Catalytic decomposition of tar using iron supported biochar. *Fuel Processing Technology*, 130, 31 - 37. doi:10.1016/j.fuproc.2014.09.038
- Kasturi, A., Gabitto, J., Tsouris, C., & Custelcean, R. (2021). Carbon dioxide capture with aqueous amino acids: Mechanistic study of amino acid regeneration by guanidine crystallization and process intensification. *Separation and Purification Technology*, 271, 118839. doi:<https://doi.org/10.1016/j.seppur.2021.118839>
- Kataoka, T., Suzuki, K., Hayakawa, M., Kudo, I., Higashi, S., & Tsuda, A. (2009). Temporal changes in community composition of heterotrophic bacteria during in situ iron enrichment in the western subarctic Pacific (SEEDS-II). *Deep Sea Research Part II: Topical Studies in Oceanography*, 56(26), 2779-2787. doi:<https://doi.org/10.1016/j.dsr2.2009.06.013>
- Kätelhön, A., Meys, R., Deutz, S., Suh, S., & Bardow, A. (2019). Climate change mitigation potential of carbon capture and utilization in the chemical industry. *Proceedings of the National Academy of Sciences*, 116(23), 11187-11194. doi:10.1073/pnas.1821029116
- Katircioglu, S., Dalir, S., & Olya, H. G. (2016). Is a Clean Development Mechanism project economically justified? Case study of an International Carbon Sequestration Project in Iran. *Environmental Science and Pollution Research*, 23(1), 504-513. doi:10.1007/s11356-015-5256-2
- Kato, E., Kinoshita, T., Ito, A., Kawamiya, M., & Yamagata, Y. (2013). Evaluation of spatially explicit emission scenario of land-use change and biomass burning using a process-based biogeochemical model. *Journal of Land Use Science*, 8(1), 104-122. doi:10.1080/1747423X.2011.628705
- Kato, E., Moriyama, R., & Kurosawa, A. (2017). A Sustainable Pathway of Bioenergy with Carbon Capture and Storage Deployment. *Energy Procedia*, 114, 6115-6123. doi:<https://doi.org/10.1016/j.egypro.2017.03.1748>
- Kato, E., & Yamagata, Y. (2014). BECCS capability of dedicated bioenergy crops under a future land-use scenario targeting net negative carbon emissions. *Earth's Future*, 2(9), 421-439. doi:10.1002/2014ef000249
- Kato, Y., Kojima, Y., & Yoon, S.-L. (2015). Hydrogen-rich gas production by steam gasification of bio-char : Influence of char characters, reaction temperature and steam supply on gas composition and hydrogen gas yield. *Bulletin of the Faculty of Agriculture Niigata University*, 67(2), 117-124. Retrieved from [http://dspace.lib.niigata-u.ac.jp/dspace/bitstream/10191/32050/1/67\(2\)_117-124.pdf](http://dspace.lib.niigata-u.ac.jp/dspace/bitstream/10191/32050/1/67(2)_117-124.pdf)

- Kaudal, B. B., Chen, D., Madhavan, D. B., Downie, A., & Weatherley, A. (2015). Pyrolysis of urban waste streams: Their potential use as horticultural media. *Journal of Analytical and Applied Pyrolysis*, 112, 105-112. doi:10.1016/j.jaat.2015.02.011
- Kaudal, B. B., Chen, D., Madhavan, D. B., Downie, A., & Weatherley, A. (2016). An examination of physical and chemical properties of urban biochar for use as growing media substrate. *Biomass and Bioenergy*, 84, 49 - 58. doi:10.1016/j.biombioe.2015.11.012
- Kauffman, N., et al. (2014). Producing energy while sequestering carbon? The relationship between biochar and agricultural productivity. *Biomass and Bioenergy*, 63, 167-176. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0961953414000592>
- Kaufman, A. C. (2020). The Soil Revolution That Could Save Farming And The Climate. *Huffington Post*. Retrieved from https://www.huffpost.com/entry/climate-change-regenerative-farming_n_5f6cba7ec5b653a2bcb1550f
- Kaufman, A. C. (2021). Activists Call It A 'False Solution.' But UN Scientists Say We Need To Suck Up CO₂. *Huffington Post*. Retrieved from https://www.huffpost.com/entry/un-ipcc-carbon-removal_n_6116c65ee4b0454ed70da0ba
- Kaufman, A. C. (2021). India Demands Rich Nations Like The U.S. Clean Up Their Climate Mess, Signaling A Shift. *Huffington Post, UK Edition*. Retrieved from https://www.huffingtonpost.co.uk/entry/india-climate-change_n_60678098c5b6832c7937008f
- Kaufman, A. C. (2021). John Kerry's Climate Warning: 'Even If We Get To Net Zero, We Need Carbon Removal'. *Huffington Post*. Retrieved from https://www.huffpost.com/entry/john-kerry-climate_n_6081c355e4b05c4290738500
- Kaufman, L. (2021). Will Covid Stimulus Be the Breakthrough Carbon Capture Has Been Waiting For? *Bloomberg Green*. Retrieved from <https://www.bloomberg.com/amp/news/articles/2021-01-04/will-covid-stimulus-be-the-breakthrough-carbon-capture-has-been-waiting-for-kjigd4i0>
- Kaufman, L., & Rathi, A. (2021). A Carbon-Sucking Startup Has Been Paralyzed by Its CEO. *Yahoo! News*. Retrieved from <https://nz.news.yahoo.com/carbon-sucking-startup-paralyzed-ceo-040116459.html>
- Kauk, S. (2020). We're Offsetting All Carbon Emissions from BFCM Order Deliveries. Retrieved from https://www.shopify.com/blog/bfcm-carbon-offsets?utm_medium=email&_hs_mi=100168559&_hsenc=p2ANqtz-8z_nbTHoS3IxDLkfqixjAZNirG_8U3GiSrli0GpdISJwEPD3B8Hgi96v8weFgDGgXVISKGTE_kmMYlp7ffe3g7cvyuRg&utm_content=100168415&utm_source=hs_email
- Kauppi, P., & Sedjo, R. (2001). Technological and economic potential of options to enhance, maintain, and manage biological carbon reservoirs and geo-engineering. In E. Calvo & B. Solberg (Eds.), *Climate Change 2001: Mitigation of Climate Change, Contribution of Working Group III to the Third Assessment Report of the Intergovernmental Panel on Climate Change* (pp. 301-344).
- Kavate, M. (2021). Tree Planting Was Hot This Year—and Hotly Debated. Who's Funding it, and Does it Make Sense? *Inside Philanthropy*. Retrieved from <https://www.insidephilanthropy.com/home/2020/12/10/tree-planting-was-hot-this-yearand-hotly-debated-whos-funding-it-and-does-it-make-sense>
- Kaven, J. O., Hickman, S. H., McGarr, A. F., & Ellsworth, W. L. (2015). Surface monitoring of microseismicity at the Decatur, Illinois, CO₂ sequestration demonstration site. *Seismological Research Letters*, 86(4), 1096-1101. doi:10.1785/0220150062
- Kay, S., Rega, C., Moreno, G., den Herder, M., Palma, J. H. N., Borek, R., . . . Herzog, F. (2019). Agroforestry creates carbon sinks whilst enhancing the environment in agricultural landscapes in Europe. *Land Use Policy*, 83, 581-593. doi:<https://doi.org/10.1016/j.landusepol.2019.02.025>
- Kaya, Y., Yamaguchi, M., & Geden, O. J. S. S. (2019). Towards net zero CO₂ emissions without

- relying on massive carbon dioxide removal. *Sustainability Science*, 14, 1739-1743. doi:10.1007/s11625-019-00680-1
- Kaye, L. (2017). Speed Up Oceanic Carbon Sequestration, to Fight Climate Change. *Triple Pundit*. Retrieved from <http://www.triplepundit.com/2017/07/scientists-discover-way-speed-oceanic-carbon-sequestration/>
- Kealan, G., Groenigen, J. v., & Cayuela, M. L. (2011). Residues of bioenergy production chains as soil amendments: Immediate and temporal phytotoxicity. *Journal of Hazardous Materials*, 186, 2017–2025. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0304389410016857>
- Kearns, D. (2021). *Technology Readiness and Costs of CCS*. Retrieved from <https://www.globalccsinstitute.com/resources/publications-reports-research/technology-readiness-and-costs-of-ccs/>
- Kearns, J. (2012). Sustainable Decentralized Water Treatment for Rural and Developing Communities Using Locally Generated Biochar Adsorbents. In.
- Kearns, J., Knappe, D., & Summers, R. (2015). Feasibility of using traditional kiln charcoals in low cost water treatment: The role of pyrolysis conditions on 2,4-D herbicide adsorption. *Environmental Engineering Science*, 32.
- Kearns, J., Teletzke, G., Palmer, J., Thomann, H., Kheshgi, H., Chen, Y.-H. H., . . . Herzog, H. (2017). Developing a Consistent Database for Regional Geologic CO₂ Storage Capacity Worldwide. *Energy Procedia*, 114, 4697-4709. doi:<https://doi.org/10.1016/j.egypro.2017.03.1603>
- Kearns, J. P., et al. (2015). Meeting multiple water quality objectives through treatment using locally generated char: improving organoleptic properties and removing synthetic organic contaminants and disinfection by-products. *Journal of Water, Sanitation & Hygiene for Development*, 5(3), 359-371. Retrieved from <http://washdev.iwaponline.com/content/ppijwjshd/5/3/359.full.pdf>
- Kearns, J. P., Knappe, D. R. U., & Summer, R. S. s. (2014). Synthetic organic water contaminants in developing communities: an overlooked challenge addressed by adsorption with locally generated char. *Journal of Water, Sanitation and Hygiene for Development*, 4(3), 422-436. Retrieved from <http://www.iwaponline.com/washdev/up/washdev2014073.htm>
- Kearns, J. P., Wellborn, L. S., Summers, R. S., & Knappe, D. R. U. (2014). 2,4-D adsorption to biochars: effect of preparation conditions on equilibrium adsorption capacity and comparison with commercial activated carbon literature data. *Water Research*, 63, 20-28. doi:10.1016/j.watres.2014.05.023
- Keating, C. (2020). Study: Forestry finance market could soar to \$800bn as net zero goals multiply. *Business Green*. Retrieved from [https://www.businessgreen.com/neCws/4022276/study-forestry-finance-market-soar-usd800bn-netzero-goals-multiply](https://www.businessgreen.com/neCws/4022276/study-forestry-finance-market-soar-usd800bn-net-zero-goals-multiply)
- Keating, C. (2021). 'Net zero is not enough': Why climate experts are calling for 'net negative' emissions strategies. *Business Green*. Retrieved from [https://www.businessgreen.com/news-analysis/4036327/netzero-climate-experts-calling-net-negative-emissions-strategies](https://www.businessgreen.com/news-analysis/4036327/net-zero-climate-experts-calling-net-negative-emissions-strategies)
- Keech, O., Carcaillet, C., & Nilsson, M. C. (2005). Adsorption of allelopathic compounds by wood-derived charcoal: The role of wood porosity. *Plant and Soil*, 272(1-2), 291-300. Retrieved from <https://link.springer.com/article/10.1007/s11104-004-5485-5>
- Keedy, J., Prymak, E., Macken, N., Pourhashem, G., Spatari, S., Mullen, C. A., & Boateng, A. A. (2015). Exergy Based Assessment of the Production and Conversion of Switchgrass, Equine Waste, and Forest Residue to Bio-Oil Using Fast Pyrolysis. *Industrial & Engineering Chemistry Research*, 54(1), 529 - 539. doi:10.1021/ie5035682
- Keeling, T. (2021). CO₂ storage plans risk leaving future generations with 'carbon bombs',

- energy expert warns. *National of Change*. Retrieved from <https://www.nationofchange.org/2021/08/14/co2-storage-plans-risk-leaving-future-generations-with-carbon-bombs-energy-expert-warns/>
- Keesstra, S. D., Bouma, J., Wallinga, J., Tittonell, P., Smith, P., Cerdà, A., . . . Fresco, L. O. (2016). The significance of soils and soil science towards realization of the United Nations Sustainable Development Goals. *SOIL*, 2(2), 111-128. doi:10.5194/soil-2-111-2016
- Keiblunger, K. M., Liu, D., Mentler, A., Zehetner, F., & Zechmeister-Boltenstern, S. (2015). Biochar application reduces protein sorption in soil. *Organic Geochemistry*, 87, 21 - 24. doi:10.1016/j.orggeochem.2015.06.005
- Keil, R. G., Nuwer, J. M., & Strand, S. E. (2010). Burial of agricultural byproducts in the deep sea as a form of carbon sequestration: A preliminary experiment. *Marine Chemistry*, 122(1–4), 91-95. doi:<http://dx.doi.org/10.1016/j.marchem.2010.07.007>
- Keiluweit, M., et al. (2012). Solvent-extractable Polycyclic Aromatic Hydrocarbons in Biochar: Influence of Pyrolysis Temperature and Feedstock. *Environmental Science & Technology*, 46(7), 9333-9341. doi:10.1021/es302125k
- Keiluweit, M., Nico, P. S., Johnson, M. G., & Kleber, M. (2010). Dynamic Molecular Structure of Plant Biomass-Derived Black Carbon (Biochar). *Environmental Science & Technology*, 44(4), 1247-1253. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/es9031419>
- Keim, B. (2009). Ocean fertilization works - unless it doesn't. *Wired*. Retrieved from <https://www.wired.com/2009/01/oceaniron/>
- Keith, A., Singh, B., & Dijkstra, F. A. (2015). Biochar reduces the rhizosphere priming effect on soil organic carbon. *Soil Biology and Biochemistry*, 88, 372 - 379. doi:10.1016/j.soilbio.2015.06.007
- Keith, A., Singh, B., & Pal Singh, B. (2011). Interactive priming of biochar and labile organic matter mineralization in a smectite-rich soil. *Environmental Science & Technology*, 45(22), 9611-9618. doi:10.1021/es202186j
- Keith, D. (2019). Why I am proud to commercialize direct air capture while I oppose any commercial work on solar geoengineering. *Keith Group*. Retrieved from <https://keith.seas.harvard.edu/blog/why-i-am-proud-commercialize-direct-air-capture-while-i-oppose-any-commercial-work-solar>
- Keith, D. W. (2001). Sinks, Energy Crops and Land Use: Coherent Climate Policy Demands an Integrated Analysis of Biomass. *Climatic Change*, 49(1), 1-10. doi:10.1023/a:1010617015484
- Keith, D. W. (2009). Why Capture CO₂ from the Atmosphere? *Science*, 325, 1654-1655. Retrieved from <http://science.sciencemag.org/content/325/5948/1654>
- Keith, D. W., et al. (2018). A Process for Capturing CO₂ from the Atmosphere. *Joule*, 2, 1-22. Retrieved from [https://www.cell.com/joule/pdf/S2542-4351\(18\)30225-3.pdf](https://www.cell.com/joule/pdf/S2542-4351(18)30225-3.pdf)
- Keith, D. W., Giardina, J. A., Morgan, M. G., & Wilson, E. J. (2005). Regulating the Underground Injection of CO₂. *Environmental Science & Technology*, 39(24), 499A-505A. doi:10.1021/es0534203
- Keith, D. W., & Ha-Duong, M. (2003). CO₂ Capture from the Air: Technology Assessment and Implications for Climate Policy A2 - Gale, J. In Y. Kaya (Ed.), *Greenhouse Gas Control Technologies - 6th International Conference* (pp. 187-192). Oxford: Pergamon.
- Keith, D. W., Ha-Duong, M., & Stolaroff, J. K. (2006). Climate Strategy with CO₂ Capture from the Air. *Climatic Change*, 74(1), 17-45. doi:10.1007/s10584-005-9026-x
- Keith, D. W., Heidel, K., & Cherry, R. (2010). Capturing CO₂ from the Atmosphere: Rationale and Process Design Considerations. In B. E. Launder & M. L. Thompson (Eds.), *Geo-engineering climate change : environmental necessity or Pandora's box?* (pp. 107-126).

- Keith, D. W., Holmes, G., St. Angelo, D., & Heidel, K. (2018). A Process for Capturing CO₂ from the Atmosphere. *Joule*, 2(8), 1573-1594. doi:10.1016/j.joule.2018.05.006
- Keith, D. W., & Rhodes, J. S. (2001). Bury, Burn or Both: A Two-for-One Deal on Biomass Carbon and Energy. *Climatic Change*, 54, 375-377. Retrieved from https://keith.seas.harvard.edu/files/tkg/files/47.keith_.2002.buryburnorboth.e.pdf
- Keith, D. W., Wagner, G., & Zabel, C. L. (2017). Solar geoengineering reduces atmospheric carbon burden. *Nature Climate Change*, 7, 617-619. doi:10.1038/nclimate3376 <https://www.nature.com/articles/nclimate3376#supplementary-information>
- Kelemen, P. B., Aines, R., Bennett, E., Benson, S. M., Carter, E., Coggon, J. A., . . . Wilcox, J. (2018). In situ carbon mineralization in ultramafic rocks: Natural processes and possible engineered methods. *Energy Procedia*, 146, 92-102. doi:<https://doi.org/10.1016/j.egypro.2018.07.013>
- Kelemen, P. B., & Matter, J. (2008). In situ carbonation of peridotite for CO₂ storage. *Proceedings of the National Academy of Sciences*, 105(45), 17295-17300. doi:10.1073/pnas.0805794105
- Kelemen, P. B., McQueen, N., Wilcox, J., Renforth, P., Dipple, G., & Vankeuren, A. P. (2020). Engineered carbon mineralization in ultramafic rocks for CO₂ removal from air: Review and new insights. *Chemical Geology*, 119628. doi:<https://doi.org/10.1016/j.chemgeo.2020.119628>
- Kelland, M. E., Wade, P. W., Lewis, A. L., Taylor, L. L., Sarkar, B., Andrews, M. G., . . . Beerling, D. J. (2020). Increased yield and CO₂ sequestration potential with the C4 cereal Sorghum bicolor cultivated in basaltic rock dust-amended agricultural soil. *Global Change Biology*, 26(6), 3658-3676. doi:10.1111/gcb.15089
- Keller, D. P., et al. (2018). The Carbon Dioxide Removal Model Intercomparison Project (CDRMIP): rationale and experimental protocol for CMIP6. *Geoscience Model Development*, 11, 1130-1160. Retrieved from <https://www.geosci-model-dev.net/11/1133/2018/>
- Keller, D. P. (2018). Marine Climate Engineering. In M. Salomon & T. Markus (Eds.), *Handbook on Marine Environment Protection : Science, Impacts and Sustainable Management* (pp. 261-276). Cham: Springer International Publishing.
- Keller, D. P., Brent, K., Bach, L. T., & Rickles, W. (2021). Editorial: The Role of Ocean-Based Negative Emission Technologies for Climate Mitigation. *Frontiers in Climate*, 3(94). doi:10.3389/fclim.2021.743816
- Keller, D. P., Lenton, A., Littleton, E. W., Oschlies, A., Scott, V., & Vaughan, N. E. (2018). The Effects of Carbon Dioxide Removal on the Carbon Cycle. *Current Climate Change Reports*, 4(3), 250-265. doi:10.1007/s40641-018-0104-3
- Keller, K., McInerney, D., & Bradford, D. F. (2008). Carbon dioxide sequestration: how much and when? *Climatic Change*, 88, 267-291. Retrieved from http://www3.geosc.psu.edu/~kzk10/Keller_cc_08.pdf
- Keller, L., Ohs, B., Lenhart, J., Abduly, L., Blanke, P., & Wessling, M. (2017). High capacity polyethylenimine impregnated microtubes made of carbon nanotubes for CO₂ capture. *Carbon*. doi:<https://doi.org/10.1016/j.carbon.2017.10.023>
- Kelly, C. N., et al. (2014). Biochar application to hardrock mine tailings: Soil quality, microbial activity, and toxic element sorption. *Applied Geochemistry*, 43, 35-48. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0883292714000250>
- Kelly, K. E., Silcox, G. D., Sarofim, A. F., & Pershing, D. W. (2011). An evaluation of ex situ, industrial-scale, aqueous CO₂ mineralization. *International Journal of Greenhouse Gas Control*, 5(6), 1587-1595. doi:<https://doi.org/10.1016/j.ijggc.2011.09.005>
- Kemache, N., Pasquier, L.-C., Mouedhen, I., Cecchi, E., Blais, J.-F., & Mercier, G. (2016). Aqueous mineral carbonation of serpentinite on a pilot scale: The effect of liquid

- recirculation on CO₂ sequestration and carbonate precipitation. *Applied Geochemistry*, 67, 21-29. doi:<https://doi.org/10.1016/j.apgeochem.2016.02.003>
- Kemper, J. (2015). Biomass and carbon dioxide capture and storage: A review. *International Journal of Greenhouse Gas Control*, 40, 401-430. doi:<http://dx.doi.org/10.1016/j.ijggc.2015.06.012>
- (2019, October 15). *Rebuilding The Soil Carbon Sponge, and Cooling the Climate Fast with Walter Jehne* [Retrieved from https://www.youtube.com/watch?time_continue=1&v=a0pREPLLWrs]
- Kendall, A., & Chang, B. (2009). Estimating life cycle greenhouse gas emissions from corn-ethanol: a critical review of current U.S. practices. *Journal of Cleaner Production*, 17(13), 1175-1182. doi:<https://doi.org/10.1016/j.jclepro.2009.03.003>
- Kennedy, C. (2019). Drax sets 2030 carbon negative goal. *New Civil Engineer*. Retrieved from <https://www.newcivilengineer.com/latest/drax-sets-2030-carbon-negative-goal-11-12-2019/>
- Kennedy, C. (2021). Calls for government to commit to carbon capture technology. *New Civil Engineer*. Retrieved from <https://www.newcivilengineer.com/latest/229514-29-07-2021/>
- Kennedy, H., et al. (2010). Seagrass sediments as a global carbon sink: Isotopic constraints. *Global Biogeochemical Cycles*, 24(4), 1-8. Retrieved from http://digitalcommons.fiu.edu/fce_lter_journal_articles/149/
- Kennedy, M., Wong, R., Vandenbroek, A., Lovekin, D., & Raynolds, M. (2011). *Biomass Sustainability Analysis. An assessment of Ontario-sourced forest-based biomass for electricity generation. FINAL REPORT. Revision C*. Alberta: Pembina Institute.
- Kenny, P., & Flynn, K. J. (2017). Physiology limits commercially viable photoautotrophic production of microalgal biofuels. *Journal of Applied Phycology*, 1-15. doi:[10.1007/s10811-017-1214-3](https://doi.org/10.1007/s10811-017-1214-3)
- Kenyon, K. E. (2007). Upwelling by a Wave Pump. *Journal of Oceanography*, 63(2), 327-331. Retrieved from <https://ci.nii.ac.jp/naid/10018879442>
- Kering, M. K., Butler, T. J., Biermacher, J. T., & Guretzky, J. A. (2012). Biomass Yield and Nutrient Removal Rates of Perennial Grasses under Nitrogen Fertilization. *BioEnergy Research*, 5(1), 61-70. doi:[10.1007/s12155-011-9167-x](https://doi.org/10.1007/s12155-011-9167-x)
- Kern, F., Gaede, J., Meadowcroft, J., & Watson, J. (2016). The political economy of carbon capture and storage: An analysis of two demonstration projects. *Technological Forecasting and Social Change*, 102, 250-260. doi:<https://doi.org/10.1016/j.techfore.2015.09.010>
- Kern, J., Giani, L., Teixeira, W., Lanza, G., & Glaser, B. (2019). What can we learn from ancient fertile anthropic soil (Amazonian Dark Earths, shell mounds, Plaggen soil) for soil carbon sequestration? *CATENA*, 172, 104-112. doi:<https://doi.org/10.1016/j.catena.2018.08.008>
- Kern, J. D., Hise, A. M., Characklis, G. W., Gerlach, R., Viamajala, S., & Gardner, R. D. (2017). Using life cycle assessment and techno-economic analysis in a real options framework to inform the design of algal biofuel production facilities. *Bioresource Technology*, 225, 418-428. doi:<https://doi.org/10.1016/j.biortech.2016.11.116>
- Kerré, B., Hernandez-Soriano, M. C., & Smolders, E. (2016). Partitioning of carbon sources among functional pools to investigate short-term priming effects of biochar in soil: A ¹³C study. *Science of The Total Environment*, 547, 30 - 38. doi:[10.1016/j.scitotenv.2015.12.107](https://doi.org/10.1016/j.scitotenv.2015.12.107)
- Kerrison, P. D., et al. (2015). The cultivation of European kelp for bioenergy: Site and species selection. *Biomass Bioenergy*, 80, 229-242.
- Kerschner, S., et al. . (2021). How US environmental laws and regulations affect carbon capture and storage Retrieved from <https://www.lexology.com/library/detail.aspx?g=2b12ab2c-c5b1-4437-943b-5ba8e0e47a66>

- Keshavarz Afshar, R., Hashemi, M., DaCosta, M., Spargo, J., & Sadeghpour, A. (2016). Biochar Application and Drought Stress Effects on Physiological Characteristics of Silybum Marianum. *Communications in Soil Science and Plant Analysis*, 47(6), 743 - 752. doi:10.1080/00103624.2016.1146752
- Kettunen, R., & Saarnio, S. (2013). Biochar can Restrict N₂O emissions and the risk of nitrogen leaching from an agricultural soil during the freeze-thaw period. In *Agriculture and Food Science*.
- Key, R., & Moesler, F. (2012). Point of View: Boosting Oklahoma's economy through investments in CO₂ removal. *The Oklahoman*. Retrieved from <https://oklahoman.com/article/5668050/point-of-view-boosting-oklahomas-economy-through-investments-in-co2-removal>
- Keyser, P. D. (2015). *Project Title Enhancing the Sustainability of Integrated Biofuel Feedstock Production Systems*. Retrieved from <http://sungrant.tennessee.edu/NR/rdonlyres/56CE70EF-88F0-44C1-A3DF-E4E0123F790D/4331/KeyserFinalReport.pdf>
- Keyßer, L. T., & Lenzen, M. (2021). 1.5 °C degrowth scenarios suggest the need for new mitigation pathways. *Nature Communications*, 12(1), 2676. doi:10.1038/s41467-021-22884-9
- Khademalrasoul, A., Naveed, M., Heckrath, G., Kumari, K. G. I. D., Jonge, L. W. d., Elsgaard, L., . . . Iversen, B. V. (2014). Biochar Effects on Soil Aggregate Properties Under No-Till Maize. *Soil Science*, 179(6), 273 - 283. doi:10.1097/SS.0000000000000069
- Khairnar, K. (2015). *Effect of different organic amendments on soil quality, vines growth, grape production and wine quality of mechanically pruned vineyards*. Technical University of Lisbon, Retrieved from <https://www.repository.utl.pt/handle/10400.5/8632>
- Khalid, F. N. M., & Klarup, D. (2015). The influence of sunlight and oxidative treatment on measured PAH concentrations in biochar. *Environmental Science and Pollution Research*, 22(17), 12975-12981. doi:10.1007/s11356-015-4469-8
- Khalidy, R., & Santos, R. M. (2021). The fate of atmospheric carbon sequestered through weathering in mine tailings. *Minerals Engineering*, 163, 106767. doi:<https://doi.org/10.1016/j.mineng.2020.106767>
- Khalifa, N., & Yousef, L. F. (2015). A Short Report on Changes of Quality Indicators for a Sandy Textured Soil after Treatment with Biochar Produced from Fronds of Date Palm. *Energy Procedia*, 74, 960 - 965. doi:10.1016/j.egypro.2015.07.729
- Khalilibad, M. R. (2008). *Characterization of the Hellehedi-Threngsli CO₂ Sequestration Target Aquifer by Tracer Testing*. (MSc Thesis).
- Khalilibad, M. R., Axelsson, G., & Gislason, S. R. (2008). Aquifer characterization with tracer test technique; permanent CO₂ sequestration into basalt, SW Iceland. *Mineralogical Magazine*, 72(1), 121-125.
- Khallaighi, N., Jeswani, H., Hanak, D. P., & Manovic, V. (2021). Techno-economic-environmental assessment of biomass oxy-gasification staged oxy-combustion for negative emission combined heat and power. *Applied Thermal Engineering*, 117254. doi:<https://doi.org/10.1016/j.applthermaleng.2021.117254>
- Khan, A. (2015). Biochar Substrate for Hydroponic Vegetable Production. In *Biochar: Production, Characterization, and Applications*.
- Khan, A., Mirza, M., Fahlman, B., Rybchuk, R., Yang, J., Harfield, D., & Anyia, A. O. (2015). Mapping Thermomechanical Pulp Sludge (TMPS) Biochar Characteristics for Greenhouse Produce Safety. *Journal of Agricultural and Food Chemistry*, 63(5), 1648-1657. doi:10.1021/jf502556t
- Khan, A., Rashid, A., & Younas, R. (2015). Adsorption of Reactive Black-5 by Pine Needles Biochar Produced Via Catalytic and Non-catalytic Pyrolysis. *Arabian Journal for Science and Engineering*, 40(5), 1269-1278. doi:10.1007/s13369-015-1601-5

- Khan, K., Chowdhury, M., & Huq, S. I. (2016). Effects of biochar on the fate of the heavy metals Cd, Cu, Pb and Zn in soil. *Bangladesh Journal of Scientific Research*, 28(1), 17. doi:10.3329/bjsr.v28i1.26240
- Khan, M. Y., Mangrich, A. S., Schultz, J., Grasel, F. S., Mattoso, N., & Mosca, D. H. (2015). Green chemistry preparation of superparamagnetic nanoparticles containing Fe₃O₄ cores in biochar. *Journal of Analytical and Applied Pyrolysis*, 116, 42 - 48. doi:10.1016/j.jaat.2015.10.008
- Khan, N., et al. (2013). Effect of integrated use of biochar, FYM and nitrogen fertilizer on soil organic fertility. *Pure Applied Biology*, 2(2), 42-47. Retrieved from <http://www.thepab.org/Docs/2013/june/PAB-MS-13006.pdf>
- Khan, N., et al. (2014). Maturity indices in co-composting of chicken manure and sawdust with biochar. *Bioresource Technology*, 168, 245-251. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0960852414002946>
- Khan, N., et al. (2015). Physical and chemical properties of biochars co-composted with biowastes and incubated with a chicken litter compost. *Chemosphere*, 142, 14-23. doi:10.1016/j.chemosphere.2015.05.065
- Khan, N., et al. (2016). Development of a buried bag technique to study biochars incorporated in a compost or composting medium. *Journal of Soils and Sediments*, 17(3), 656-664. doi:10.1007/s11368-016-1359-8
- Khan, N., & Shea, S. (2013). Turf Root Enhancement by Amendment of Jandakot Sands of Western Australia with Different Rates of Biochar. *Journal of Biobased Materials and Bioenergy*, 7, 1-9. Retrieved from https://www.researchgate.net/publication/251880768_Turf_Root_Enhancement_by_Amendment_of_Jandakot_Sands_of_Western_Australia_with_Different_Rates_of_Biochar
- Khan, S., et al. . (2014). Application of biochar to soil reduces cancer risk via rice consumption: A case study in Miaoqian village, Longyan, China. *Environment International*, 68, 154–161. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0160412014000907>
- Khan, S., et al. (2015). The influence of various biochars on the bioaccessibility and bioaccumulation of PAHs and potentially toxic elements to turnips (*Brassica rapa* L.). *Journal of Hazardous Materials*, 300, 243 - 253. doi:10.1016/j.jhazmat.2015.06.050
- Khan, S., Chao, C., Waqas, M., Arp, H. P. H., & Zhu, Y.-G. (2013). Sewage Sludge Biochar Influence upon Rice (*Oryza sativa* L) Yield, Metal Bioaccumulation and Greenhouse Gas Emissions from Acidic Paddy Soil. *Environmental Science & Technology*, 47(15), 8624-8632. doi:10.1021/es400554x
- Khan, S., Hwang, J., Horn, Y.-S., & Varanasi, K. K. (2021). Catalyst-proximal plastrons enhance activity and selectivity of carbon dioxide electroreduction. *Cell Reports Physical Science*, 100318. doi:<https://doi.org/10.1016/j.xcrp.2020.100318>
- Khan, S., Wang, N., Reid, B. J., Freddo, A., & Cai, C. (2013). Reduced bioaccumulation of PAHs by *Lactuca sativa* L. grown in contaminated soil amended with sewage sludge and sewage sludge derived biochar. *Environmental Pollution*, 175C, 64-68. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3337353/>
- Khan, S., Wani, O. B., Shoaib, M., Forster, J., Sodhi, R. N., Boucher, D., & Bobicki, E. R. (2021). Mineral carbonation for serpentine mitigation in nickel processing: a step towards industrial carbon capture and storage. *Faraday Discussions*, 230(0), 172-186. doi:10.1039/D1FD00006C
- Khan, T., & Huq, S. M. I. (2014). Effect of Biochar on the Abundance of Soil Bacteria. *British Microbiology Research Journal*, 4(8), 896 - 904. doi:10.9734/bmrij/2014/9334
- Khan, T. F., & Ahmed, M. M. H., Shah Muhammad Imamul. (2014). Effects of Biochar on the Abundance of Three Agriculturally Important Soil Bacteria. *Journal of Agricultural*

- Chemistry and Environment*, 3, 31-39. Retrieved from http://file.scirp.org/pdf/JACEN_2014052010550548.pdf
- Khan, T. F., & Huq, S. M. I. (2015). Effect of Biochar on the Abundance of Soil Bacteria. *British Microbiology Research Journal*, 4(8), 896-904. Retrieved from <http://imsear.li.mahidol.ac.th/jspui/handle/123456789/163224>
- Khanday, M. U. D., et al. (2018). Quantifying the Stock of Soil Carbon Sequestration in Different Land Uses: An Overview. *International Journal of Current Microbiology and Applied Sciences*, 6(4), 382-392. Retrieved from <https://www.ijcmas.com/abstractview.php?ID=1932&vol=6-4-2017&SNo=43>
- Khanmohammadi, Z., Afyuni, M., & Mosaddeghi, M. R. (2015). Effect of pyrolysis temperature on chemical and physical properties of sewage sludge biochar. *Environmental Sciences*, 33(3), 275-283. Retrieved from <http://wmr.sagepub.com/content/early/2015/01/16/0734242X14565210.abstract>
- Khare, P., et al. (2013). Plant refuses driven biochar: Application as metal adsorbent from acidic solutions. *Arabian Journal of Chemistry*, 10, 1-10. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1878535213004176>
- Khatab, O. H., Nasib, M. A. A., Ghoneimy, E. A., Abo-Elnasr, A. A., Hassan, H. A. A., Hassan, M. Y. A., & Attitala, I. H. (2015). Role of microorganisms in our life's as ecofriendly and replacement for chemical methods. *International Journal of Pharmacy and Life Sciences*. Retrieved from <http://www.cabdirect.org/abstracts/20153103111.html;jsessionid=E22E1A897FB8B33ABAD5B824AA78992E>
- Kheirfam, H. (2019). Increasing soil potential for carbon sequestration using microbes from biological soil crusts. *Journal of Arid Environments*, 104022. doi:<https://doi.org/10.1016/j.jaridenv.2019.104022>
- Kheshgi, H., Prince, R. C., & Marland, G. (2000). The Potential of Biomass Fuels in the Context of Global Climate Change: Focus on Transportation Fuels. *Annual Review of Energy and the Environment*, 25, 199-244. Retrieved from <http://www.annualreviews.org/doi/abs/10.1146/annurev.energy.25.1.199>
- Kheshgi, H. S. (1995). Sequestering atmospheric carbon dioxide by increasing ocean alkalinity. *Energy*, 20(9), 915-922. doi:[http://dx.doi.org/10.1016/0360-5442\(95\)00035-F](http://dx.doi.org/10.1016/0360-5442(95)00035-F)
- Khoo, H. H., & Tan, R. B. H. (2006). Life Cycle Investigation of CO₂ Recovery and Sequestration. *Environmental Science & Technology*, 40(12), 4016-4024. doi:[10.1021/es051882a](https://doi.org/10.1021/es051882a)
- Khoo, Z.-Y., Ho, E. H. Z., Li, Y., Yeo, Z., Low, J. S. C., Bu, J., & Chia, L. S. O. (2020). Life cycle assessment of a CO₂ mineralisation technology for carbon capture and utilisation in Singapore. *Journal of CO₂ Utilization*, 101378. doi:<https://doi.org/10.1016/j.jcou.2020.101378>
- Khor, K. H., & Lim, K. O. (2006). Carbonisation of Oil Palm Fronds. *International Energy Journal*, 7(4), 239-243. Retrieved from <http://www.rericjournal.ait.ac.th/index.php/reric/article/view/50/36>
- Khor, K. H., & Lim, K. O. (2008). Slow Pyrolysis of Oil Palm Empty Fruit Bunches. *International Energy Journal*, 9(3), 181-188. Retrieved from <http://www.rericjournal.ait.ac.th/index.php/reric/article/view/484/301>
- Khor, K. H., Lim, K. O., & Zainal Alimuddin, Z. A. (2010). Laboratory-scale Pyrolysis of Oil Palm Trunks. *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects*, 32(6), 518-531. Retrieved from <http://www.tandfonline.com/doi/pdf/10.1080/15567030802612374?needAccess=true>
- Khor, K. H., Lim, K. O., & Zainal, Z. A. (2009). Characterization of Bio-Oil: A By-Product from Slow Pyrolysis of Oil Palm Empty Fruit Bunches. *American Journal of Applied Sciences*, 6, 1647-1652. Retrieved from [http://www.scipub.org/scipub/ab_issue.php?](http://www.scipub.org/scipub/ab_issue.php?ID=1932&vol=6-4-2017&SNo=43)

- pg_no=1647-1652&j_id=ajas&art_no=1000035&issue_no=217
- Khor, K. H., Lim, K. O., Zainal, Z. A., & Mah, K. F. (2008). Small Industrial Scale Pyrolysis of Oil Palm Shells and Characterizations of their Products. *International Energy Journal*, 9(4), 251-258. Retrieved from <http://www.rericjournal.ait.ac.th/index.php/reric/article/view/532>
- Khorram, M. S., Wang, Y., Jin, X., Fang, H., & Yu, Y. (2015). Reduced mobility of fomesafen through enhanced adsorption in biochar amended soil. *Environmental Toxicology and Chemistry*, 34(6), 1258-1266. doi:10.1002/etc.2946
- Khorshidi, Z., et al. (2014). The impact of biomass quality and quantity on the performance and economics of co-firing plants with and without CO₂ capture. *International Journal of Greenhouse Gas Control*, 21, 191-202. Retrieved from https://www.researchgate.net/publication/259578661_The_impact_of_biomass_quality_and_quantity_on_the_performance_and_economics_of_co-firing_plants_with_and_without_CO2_capture
- Khraisheh, M., Mukherjee, S., Kumar, A., Al Momani, F., Walker, G., & Zaworotko, M. J. (2020). An overview on trace CO₂ removal by advanced physisorbent materials. *Journal of Environmental Management*, 255, 109874. doi:<https://doi.org/10.1016/j.jenvman.2019.109874>
- Khrennikova, D., et al. (2021). Russia Wants to Use a Forest Bigger Than India to Offset Carbon. *Bloomberg Green*. Retrieved from <https://www.bloomberg.com/news/articles/2021-03-23/russia-wants-to-use-a-forest-bigger-than-india-to-offset-carbon>
- Khura, T., Sundaram, P. K., Lande, S. D., Kushwaha, H. L., & Chandra, R. A. M. (2015). Biochar for Climate Change Mitigation and Ameliorating Soil Health—A Review. *Journal of AgriSearch*, 2(1), 1-6. Retrieved from <https://www.jsure.org.in/journal/index.php/jas/article/view/120>
- Kidgell, J. T., et al. . (2014). Bioremediation of a Complex Industrial Effluent by Biosorbents Derived from Freshwater Macroalgae. *Plos One*, 9(6), 1-9. Retrieved from <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0094706>
- Kidgell, J. T., et al.. (2014). The Sequential Application of Macroalgal Biosorbents for the Bioremediation of a Complex Industrial Effluent. *Plos One*, 9(7), e101309. doi:10.1371/journal.pone.0101309.s004
- Killeen, T. J., Schroth, G., Turner, W., Harvey, C. A., Steininger, M. K., Dragisic, C., & Mittermeier, R. A. (2011). Stabilizing the agricultural frontier: Leveraging REDD with biofuels for sustainable development. *Biomass and Bioenergy*, 35(12), 4815-4823. doi:<http://dx.doi.org/10.1016/j.biombioe.2011.06.027>
- Kim, B.-R., Shin, W.-S., & Kim, Y.-K. (2015). 해초 Biochar를 이용한 Cr6+과 As3+ 흡착 특성 (Adsorption Characteristics of Cr6+ and As3+ Using Seaweed Biochar). In.
- Kim, C., et al. (2018). Efficient CO₂ Utilization via a Hybrid Na-CO₂ System Based on CO₂ Dissolution. *IScience*, 9, 278-285. Retrieved from [https://www.cell.com/isce/pdf/S2589-0042\(18\)30186-X.pdf](https://www.cell.com/isce/pdf/S2589-0042(18)30186-X.pdf)
- Kim, D., Anderson, Nathaniel M. L., & Chung, W. (2014). Financial performance of a mobile pyrolysis system used to produce biochar from sawmill residues. *Forest Products Journal*, 65(6), 189-197. doi:10.13073/fpj-d-14-00052
- Kim, D., Kley, C. S., Li, Y., & Yang, P. (2017). Copper nanoparticle ensembles for selective electroreduction of CO₂ to C₂-C₃ products. *Proceedings of the National Academy of Sciences*. doi:10.1073/pnas.1711493114
- Kim, D., Yoshikawa, K., & Park, K. (2015). Characteristics of Biochar Obtained by Hydrothermal Carbonization of Cellulose for Renewable Energy. *Energies*, 8(12), 14040 - 14048. doi:10.3390/en81212412
- Kim, D.-G., Kirschbaum, M. U. F., & Beedy, T. L. (2016). Carbon sequestration and net emissions of CH₄ and N₂O under agroforestry: Synthesizing available data and

- suggestions for future studies. *Agriculture, Ecosystems & Environment*, 226, 65-78. doi:<https://doi.org/10.1016/j.agee.2016.04.011>
- Kim, D.-G. J. A. S. (2012). Estimation of net gain of soil carbon in a nitrogen-fixing tree and crop intercropping system in sub-Saharan Africa: results from re-examining a study. *86(2)*, 175-184. doi:[10.1007/s10457-011-9477-1](https://doi.org/10.1007/s10457-011-9477-1)
- Kim, E., Gil, H., Park, S., & Park, J. (2015). Bio-oil production from pyrolysis of waste sawdust with catalyst ZSM-5. *Journal of Material Cycles and Waste Management*, 19(1), 423-431. doi:[10.1007/s10163-015-0438-z](https://doi.org/10.1007/s10163-015-0438-z)
- Kim, G., Choi, S.-K., & Seok, J. H. (2020). Does Biomass Energy Consumption Reduce Total Energy CO₂ Emissions in the U.S.? *Journal of Policy Modeling*. doi:<https://doi.org/10.1016/j.jpolmod.2020.02.009>
- Kim, H., & Lee, K. S. (2016). Design guidance for an energy-thrift absorption process for carbon capture: Analysis of thermal energy consumption for a conventional process configuration. *International Journal of Greenhouse Gas Control*, 47, 291-302. doi:<http://dx.doi.org/10.1016/j.ijggc.2016.02.003>
- Kim, H.-J., et al. (2014). Effect of Biochar bead on Adsorption of Heavy Metals. *한국토양비료학회지 제 (Korea Journal of fertilizers)*, 47(5), 351-355. Retrieved from <http://www.dbpia.co.kr/Journal/ArticleDetail/3524198>
- Kim, H.-S., et al. . (2015). Effect of biochar on heavy metal immobilization and uptake by lettuce (*Lactuca sativa L.*) in agricultural soil. *Environmental Earth Sciences*, 74(2), 1249-1259. doi:[10.1007/s12665-015-4116-1](https://doi.org/10.1007/s12665-015-4116-1)
- Kim, H.-S., et al. . (2015). Effect of biochar on reclaimed tidal land soil properties and maize (*Zea mays L.*) response. *Chemosphere*, 142, 153-159. doi:[10.1016/j.chemosphere.2015.06.041](https://doi.org/10.1016/j.chemosphere.2015.06.041)
- Kim, H. S., et al. (2015). Examination of Three Different Organic Waste Biochars as Soil Amendment for Metal-Contaminated Agricultural Soils. *Water, Air, & Soil Pollution*, 226(9), 282. doi:[10.1007/s11270-015-2556-6](https://doi.org/10.1007/s11270-015-2556-6)
- Kim, I. J., Kim, R.-Y., Kim, J. I., Kim, H. S., Noh, H.-J., Kim, T. S., . . . Jung, H.-S. (2015). Feasibility Study of Different Biochars as Adsorbent for Cadmium and Lead. *Journal of Fertilizers Korea*, 48(5), 332-339. Retrieved from http://www.dbpia.co.kr/Journal/PDFViewNew?id=NODE06539226&prevPathCode=&_referer=http://www.dbpia.co.kr/Journal/articledetail/NODE06539226
- Kim, J. (2015). *Integrated adsorption, oxidation and biodegradation for treating emerging contaminants in wastewater and water*. University of Hawaii, Retrieved from <http://scholarspace.manoa.hawaii.edu/handle/10125/101099>
- Kim, J., Sparovek, G., Longo, R. M., De Melo, W. J., & Crowley, D. (2007). Bacterial Diversity of Terra Preta and Pristine Forest Soil from the Western Amazon. *Soil Biology & Biochemistry*, 39(2), 684-690.
- Kim, J., Yoo, G., Kim, D., Ding, W., & Kang, H. (2017). Combined application of biochar and slow-release fertilizer reduces methane emission but enhances rice yield by different mechanisms. *Applied Soil Ecology*, 117, 57-62. doi:<http://dx.doi.org/10.1016/j.apsoil.2017.05.006>
- Kim, J. H., Ok, Y. S., Choi, G.-H., & Park, B.-J. (2015). Residual perfluorochemicals in the biochar from sewage sludge. *Chemosphere*, 134, 435 - 437. doi:[10.1016/j.chemosphere.2015.05.012](https://doi.org/10.1016/j.chemosphere.2015.05.012)
- Kim, K. H., et al. (2012). Influence of pyrolysis temperature on physicochemical properties of biochar obtained from the fast pyrolysis of pitch pine (*Pinus rigida*). *Bioresource Technology*, 118, 158-162. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/22705519>
- Kim, M., Lee, Y., Park, J., Ryu, C., & Ohm, T.-I. (2016). Partial oxidation of sewage sludge

- briquettes in a updraft fixed bed. *Waste Management*, 49, 204 - 211. doi:10.1016/j.wasman.2016.01.040
- Kim, M., Won, W., & Kim, J. (2017). Integration of carbon capture and sequestration and renewable resource technologies for sustainable energy supply in the transportation sector. *Energy Conversion and Management*, 143, 227-240. doi:<https://doi.org/10.1016/j.enconman.2017.04.010>
- Kim, M. K., Baldini, L., Leibundgut, H., Wurzbacher, J. A., & Piatkowski, N. (2015). A novel ventilation strategy with CO₂ capture device and energy saving in buildings. *Energy and Buildings*, 87(Supplement C), 134-141. doi:<https://doi.org/10.1016/j.enbuild.2014.11.017>
- Kim, M.-S., Min, H.-G., Koo, N., Park, J., Lee, S.-H., Bak, G.-I., & Kim, J.-G. (2014). The effectiveness of spent coffee grounds and its biochar on the amelioration of heavy metals-contaminated water and soil using chemical and biological assessments. *Journal of Environmental Management*, 146, 124 - 130. doi:10.1016/j.jenvman.2014.07.001
- Kim, P., Hensley, D., & Labb  , N. (2014). Nutrient release from switchgrass-derived biochar pellets embedded with fertilizers. *Geoderma*, 232-234, 341-351. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0016706114002225>
- Kim, S., Agblevor, F. A., & Lim, J. (2009). Fast pyrolysis of chicken litter and turkey litter in a fluidized bed reactor. *Journal of Industrial and Engineering Chemistry*, 15(2), 247-252.
- Kim, S., & Dale, B. E. (2005). Life cycle assessment of various cropping systems utilized for producing biofuels: Bioethanol and biodiesel. *Biomass and Bioenergy*, 29(6), 426-439. doi:<https://doi.org/10.1016/j.biombioe.2005.06.004>
- Kim, S. W., Kaplan, L. A., Benner, R., & Hatcher, P. G. (2004). Hydrogen-deficient molecules in natural riverine water samples - evidence for the existence of black carbon in DOM. *Marine Chemistry*, 92(1-4), 225-234.
- Kim, W. I., Kunhikrishnan, A., Go, W. R., Jeong, S. H., & Kim, G. J. (2015). Open Access ; Influence of Various Biochars on the Survival, Growth, and Oxidative DNA Damage in the Earthworm Eisenia Fetida. *한국환경농학회지 (Korea Journal of Environmental Agriculture)*. Retrieved from http://www.papersearch.net/view/detail.asp?detail_key=09202729
- Kim, W.-K., Shim, T., Kim, Y.-S., Hyun, S., Ryu, C., Park, Y.-K., & Jung, J. (2013). Characterization of cadmium removal from aqueous solution by biochar produced from a giant Miscanthus at different pyrolytic temperatures. *Bioresource Technology*, 138, 266-270. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0960852413005907>
- Kim, Y., Lim, S.-R., Jung, K. A., & Park, J. M. (2019). Process-based life cycle CO₂ assessment of an ammonia-based carbon capture and storage system. *Journal of Industrial and Engineering Chemistry*, 76, 223-232. doi:<https://doi.org/10.1016/j.jiec.2019.03.044>
- Kim, Y. J., Park, H., Kim, M. H., Seo, S., Ok, Y. S., & Yoo, G. (2016). GWP (Global Warming Potential)를 고려한 가시박바이오차르의 토양 납 제거 효과 분석 [GWP (Global Warming Potential) visible night and bio-char soil analysis considering the effect of lead removal]. *대한환경공학회지 (Journal of Korean Society of Environmental Engineers)*. Retrieved from http://www.papersearch.net/view/detail.asp?detail_key=04714126
- Kimani, A. (2021). Carbon Capture Could Dramatically Improve The LNG Outlook. Retrieved from <https://oilprice.com/Energy/Natural-Gas/Carbon-Capture-Could-Dramatically-Improve-The-LNG-Outlook.html>
- Kimbrough, L. (2021). How to pick a tree-planting project? Mongabay launches transparency tool to help supporters decide. *Mongabay*. Retrieved from https://news.mongabay.com/2021/05/how-to-pick-a-tree-planting-project-mongabay-launches-transparency-tool-to-help-potential-supporters-decide/?utm_source=Mongabay+Newsletter&utm_campaign=11b925d27a-

- Newsletter_2020_04_30_COPY_01&utm_medium=email&utm_term=0_940652e1f4-11b925d27a-77159097&mc_cid=11b925d27a&mc_eid=ceaae677fe
- Kimetu, J., et al. (2008). Reversibility of Soil Productivity Decline with Organic Matter of Differing Quality Along a Degradation Gradient. *Ecosystems*, 11, 726-739. Retrieved from <https://link.springer.com/article/10.1007/s10021-008-9154-z>
- Kimetu, J. M., Hill, J. M., Husein, M., Bergerson, J., & Layzell, D. B. (2014). Using activated biochar for greenhouse gas mitigation and industrial water treatment. *Mitigation and Adaptation Strategies for Global Change*, 21(5), 761-777. doi:10.1007/s11027-014-9625-9
- Kimetu, J. M., & Lehmann, J. (2010). Stability and stabilisation of biochar and green manure in soil with different organic carbon contents. *Australian Journal of Soil Research*, 48, 577-585.
- Kimura, K., Hachinohe, M., Klasson, K. T., Hamamatsu, S., Hagiwara, S., Todoriki, S., & Kawamoto, S. (2014). Removal of Radioactive Cesium (134Cs plus 137Cs) from Low-Level Contaminated Water by Charcoal and Broiler Litter Biochar. *Food Science and Technology Research*, 20(6), 1183 - 1189. doi:10.3136/fstr.20.1183
- Kindermann, G., Obersteiner, M., Sohngen, B., Sathaye, J., Andrasko, K., Rametsteiner, E., . . . Beach, R. (2008). Global cost estimates of reducing carbon emissions through avoided deforestation. *Proceedings of the National Academy of Sciences*, 105(30), 10302-10307. doi:10.1073/pnas.0710616105
- King, G. M. (2011). Enhancing soil carbon storage for carbon remediation: potential contributions and constraints by microbes. *Trends in Microbiology*, 19(2), 75-84. doi:<http://dx.doi.org/10.1016/j.tim.2010.11.006>
- King, J. S., Ceulemans, R., Albaugh, J. M., Dillen, S. Y., Domec, J.-C., Fichot, R., . . . Zenone, T. (2013). The Challenge of Lignocellulosic Bioenergy in a Water-Limited World. *BioScience*, 63(2), 102-117. doi:10.1525/bio.2013.63.2.6
- King, R., & Parnell, R. (2020). Stopping climate change could cost less than fighting covid-19. *Washington Post*. Retrieved from https://www.washingtonpost.com/outlook/climate-change-intervention-cost/2020/09/17/c6715db6-f784-11ea-89e3-4b9efa36dc64_story.html
- Kingdom), N. E. R. C. U. (2019). Greenhouse Gas Removal Demonstrators: Directorate Hub. Retrieved from <https://nerc.ukri.org/research/funded/programmes/ggrd/>
- Kinney, T. J., et al. (2012). Hydrologic properties of biochars produced at different temperatures. *Biomass and Bioenergy*, 41, 34 - 43.
- Kintisch, E. (2014). Can Sucking CO₂ Out of the Atmosphere Really Work? *MIT Technology Review*. Retrieved from <https://www.technologyreview.com/s/531346/can-sucking-co2-out-of-the-atmosphere-really-work/>
- Kinyangi, J., et al. . (2006). Nanoscale Biogeocomplexity of the Organo-Mineral Assemblage in Soil: Application of STXM Microscopy and C 1s-NEXAFS Spectroscopy. *Soil Science Society of America Journal*, 70(5), 1708-1718. Retrieved from <https://dl.sciencesocieties.org/publications/ssaj/abstracts/70/5/1708>
- Kiran, B., Kumar, R., & Deshmukh, D. (2014). Perspectives of microalgal biofuels as a renewable source of energy. *Energy Conversion and Management*, 88, 1228-1244. doi:<https://doi.org/10.1016/j.enconman.2014.06.022>
- Kiran, G. A. R. (2015). *CFD Modeling and Simulations of Catalytic Hydrotreatment of Bio-Oil*. Indian Institute of Technology Guwahati, Retrieved from <http://gyan.iitg.ernet.in/handle/123456789/629?show=full>
- Kırkıyık, Ç., Pütün, A. E., & Pütün, E. (2015). Comparative studies on adsorptive removal of heavy metal ions by biosorbent, bio-char and activated carbon obtained from low cost agro residue. In.

- Kirchner, J. S., Berry, A., Ohnemüller, F., Schnetger, B., Erich, E., Brumsack, H.-J., & Lettmann, K. A. (2020). Reducing CO₂ Emissions of a Coal-Fired Power Plant via Accelerated Weathering of Limestone: Carbon Capture Efficiency and Environmental Safety. *Environmental Science & Technology*. doi:10.1021/acs.est.9b07009
- Kirchofer, A., et al. (2012). Impact of alkalinity sources on the life-cycle energy efficiency of mineral carbonation technologies. *Energy & Environmental Science*, 5, 8631-8641. Retrieved from <http://pubs.rsc.org/en/content/articlehtml/2012/ee/c2ee22180b>
- Kirchofer, A., et al. (2013). CO₂ Mitigation Potential of Mineral Carbonation with Industrial Alkalinity Sources in the United States. *Environmental Science and Technology*, 47, 7548-7554. Retrieved from <http://pubs.acs.org/doi/pdf/10.1021/es4003982>
- Kirkby, C. A., Richardson, A. E., Wade, L. J., Batten, G. D., Blanchard, C., & Kirkegaard, J. A. (2013). Carbon-nutrient stoichiometry to increase soil carbon sequestration. *Soil Biology and Biochemistry*, 60, 77-86. doi:<https://doi.org/10.1016/j.soilbio.2013.01.011>
- Kirrolia, A., Bishnoi, N. R., & Singh, R. (2013). Microalgae as a boon for sustainable energy production and its future research & development aspects. *Renewable and Sustainable Energy Reviews*, 20, 642-656. doi:<https://doi.org/10.1016/j.rser.2012.12.003>
- Kirschbaum, M. U. F., Whitehead, D., Dean, S. M., Beets, P. N., Shepherd, J. D., & Ausseil, A. G. E. (2011). Implications of albedo changes following afforestation on the benefits of forests as carbon sinks. *Biogeosciences*, 8(12), 3687-3696. doi:10.5194/bg-8-3687-2011
- Kiser, L. C., & Fox, T. R. (2013). Short-rotation Wood Crop Biomass Production for Bioenergy. In B. P. Singh (Ed.), *Biofuel Crop Sustainability* (pp. 205-237).
- Kishimoto, M., Okakura, T., Nagashima, H., Minowa, T., Yokoyama, S.-Y., & Yamaberi, K. (1994). CO₂ fixation and oil production using micro-algae. *Journal of Fermentation and Bioengineering*, 78(6), 479-482. doi:[https://doi.org/10.1016/0922-338X\(94\)90052-3](https://doi.org/10.1016/0922-338X(94)90052-3)
- Kite-Powell, H., Buesseler, K. O., & Doney, S. C. (2008). To Fertilize, or Not to Fertilize. *Oceanus*, 46(1). Retrieved from <http://www.whoi.edu/oceanus/viewArticle.do?id=37026>
- Kittredge, J. (2020). Soil Carbon Restoration: Can Biology do the Job? Part One. *Future Directions International*. Retrieved from <http://www.futuredirections.org.au/publication/soil-carbon-restoration-can-biology-do-the-job-part-one/>
- Kittredge, J. (2020). Soil Carbon Restoration: Can Biology do the Job? Part Three. *Future Directions International*. Retrieved from <http://www.futuredirections.org.au/publication/soil-carbon-restoration-can-biology-do-the-job-part-three/>
- Kittredge, J. (2020). Soil Carbon Restoration: Can Biology do the Job? Part Two. *Future Directions International*. Retrieved from <http://www.futuredirections.org.au/publication/soil-carbon-restoration-can-biology-do-the-job-part-two/>
- Kizha, A. R., & Han, H.-s. (2015). *Cost and productivity for processing and sorting forest residues*. Paper presented at the 2015 Council on Forest Engineering Annual Meeting. http://www.researchgate.net/profile/Anil_Raj_Kizha2/publication/281452862_Cost_and_productivity_for_processing_and_sorting_forest_residues/links/55e8791f08ae21d099c179b4.pdf
- Kizito, S., Wu, S., Kipkemoi Kirui, W., Lei, M., Lu, Q., Bah, H., & Dong, R. (2014). Evaluation of slow pyrolyzed wood and rice husks biochar for adsorption of ammonium nitrogen from piggery manure anaerobic digestate slurry. *Science of The Total Environment*, 505, 102 - 112. doi:10.1016/j.scitotenv.2014.09.096
- Klasson, K. T., Ledbetter, C. A., Wartelle, L. H., & Lingle, S. E. (2010). Feasibility of dibromochloropropane (DBCP) and trichloroethylene (TCE) adsorption onto activated carbons made from nut shells of different almond varieties. *Industrial Crops and Products*, 31, 261-265. Retrieved from <https://www.ars.usda.gov/research/publications/publication/?seqNo115=244132>
- Klasson, K. T., Lima, I. M., & Boihem, J., L. L. (2009). Poultry manure as raw material for

- mercury adsorbents in gas applications. *Journal of Applied Poultry Research*, 18(3), 562-569. Retrieved from <https://academic.oup.com/japr/article/18/3/562/879801/Poultry-manure-as-raw-material-for-mercury>
- Klasson, K. T., Lima, I. M., Boihem, J., L. L., & Wartelle, L. H. (2010). Feasibility of mercury removal from simulated flue gas by activated chars made from poultry manures. *Journal of Environmental Management*, 91(12), 2466-2470. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/20678859>
- Klasson, K. T., Wartelle, L. H., Lima, I. M., Marshall, W. E., & Akin, D. E. (2009). Activated carbons from flax shive and cotton gin waste as environmental adsorbents for the chlorinated hydrocarbon trichloroethylene. *Bioresource Technology*, 100(21), 5045-5050. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0960852409005896>
- Klasson, K. T., Wartelle, L. H., Rodgers III, J. E., & Lima, I. M. (2009). Copper (II) adsorption by activated carbons from pecan shells: Effect of oxygen level during activation. *Industrial Crops and Products*, 30(1), 72-77. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0926669009000235>
- Kleber, M., Hockaday, W., & Nico, P. S. (2015). Characteristics of biochar: macro-molecular properties. In *Biochar for Environmental Management: Science and Technology and Implementation*.
- Klein, D., Bauer, N., Bodirsky, B., Dietrich, J. P., & Popp, A. (2011). Bio-IGCC with CCS as a long-term mitigation option in a coupled energy-system and land-use model. *Energy Procedia*, 4, 2933-2940. doi:<http://dx.doi.org/10.1016/j.egypro.2011.02.201>
- Klein, D., Luderer, G., & Kriegler, E. (2014). The value of bioenergy in low stabilization scenarios: An assessment using REMIND-MAgPIE. *Climatic Change*, 123(3-4), 705-718. Retrieved from https://www.researchgate.net/publication/259637129_The_value_of_bioenergy_in_low_stabilization_scenarios_An_assessment_using_REMIND-MAgPIE
- Klein, D. e. a. (2014). The global economic long-term potential of modern biomass in a climate-constrained world. *Environmental Research Letters*, 9(7), 1-11. Retrieved from <http://stacks.iop.org/1748-9326/9/i=7/a=074017>
- Klein, F., & Garrido, C. J. (2011). Thermodynamic constraints on mineral carbonation of serpentized peridotite. *Lithos*, 126(3), 147-160. doi:<https://doi.org/10.1016/j.lithos.2011.07.020>
- Klein, J. (2020). In the quest for carbon offsets, (almost) anything goes. *Greenbiz101*. Retrieved from <https://www.greenbiz.com/article/quest-carbon-offsets-almost-anything-goes>
- Klement, J., Rootzén, J., Normann, F., & Johnsson, F. (2021). Supply Chain Driven Commercialisation of Bio Energy Carbon Capture and Storage. *Frontiers in Climate*, 3(6). doi:[10.3389/fclim.2021.615578](https://doi.org/10.3389/fclim.2021.615578)
- Klinar, D. (2016). Universal model of slow pyrolysis technology producing biochar and heat from standard biomass needed for the techno-economic assessment. *Bioresource Technology*, 206, 112-120. doi:[10.1016/j.biortech.2016.01.053](https://doi.org/10.1016/j.biortech.2016.01.053)
- Kline, K. L., Msangi, S., Dale, V. H., Woods, J., Souza, Glauzia M., Osseweijer, P., . . . Mugera, H. K. (2017). Reconciling food security and bioenergy: priorities for action. *GCB Bioenergy*, 9(3), 557-576. doi:[10.1111/gcbb.12366](https://doi.org/10.1111/gcbb.12366)
- Kloss, S., et al. (2013). Biochar application to temperate soils: Effects on soil fertility and crop growth under greenhouse conditions. *Journal of Plant Nutrition and Soil Science*, 177(1), 3-15. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/jpln.201200282/abstract>
- Kloss, S., et al. (2014). Trace element biogeochemistry in the soil-water-plant system of a temperate agricultural soil amended with different biochars. *Environmental Science and Pollution Research*, 22(6), 4513-4526. doi:[10.1007/s11356-014-3685-y](https://doi.org/10.1007/s11356-014-3685-y)
- Kloss, S., et al. (2014). Trace element concentrations in leachates and mustard plant tissue

- (*Sinapis alba* L.) after biochar application to temperate soils. *Science of The Total Environment*, 481, 498–508. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0048969714002769>
- Kloss, S., Zehetner, F., Dellantonio, A., Hamid, R., Ottner, F., Liedtke, V., . . . Soja, G. (2012). Characterization of Slow Pyrolysis Biochars: Effects of Feedstocks and Pyrolysis Temperature on Biochar Properties. *Journal of Environmental Quality*, 41(4), 990-1000. doi:10.2134/jeq2011.0070
- Kluepfel, L., et al. . (2014). Redox properties of plant biomass-derived black carbon (biochar). *Environmental Science & Technology*, 48(10), 5601-5611. doi:10.1021/es500906d
- Kluiters, S. C., Van Den Brink, R. W., & Haije, W. G. (2010). Advanced oxygen production systems for power plants with integrated carbon dioxide (CO₂) capture A2 - Maroto-Valer, M. Mercedes. In *Developments and Innovation in Carbon Dioxide (CO₂) Capture and Storage Technology* (Vol. 1, pp. 320-357): Woodhead Publishing.
- Knicker, H. (2011). Pyrogenic organic matter in soil: Its origin and occurrence, its chemistry and survival in soil environments. *Quaternary International*, 243(2), 251-263. Retrieved from <http://www.sciencedirect.com/science/article/B6VGS-52C8FW1-1/2/88e86278c0aa46049bbc5c49ae770024>
- Knicker, H., Almendros, G., Gonzalez-Vila, F. J., Gonzalez-Perez, J. A., & Polvillo, O. (2006). Characteristic alterations of quantity and quality of soil organic matter caused by forest fires in continental Mediterranean ecosystems: a solid-state C-13 NMR study. *European Journal of Soil Science*, 57(4), 558-569. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2389.2006.00814.x/abstract>
- Knicker, H., Muffler, P., & Hilscher, A. (2007). How useful is chemical oxidation with dichromate for the determination of "black carbon" in fire-affected soils? *Geoderma*, 142(1-2), 178-196.
- Knowles, O. A., Robinson, B. H., Contangelo, A., & Clucas, L. (2011). Biochar for the mitigation of nitrate leaching from soil amended with biosolids. *Science of The Total Environment*, 409, 3206-3210. Retrieved from <http://kiwiscience.com/JournalArticles/STOTEN2011.pdf>
- Knox, O. G. G., et al. (2015). Biochar Increases Soil PH, But Is As Ineffective As Liming at Controlling Clubroot. *Journal of Plant Pathology*, 95(1), 149-152. doi:10.4454/jpp.v97i1.016
- Kobayashi-Solomon, E. (2019). Capitalism vs Climate Change: Front Line Interview I. *Forbes*. Retrieved from <https://www.forbes.com/sites/erikkobayashisolomon/2019/05/21/capitalism-vs-climate-change-front-line-interview-i/#2ab918406b18>
- Kobayashi-Solomon, E. (2019). Capitalism vs Climate Change: The Venture Capitalists' Perspective. *Forbes*. Retrieved from <https://www.forbes.com/sites/erikkobayashisolomon/2019/06/18/capitalism-vs-climate-change-the-venture-capitalists-perspective/#1f9d4beb4c24>
- Köberle, A. C. (2019). The Value of BECCS in IAMs: a Review. *Current Sustainable/Renewable Energy Reports*. doi:10.1007/s40518-019-00142-3
- Kocsis, T., & Biró, B. (2015). Bioszén hatása a talaj-növény-mikróba rendszerre: előnyök és aggályok — Szemle. *Agrokémia és Talajtan*, 64(1), 257 - 272. doi:10.1556/0088.2015.64.1.19
- Kodama, S., Nishimoto, T., Yamamoto, N., Yogo, K., & Yamada, K. (2008). Development of a new pH-swing CO₂ mineralization process with a recyclable reaction solution. *Energy*, 33(5), 776-784. doi:<https://doi.org/10.1016/j.energy.2008.01.005>
- Koehler, S. D., Gerhardt, E., & Joseph, S. (2012). *Improving Yields of Strawberries Grown in South Florida Through Addition of Compost Biochar and Minerals*. Retrieved from http://www.biochar-international.org/sites/default/files/Biochar_Strawberry_Trial%20writeup_clean-1.pdf

- Koelbl, B. S., van den Broek, M. A., Faaij, A. P. C., & van Vuuren, D. P. (2014). Uncertainty in Carbon Capture and Storage (CCS) deployment projections: a cross-model comparison exercise. *Climatic Change*, 123(3), 461-476. doi:10.1007/s10584-013-1050-7
- Koh, L. P., & Ghazoul, J. (2008). Biofuels, biodiversity, and people: Understanding the conflicts and finding opportunities. *Biological Conservation*, 141(10), 2450-2460. doi:<https://doi.org/10.1016/j.biocon.2008.08.005>
- Köhl, M., Ehrhart, H.-P., Knauf, M., & Neupane, P. R. (2020). A viable indicator approach for assessing sustainable forest management in terms of carbon emissions and removals. *Ecological Indicators*, 111, 106057. doi:<https://doi.org/10.1016/j.ecolind.2019.106057>
- Köhler, P., et al. (2013). Geoengineering impact of open ocean dissolution of olivine on atmospheric CO₂, surface ocean pH and marine biology. *Environmental Research Letters*, 8(1), 014009. Retrieved from <http://stacks.iop.org/1748-9326/8/i=1/a=014009>
- Köhler, P. (2016). Using the Suess effect on the stable carbon isotope to distinguish the future from the past in radiocarbon. *Environmental Research Letters*, 11(124016). Retrieved from <http://iopscience.iop.org/article/10.1088/1748-9326/11/12/124016/meta>
- Köhler, P. (2020). Anthropogenic CO₂ of High Emission Scenario Compensated After 3500 Years of Ocean Alkalination With an Annually Constant Dissolution of 5 Pg of Olivine. *Frontiers in Climate*, 2(7). doi:10.3389/fclim.2020.575744
- Köhler, P., Hartmann, J., & Wolf-Gladrow, D. A. (2010). Geoengineering potential of artificially enhanced silicate weathering of olivine. *Proceedings of the National Academy of Sciences*, 107(47), 20228-20233. doi:10.1073/pnas.1000545107
- Koide, H., Tazaki, Y., Noguchi, Y., Iijima, M., Ito, K., & Shindo, Y. (1993). Underground storage of carbon dioxide in depleted natural gas reservoirs and in useless aquifers. *Engineering Geology*, 34(3), 175-179. doi:[https://doi.org/10.1016/0013-7952\(93\)90086-R](https://doi.org/10.1016/0013-7952(93)90086-R)
- Koide, R. T., et al. . (2014). Biochar amendment of soil improves resilience to climate change. *Global Change Biology*, 7(5), 1084-1091. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/gcbb.12191/abstract>
- Koide, R. T., Petprakob, K., & Peoples, M. (2011). Quantitative analysis of biochar in field soil. *Soil Biology and Biochemistry*, 43(7), 1563-1568. doi:10.1016/j.soilbio.2011.04.006
- Koizumi, T. (2014). Biofuels and Food Security. In *Biofuels and Food Security* (pp. 103-121).
- Koizumi, T. (2014). Biofuels and Food Security in Brazil. In *Biofuels and Food Security* (pp. 13-30).
- Koizumi, T. (2014). Biofuels and Food Security in China. In *Biofuels and Food Security* (pp. 31-41).
- Koizumi, T. (2014). Biofuels and Food Security in Japan and Other Asian Countries. In *Biofuels and Food Security* (pp. 43-57).
- Koizumi, T. (2014). Biofuels and Food Security in the US, the EU and Other Countries. In *Biofuels and Food Security* (pp. 59-78).
- Koizumi, T. (2014). Global Discussion of Biofuels and Food Security. In *Biofuels and Food Security* (pp. 79-102).
- Kojima, T., Nagamine, A., Ueno, N., & Uemiya, S. (1997). Absorption and fixation of carbon dioxide by rock weathering. *Energy Conversion and Management*, 38, S461-S466. doi:[https://doi.org/10.1016/S0196-8904\(96\)00311-1](https://doi.org/10.1016/S0196-8904(96)00311-1)
- Kokal, S., et al. (2017). *Design and Implementation of First CO₂-EOR Demonstration Project in Saudi Arabia*. Paper presented at the Society of Petroleum Engineers. <https://www.onepetro.org/download/conference-paper/SPE-181729-MS?id=conference-paper%2FSPE-181729-MS>
- Kokal, S. (2017). Technology Focus: CO₂ Applications. *Journal of Petroleum Technology*, 69(7). Retrieved from <https://www.spe.org/en/jpt/jpt-article-detail/?art=3119>
- Kokal, S., Sanni, M., & Alhashboul, A. (2016). *Design and Implementation of the First CO₂-EOR*

Demonstration Project in Saudi Arabia. <https://www.onepetro.org/conference-paper/SPE-181729-MS>

- Kolb, S. E., Fermanich, K. J., & Dornbush, M. E. (2009). Effect of Charcoal Quantity on Microbial Biomass and Activity in Temperate Soils. *Soil Science of America Journal*, 73(4), 1173-1182. Retrieved from <http://soil.scijournals.org/cgi/content/abstract/73/4/1173>
- Kolber, Z. S., Barber, R. T., Coale, K. H., Fitzwater, S. E., Greene, R. M., Johnson, K. S., . . . Falkowski, P. G. (1994). Iron limitation of phytoplankton photosynthesis in the equatorial Pacific Ocean. *Nature*, 371(6493), 145-149. Retrieved from <http://dx.doi.org/10.1038/371145a0>
- Kolbert, E. (2017). Going Negative. *New Yorker*. Retrieved from <https://www.newyorker.com/magazine/2017/11/20/can-carbon-dioxide-removal-save-the-world/amp>
- Kolby Smith, W., Zhao, M., & Running, S. W. (2012). Global Bioenergy Capacity as Constrained by Observed Biospheric Productivity Rates. *BioScience*, 62(10), 911-922. Retrieved from <https://academic.oup.com/bioscience/article/62/10/911/238201/Global-Bioenergy-Capacity-as-Constrained-by>
- Kollah, B., Dubey, G., Parasai, P., Saha, J. K., Gangil, S., & Mohanty, S. R. (2015). Interactive effect of biochar size and organic amendments on methane consumption in a tropical vertisol. *Soil Use and Management*, n/a - n/a. doi:10.1111/sum.12168
- Kolodynska, D., , et al. (2012). Kinetic and Adsorptive Characterisation of Biochar in Metal Ions Removal. *Chemical Engineering Journal*, 197, 295-305. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1385894712005979>
- Kolosz, B. W., Sohi, S. P., & Manning, D. A. C. (2019). CASPER: A modelling framework to link mineral carbonation with the turnover of organic matter in soil. *Computers & Geosciences*. doi:<https://doi.org/10.1016/j.cageo.2018.12.012>
- Kolster, C., Masnadi, M. S., Krevor, S., Mac Dowell, N., & Brandt, A. R. (2017). CO₂ enhanced oil recovery: a catalyst for gigatonne-scale carbon capture and storage deployment? *Energy & Environmental Science*, 10(12), 2594-2608. doi:10.1039/C7EE02102J
- Kolton, M., et al. . (2011). Impact of biochar application to soil on the root-associated bacterial community structure of fully developed greenhouse pepper plants. *Applied and Environmental Microbiology*, 77(14), 4924-4930. doi:10.1128/aem.00148-11
- Kołtowski, M., Hilber, I., Bucheli, T. D., & Oleszczuk, P. (2016). Effect of activated carbon and biochars on the bioavailability of polycyclic aromatic hydrocarbons in different industrially contaminated soils. *Environmental Science and Pollution Research*, 23(11), 11058-11068. doi:10.1007/s11356-016-6196-1
- Kołtowski, M., & Oleszczuk, P. (2015). Effect of activated carbon or biochars on toxicity of different soils contaminated by mixture of native polycyclic aromatic hydrocarbons and heavy metals. *Environmental Toxicology and Chemistry*, 35(5), 1321-1328. doi:10.1002/etc.3246
- Kołtowski, M., & Oleszczuk, P. (2015). Toxicity of biochars after polycyclic aromatic hydrocarbons removal by thermal treatment. *Ecological Engineering*, 75, 79 - 85. doi:10.1016/j.ecoleng.2014.11.004
- Komaki, Y., Nakano, A., Katoh, H., & Uehara, Y. (2002). Utilization of chaff charcoal for medium of flower bed seedlings and its effect of growth and quality of madagascar periwinkle (*Catharanthus roseus* G. Don) seedlings. *Japanese Journal of Soil Science and Plant Nutrition*, 73(1), 49-52. Retrieved from https://www.jstage.jst.go.jp/article/dojo/73/1/73_KJ00000888648/_pdf
- Komar, N., & Zeebe, R. E. (2011). Oceanic calcium changes from enhanced weathering during the Paleocene-Eocene thermal maximum: No effect on calcium-based proxies. *Paleoceanography*, 26, 1-13.
- Komkiene, J., & Baltrenaite, E. (2015). Biochar as adsorbent for removal of heavy metal ions

- [Cadmium(II), Copper(II), Lead(II), Zinc(II)] from aqueous phase. *International Journal of Environmental Science and Technology*, 13(2), 471-482. doi:10.1007/s13762-015-0873-3
- Komnitsas, K., et al. (2014). Assessment of pistachio shell biochar quality and its potential for absorption of heavy metals. *Waste and Biomass Valorization*, 6(5), 805-816. Retrieved from http://athens2014.biowaste.gr/pdf/komnitsas_et_al.pdf
- Komnitsas, K., Zaharaki, D., Bartzas, G., Kaliakatsou, G., & Kritikaki, A. (2014). Efficiency of pecan shells and sawdust biochar on Pb and Cu adsorption. *Desalination and Water Treatment*, 57(7), 3237-3246. doi:10.1080/19443994.2014.981227
- Konadu, D. D., Mourão, Z. S., Allwood, J. M., Richards, K. S., Kopec, G., McMahon, R., & Fenner, R. (2015). Land use implications of future energy system trajectories—The case of the UK 2050 Carbon Plan. *Energy Policy*, 86, 328-337. doi:<http://dx.doi.org/10.1016/j.enpol.2015.07.008>
- Konadu, D. D., Mourão, Z. S., Allwood, J. M., Richards, K. S., Kopec, G. M., McMahon, R. A., & Fenner, R. A. (2015). Not all low-carbon energy pathways are environmentally “no-regrets” options. *Global Environmental Change*, 35, 379-390. doi:<http://dx.doi.org/10.1016/j.gloenvcha.2015.10.002>
- Kondo, Y., et al. . (2012). A new application of bagasse char as a solar energy absorption and accumulation material. *Earth and Environmental Science Transactions of the Royal Society of Edinburgh*, 103, 31-38. Retrieved from <https://www.cambridge.org/core/journals/earth-and-environmental-science-transactions-of-royal-society-of-edinburgh/article/a-new-application-of-bagasse-char-as-a-solar-energy-absorption-and-accumulation-material/4285D34F015CA038C01A2ED961168BD8>
- Kong, H., et al. . (2011). Cosorption of Phenanthrene and Hg (II) from Aqueous Solution by Soybean Stalk-based Biochar. *Journal of Agricultural and Food Chemistry*, 59(22), 12116-12123. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/jf202924a>
- Kong, H., He, J., Han, J., & Gao, Y. (2013). Utilizing Stalk-Based Biochar to Control the Risk of Persistent Organic Pollutants in the Environment. *Functions of Natural Organic Matter in Changing Environment*.
- Kong, L. L., & Zhou, Q. X. (2013). Influences of Biochar Aging Processes by Eco-Environmental Conditions. *Advanced Materials Research*, 790, 467-470. Retrieved from <https://www.scientific.net/AMR.790.467>
- Kong, L.-L., Liu, W.-T., & Zhou, Q.-X. (2014). Biochar: An Effective Amendment for Remediating Contaminated Soil. *Reviews of Environmental Contamination and Toxicology*, 228, 83-99.
- Kong, S.-H., Loh, S.-K., Bachmann, R. T., Rahim, S. A., & Salimon, J. (2014). Biochar from oil palm biomass: A review of its potential and challenges. *Renewable and Sustainable Energy Reviews*, 39, 729 - 739. doi:10.1016/j.rser.2014.07.107
- Kong, Y., et al. (2017). Supercritical drying: a promising technique on synthesis of sorbent for CO₂ capture. *International Journal of Global Warming*, 12(2), 228-241. Retrieved from <http://www.inderscience.com/info/inarticle.php?artid=84507>
- Kong, Y., Jiang, G., Wu, Y., Cui, S., & Shen, X. (2016). Amine hybrid aerogel for high-efficiency CO₂ capture: Effect of amine loading and CO₂ concentration. *Chemical Engineering Journal*, 306, 362-368. doi:<http://dx.doi.org/10.1016/j.cej.2016.07.092>
- Kong, Z. (2014). *Effects of pyrolysis conditions and biomass properties on leachability and recyclability of inorganic nutrients in biochars produced from mallee biomass pyrolysis*. Curtin University, Retrieved from http://espace.library.curtin.edu.au/R?func=dbin-jump-full&object_id=225820
- Kongmuang, R. (2019). Carbon Capture: What We Don't Talk About When We Talk About Climate Change. *TruthOut*. Retrieved from <https://truthout.org/articles/carbon-capture->

- what-we-dont-talk-about-when-we-talk-about-climate-change/
- KONGTHOD, T., Thanachit, S., Anusontpornperm, S., & Wiriyakitnateekul, W. (2015). Effects of Biochars and Other Organic Soil Amendments on Plant Nutrient Availability in an Ustoxic Quartzipsamment. *Pedosphere*, 25(5), 790 - 798. doi:10.1016/s1002-0160(15)30060-6
- König, M., Lin, S.-H., Vaes, J., Pant, D., & Klemm, E. (2021). Integration of aprotic CO₂ reduction to oxalate at a Pb catalyst into a GDE flow cell configuration. *Faraday Discussions*, 230(0), 360-374. doi:10.1039/D0FD00141D
- Konsolakis, M., Kaklidis, N., Marnellos, G. E., Zaharaki, D., & Komnitsas, K. (2015). Assessment of biochar as feedstock in a direct carbon solid oxide fuel cell. *RSC Adv.*, 5(90), 73399 - 73409. doi:10.1039/c5ra13409a
- Konz, J., Cohen, B., & van der Merwe, A. B. (2015). *Assessment of the potential to produce biochar and its application to South African soils as a mitigation measure*. Retrieved from <https://www.environment.gov.za/sites/default/files/reports/biocharreport2015.pdf>
- Kookana, R. S. (2010). The role of biochar in modifying the environmental fate, bioavailability, and efficacy of pesticides in soils: a review. *Australian Journal of Soil Research*, 48, 627-637. Retrieved from <http://www.publish.csiro.au/sr/pdf/SR10007>
- Kookana, R. S., Sarmah, A. K., Van Zwieten, L., Krull, E., & B., S. (2011). BIOCHAR APPLICATION TO SOIL: AGRONOMIC AND ENVIRONMENTAL BENEFITS AND UNINTENDED CONSEQUENCES. In D. L. Sparks (Ed.), *Advances in Agronomy San Diego* (Vol. 112, pp. 103-143). San Diego: Elsevier Academic Press Inc.
- Koomson, E. (2014). *Measurement of CO₂ Emission from Bio-Char-Amended Rice Paddy Field in the Coastal Savannah Zone of Ghana*. University of Ghana, Retrieved from <http://ugspace.ug.edu.gh/handle/123456789/5570>
- Koornneef, J., et al. (2011). Carbon Dioxide Capture and Air Quality. In N. Mazzeo (Ed.), *Chemistry, Emission Control, Radioactive Pollution and Indoor Air Quality* (pp. 17-44).
- Koornneef, J., Ramírez, A., Turkenburg, W., & Faaij, A. (2011). The environmental impact and risk assessment of CO₂ capture, transport and storage—an evaluation of the knowledge base using the DPSIR framework. *Energy Procedia*, 4, 2293-2300. doi:<https://doi.org/10.1016/j.egypro.2011.02.119>
- Koornneef, J., Ramírez, A., Turkenburg, W., & Faaij, A. (2012). The environmental impact and risk assessment of CO₂ capture, transport and storage – An evaluation of the knowledge base. *Progress in Energy and Combustion Science*, 38(1), 62-86. doi:<http://dx.doi.org/10.1016/j.pecs.2011.05.002>
- Koornneef, J., van Breevoort, P., Hamelinck, C., Hendriks, C., Hoogwijk, M., Koop, K., . . . Camps, A. (2012). Global potential for biomass and carbon dioxide capture, transport and storage up to 2050. *International Journal of Greenhouse Gas Control*, 11, 117-132. doi:10.1016/j.ijggc.2012.07.027
- Korchagin, J., Caner, L., & Bortoluzzi, E. C. (2019). Variability of amethyst mining waste: A mineralogical and geochemical approach to evaluate the potential use in agriculture. *Journal of Cleaner Production*, 210, 749-758. doi:<https://doi.org/10.1016/j.jclepro.2018.11.039>
- Kortsch, T., Hildebrand, J., & Schweizer-Ries, P. (2015). Acceptance of biomass plants – Results of a longitudinal study in the bioenergy-region Altmark. *Renewable Energy*, 83(Supplement C), 690-697. doi:<https://doi.org/10.1016/j.renene.2015.04.059>
- Kosar, U. (2020). Creating Jobs and Meeting Climate Goals: The Evolving Case for Direct Air Capture. *Medium*. Retrieved from <https://medium.com/@carbon180/creating-jobs-and-meeting-climate-goals-the-evolving-case-for-direct-air-capture-428a853223d3>
- Kosar, U. (2020). The opportunity to root carbon removal in equity and justice. Retrieved from <https://www.c2g2.net/the-opportunity-to-root-carbon-removal-in-equity-and-justice/>
- Kosar, U. (2020). We're bringing environmental justice to the forefront of our work. Retrieved

- from <https://carbon180.medium.com/were-bringing-environmental-justice-to-the-forefront-of-our-work-723b6e65e0d7>
- Kosar, U., & Suarez, V. (2021). The carbon removal field has a responsibility to the environmental justice movement. *The Deep End*. Retrieved from <https://us11.campaign-archive.com/?u=4823fd7f19ac2e684f23c310e&id=9a41fdf246>
- Kosar, U., & Suarez, V. (2021). *Removing Forward: Centering Equity and Justice in a Carbon-Removing Future*. Retrieved from <https://carbon180.org/s/Carbon180-RemovingForward.pdf>
- Koski, K., et al. (2020). *Study on States' Policies and Regulations per CO2-EOR Storage Conventional, ROZ and EOR in Shale*. Retrieved from
- Kostić, M. D., Bazargan, A., Stamenković, O. S., Veljković, V. B., & McKay, G. (2016). Optimization and kinetics of sunflower oil methanolysis catalyzed by calcium oxide-based catalyst derived from palm kernel shell biochar. *Fuel*, 163, 304 - 313. doi:10.1016/j.fuel.2015.09.042
- Kotecki, P. (2019). A Coca Cola-owned brand will sell sparkling water made with carbon dioxide captured from the atmosphere. *Business Insider*, (January 15). Retrieved from <https://www.businessinsider.com/coca-cola-owned-valser-sparkling-water-carbon-dioxide-from-atmosphere-2019-1>
- Kothandaraman, J., Goeppert, A., Czaun, M., Olah, G. A., & Prakash, G. K. S. (2016). Conversion of CO₂ from Air into Methanol Using a Polyamine and a Homogeneous Ruthenium Catalyst. *Journal of the American Chemical Society*, 138(3), 778-781. doi:10.1021/jacs.5b12354
- Kotiya, A., Sharma, M. K., & Kumar, A. (2018). Potential Biomass for Biofuels from Wastelands. In A. Kumar, S. Ogita, & Y.-Y. Yau (Eds.), *Biofuels: Greenhouse Gas Mitigation and Global Warming: Next Generation Biofuels and Role of Biotechnology* (pp. 59-79). New Delhi: Springer India.
- Kotowicz, J., Brzeczek, M., & Job, M. (2017). The influence of carbon capture and compression unit on the characteristics of ultramodern combined cycle power plant. *International Journal of Global Warming*, 12(2), 164-187. Retrieved from <http://www.inderscience.com/info/inarticle.php?artid=84511>
- Kouchachvili, L., Maffei, N., & Entchev, E. (2015). Infested ash trees as a carbon source for supercapacitor electrodes. *Journal of Porous Materials*, 22(4), 979-988. doi:10.1007/s10934-015-9972-2
- Koutcheiko, S., & Vorontsov, V. (2013). Activated Carbon Derived from Wood Biochar and Its Application in Supercapacitors. *Journal of Biobased Materials and Bioenergy*, 7(5), 733-740. Retrieved from https://www.researchgate.net/publication/255483262_Activated_Carbon_Derived_from_Wood_Biochar_and_Its_Application_in_Supercapacitors
- Kovscek, A. R., & Cakici, M. D. (2005). Geologic storage of carbon dioxide and enhanced oil recovery. II. Cooptimization of storage and recovery. *Energy Conversion and Management*, 46(11), 1941-1956. doi:<https://doi.org/10.1016/j.enconman.2004.09.009>
- Koweek, D. A., Mucciarone, D. A., & Dunbar, R. B. (2016). Bubble Stripping as a Tool To Reduce High Dissolved CO₂ in Coastal Marine Ecosystems. *Environmental Science & Technology*, 50(7), 3790-3797. doi:10.1021/acs.est.5b04733
- Koyama, S., Inazaki, F., Minamikawa, K., Kato, M., & Hayashi, H. (2015). Increase in soil carbon sequestration using rice husk charcoal without stimulating CH₄ and N₂O emissions in an Andosol paddy field in Japan. *Soil Science and Plant Nutrition*, 1 - 12. doi:10.1080/00380768.2015.1065511
- Koitsoumpa, E. I., Bergins, C., & Kakaras, E. (2018). The CO₂ economy: Review of CO₂ capture and reuse technologies. *The Journal of Supercritical Fluids*, 132, 3-16.

- doi:<https://doi.org/10.1016/j.supflu.2017.07.029>
- Kraan, S. (2013). Mass-cultivation of carbohydrate rich macroalgae, a possible solution for sustainable biofuel production. *Mitigation and Adaptation Strategies for Global Change*, 18(1), 27-46. doi:10.1007/s11027-010-9275-5
- Krack, K., Clay, S. A., Clay, D. E., & Schumacher, T. (2015). *Impact of Biochar Application on Soil Properties and Herbicide Sorption*. Paper presented at the Proceedings of the South Dakota Academy of Science.
- Kraemer, S. (2020). CEMEX and Synhelion to Demo Zero CO₂ Cement. Retrieved from <https://www.solarpaces.org/cemex-and-synhelion-to-demo-zero-co2-cement/>
- Kragt, M. E., Dumbrell, N. P., & Blackmore, L. (2017). Motivations and barriers for Western Australian broad-acre farmers to adopt carbon farming. *Environmental Science & Policy*, 73, 115-123. doi:<https://doi.org/10.1016/j.envsci.2017.04.009>
- Kraiem, T., et al. (2014). *Characterization of syngas and bio-char: Co-products from pyrolysis of waste fish fats*. Paper presented at the 5th International Renewable Energy Congress.
- Krampitz, L. O. (1988). Discovery of heterotrophic carbon dioxide utilization. *Trends in Biochemical Sciences*, 13(4), 152-154. doi:[https://doi.org/10.1016/0968-0004\(88\)90075-8](https://doi.org/10.1016/0968-0004(88)90075-8)
- Kranking, C. (2020). Scientists look to remove CO₂ from atmosphere by accelerating natural Earth processes. *Medill Reports Chicago*. Retrieved from <https://news.medill.northwestern.edu/chicago/scientists-look-to-remove-co2-from-atmosphere-by-accelerating-natural-earth-processes/>
- Krapfl, K. J., et al. (2014). Soil Properties, Nitrogen Status, and Switchgrass Productivity in a Biochar-Amended Silty Clay Loam. *Soil Science Society of America Journal*, 78(S1), S136. doi:10.2136/sssaj2013.07.0304nafsc
- Kratz, D., Wendling, I., & Pires, P. P. (2012). Mini-cutting technique of rooting Eucalyptus benthamii × E. dunnii in carbonized rice husk substrates. *Scientia Forestalis*, 40, 547-556.
- Krause, A., et al. (2018). Large uncertainty in carbon uptake potential of land-based climate-change mitigation efforts. 24, *Global Change Biology*, 3025-3038. Retrieved from <https://onlinelibrary.wiley.com/doi/pdf/10.1111/gcb.14144>
- Krause, R. M., Carley, S. R., Warren, D. C., Rupp, J. A., & Graham, J. D. (2014). "Not in (or Under) My Backyard": Geographic Proximity and Public Acceptance of Carbon Capture and Storage Facilities. *Risk Analysis*, 34(3), 529-540. doi:[doi:10.1111/risa.12119](https://doi.org/10.1111/risa.12119)
- Krause-Jensen, D., & Duarte, C. M. (2016). Substantial role of macroalgae in marine carbon sequestration. *Nature Geoscience*, 9, 737. doi:10.1038/ngeo2790
<https://www.nature.com/articles/ngeo2790#supplementary-information>
- Krause-Jensen, D., Lavery, P., Serrano, O., Marbà, N., Masque, P., & Duarte, C. M. (2018). Sequestration of macroalgal carbon: the elephant in the Blue Carbon room. *Biology Letters*, 14(6), 20180236. doi:[doi:10.1098/rsbl.2018.0236](https://doi.org/10.1098/rsbl.2018.0236)
- Krauss, C. (2019). Blamed for Climate Change, Oil Companies Invest in Carbon Removal. *New York Times*, (April 7). Retrieved from <https://www.nytimes.com/2019/04/07/business/energy-environment/climate-change-carbon-engineering.html>
- Krauss, L. (2013). Cutting Carbon Dioxide Isn't Enough. *Slate.com*. Retrieved from http://www.slate.com/articles/technology/future_tense/2013/05/direct_air_carbon_capture_technology_must_be_developed_to_help_fight_climate.html
- Krauss, M., Ruser, R., Müller, T., Hansen, S., Mäder, P., & Gattinger, A. (2017). Impact of reduced tillage on greenhouse gas emissions and soil carbon stocks in an organic grass-clover ley - winter wheat cropping sequence. *Agriculture, Ecosystems & Environment*, 239, 324-333. doi:<https://doi.org/10.1016/j.agee.2017.01.029>
- Kraxner, F. (2013). Global bioenergy scenarios - Future forest development, land-use

- implications, and trade-offs. *Biomass & Bioenergy*, 57, 86-96. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0961953413000524>
- Kraxner, F., et al. (2015). The Role of Bioenergy with Carbon Capture and Storage (BECCS) for Climate Policy. In J. Yan (Ed.), *Handbook of Clean Energy Systems* (pp. 1-19).
- Kraxner, F., Aoki, K., Kindermann, G., Leduc, S., Albrecht, F., Liu, J., & Yamagata, Y. (2016). Bioenergy and the city – What can urban forests contribute? *Applied Energy*, 165, 990-1003. doi:<http://dx.doi.org/10.1016/j.apenergy.2015.12.121>
- Kraxner, F., Aoki, K., Leduc, S., Kindermann, G., Fuss, S., Yang, J., . . . Obersteiner, M. (2014). BECCS in South Korea—Analyzing the negative emissions potential of bioenergy as a mitigation tool. *Renewable Energy*, 61, 102-108. doi:<http://dx.doi.org/10.1016/j.renene.2012.09.064>
- Kraxner, F., Leduc, S., Fuss, S., Aoki, K., Kindermann, G., & Yamagata, Y. (2014). Energy Resilient Solutions for Japan - a BECCS Case Study. *Energy Procedia*, 61(Supplement C), 2791-2796. doi:<https://doi.org/10.1016/j.egypro.2014.12.316>
- Kraxner, F., Nilsson, S., & Obersteiner, M. (2003). Negative emissions from BioEnergy use, carbon capture and sequestration (BECS)—the case of biomass production by sustainable forest management from semi-natural temperate forests. *Biomass and Bioenergy*, 24(4), 285-296. doi:[https://doi.org/10.1016/S0961-9534\(02\)00172-1](https://doi.org/10.1016/S0961-9534(02)00172-1)
- Krebs, R. B. (2015). *Caracterização do biochar de pirólise rápida (Characterization of biochar fast pyrolysis)*. Federal University of Rio Grande do Sul, Retrieved from <http://www.lume.ufrrgs.br/handle/10183/109714>
- Kreidenweis, U., et al. . (2016). Afforestation to mitigate climate change: impacts on food prices under consideration of albedo effects. *Environmental Research Letters*, 11(8). Retrieved from <http://iopscience.iop.org/article/10.1088/1748-9326/11/8/085001>
- Krekel, D., et al. (2018). The separation of CO₂ from ambient air – A techno-economic assessment. *Applied Energy*, 218, 361-381. Retrieved from <https://www.deepdyve.com/lp/elsevier/the-separation-of-co2-from-ambient-air-a-techno-economic-assessment-AqP0IVbhpX>
- Kremer, D., Etzold, S., Boldt, J., Blaum, P., Hahn, K. M., Wotruba, H., & Telle, R. (2019). Geological Mapping and Characterization of Possible Primary Input Materials for the Mineral Sequestration of Carbon Dioxide in Europe. *Minerals*, 9(8), 485. Retrieved from <https://www.mdpi.com/2075-163X/9/8/485>
- Kreuter, J. (2020). *Climate Engineering as an Instance of Politicization*(pp. 1-264). Retrieved from <https://link.springer.com/book/10.1007%2F978-3-030-60340-3>
- Kreutz, T. (2011). Prospects for producing low carbon transportation fuels from captured CO₂ in a climate constrained world. *Energy Procedia*, 4, 2121-2128. doi:<http://dx.doi.org/10.1016/j.egypro.2011.02.096>
- Krevor, S., Blunt, M. J., Trusler, J. P. M., & De Simone, S. (2020). Chapter 8 An Introduction to Subsurface CO₂ Storage. In *Carbon Capture and Storage* (pp. 238-295): The Royal Society of Chemistry.
- Krevor, S. C. M., & Lackner, K. S. (2011). Enhancing serpentine dissolution kinetics for mineral carbon dioxide sequestration. *International Journal of Greenhouse Gas Control*, 5(4), 1073-1080. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1750583611000077>
- Kreysa, G. (2009). Sustainable Management of the Global Carbon Cycle Through Geostorage of Wood. *ChemSusChem*, 2(7), 633-644. doi:<10.1002/cssc.200900102>
- Kriegler, E., et al. (2013). Is atmospheric carbon dioxide removal a game changer for climate change mitigation? *Climatic Change*, 118, 45-57. Retrieved from <https://www.pik-potsdam.de/members/edenh/publications-1/Isatmosphericcarbondioxidremovalagame.pdf>

- Krishna, A. R., Dev, L., & Thankamani, V. (2012). An integrated process for Industrial effluent treatment and Biodiesel production using Microalgae. *Research in Biotechnology*, 3(1), 47-60. Retrieved from <http://researchinbiotechnology.com/index.php/rib/article/viewFile/72/69>
- Krishna, B. B., Biswas, B., Kumar, J., Singh, R., & Bhaskar, T. (2015). Role of Reaction Temperature on Pyrolysis of Cotton Residue. *Waste and Biomass Valorization*. doi:10.1007/s12649-015-9440-x
- Krishna, B. B., Biswas, B., Ohri, P., Kumar, J., Singh, R., & Bhaskar, T. (2016). Pyrolysis of Cedrus deodara saw mill shavings in hydrogen and nitrogen atmosphere for the production of bio-oil. *Renewable Energy*. doi:10.1016/j.renene.2016.02.056
- Krishna, B. B., Singh, R., & Bhaskar, T. (2015). Effect of catalyst contact on the pyrolysis of wheat straw and wheat husk. *Fuel*, 160, 64 - 70. doi:10.1016/j.fuel.2015.07.065
- Krishna Sethi, V., & S. Dutta, P. (2018). *An Innovative Approach in Post Combustion Carbon Capture and Sequestration towards Reduction of Energy Penalty in Regeneration of Solvent*.
- Krishnakumar, S., et al. (2014). Impact of Biochar on Soil Health. *International Journal of Advanced Research*, 2(4), 933-950. Retrieved from http://www.researchgate.net/profile/Vinoth_Chekkadurai/publication/274712806_Impact_of_Biochar_on_Soil_Health/links/552744d10cf2e486ae40fd5f.pdf
- Krishnakumar, S., Rajalakshmi, G., & Balaganesh, B. (2015). Effect of black carbon in germination of maize seeds. *Environment and Ecology*, 33(2), 730-733. Retrieved from <http://www.cabdirect.org/abstracts/20153193762.html;jsessionid=B321C75A5D36617818C884B6BABD391C>
- Krishnamurthy, A., Moore, J. K., & Doney, S. C. (2008). The effects of dilution and mixed layer depth on deliberate ocean iron fertilization: 1-D simulations of the southern ocean iron experiment (SOFeX). *Journal of Marine Systems*, 71(1–2), 112-130. doi:<http://dx.doi.org/10.1016/j.jmarsys.2007.07.002>
- Kroeger, J. E., Pourhashem, G., Medlock, K. B., & Masiello, C. A. (2021). Water cost savings from soil biochar amendment: A spatial analysis. *GCB Bioenergy*, 13(1), 133-142. doi:<https://doi.org/10.1111/gcbb.12765>
- Kroumov, A. D., Scheufele, F. B., Trigueros, D. E. G., Modenes, A. N., Zaharieva, M., & Najdenski, H. (2017). Chapter 11 - Modeling and Technoeconomic Analysis of Algae for Bioenergy and Coproducts A2 - Rastogi, Rajesh Prasad. In D. Madamwar & A. Pandey (Eds.), *Algal Green Chemistry* (pp. 201-241). Amsterdam: Elsevier.
- Kruesi, M., Jovanovic, Z. R., Haselbacher, A., & Steinfeld, A. (2014). Analysis of solar-driven gasification of biochar trickling through an interconnected porous structure. *AIChE Journal*, 61(3), 867-879. doi:10.1002/aic.14672
- Kruger, T. (2015). We need to get serious about 'negative emissions' technology – fast. *The Conversation*. Retrieved from <https://theconversation.com/we-need-to-get-serious-about-negative-emissions-technology-fast-52549>
- Krüger, T. (2017). Conflicts over carbon capture and storage in international climate governance. *Energy Policy*, 100(Supplement C), 58-67. doi:<https://doi.org/10.1016/j.enpol.2016.09.059>
- Krull, E., et al. (2008). The global extent of black C in soils: is it everywhere? In G. S. Hans (Ed.), *Grasslands: Ecology, Management and Restoration* (pp. 13-17): Nova Science Publishers, Inc.
- Krull, E., Baldock, J., & Skjemstad, J. (2003). Importance of mechanisms and processes of the stabilization of soil organic matter for modeling carbon turnover. *Functional Plant Biology*, 30, 207–222. Retrieved from <http://www.publish.csiro.au/FP/pdf/FP02085>
- Krull, E., Singh, B., & Joseph, S. (2009, 10/2010). *Preface to Special Issue: Proceedings from*

- the 1st Asia-Pacific Biochar Conference, 2009, Gold Coast, Australia.* Paper presented at the 1st Asia-Pacific Biochar Conference, Gold Coast, Australia.
- Krull, E. S., Baldock, J., Skjemstad, J. O., & Smernik, R. S. (2009). Characteristics of biochar - organo-chemical properties. In *Biochar for environmental management: Science and technology* (pp. 53-66): Earthscan.
- Krupp, F., et al. (2019). Can Carbon-Removal Technologies Curb Climate Change? *Foreign Affairs, March/April*. Retrieved from <https://www.foreignaffairs.com/articles/2019-02-12/less-zero>
- Krzesinska, M., & Zachariasz, J. (2007). The effect of pyrolysis temperature on the physical properties of monolithic carbons derived from solid iron bamboo. *Journal of Analytical and Applied Pyrolysis, 80*(1), 209-215. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0165237007000393>
- Kua, H. W., & Gladys Choo, S. Y. (2019). Chapter 17 - The Use of Biochar-Coated Lime Plaster Pellets for Indoor Carbon Dioxide Sequestration. In Y. S. Ok, D. C. W. Tsang, N. Bolan, & J. M. Novak (Eds.), *Biochar from Biomass and Waste* (pp. 305-317): Elsevier.
- Kua, H. W., Pedapati, C., Lee, R. V., & Kawi, S. (2019). Effect of indoor contamination on carbon dioxide adsorption of wood-based biochar – Lessons for direct air capture. *Journal of Cleaner Production, 210*, 860-871. doi:<https://doi.org/10.1016/j.jclepro.2018.10.206>
- Kubota, H., & Shimota, A. (2017). How should Information about CCS be Shared with the Japanese Public? *Energy Procedia, 114*(Supplement C), 7205-7211. doi:<https://doi.org/10.1016/j.egypro.2017.03.1827>
- Kuch, D. (2017). “Fixing” climate change through carbon capture and storage: Situating industrial risk cultures. *Futures, 92*, 90-99. Retrieved from <https://www.sciencedirect.com/science/article/abs/pii/S001632871630146X?via%3Dihub>
- Kudo, I., Noiri, Y., Imai, K., Nojiri, Y., Nishioka, J., & Tsuda, A. (2005). Primary productivity and nitrogenous nutrient assimilation dynamics during the Subarctic Pacific Iron Experiment for Ecosystem Dynamics Study. *Progress in Oceanography, 64*(2), 207-221. doi:<https://doi.org/10.1016/j.pocean.2005.02.009>
- Kudo, I., Noiri, Y., Nishioka, J., Taira, Y., Kiyosawa, H., & Tsuda, A. (2006). Phytoplankton community response to Fe and temperature gradients in the NE (SERIES) and NW (SEEDS) subarctic Pacific Ocean. *Deep Sea Research Part II: Topical Studies in Oceanography, 53*(20–22), 2201-2213. doi:<http://dx.doi.org/10.1016/j.dsr2.2006.05.033>
- Kuhlbusch, T. A. J. (1998). Black carbon and the carbon cycle. *Science, 280*(5371), 1903-1904. Retrieved from <http://science.sciencemag.org/content/280/5371/1903>
- Kuijper, M. (2021). *Carbon Takeback Obligation: A Producers Responsibility Scheme on the Way to a Climate Neutral Energy System*. Retrieved from <https://www.gemeent.nl/bericht/carbon-takeback-obligation-a-producers-responsibility-scheme-on-the-way-to-a-climate-neutral-energy-system>
- Kuijun, L. (2016). *Multi-Scale Simulation of Carbon Capture Processes Based on Mesoporous Silica-Supported, Polyethyleneimine-Impregnated Sorbents*. (Ph.D. Dissertation/Thesis). West Virginia University, Retrieved from <https://search.proquest.com/docview/1848669049?accountid=14496>
- Kuittinen, M., Zernicke, C., Slabik, S., & Hafner, A. (2021). How can carbon be stored in the built environment? A review of potential options. *Architectural Science Review, 1*-17. doi:[10.1080/00038628.2021.1896471](https://doi.org/10.1080/00038628.2021.1896471)
- Kujanpää, L., Rauramo, J., & Arasto, A. (2011). Cross-border CO₂ infrastructure options for a CCS demonstration in Finland. *Energy Procedia, 4*, 2425-2431. doi:[http://dx.doi.org/10.1016/j.egypro.2011.02.136](https://doi.org/10.1016/j.egypro.2011.02.136)
- Kula, E. (2010). Afforestation with carbon sequestration and land use policy in Northern Ireland.

- Land Use Policy*, 27(3), 749-752. doi:<https://doi.org/10.1016/j.landusepol.2009.10.004>
- Kulkarni, & R., D. S. S. (2012). *Analysis of Equilibrium-Based TSA Processes for Direct Capture of CO₂ from Air. Industrial & Engineering Chemistry Research*, 51(25), 8631-8645. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/ie300691c?prevSearch=air%2Bcapture&searchHistoryKey=&>
- Kulshrestha, U. C. (2020). Biochar Application in Agricultural Fields may be Fatal for Solar Energy Mission and Climate Change Targets. *Current World Environment*, 15(3), 377-379. doi:10.12944/cwe.15.3.01
- Kulyk, N. (2012). *Cost-benefit analysis of the biochar application in the U.S. Cereal Crop Cultivation. Technical Report # 12*. Amherst: Center for Public Policy and Administration University of Massachusetts.
- Kuma, A., et al. (2010). Enhanced CO₂ fixation and biofuel production via microalgae: recent developments and future directions. *Trends in Biotechnology*, 28, 371-380. Retrieved from <http://lira.pro.br/wordpress/wp-content/uploads/downloads/2011/11/kumar-et-al-2011.pdf>
- Kumar, A., et al. (2015). Direct Air Capture of CO₂ by Physisorbent Materials. *Angewandte Chemie International Edition*, 54(48), 14372-14377. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/anie.201506952/full>
- Kumar, A., Ergas, S., Yuan, X., Sahu, A., Zhang, Q., Dewulf, J., . . . van Langenhove, H. (2010). Enhanced CO₂ fixation and biofuel production via microalgae: recent developments and future directions. *Trends in Biotechnology*, 28(7), 371-380. doi:<https://doi.org/10.1016/j.tibtech.2010.04.004>
- Kumar, A., & Sokhansanj, S. (2007). Switchgrass (*Panicum virgatum*, L.) delivery to a biorefinery using integrated biomass supply analysis and logistics (IBSAL) model. *Bioresource Technology*, 98(5), 1033-1044. doi:<https://doi.org/10.1016/j.biortech.2006.04.027>
- Kumar, D., & Pant, K. K. (2015). Production and characterization of biocrude and biochar obtained from non-edible de-oiled seed cakes hydrothermal conversion. *Journal of Analytical and Applied Pyrolysis*, 115, 77-86. doi:10.1016/j.jaat.2015.06.014
- Kumar, K., Dasgupta, C. N., Nayak, B., Lindblad, P., & Das, D. (2011). Development of suitable photobioreactors for CO₂ sequestration addressing global warming using green algae and cyanobacteria. *Bioresource Technology*, 102(8), 4945-4953. doi:<https://doi.org/10.1016/j.biortech.2011.01.054>
- Kumar, R., et al. (2019). Climate Change and Mitigation through Agroforestry. *International Journal of Current Microbiology and Applied Sciences*, 8(6), 1662-1667. Retrieved from <https://www.ijcmas.com/abstractview.php?ID=13296&vol=8-6-2019&SNo=198>
- Kumar, R., Bhatnagar, P. R., Kakade, V., & Dobhal, S. (2020). Tree plantation and soil water conservation enhances climate resilience and carbon sequestration of agro ecosystem in semi-arid degraded ravine lands. *Agricultural and Forest Meteorology*, 282-283, 107857. doi:<https://doi.org/10.1016/j.agrformet.2019.107857>
- Kumar, S., et al. (2011). An Assessment of U(VI) removal from groundwater using biochar produced from hydrothermal carbonization. *Journal of Environmental Management*, 92(10), 2504-2512. doi:10.1016/j.jenvman.2011.05.013
- Kumar, S., et al. (2013). Biochar preparation from *Parthenium hysterophorus* and its potential use in soil application. *Ecological Engineering*, 55, 67-72. Retrieved from <http://www.sciencedirect.com/science/article/pii/S092585741300089X>
- Kumar, S., Jain, M. C., & Chhonkar, P. K. (1987). A Note on Stimulation of Biogas Production from Cattle Dung by Addition of Charcoal. *Biological Wastes*, 20(3), 1209-1215. Retrieved from <http://www.sciencedirect.com/science/article/pii/0269748387901558>
- Kumar Sakhiya, A., Anand, A., Aier, I., Baghel, P., Vijay, V. K., & Kaushal, P. (2020). Sustainable

- utilization of rice straw to mitigate climate change: A bioenergy approach. *Materials Today: Proceedings*. doi:<https://doi.org/10.1016/j.matpr.2020.08.795>
- Kumar Shukla, A., et al. . (2020). Advances of Carbon Capture and Storage in Coal-Based Power Generating Units in an Indian Context. *Energies*, 13(16), 1-17. Retrieved from <https://www.mdpi.com/1996-1073/13/16/4124>
- Kumarathilaka, P., Mayakaduwa, S., Herath, I., & Vithanage, M. (2015). Biochar. In *Biochar: Production, Characterization, and Applications*.
- Kumari, H. B. J., Vithanage, M., Dissanayaka, D. M. S. H., Rajakaruna, R. M. P., & Seneviratne, G. (2014). *Novel Bio-Amendments For Phytotoxicity Reduction of Heavy Metals in Contaminated Soils*. Paper presented at the Agricultural Engineering and Soil Sciences - 6th Annual Research Symposium. <http://repository.rjt.ac.lk/jspui/bitstream/7013/2028/1/18.pdf>
- Kumari, K. G. I. D., Moldrup, P., Paradelo, M., & de Jonge, L. W. (2014). Phenanthrene Sorption on Biochar-Amended Soils: Application Rate, Aging, and Physicochemical Properties of Soil. *Water, Air, & Soil Pollution*, 225(9), 2105. doi:10.1007/s11270-014-2105-8
- Kumari, N., & Singh, R. K. (2019). Biofuel and co-products from algae solvent extraction. *Journal of Environmental Management*, 247, 196-204. doi:<https://doi.org/10.1016/j.jenvman.2019.06.042>
- Kump, L. R., Brantley, S. L., & Arthur, M. A. (2000). Chemical Weathering, Atmospheric CO₂, and Climate. *Annual Review of Earth and Planetary Sciences*, 28(1), 611-667. doi:10.1146/annurev.earth.28.1.611
- Kung, C.-C., et al. (2014). Environmental Impact and Bioenergy Potential: Evaluation of Agricultural Commodity and Animal Waste Based Biochar Application on Taiwanese Set-aside Land. *Energy Procedia*, 61, 679 - 682. doi:10.1016/j.egypro.2014.11.941
- Kung, C. C. (2012). Biochar Utilization in Poyang Lake Eco-Economic Zone: Chances and Difficulties. *Journal Advanced Materials Research, Renewable and Sustainable Energy II (Volumes 512 - 515)*, 347-350. doi:10.4028/www.scientific.net/AMR.512-515.347
- Kung, C. C., McCarl, B. A., & Cao, X. Y. (2013). Economics of pyrolysis-based energy production and biochar utilization: A case study in Taiwan. *Energy Policy*, 60. doi:10.1016/j.enpol.2013.05.029
- Kung, C.-C., & Chang, M.-S. (2015). Effect of Agricultural Feedstock to Energy Conversion Rate on Bioenergy and GHG Emissions. *Sustainability*, 7(5), 5981 - 5995. doi:10.3390/su7055981
- Kung, C.-C., Kong, F., & Choi, Y. (2014). Pyrolysis and biochar potential using crop residues and agricultural wastes in China. *Ecological Indicators*, 51, 139-145. doi:10.1016/j.ecolind.2014.06.043
- Kung, C.-C., McCarl, B., & Chen, C.-C. (2012). *Environmental Impact and Energy Production: Evaluation of Biochar Applicaiton on Taiwanese Set-Aside Land*. Retrieved from <http://www.usaee.org/usaee2012/submissions/OnlineProceedings/Environmental%20Impact%20and%20Energy%20Production.pdf>
- Kung, C.-C., McCarl, B. A., & CaoX, i. (2013). Economics of pyrolysis-based energy production and biochar utilization: A case study in Taiwan. *Energy Policy*, 60, 317-323. Retrieved from <https://www.sciencedirect.com/science/article/pii/S0301421513003613>
- Kung, C.-C., & Mu, J. E. (2019). Prospect of China's renewable energy development from pyrolysis and biochar applications under climate change. *Renewable and Sustainable Energy Reviews*, 114, 109343. doi:<https://doi.org/10.1016/j.rser.2019.109343>
- Kunz, R., et al. (2013). Mapping the potential water use of biofuel feedstock production in South Africa. In J. F. Dellemand & P. W. Gerbens-Leenes (Eds.), *Bioenergy and Water* (pp. 173-190): European Commission.
- Kunzig, R., & Broecker, W. S. (2009). Can technology clear the air? *New Scientist*, (January 7).

- Retrieved from <https://www.newscientist.com/article/mg20126901.200-can-technology-clear-the-air/>
- Kuoppamäki, K., Hagner, M., Lehvävirta, S., & Setälä, H. (2016). Biochar amendment in the green roof substrate affects runoff quality and quantity. *Ecological Engineering*, 88, 1 - 9. doi:10.1016/j.ecoleng.2015.12.010
- Kuparinen, K., Vakkilainen, E., Tynjälä, T. J. M., & Change, A. S. f. G. (2019). Biomass-based carbon capture and utilization in kraft pulp mills. doi:10.1007/s11027-018-9833-9
- Kuppens, T., Van Dael, M., Vanreppelen, K., Carleer, R., Yperman, J., Schreurs, S., & Van Passel, S. (2014). *Techno-Economic Assessment of Pyrolysis Char Production and Application – A Review*. Paper presented at the Institute for Materials Research, Nuclear Technology Centre, Environmental Economics, Research Institute: Centre for Environmental Sciences, Applied and Analytical Chemistry.
- Kuppusamy, S., et al. . (2016). Agronomic and remedial benefits and risks of applying biochar to soil: Current knowledge and future research directions. *Environment International*, 87, 1 - 12. doi:10.1016/j.envint.2015.10.018
- Kuppusamy, S., Krishnan, P. S., Kumutha, K., French, J., Carlos, G. E., & Toefield, B. (2011). Suitability of UK and Indian Source Acacia Wood Based Biochar as a Best Carrier Material for the Preparation of Azospirillum Inoculum. *International Journal of Biotechnology*, 4, 582-588. Retrieved from <http://ijbiotch.webs.com/ijb462011.htm>
- Kupryianchyk, D., Hale, S., Zimmerman, A. R., Harvey, O., Rutherford, D., Abiven, S., . . . Cornelissen, G. (2016). Sorption of hydrophobic organic compounds to a diverse suite of carbonaceous materials with emphasis on biochar. *Chemosphere*, 144, 879 - 887. doi:10.1016/j.chemosphere.2015.09.055
- Kupryianchyk, D., Hale, S. E., Breedveld, G. D., & Cornelissen, G. (2015). Treatment of sites contaminated with perfluorinated compounds using biochar amendment. *Chemosphere*. doi:10.1016/j.chemosphere.2015.04.085
- Kuramochi, T., Ramirez, A., Turkenburg, W., & Faaij, A. (2012). Comparative assessment of CO₂ capture technologies for carbon-intensive industrial processes. *Progress in Energy and Combustion Science*, 38(1), 87-112. doi:10.1016/j.pecs.2011.05.001
- Kuramochi, T., Ramírez, A., Turkenburg, W., & Faaij, A. (2013). Techno-economic prospects for CO₂ capture from distributed energy systems. *Renewable and Sustainable Energy Reviews*, 19, 328-347. doi:<http://dx.doi.org/10.1016/j.rser.2012.10.051>
- Kurano, N., Ikemoto, H., Miyashita, H., Hasegawa, T., Hata, H., & Miyachi, S. (1995). Fixation and utilization of carbon dioxide by microalgal photosynthesis. *Energy Conversion and Management*, 36(6), 689-692. doi:[https://doi.org/10.1016/0196-8904\(95\)00099-Y](https://doi.org/10.1016/0196-8904(95)00099-Y)
- Kurbanov, E., Vorobyov, O., Gubayev, A., Moshkina, L., & Lezhnin, S. (2007). Carbon sequestration after pine afforestation on marginal lands in the Povolgie region of Russia: A case study of the potential for a Joint Implementation activity. *Scandinavian Journal of Forest Research*, 22(6), 488-499. doi:10.1080/02827580701803080
- Kurlov, A., Broda, M., Hosseini, D., Mitchell, S. J., Pérez-Ramírez, J., & Müller, C. R. (2016). Mechanically Activated, Calcium Oxide-Based, Magnesium Oxide-Stabilized Carbon Dioxide Sorbents. *ChemSusChem*, 9(17), 2380-2390. doi:10.1002/cssc.201600510
- Kurth, V. J., MacKenzie, M. D., & DeLuca, T. H. (2006). Estimating charcoal content in forest mineral soils. *Geoderma*, 137(1-2), 135-139. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0016706106002394>
- Kurz, K. D., & Maier-Reimer, E. (1993). Iron fertilization of the Austral Ocean—The Hamburg Model Assessment. *Global Biogeochemical Cycles*, 7(1), 229-244. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1029/92GB02910/full>
- Kuse, K. (2019). USA Patent No.: U. S. P. Office.

- Kusmer, A. (2020). Can direct air capture make a real impact on climate change? *The World*. Retrieved from <https://www.pri.org/stories/2020-07-03/can-direct-air-capture-make-real-impact-climate-change>
- Kusmierz, M., & Oleszczuk, P. (2013). Biochar production increases the polycyclic aromatic hydrocarbon content in surrounding soils and potential cancer risk. *Environmental Science and Pollution Research*, 21, 3646-3652. Retrieved from <https://link.springer.com/article/10.1007/s11356-013-2334-1>
- Kuśmierz, M., Oleszczuk, P., Kraska, P., Pałys, E., & Andruszczak, S. (2016). Persistence of polycyclic aromatic hydrocarbons (PAHs) in biochar-amended soil. *Chemosphere*, 146, 272 - 279. doi:10.1016/j.chemosphere.2015.12.010
- Kusnetz, N. (2020). Exxon Touts Carbon Capture as a Climate Fix, but Uses It to Maximize Profit and Keep Oil Flowing. *Inside Climate News*. Retrieved from https://insideclimatenews.org/news/25092020/exxon-carbon-capture?utm_source=InsideClimate+News&utm_campaign=9cd7f309b9-&utm_medium=email&utm_term=0_29c928ffb5-9cd7f309b9-326466933
- Kusumo, B. H., Arbestain, M. C., Mahmud, A. F., Hedley, M. J., Hedley, C. B., Pereira, R. C., . . . Singh, B. P. (2014). Assessing biochar stability indices using near infrared spectroscopy. In.
- Kuuskraa, V. (2013). The role of enhanced oil recovery for carbon capture, use, and storage. *Greenhouse Gases: Science and Technology*, 3(1), 3-4. doi:doi:10.1002/ghg.1334
- Kuuskraa, V. A., Godec, M. L., & Dipietro, P. (2013). CO₂ Utilization from “Next Generation” CO₂ Enhanced Oil Recovery Technology. *Energy Procedia*, 37(Supplement C), 6854-6866. doi:<https://doi.org/10.1016/j.egypro.2013.06.618>
- Kuwae, T., & Hori, M. (2018). The Future of Blue Carbon: Addressing Global Environmental Issues. In T. Kuwae & M. Hori (Eds.), *Blue Carbon in Shallow Coastal Ecosystems: Carbon Dynamics, Policy, and Implementation* (pp. 347-373). Singapore: Springer Singapore.
- Kuwae, T., Kanda, J., Kubo, A., Nakajima, F., Ogawa, H., Sohma, A., & Suzumura, M. (2018). CO₂ Uptake in the Shallow Coastal Ecosystems Affected by Anthropogenic Impacts. In T. Kuwae & M. Hori (Eds.), *Blue Carbon in Shallow Coastal Ecosystems: Carbon Dynamics, Policy, and Implementation* (pp. 295-319). Singapore: Springer Singapore.
- Kuwagaki, H., & Tamura, K. (1990). Aptitude of wood charcoal to a soil improvement and other non-fuel use. In *Mitigation and Adaptation Strategies for Global Change*.
- Kuzyakov, Y., et al. (2009). Black Carbon Decomposition and Incorporation into Soil Microbial Biomass Estimated by Carbon 14 Labeling. *Soil Biology and Biochemistry*, 41, 210 - 219. Retrieved from http://www.aec.uni-bayreuth.de/kuzyakov/K_SBB_2009_14C-BC-Decomposition-MB.pdf
- Kuzyakov, Y., Bogomolova, I., & Glaser, B. (2014). Biochar stability in soil: Decomposition during eight years and transformation as assessed by compound-specific ¹⁴C analysis. *Soil Biology and Biochemistry*, 70, 229-238. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0038071713004653>
- Kwak, D.-H., & Kim, J.-K. (2017). Techno-economic evaluation of CO₂ enhanced oil recovery (EOR) with the optimization of CO₂ supply. *International Journal of Greenhouse Gas Control*, 58, 169-184. doi:<https://doi.org/10.1016/j.ijggc.2017.01.002>
- Kwan, B. (2018). The discovery giving the Great Barrier Reef a fighting chance. *SBS News*. Retrieved from <https://www.sbs.com.au/news/the-discovery-giving-the-great-barrier-reef-a-fighting-chance>
- Kwapinski, W., et al. (2010). Biochar from Biomass and Waste. *Waste and Biomass Valorization*, 1(2), 177-189. Retrieved from <https://link.springer.com/article/10.1007/s12649-010-9024-8#citeas>

- Kwiatkowski, L., Ricke, K. L., & Caldeira, K. (2015). Atmospheric consequences of disruption of the ocean thermocline. *Environmental Research Letters*, 10(3), 034016. Retrieved from <http://stacks.iop.org/1748-9326/10/i=3/a=034016>
- Kyrimis, S., Potter, M. E., Raja, R., & Armstrong, L.-M. (2021). Understanding catalytic CO₂ and CO conversion into methanol using computational fluid dynamics. *Faraday Discussions*, 230(0), 100-123. doi:10.1039/D0FD00136H
- La Shier, B. (2018). Carbon Removal Strategies: A Broad Overview Combating Climate Change Will Almost Certainly Require Removing Carbon from the Atmosphere. Retrieved from <https://www.eesi.org/articles/view/carbon-removal-strategies-a-broad-overview>
- Lab, S. N. A. (2019). First snapshots of trapped CO₂ molecules shed new light on carbon capture. *Phys.org*. Retrieved from <https://phys.org/news/2019-06-snapshots-co2-molecules-carbon-capture.html>
- Lababpour, A. (2018). A dynamic model for the prediction of flue gas carbon dioxide removal by the microalga Chlorella vulgaris in column photobioreactor. *Alexandria Engineering Journal*, 57(4), 3311-3320. doi:<https://doi.org/10.1016/j.aej.2018.01.013>
- Labbé, S. (2021). B.C. company moves to suck jet fuel out of the atmosphere. *North Shore News*. Retrieved from <https://www.nsnews.com/highlights/bc-company-moves-to-suck-jet-fuel-out-of-the-atmosphere-4180792>
- Laboratory, D. A. N. (2013). Iron fertilization, process of putting iron into ocean to help capture carbon, could backfire. *ScienceDaily*.
- Lackner, K., et. al. (2012). *The urgency of the development of CO₂ capture from ambient air*. *PNAS*, 109(33), 13156-13162. Retrieved from <http://www.pnas.org/content/109/33/13156.abstract?etoc>
- Lackner, K. (2021). How do we solve a problem like climate change? With innovations like Mechanical Trees. *Azcentral*. Retrieved from <https://www.azcentral.com/story/opinion/oped/2021/01/01/mechanical-trees-innovative-way-address-climate-change/4027597001/>
- Lackner, K., Ziolk, H.-J., & Grimes, P. (1999). *Carbon Dioxide Extraction From Air: Is It An Option?* Paper presented at the 24th Annual Technical Conference on Coal Utilization & Fuel Systems.
- Lackner, K. S. (1995). A Guide to CO₂ Sequestration. *Science*, 300(5626), 1677-1678. Retrieved from <http://science.sciencemag.org/content/300/5626/1677>
- Lackner, K. S. (2002). Carbonate Chemistry for Sequestering Fossil Carbon. *Annual Review of Energy and the Environment*, 27, 193-232. Retrieved from <http://www.annualreviews.org/doi/pdf/10.1146/annurev.energy.27.122001.083433>
- Lackner, K. S. (2003). A Guide to CO₂ Sequestration. *Science*, 300(5626), 1677-1678. doi:10.1126/science.1079033
- Lackner, K. S. (2009). Capture of carbon dioxide from ambient air. *European Physical Journal Special Topics*, 176(1), 93-106. Retrieved from <http://link.springer.com/article/10.1140%2Fepjst%2Fe2009-01150-3>
- Lackner, K. S. (2013). The thermodynamics of direct air capture of carbon dioxide. *Energy*, 50, 38-46. doi:<http://dx.doi.org/10.1016/j.energy.2012.09.012>
- Lackner, K. S. (2014). The Use of Artificial Trees. In R. E. Hester & R. M. Harrison (Eds.), *Geoengineering of the Climate System* (pp. 80-104). Cambridge: Royal Soc Chemistry.
- Lackner, K. S. (2015). *State of Direct Air Capture*. Paper presented at the Carbon Management Technologies Conference, Sugarland, TX. <https://engineering.asu.edu/cnce/wp-content/uploads/sites/69/2015/02/11.19.15-Lackner-presentation-CMTC-conference.pdf>
- Lackner, K. S. (2016). The Promise of Negative Emissions. *Science*, 354(6313), 714. Retrieved from <http://science.sciencemag.org/content/354/6313/714.1>
- Lackner, K. S., & Azarabadi, H. (2021). Buying down the Cost of Direct Air Capture. *Industrial & Engineering Chemistry Research*. doi:10.1021/acs.iecr.0c04839

- Lackner, K. S., & Brennan, S. (2009). Envisioning carbon capture and storage: expanded possibilities due to air capture, leakage insurance, and C-14 monitoring. *Climatic Change*, 96(3), 357-378. doi:10.1007/s10584-009-9632-0
- Lackner, K. S., Brennan, S., Matter, J. M., Park, A. H. A., Wright, A., & van der Zwaan, B. (2012). *Proc. Natl. Acad. Sci. U. S. A.*, 109, 13156.
- Lackner, K. S., Butt, D. P., & Wendt, C. H. (1997). Progress on binding CO₂ in mineral substrates. *Energy Conversion and Management*, 38, S259-S264. doi:[https://doi.org/10.1016/S0196-8904\(96\)00279-8](https://doi.org/10.1016/S0196-8904(96)00279-8)
- Lackner, K. S., & Jospe, C. (2017). Climate Change is a Waste Management Problem. *Issues in Science and Technology*(Spring), 83-88. Retrieved from <https://issues.org/climate-change-is-a-waste-management-problem/>
- Lackner, K. S., Wendt, C. H., Butt, D. P., Joyce, E. L., & Sharp, D. H. (1995). Carbon dioxide disposal in carbonate minerals. *Energy*, 20(11), 1153-1170. doi:[http://dx.doi.org/10.1016/0360-5442\(95\)00071-N](http://dx.doi.org/10.1016/0360-5442(95)00071-N)
- Lackner, K. S., Wilson, R., & Ziolk, H.-J. (2000). *Free-Market Approaches to Controlling Carbon Dioxide Emissions to the Atmosphere*. Paper presented at the Proceedings of the Global Warming and Energy Policy Conference,, Ft. Lauderdale, FL.
- Låg, M., et al. (2009). *Health effects of different amines and possible degradation products relevant for CO₂ capture*. Retrieved from https://brage.bibsys.no/xmlui/bitstream/handle/11250/220543/L%C3%A5g_2009_Hea.pdf?sequence=3
- Laganière, J., Angers, D. A., & Pare, D. (2010). Carbon accumulation in agricultural soils after afforestation: a meta-analysis. *Global Change Biology*, 16(1), 439-453. doi:doi:10.1111/j.1365-2486.2009.01930.x
- Laganière, J., Paré, D., Thiffault, E., & Bernier, P. Y. (2017). Range and uncertainties in estimating delays in greenhouse gas mitigation potential of forest bioenergy sourced from Canadian forests. *GCB Bioenergy*, 9(2), 358-369. doi:doi:10.1111/gcbb.12327
- Laghari, M., Hu, Z., Mirjat, M. S., Xiao, B., Tagar, A. A., & Hu, M. (2015). Fast pyrolysis biochar from sawdust improves quality of desert soils and enhances plant growth. *Journal of the Science of Food and Agriculture*, 96(1), 199-206. doi:10.1002/jsfa.7082
- Laghari, M., Mirjat, M. S., Hu, Z., Fazal, S., Xiao, B., Hu, M., . . . Guo, D. (2015). Effects of biochar application rate on sandy desert soil properties and sorghum growth. *CATENA*, 135, 313 - 320. doi:10.1016/j.catena.2015.08.013
- Laglera, L. M., Tovar-Sánchez, A., Iversen, M. H., González, H. E., Naik, H., Mangesh, G., . . . Wolf-Gladrow, D. A. (2017). Iron partitioning during LOHAFEX: Copepod grazing as a major driver for iron recycling in the Southern Ocean. *Marine Chemistry*, 196(Supplement C), 148-161. doi:<https://doi.org/10.1016/j.marchem.2017.08.011>
- Lahijani, P., Mohammadi, M., & Mohamed, A. R. (2018). Metal incorporated biochar as a potential adsorbent for high capacity CO₂ capture at ambient condition. *Journal of CO₂ Utilization*, 26, 281-293. doi:<https://doi.org/10.1016/j.jcou.2018.05.018>
- Lai, W.-Y., et al. . (2013). The effects of woodchip biochar application on crop yield, carbon sequestration and greenhouse gas emissions from soils planted with rice or leaf beet. *Journal of the Taiwan Institute of Chemical Engineers*, 44(6), 1039-1044. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1876107013001740>
- Laili, Z., Wahab, M. A., Laili, Z., Yasir, M. S., Mahmud, N. A., & Abidin, N. Z. (2015). Immobilisation Of Spent Ion Exchange Resins Using Portland Cement Blending With Organic Material. In.
- Laili, Z., Yasir, M. S., & Wahab, M. A. (2015). *AIP Conference Proceedings Solidification of radioactive waste resins using cement mixed with organic material*. Paper presented at the ADVANCING OF NUCLEAR SCIENCE AND ENERGY FOR NATIONAL DEVELOPMENT: Proceedings of the Nuclear Science, Technology, and Engineering

- Conference 2014 (NuSTEC2014), Skudai, Johor, Malaysia. <http://scitation.aip.org/content/aip/proceeding/aipcp/10.1063/1.4916876>
- Laili, Z., Yasir, M. S., Wahab, M. A., Mahmud, N. A., & Abidin, N. Z. (2015). Penilaian kekuatan mampatan matriks simen-resin terpakai yang dicampur dengan bioarang (Evaluation of compressive strength of cement-resin matrix used mixed with charcoal). *Malaysian Journal of Analytical Sciences*, 19(3), 565-573. Retrieved from http://www.ukm.my/mjas/v19_n3/pdf/ZalinaLaili_19_3_13.pdf
- Laird, D., Fleming, P., Wang, B. Q., Horton, R., & Karlen, D. (2010). Biochar impact on nutrient leaching from a Midwestern agricultural soil. *Geoderma*, 158(3-4), 436-442. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0016706110001758>
- Laird, D. A. (2008). The charcoal vision: A win-win-win scenario for simultaneously producing bioenergy, permanently sequestering carbon, while improving soil and water quality. *Agronomy Journal*, 100(1), 178-181.
- Laird, D. A., Brown, R., Amonette, J., & Lehmann, J. (2009). Review of the pyrolysis platform for coproducing bio-oil and biochar. *Biofuels, Bioproducts and Biorefining*, 3(5), 547 - 562. Retrieved from <http://www.css.cornell.edu/faculty/lehmann/publ/BiofBioproBioref%203,%20547-562,%202009%20Laird.pdf>
- Laird, D. A., Fleming, P., Davis, D. D., Horton, R., Wang, B. Q., & Karlen, D. L. (2010). Impact of biochar amendments on the quality of a typical Midwestern agricultural soil. *Geoderma*, 158(3-4), 443-449. Retrieved from <http://www.sciencedirect.com/science/article/pii/S001670611000176X>
- Laird, D. A., & Novak, J. M. (2009). Biochar and Soil Quality. In R. Lal (Ed.), *Encyclopedia of Soil Science*. New York: Taylor and Francis Group.
- Laird, D. A., Thompson, M. L., Chappell, M. A., Martens, D. A., & Wershaw, R. L. (2008). Distinguishing Black Carbon from Biogenic Humic Substances in Soil Clay Fractions. *Geoderma*, 143(1-2), 115–122. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0016706107003084>
- Lake, L. W., et al. (2014). *Fundamentals of Enhanced Oil Recovery*: Society of Petroleum Engineers.
- Lal, R., et al. (1999). Management of U.S. cropland to sequester carbon in soil. *Journal of Soil and Water Conservation*, 54(1), 374-381. Retrieved from <http://www.jswconline.org/content/54/1/374.extract>
- Lal, R. (2003). Global Potential of Soil Carbon Sequestration to Mitigate the Greenhouse Effect. *Critical Reviews in Plant Sciences*, 22(2), 151-184. doi:10.1080/713610854
- Lal, R. (2004). Carbon Sequestration in Dryland Ecosystems. *Environmental Management*, 33(4), 528-544. doi:10.1007/s00267-003-9110-9
- Lal, R. (2004). Soil Carbon Sequestration Impacts on Global Climate Change and Food Security. *Science*, 304(5677), 1623-1627. Retrieved from <http://science.sciencemag.org/content/304/5677/1623>
- Lal, R. (2004). Soil carbon sequestration to mitigate climate change. *Geoderma*, 123(1), 1-22. doi:<https://doi.org/10.1016/j.geoderma.2004.01.032>
- Lal, R. (2005). Forest soils and carbon sequestration. *Forest Ecology and Management*, 220(1–3), 242-258. doi:<http://dx.doi.org/10.1016/j.foreco.2005.08.015>
- Lal, R. (2005). World crop residues production and implications of its use as a biofuel. *Environment International*, 31(4), 575-584. doi:<https://doi.org/10.1016/j.envint.2004.09.005>
- Lal, R. (2006). Soil and environmental implications of using crop residues as biofuel feedstock. *International Sugar Journal*, 108(1287), 162-167. Retrieved from http://web.natur.cuni.cz/fyziol5/kfrserver/gztu/pdf/LAL_residues_biofuel_2006.pdf
- Lal, R., et al. (2007). Soil Carbon Sequestration to Mitigate Climate Change and Advance Food

- Security. *Soil Science*, 172(12), 943-956. Retrieved from https://journals.lww.com/soilsci/Abstract/2007/12000/Soil_Carbon_Sequestration_To_Mitigate_Climate.1.aspx
- Lal, R. (2008). Sequestration of atmospheric CO₂ in global carbon pools. *Energy & Environmental Science*, 1(1), 86-100. doi:10.1039/B809492F
- Lal, R. (2009). Sequestering Atmospheric Carbon Dioxide. *Critical Reviews in Plant Sciences*, 28(3), 90-96. doi:10.1080/07352680902782711
- Lal, R. (2009). Soils and food sufficiency. A review. *Agronomy for Sustainable Development*, 29(1), 113-133. Retrieved from <http://link.springer.com/article/10.1051/agro:2008044>
- Lal, R. (2009). Use of crop residues in the production of biofuel A2 -. In *Handbook of Waste Management and Co-Product Recovery in Food Processing* (pp. 455-478): Woodhead Publishing.
- Lal, R. (2010). Beyond Copenhagen: mitigating climate change and achieving food security through soil carbon sequestration. *Food Security*, 2(2), 169-177. doi:10.1007/s12571-010-0060-9
- Lal, R. (2010). Terrestrial sequestration of carbon dioxide (CO₂) A2 - Maroto-Valer, M. Mercedes. In *Developments and Innovation in Carbon Dioxide (CO₂) Capture and Storage Technology* (Vol. 2, pp. 271-303): Woodhead Publishing.
- Lal, R. (2011). Sequestering carbon in soils of agro-ecosystems. *Food Policy*, 36(1), S33-S39. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0306919210001454>
- Lal, R. (2013). Intensive Agriculture and the Soil Carbon Pool. *Journal of Crop Improvement*, 27(6), 735-751. doi:10.1080/15427528.2013.845053
- Lal, R. (2016). Beyond COP 21: Potential and challenges of the “4 per Thousand” initiative. *Journal of Soil and Water Conservation*, 71(1), 20A-25A. Retrieved from <http://www.jswconline.org/content/71/1/20A.extract%E2%80%8B>
- Lal, R. (2016). Biochar and Soil Carbon Sequestration. In M. Guo, Z. He, & M. Uchimiya (Eds.), *Agricultural and Environmental Applications of Biochar: Advances and Barriers* (pp. 175-198).
- Lal, R., Bouma, J., Brevik, E., Dawson, L., Field, D. J., Glaser, B., . . . Zhang, J. (2021). Soils and sustainable development goals of the United Nations (New York, USA): An IUSS perspective. *Geoderma Regional*, e00398. doi:<https://doi.org/10.1016/j.geodrs.2021.e00398>
- Lal, R., Negassa, W., & Lorenz, K. (2015). Carbon sequestration in soil. *Current Opinion in Environmental Sustainability*, 15, 79-86. doi:<https://doi.org/10.1016/j.cosust.2015.09.002>
- Lam, M. K., Lee, K. T., & Mohamed, A. R. (2012). Current status and challenges on microalgae-based carbon capture. *International Journal of Greenhouse Gas Control*, 10, 456-469. doi:<https://doi.org/10.1016/j.ijggc.2012.07.010>
- Lambe, D. (2020). Why trees really matter in the race to decarbonization. Retrieved from <https://www.weforum.org/agenda/2020/11/how-do-trees-affect-climate-change>
- Lamers, P., & Junginger, M. (2013). The ‘debt’ is in the detail: A synthesis of recent temporal forest carbon analyses on woody biomass for energy. *Biofuels, Bioproducts & Biorefining*, 7(4), 373-385. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/bbb.1407/abstract>
- Lamichhane, S., Bal Krishna, K. C., & Sarukkalige, R. (2016). Polycyclic aromatic hydrocarbons (PAHs) removal by sorption: A review. *Chemosphere*, 148, 336 - 353. doi:10.1016/j.chemosphere.2016.01.036
- Lammirato, C., Miltner, A., & Kaestner, M. (2011). Effects of wood char and activated carbon on the hydrolysis of cellobiose by beta-glucosidase from *Aspergillus niger*. *Soil Biology & Biochemistry*, 43(9), 1936-1942. Retrieved from <http://cat.inist.fr/?aModele=afficheN&cpsidt=24765751>
- Lampitt, R. S., et al. (2008). Ocean fertilization: a potential means of geoengineering?

- Philosophical Transactions of the Royal Society A*, 366(1882), 3919-3945.
- Lance, V. P., Hiscock, M. R., Hilting, A. K., Stuebe, D. A., Bidigare, R. R., Smith, W. O., & Barber, R. T. (2007). Primary productivity, differential size fraction and pigment composition responses in two Southern Ocean in situ iron enrichments. *Deep Sea Research Part I: Oceanographic Research Papers*, 54(5), 747-773. doi:<https://doi.org/10.1016/j.dsr.2007.02.008>
- Lancelot, C., Veth, C., & Mathot, S. (1991). Modelling ice-edge phytoplankton bloom in the Scotia-Weddell sea sector of the Southern Ocean during spring 1988. *Journal of Marine Systems*, 2(3), 333-346. doi:[https://doi.org/10.1016/0924-7963\(91\)90040-2](https://doi.org/10.1016/0924-7963(91)90040-2)
- Landis, D. A., Gardiner, M. M., van der Werf, W., & Swinton, S. M. (2008). Increasing corn for biofuel production reduces biocorral services in agricultural landscapes. *Proceedings of the National Academy of Sciences*, 105(51), 20552-20557. doi:[10.1073/pnas.0804951106](https://doi.org/10.1073/pnas.0804951106)
- Landry, M. R., et al. (2000). Biological response to iron fertilization in the eastern equatorial Pacific (IronEx II). III. Dynamics of phytoplankton growth and microzooplankton grazing. *Marine Ecology Progress Series*, 201, 57-72. Retrieved from <http://www.int-res.com/articles/meps/201/m201p027.pdf>
- Lang, J. O., et al. (2020). Summary of Guidance on Section 45Q Carbon Tax Credits Under 2020 Notice and Revenue Procedure. *GT Alert*. Retrieved from <https://www.gtlaw.com/en/insights/2020/3/summary-of-guidance-on-section-45q-carbon-tax-credits-under-2020-notice-and-revenue-procedure>
- Langanke, J., Wolf, A., Hofmann, J., Böhm, K., Subhani, M. A., Müller, T. E., . . . Gürtler, C. (2014). Carbon dioxide (CO₂) as sustainable feedstock for polyurethane production. *Green Chemistry*, 16(4), 1865-1870. doi:[10.1039/C3GC41788C](https://doi.org/10.1039/C3GC41788C)
- Langer, W. H., San Juan, C. A., Rau, G., & Caldeira, K. (2009). Accelerated weathering of limestone for CO₂ mitigation: Opportunities for the stone and cement industries. *Mining Engineering*, 61(2), 27-32. Retrieved from https://www.researchgate.net/profile/Ken_Caldeira/publication/283868780_Accelerated_weathering_of_limestone_for_CO2_mitigation_Opportunities_for_the_stone_and_cement_industries/links/56a9486108ae2df821651f60/Accelerated-weathering-of-limestone-for-CO2-mitigation-Opportunities-for-the-stone-and-cement-industries.pdf?origin=publication_detail
- Langholtz, M., Busch, I., Kasturi, A., Hilliard, M. R., McFarlane, J., Tsouris, C., . . . Parish, E. S. (2020). The Economic Accessibility of CO₂ Sequestration through Bioenergy with Carbon Capture and Storage (BECCS) in the US. *Land*, 9(9), 299. Retrieved from <https://www.mdpi.com/2073-445X/9/9/299>
- Lankoski, J., & Ollikainen, M. (2011). Biofuel policies and the environment: Do climate benefits warrant increased production from biofuel feedstocks? *Ecological Economics*, 70(4), 676-687. doi:[10.1016/j.ecolecon.2010.11.002](https://doi.org/10.1016/j.ecolecon.2010.11.002)
- Lannuzel, D., Chever, F., van der Merwe, P. C., Janssens, J., Roukaerts, A., Cavagna, A.-J., . . . Meiners, K. M. (2016). Iron biogeochemistry in Antarctic pack ice during SIPEX-2. *Deep Sea Research Part II: Topical Studies in Oceanography*, 131, 111-122. doi:<https://doi.org/10.1016/j.dsr2.2014.12.003>
- Lant, K. (2017). A Plant 1,000 Times More Efficient at CO₂ Removal Than Photosynthesis Is Now Active. *Futurism*. Retrieved from <https://futurism.com/a-plant-1000-times-more-efficient-at-co2-removal-than-photosynthesis-is-now-active/>
- Lapola, D. M., Schaldach, R., Alcamo, J., Bondeau, A., Koch, J., Koelking, C., & Priess, J. A. (2010). Indirect land-use changes can overcome carbon savings from biofuels in Brazil. *Proceedings of the National Academy of Sciences*, 107(8), 3388-3393. doi:[10.1073/pnas.0907318107](https://doi.org/10.1073/pnas.0907318107)

- Larjavaara, M., Kanninen, M., Gordillo, H., Koskinen, J., Kukkonen, M., Käyhkö, N., . . . Wunder, S. (2017). Global variation in the cost of increasing ecosystem carbon. *Nature Climate Change*. doi:10.1038/s41558-017-0015-7
- Larkin, A., Kuriakose, J., Sharmina, M., & Anderson, K. (2017). What if negative emission technologies fail at scale? Implications of the Paris Agreement for big emitting nations. *Climate Policy*, 1-25. doi:10.1080/14693062.2017.1346498
- Larkin, P., Bird, S., & Gattinger, M. (2021). *Carbon Capture, Utilization and Storage: Polarization, Public Confidence and Decision-Making*. Retrieved from <https://www.uottawa.ca/positive-energy/content/carbon-capture-utilization-and-storage-polarization-public-confidence-and-decision-making>
- Larsbo, M., et al. (2013). Pesticide leaching from two Swedish topsoils of contrasting texture amended with biochar. *Journal of Contaminant Hydrology*, 147, 73-81. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0169772213000156>
- Larsen, J., et al. (2019). *Capturing Leadership: Policies for the US to Advance Direct Air Capture Technology*. Retrieved from https://rhg.com/wp-content/uploads/2019/05/Rhodium_CapturingLeadership_May2019-1.pdf
- Larsen, J., et al. (2020). *Capturing New Business: The market opportunities associated with scale-up of Direct Air Capture (DAC) technology in the US*. Retrieved from <https://rhg.com/research/capturing-new-jobs-and-new-business/>
- Larsen, J., et al. (2020). *Capturing New Jobs*. Retrieved from <https://rhg.com/research/capturing-new-jobs-and-new-business/>
- Larsen, R. K., Jiwan, N., Rompas, A., Jenito, J., Osbeck, M., & Tarigan, A. (2014). Towards 'hybrid accountability' in EU biofuels policy? Community grievances and competing water claims in the Central Kalimantan oil palm sector. *Geoforum*, 54, 295-305. doi:<https://doi.org/10.1016/j.geoforum.2013.09.010>
- Larson, A. M., et al. (2013). Land tenure and REDD+: the good, the bad and the ugly. *Global Environmental Change*, 23(3), 678-689. Retrieved from <https://www.cifor.org/library/4146/>
- Larson, R. A., & Sharma, B. K. (2015). *Antioxidants from Wood-derived Pyrolyzates (Bio-oils)*. Retrieved from <https://www.ideals.illinois.edu/handle/2142/77812>
- Larson, R. W. (2015). Potential Annual and Cumulative Carbon Dioxide Removal via Biochar. In T. Goreau, R. Larson, & J. Campe (Eds.), *Geotherapy: Innovative Methods of Soil Fertility Restoration, Carbon Sequestration, and Reversing CO₂ Increase* (pp. 59-80).
- Lasco, R. D., Delfino, R. J. P., Catacutan, D. C., Simelton, E. S., & Wilson, D. M. (2014). Climate risk adaptation by smallholder farmers: the roles of trees and agroforestry. *Current Opinion in Environmental Sustainability*, 6, 83-88. doi:<https://doi.org/10.1016/j.cosust.2013.11.013>
- Lasen, M., Jackson, C., Beavan, A., Johnson, B., & Callin, R. (2015). Paper: An Investigation of Secondary Students' Engagement in a Science Inquiry through a Student–Scientist Partnership. In.
- Lashari, M. S., Liu, Y., Li, L., Pan, W., Fu, J., Pan, G., . . . Zhang, X. (2013). Effects of amendment of biochar-manure compost in conjunction with pyroligneous solution on soil quality and wheat yield of a salt-stressed cropland from Central China Great Plain. *Field Crops Research*, 144, 113–118.
- Lashari, M. S., Ye, Y., Ji, H., Li, L., Kibue, G. W., Lu, H., . . . Pan, G. (2014). Biochar-manure compost in conjunction with pyroligneous solution alleviated salt stress and improved leaf bioactivity of maize in a saline soil from Central China: A two-year field experiment. *Journal of the Science of Food and Agriculture*, n/a - n/a. doi:10.1002/jsfa.6825
- Laskosky, J. (2015). *Productivity and greenhouse gas emissions from longterm stockpiled soils treated with organic amendments*. University of Manitoba, Retrieved from <http://>

- mspace.lib.umanitoba.ca/handle/1993/30846
- Lassaletta, L., & Aguilera, E. (2015). Soil carbon sequestration is a climate stabilization wedge: Comments on Sommer and Bossio (2014). *Journal of Environmental Management*, 153, 48-49. doi:<https://doi.org/10.1016/j.jenvman.2015.01.038>
- Latasa, M., et al. (2014). Progressive decoupling between phytoplankton growth and microzooplankton grazing during an iron-induced phytoplankton bloom in the Southern Ocean (EIFEX). *Marine Ecology Progress Series*, 513, 39-50.
- Lau, W. W. Y. (2013). Beyond carbon: Conceptualizing payments for ecosystem services in blue forests on carbon and other marine and coastal ecosystem services. *Ocean & Coastal Management*, 83, 5-14. doi:<https://doi.org/10.1016/j.ocecoaman.2012.03.011>
- Laude, A., Ricci, O., Bureau, G., Royer-Adnot, J., & Fabbri, A. (2011). CO₂ capture and storage from a bioethanol plant: Carbon and energy footprint and economic assessment. *International Journal of Greenhouse Gas Control*, 5(5), 1220-1231. doi:<https://doi.org/10.1016/j.ijggc.2011.06.004>
- Laude, A. J. M., & Change, A. S. f. G. (2019). Bioenergy with carbon capture and storage: are short-term issues set aside? doi:[10.1007/s11027-019-09856-7](https://doi.org/10.1007/s11027-019-09856-7)
- Lauderdale, J. M., Braakman, R., Forget, G., Dutkiewicz, S., & Follows, M. J. (2020). Microbial feedbacks optimize ocean iron availability. *Proceedings of the National Academy of Sciences*, 201917277. doi:[10.1073/pnas.1917277117](https://doi.org/10.1073/pnas.1917277117)
- Launder, B. E., & Thompson, M. T. (2010). *Geo-engineering climate change : environmental necessity or Pandora's box?* Cambridge, UK; New York: Cambridge University Press.
- Laurens, L. M. L., Chen-Glasser, M., & McMillan, J. D. (2017). A perspective on renewable bioenergy from photosynthetic algae as feedstock for biofuels and bioproducts. *Algal Research*, 24, 261-264. doi:<https://doi.org/10.1016/j.algal.2017.04.002>
- Lauri, P., Havlík, P., Kindermann, G., Forsell, N., Böttcher, H., & Obersteiner, M. (2014). Woody biomass energy potential in 2050. *Energy Policy*, 66, 19-31. doi:<https://doi.org/10.1016/j.enpol.2013.11.033>
- Laurin-Lancôt, S. (2015). "Effet de l'amendement en biochar des sols biologiques pour une culture de tomates sous serre : Rétention en nutriments, activité biologique et régie de fertilisation (Effect of biochar amendment biological soil for tomatoes in greenhouses: Nutrient reten. Universite Laval, Retrieved from <http://theses.ulaval.ca/archimede/fichiers/31583/31583.pdf>
- Lavars, N. (2019). Algae-fueled bioreactor soaks up CO₂ 400x more effectively than trees. Retrieved from <https://newatlas.com/environment/algae-fueled-bioreactor-carbon-sequestration/>
- Lavery, P. S., et al. (2013). Variability in the Carbon Storage of Seagrass Habitats and Its Implications for Global Estimates of Blue Carbon Ecosystem Service. *Plos One*, 8, e73748. Retrieved from <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0073748>
- Lavery, T. J., Roudnew, B., Gill, P., Seymour, J., Seuront, L., Johnson, G., . . . Smetacek, V. (2010). Iron defecation by sperm whales stimulates carbon export in the Southern Ocean. *Proceedings of the Royal Society B: Biological Sciences*, 277(1699), 3527-3531. doi:[10.1098/rspb.2010.0863](https://doi.org/10.1098/rspb.2010.0863)
- Law, B. E., Hudiburg, T. W., Berner, L. T., Kent, J. J., Buotte, P. C., & Harmon, M. E. (2018). Land use strategies to mitigate climate change in carbon dense temperate forests. 115(14), 3663-3668. doi:[10.1073/pnas.1720064115](https://doi.org/10.1073/pnas.1720064115) %J Proceedings of the National Academy of Sciences
- Law, C. f. I. E. (2021). Carbon capture is not a climate solution Retrieved from https://www.ciel.org/wp-content/uploads/2021/07/CCS-Letter_FINAL_US-1.pdf
- Law, C. S. (2008). Predicting and monitoring the effects of large-scale ocean iron fertilization on

- marine trace gas emissions. *Marine Ecology Progress Series*, 364, 283-288. doi:10.3354/meps07549
- Law, C. S., Crawford, W. R., Smith, M. J., Boyd, P. W., Wong, C. S., Nojiri, Y., . . . Arychuk, M. (2006). Patch evolution and the biogeochemical impact of entrainment during an iron fertilisation experiment in the sub-Arctic Pacific. *Deep Sea Research Part II: Topical Studies in Oceanography*, 53(20–22), 2012-2033. doi:<http://dx.doi.org/10.1016/j.dsr2.2006.05.028>
- Law, C. S., & Ling, R. D. (2001). Nitrous oxide flux and response to increased iron availability in the Antarctic Circumpolar Current. *Deep Sea Research Part II: Topical Studies in Oceanography*, 48(11–12), 2509-2527. doi:[http://dx.doi.org/10.1016/S0967-0645\(01\)00006-6](http://dx.doi.org/10.1016/S0967-0645(01)00006-6)
- Law, C. S., Smith, M. J., Stevens, C. L., Abraham, E. R., Ellwood, M. J., Hill, P., . . . Walkington, C. M. (2011). Did dilution limit the phytoplankton response to iron addition in HNLCLSi sub-Antarctic waters during the SAGE experiment? *Deep Sea Research Part II: Topical Studies in Oceanography*, 58(6), 786-799. doi:<https://doi.org/10.1016/j.dsr2.2010.10.018>
- Law, C. S., Watson, A. J., Liddicoat, M. I., & Stanton, T. (1998). Sulphur hexafluoride as a tracer of biogeochemical and physical processes in an open-ocean iron fertilisation experiment. *Deep Sea Research Part II: Topical Studies in Oceanography*, 45(6), 977-994. doi:[http://dx.doi.org/10.1016/S0967-0645\(98\)00022-8](http://dx.doi.org/10.1016/S0967-0645(98)00022-8)
- Lawal OO, O. M. (2015). Stabilization of Pb in Pb Smelting Slag-Contaminated Soil by Compostmodified Bio Chars and their Effects on Maize Plant Growth. *Journal of Bioremediation & Biodegradation*, 06(04). doi:10.4172/2155-6199.1000297
- Lawford-Smith, H., & Currie, A. (2017). Accelerating the carbon cycle: the ethics of enhanced weathering. *Biology Letters*, 13(4), 1-6. Retrieved from <http://rsbl.royalsocietypublishing.org/content/13/4/20160859>
- Lawrence, C. R., Schulz, M. S., Masiello, C. A., Chadwick, O. A., & Harden, J. W. (2021). The trajectory of soil development and its relationship to soil carbon dynamics. *Geoderma*, 403, 115378. doi:<https://doi.org/10.1016/j.geoderma.2021.115378>
- Lawrence, M. G., & Schäfer, S. (2019). Promises and perils of the Paris Agreement. *Science*, 364(6443), 829-830. doi:10.1126/science.aaw4602
- Lawrence, M. G., Schäfer, S., Muri, H., Scott, V., Oschlies, A., Vaughan, N. E., . . . Scheffran, J. (2018). Evaluating climate geoengineering proposals in the context of the Paris Agreement temperature goals. *Nature Communications*, 9(1), 3734. doi:10.1038/s41467-018-05938-3
- Lawrence, M. W. (2014). Efficiency of carbon sequestration by added reactive nitrogen in ocean fertilisation. *International Journal of Global Warming*, 6(1), 15-33. doi:10.1504/ijgw.2014.058754
- Lawrinenko, M. (2014). *Anion exchange capacity of biochar*. Iowa State University, Retrieved from <http://lib.dr.iastate.edu/etd/13685/>
- Lawter, A. R., Qafoku, N. P., Asmussen, R. M., Bacon, D. H., Zheng, L., & Brown, C. F. (2017). Risk of Geologic Sequestration of CO₂ to Groundwater Aquifers: Current Knowledge and Remaining Questions. *Energy Procedia*, 114, 3052-3059. doi:<https://doi.org/10.1016/j.egypro.2017.03.1433>
- Le Brech, Y., et al. (2015). High Resolution Solid State 2D NMR Analysis of Biomass and Biochar. *Analytical Chemistry*, 87(2), 843 - 847. doi:10.1021/ac504237c
- Le Noë, J., Billen, G., & Garnier, J. (2019). Carbon Dioxide Emission and Soil Sequestration for the French Agro-Food System: Present and Prospective Scenarios. *Frontiers in Sustainable Food Systems*, 3(19). doi:10.3389/fsufs.2019.00019
- Leach, A., et al. (2009). *Co-Optimization of Enhanced Oil Recovery and Carbon Sequestration*. Retrieved from <https://poseidon01.ssrn.com/delivery.php?>

- ID=5371001000070260880850281060310710000710510060340260160250560260600
5502506508602302311703510109802400206807405008701407210106803009610612
7005007081115086126064073126113104066094005005029020064027&EXT=pdf
- Leach, A., Mason, C. F., & Veld, K. v. t. (2011). Co-optimization of enhanced oil recovery and carbon sequestration. *Resource and Energy Economics*, 33(4), 893-912. doi:<https://doi.org/10.1016/j.reseneeco.2010.11.002>
- Leach, D. J., et al. (2015). *Removing Nutrient Pollutants from Urban Stormwater Run-Off Using Adsorptive Substrates*. Paper presented at the Southeastern Section, Geological Society of America - 64th Annual Meeting. <https://gsa.confex.com/gsa/2015SE/webprogram/Paper253415.html>
- Leach, M., Fairhead, J., & Fraser, J. (2012). Green grabs and biochar: Revaluing African soils and farming in the new carbon economy. *The Journal of Peasant Studies*, 39(2), 285-307. doi:10.1080/03066150.2012.658042
- Leahy, S. (2019). Earth's rocks can absorb a shocking amount of carbon: here's how. *National Geographic*. Retrieved from <https://www.nationalgeographic.com/science/2019/10/earth-rocks-can-absorb-shocking-amount-of-carbon/>
- Learn, J. (2014). Are Record Salmon Runs in the Northwest the Result of a Controversial CO₂ Reduction Scheme? *ClimateWire*. Retrieved from <https://www.eenews.net/stories/1060008722>
- Learn, J. (2014). Legal mess hampers understanding of a major CO₂ sequestration test. *ClimateWire*. Retrieved from <https://www.eenews.net/stories/1060008800>
- Learn, J. (2017, 11/15/2017 Nov 15). Carbon capture sees significant milestones in 2017 despite Kemper setback. *SNL Energy Daily Coal Report*. Retrieved from <https://search.proquest.com/docview/1964904100?accountid=14496>
- http://ucelinks.cdlib.org:8888/sfx_local?url_ver=Z39.88-2004&rft_val_fmt=info:ofi/fmt:kev:mtx:journal&genre=unknown&sid=ProQ:ProQ%3Aenvscijournals&atitle=Carbon+capture+sees+significant+milestones+in+2017+despite+Kemper+setback&title=SNL+Energy+Daily+Coal+Report&issn=19357311&date=2017-11-15&volume=&issue=&spage=&au=Learn%2C+Joshua&isbn=&jtitle=SNL+Energy+Daily+Coal+Report&btitle=&rft_id=info:eric/&rft_id=info:doi/
- Lebling, K. (2020). 3 ways we could store carbon in the ocean - without harming it. *World Economic Forum*. Retrieved from <https://www.weforum.org/agenda/2020/10/leveraging-oceans-carbon-removal-potential/>
- Lebling, K. (2021). Direct Air Capture: Resource Considerations and Costs for Carbon Removal. Retrieved from <https://www.wri.org/blog/2021/01/direct-air-capture-definition-cost-considerations>
- Lebling, K., & Northrop, E. (2020). Leveraging the Ocean's Carbon Removal Potential. Retrieved from <https://www.wri.org/blog/2020/10/ocean-carbon-dioxide-sequestration>
- Lebo, J. A., Huckins, J. N., Petty, J. D., Cranor, W. L., & Ho, K. T. (2003). Comparisons of coarse and fine versions of two carbons for reducing the bioavailabilities of sediment-bound hydrophobic organic contaminants. *Chemosphere*, 50(10), 1309-1317. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/12586162>
- LeCroy, C., et al. . (2012). Nitrogen, biochar, and mycorrhizae: Alteration of the symbiosis and oxidation of the char surface. *Soil Biology and Biochemistry*, 58, 248-254. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0038071712004671>
- Lee, B.-K., & Nguyen, M.-V. (2014). Cu²⁺ ion adsorption from aqueous solutions by amine activated poultry manure biochar. *Journal of Selcuk University Natural and Applied Science*. Retrieved from <http://www.josunas.org/login/index.php/josunas/article/view/438>
- Lee, D.-H. (2017). Econometric assessment of bioenergy development. *International Journal of*

- Hydrogen Energy*, 42(45), 27701-27717. doi:<https://doi.org/10.1016/j.ijhydene.2017.08.055>
- Lee, J., Xiao, Y., Seong-Heo, C., & Kwon, E. (2017). Pyrolysis process of agricultural waste using CO₂ for waste management, energy recovery, and biochar fabrication. *Applied Energy*, 185, 214-222. Retrieved from https://www.researchgate.net/publication/309589573_Pyrolysis_process_of_agricultural_waste_using_CO2_for_waste_management_energy_recovery_and_biochar_fabrication
- Lee, J.-S. M., Rochelle, G., Styring, P., Fennell, P., Wilson, G., Trusler, M., . . . Smit, B. (2016). CCS – A technology for now: general discussion. *Faraday Discussions*, 192(0), 125-151. doi:10.1039/C6FD90052F
- Lee, J. W., et al. (2010). Characterization of Biochars Produced from Cornstovers for Soil Amendment. *Environmental Science and Technology*, 44(20), 7970–7974. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/es101337x>
- Lee, J. W., et al. (2010). Sustainability: the capacity of smokeless biomass pyrolysis for energy production, global carbon capture and sequestration. *Energy & Environmental Science*, 3(11), 1695-1705. doi:10.1039/c004561f
- Lee, J. W., et al. (2013). Biochar Fertilizer for Soil Amendment and Carbon Sequestration. In *Advanced Biofuels and Bioproducts* (Vol. 2, pp. 57-68).
- Lee, J. W., et al. (2013). Oxygenation of Biochar for Enhanced Cation Exchange Capacity. In *Advanced Biofuels and Bioproducts* (Vol. 2, pp. 35-45).
- Lee, J. W., & Day, D. M. (2013). Smokeless Biomass Pyrolysis for Producing Biofuels and Biochar as a Possible Arsenal to Control Climate Change. In *Advanced Biofuels and Bioproducts* (Vol. 2, pp. 23-34).
- Lee, J. W., Hawkins, B., Day, D. M., & Reicosky, D. C. (2010). Sustainability: the capacity of smokeless biomass pyrolysis for energy production, global carbon capture and sequestration. *Energy & Environmental Science*, 3(11), 1695-1705. doi:10.1039/C004561F
- Lee, J. W., & Li, R. (2003). Integration of fossil energy systems with CO₂ sequestration through NH₄HCO₃ production. *Energy Conversion and Management*, 44(9), 1535-1546. doi:[https://doi.org/10.1016/S0196-8904\(02\)00149-8](https://doi.org/10.1016/S0196-8904(02)00149-8)
- Lee, J. W., Smith, C., & Buzan, E. (2012). Potential Impact of Biochar Water-Extractable Substances on Environmental Sustainability. *ACS Sustainable Chemical Engineering*, 1(1), 116-126. doi:10.1021/sc300063f
- Lee, K. S. B., Fyson, C., & Schleussner, C.-F. (2021). Fair distributions of carbon dioxide removal obligations and implications for effective national net-zero targets. *Environmental Research Letters*. Retrieved from <http://iopscience.iop.org/article/10.1088/1748-9326/ac1970>
- Lee, M., & Den, W. (2015). Life cycle value analysis for sustainability evaluation of bioenergy products. *Journal of Cleaner Production*. doi:10.1016/j.jclepro.2015.11.073
- Lee, O. K., Seong, D. H., Lee, C. G., & Lee, E. Y. (2015). Sustainable production of liquid biofuels from renewable microalgae biomass. *Journal of Industrial and Engineering Chemistry*. doi:10.1016/j.jiec.2015.04.016
- Lee, S., Kim, J.-W., Chae, S., Bang, J.-H., & Lee, S.-W. (2016). CO₂ sequestration technology through mineral carbonation: An extraction and carbonation of blast slag. *Journal of CO₂ Utilization*, 16, 336-345. doi:<https://doi.org/10.1016/j.jcou.2016.09.003>
- Lee, S., Liang, L., Riestenberg, D., West, O. R., Tsouris, C., & Adams, E. (2003). CO₂ Hydrate Composite for Ocean Carbon Sequestration. *Environmental Science & Technology*, 37(16), 3701-3708. doi:10.1021/es026301l
- Lee, S. E., et al. . (2011). Effects of Biochar on Soil Quality and Heavy Metal Availability in a Military Shooting Range Soil in Korea. 67-77. Retrieved from <http://>

www.papersearch.net/view/detail.asp?detail_key=09405130

- Lee, S.-J., Park, J. H., Ahn, Y.-T., & Chung, J. W. (2015). Comparison of Heavy Metal Adsorption by Peat Moss and Peat Moss-Derived Biochar Produced Under Different Carbonization Conditions. *Water, Air, & Soil Pollution*, 226(2). doi:10.1007/s11270-014-2275-4
- Lee, S. S., et al. . (2015). Synergy effects of biochar and polyacrylamide on plants growth and soil erosion control. *Environmental Earth Sciences*, 74(3), 2463-2473. doi:10.1007/s12665-015-4262-5
- Lee, T. S., Cho, J. H., & Chi, S. H. (2015). Carbon dioxide removal using carbon monolith as electric swing adsorption to improve indoor air quality. *Building and Environment*, 92, 209-221. doi:<https://doi.org/10.1016/j.buildenv.2015.04.028>
- Lee, W. R., Hwang, S. Y., Ryu, D. W., Lim, K. S., Han, S. S., Moon, D., . . . Hong, C. S. (2014). Diamine-functionalized metal–organic framework: exceptionally high CO₂ capacities from ambient air and flue gas, ultrafast CO₂ uptake rate, and adsorption mechanism. *Energy & Environmental Science*, 7(2), 744-751. doi:10.1039/C3EE42328J
- Lee, Y., et al. (2013). Characteristics of biochar produced from slow pyrolysis of Geodae-Uksae 1. *Bioresource Technology*, 130, 345 - 350. doi:10.1016/j.biortech.2012.12.012
- Lee, Y., Eum, P.-R.-B., Ryu, C., Park, Y.-K., Jung, J.-H., & Hyun, S. (2012). Characteristics of Biochar Produced from Slow Pyrolysis of Geodae-Uksae 1. *Bioresource Technology*.
- Lee, Y., Park, J., Gang, K. S., Ryu, C., Yang, W., Jung, J.-H., & Hyun, S. (2015). Production and characterization of Biochar from Various Biomass materials By slow Pyrolysis. In.
- Lee, Y., Park, J., Ryu, C., Gang, K. S., Yang, W., Park, Y.-K., . . . Hyun, S. (2013). Comparison of Biochar Properties from Biomass Residues Produced by Slow Pyrolysis at 500 °C. *Bioresource Technology*.
- Lee, Y. H., Kwon, Y., Kim, C., Hwang, Y.-E., Choi, M., Park, Y., . . . Koh, D.-Y. (2021). Controlled Synthesis of Metal–Organic Frameworks in Scalable Open-Porous Contactor for Maximizing Carbon Capture Efficiency. *JACS Au*. doi:10.1021/jacsau.1c00068
- Leenes, W. G. (2013). The water footprint of biofuels from microalgae. In J. F. Dellemand & P. W. Gerbens-Leenes (Eds.), *Bioenergy and Water* (pp. 191-200): European Commission.
- Leenes, W. G. (2013). Water footprint quantification of energy at global level. In J. F. Dellemand & P. W. Gerbens-Leenes (Eds.), *Bioenergy and Water* (pp. 61-76): European Commission.
- Leeson, D., Ramirez, A., & Mac Dowell, N. (2020). Chapter 9 Carbon Capture and Storage from Industrial Sources. In *Carbon Capture and Storage* (pp. 296-314): The Royal Society of Chemistry.
- Lefebvre, D., Goglio, P., Williams, A., Manning, D. A. C., de Azevedo, A. C., Bergmann, M., . . . Smith, P. (2019). Assessing the potential of soil carbonation and enhanced weathering through Life Cycle Assessment: A case study for Sao Paulo State, Brazil. *Journal of Cleaner Production*, 233, 468-481. doi:<https://doi.org/10.1016/j.jclepro.2019.06.099>
- Lefebvre, D., Williams, A., Kirk, G. J. D., Meersmans, J., Sohi, S., Goglio, P., & Smith, P. (2021). An anticipatory life cycle assessment of the use of biochar from sugarcane residues as a greenhouse gas removal technology. *Journal of Cleaner Production*, 127764. doi:<https://doi.org/10.1016/j.jclepro.2021.127764>
- Lefebvre, D., Williams, A., Meersmans, J., Kirk, G. J. D., Sohi, S., Goglio, P., & Smith, P. (2020). Modelling the potential for soil carbon sequestration using biochar from sugarcane residues in Brazil. *Scientific Reports*, 10(1), 19479. doi:10.1038/s41598-020-76470-y
- Lefèvre, D., Guiguer, C., & Obernosterer, I. (2008). The metabolic balance at two contrasting sites in the Southern Ocean: The iron-fertilized Kerguelen area and HNLC waters. *Deep Sea Research Part II: Topical Studies in Oceanography*, 55(5), 766-776. doi:<https://doi.org/10.1016/j.dsrr.2007.12.006>
- Leffler, T., Brackmann, C., Berg, M., Aldén, M., & Li, Z. (2017). Online Alkali Measurement

- during Oxy-fuel Combustion. *Energy Procedia*, 120(Supplement C), 365-372. doi:<https://doi.org/10.1016/j.egypro.2017.07.217>
- Legendre, L., Rivkin, R. B., & Jiao, N. Z. (2018). Advanced experimental approaches to marine water-column biogeochemical processes. *ICES Journal of Marine Science*, 75(1), 30-42. doi:10.1093/icesjms/fsx146
- Leger, D., Matassa, S., Noor, E., Shepon, A., Milo, R., & Bar-Even, A. (2021). Photovoltaic-driven microbial protein production can use land and sunlight more efficiently than conventional crops. *Proceedings of the National Academy of Sciences*, 118(26), e2015025118. doi:10.1073/pnas.2015025118
- Legislators, N. C. o. E. (2017). Carbon Farming Study Included in NY Budget. Retrieved from <http://ncel.net/2017/06/26/carbon-farming-study-included-ny-budget/>
- Lehahn, Y., et al. (2016). Global potential of offshore and shallow waters macroalgal biorefineries to provide for food, chemicals and energy: feasibility and sustainability. *Algal Research*, 17, 150-160. Retrieved from https://ylhomepage.files.wordpress.com/2016/05/lehahn_ar_2016.pdf
- Lehmann, J., et al. (1998). Below-Ground Interactions in Dryland Agroforestry. *Forest Ecology and Management*, 111, 157-169. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0378112798003223>
- Lehmann, J., et al. (1998). Short-Term Effects of Soil Amendment with Legume Tree Biomass on Carbon and Nitrogen in Particle Size Fractions in Central Togo. *Soil Biology and Biochemistry*, 30(12), 1545-1552. Retrieved from <http://www.css.cornell.edu/faculty/lehmann/publ/SoilBiolBiochem%2030,%201545-1552,%201998%20Lehmann.pdf>
- Lehmann, J., et al. (2003). *Amazonian Dark Earths: Origin, Properties, Management*. Amsterdam: Kluwer Academic Publishers.
- Lehmann, J., et al. (2003). Nutrient Availability and Leaching in an Archaeological Anthrosol and a Ferralsol of the Central Amazon Basin: Fertilizer, Manure and Charcoal Amendments. *Plant and Soil*, 249, 343-357. Retrieved from <http://www.css.cornell.edu/faculty/lehmann/publ/PlantSoil%20249,%20343-357,%202003%20Lehmann.pdf>
- Lehmann, J., et al. (2004). Subsoil Retention of Organic and Inorganic Nitrogen in a Brazilian Savanna Oxisol. *Soil Use and Management*, 20, 163-172. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/j.1475-2743.2004.tb00352.x/abstract>
- Lehmann, J., et al. (2005). Near-Edge X-Ray Absorption Fine Structure (NEXAFS) Spectroscopy for Mapping Nano-Scale Distribution of Organic Carbon Forms in Soil: Application to Black Carbon Particles. *Global Biogeochemical Cycles*, 19(1), 1-12.
- Lehmann, J. (2007). Biochar for Mitigating Climate Change: Carbon Sequestration in the Black. *Forum Geooekologie*, 18(2), 15-17. Retrieved from http://geooekologie.de/download_forum/forum_2007_2_spfo072b.pdf
- Lehmann, J. (2007). Bio-energy in the Black. *Frontiers in Ecology*, 5(7), 381-387. Retrieved from <http://www.css.cornell.edu/faculty/lehmann/publ/FrontiersEcolEnv%205,%20381-387,%202007%20Lehmann.pdf>
- Lehmann, J. (2007). Environmentally Friendly Bioenergy. *Scitizen*. Retrieved from http://scitizen.com/future-energies/environmentally-friendly-bioenergy_a-14-709.html
- Lehmann, J. (2007). A handful of carbon. *Nature*, 447(7141), 143-144. Retrieved from <http://dx.doi.org/10.1038/447143a>
- Lehmann, J., et al. (2008). Australian Climate-Carbon Cycle Feedback Reduced by Soil Black Carbon. *Nature Geoscience*, 1, 832-835. Retrieved from <http://www.nature.com/ngeo/journal/v1/n12/abs/ngeo358.html>
- Lehmann, J., et al. (2009). Bacterial Community Composition in Brazilian Anthrosols and Adjacent Soils Characterized Using Culturing and Molecular Identification. *Microbial Ecology*, 58, 23-35. Retrieved from <http://www.css.cornell.edu/faculty/lehmann/publ/>

- MicrobEcol%2058,%202023-35,%202009%20ONeill.pdf
- Lehmann, J., et al. (2009). Biogenic calcium phosphate transformation in soils over millennial time scales. *Journal of Soils and Sediments*, 3, 194 - 205. Retrieved from <http://www.nature.com/ngeo/journal/v1/n12/abs/ngeo358.html>
- Lehmann, J. (2009). Biological carbon sequestration must and can be a win-win approach. *Climatic Change*, 97(3), 459. doi:10.1007/s10584-009-9695-y
- Lehmann, J., et al. (2009). Stability of biochar in soil. In L. Johannes & J. Stephen (Eds.), *Biochar for environmental management: Science and technology* (pp. 183-206). London, UK: Earthscan.
- Lehmann, J., et al. . (2011). Biochar effects on soil biota – A review. *Soil Biology and Biochemistry*, 43(9), 1812-1836. doi:10.1016/j.soilbio.2011.04.022
- Lehmann, J., et al. (2015). Biochars and the plant-soil interface. *Plant and Soil*, 395(1-2), 1 - 5. doi:10.1007/s11104-015-2658-3
- Lehmann, J., et al. (2015). Persistence of Biochar in Soil. In *Biochar For Environmental Engineering*.
- Lehmann, J., Cravo, M. S., & Zech, W. (2001). Organic Matter Stabilization in a Xanthic Ferralsol of the Central Amazon as Affected by Single Trees: Chemical Characterization of Density, Aggregate and Particle Size Fractions. *Geoderma*, 99(1-2), 147-168. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0016706100000707>
- Lehmann, J., Gaunt, J., Rondon, M. J. M., & Change, A. S. f. G. (2006). Bio-char Sequestration in Terrestrial Ecosystems – A Review. 11(2), 403-427. doi:10.1007/s11027-005-9006-5
- Lehmann, J., Hansel, C. M., Kaiser, C., Kleber, M., Maher, K., Manzoni, S., . . . Kögel-Knabner, I. (2020). Persistence of soil organic carbon caused by functional complexity. *Nature Geoscience*, 13(8), 529-534. doi:10.1038/s41561-020-0612-3
- Lehmann, J., & Joseph, S. (2009). Biochar for environmental management: An introduction. In J. Lehmann & S. Joseph (Eds.), *Biochar for environmental management science and technology*. Washington D.C.: Earthscan, London.
- Lehmann, J., & Joseph, S. (2009). *Biochar for Environmental Management: Science and Technology*. London, UK: Earthscan.
- Lehmann, J., & Joseph, S. (2009). Biochar Systems. In *Biochar for Environmental Management: Science and Technology* (pp. 147-168). London, UK: Earthscan.
- Lehmann, J., Kinyangi, J., & Solomon, D. (2007). Organic Matter Stabilization in Soil Microaggregates: Implications from Spatial Heterogeneity of Organic Carbon Contents and Carbon Forms. *Biogeochemistry*, 85(1), 45-57. Retrieved from <https://link.springer.com/article/10.1007/s10533-007-9105-3>
- Lehmann, J., & Kleber, M. (2015). The contentious nature of soil organic matter. *Nature*, 528, 60. doi:10.1038/nature16069
- Lehmann, J., & Possinger, A. (2020). Removal of atmospheric CO₂ by rock weathering holds promise for mitigating climate change. *Nature*, 583(July 9), 204-205. Retrieved from <https://www.nature.com/articles/d41586-020-01965-7>
- Lehmann, J., & Rondon, M. (2006). Bio-char soil management on highly weathered soils in the humid tropics. *Biological approaches to sustainable soil systems*, 517-530.
- Lehmann, J., & Saran, S. (2008). Comment on "Fire-Derived Charcoal Causes Loss of Forest Humus". In (5894 ed., Vol. 321, pp. 1295).
- Lehmann, J., & Stephen, J. (2009). Biochar for Environmental Management - An Introduction. In *Biochar for Environmental Management: Science and Technology* (pp. 1-12). London, UK: Earthscan.
- Lehrer II, J. (2021). Monetizing the Section 45Q Tax Credit: The Key to Carbon Sequestration. *JD Supra*. Retrieved from <https://www.jdsupra.com/legalnews/monetizing-the-section-45q-tax-credit-2165203/>

- Lehtonen, J., et al. (2019). *The Carbon Reuse Economy: Transforming CO₂ from a Pollutant into a Resource*. Retrieved from <https://doi.org/10.32040/2019.978-951-38-8709-4>
- Lehtveer, M. (2018). BECCS in Climate Scenarios. In M. Fridahl (Ed.), *Bioenergy with carbon capture and storage: From global potentials to domestic realities* (pp. 7-15).
- Lei, H., et al. (2009). The Effects of Reaction Temperature and Time and Particle Size of Corn Stover on Microwave Pyrolysis. *Energy Fuels*, 23(6), 3254–3261. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/ef9000264>
- Leifeld, J. (2007). Thermal stability of black carbon characterised by oxidative differential scanning calorimetry. *Organic Geochemistry*, 38(1), 112-127. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0146638006002087>
- Leifeld, J., Fenner, S., & Muller, M. (2007). Mobility of black carbon in drained peatland soils. *Biogeosciences*, 4(3), 425-432. Retrieved from <http://www.biogeosciences.net/4/425/2007/>
- Leigh, D. (2020). Interview with Antti Vihavainen, Co-Founder at B2B Carbon Removal Marketplace Puro.earth. Retrieved from <https://techround.co.uk/interviews/interview-with-antti-vihavainen-co-founder-at-b2b-carbon-removal-marketplace-puro-earth/amp/>
- Leinen, M. (2008). Building relationships between scientists and business in ocean iron fertilization. *Marine Ecology Progress Series*, 364, 251-256. Retrieved from <http://www.int-res.com/abstracts/meps/v364/p251-256/>
- Leinen, M. (2008). Building relationships between scientists and business in ocean iron fertilization. *Marine Ecology Progress Series*, 364, 251-256. Retrieved from <https://www.int-res.com/abstracts/meps/v364/p251-256/>
- Leinweber, P., Schulten, H. R., & Kerschens, M. (1995). Hot water extracted organic matter: chemical composition and temporal variations in a long-term field experiment. *Biology and Fertility in Soils*, 20(1), 17-23. Retrieved from <https://link.springer.com/article/10.1007/BF00307836>
- Leite, D. C. A., et al. (2014). Comparison of DNA extraction protocols for microbial communities from soil treated with biochar. *Brazilian Journal of Microbiology*, 45(1), 175-183. Retrieved from http://www.scielo.br/scielo.php?pid=S1517-83822014000100023&script=sci_arttext
- Leitner, W., & Schmitz, M. (2021). Concluding remarks: Carbon dioxide utilization: where are we now?... and where are we going? *Faraday Discussions*, 230(0), 413-426. doi:10.1039/D1FD00038A
- Lemieux, J.-M. (2011). Review: The potential impact of underground geological storage of carbon dioxide in deep saline aquifers on shallow groundwater resources. *Hydrogeology Journal*, 4, 757-778. Retrieved from <https://www.springerprofessional.de/en/review-the-potential-impact-of-underground-geological-storage-of/11677912#pay-wall>
- Lemoine, D. (2020). *Incentivizing Negative Emissions Through Carbon Shares*. Retrieved from <https://www.nber.org/papers/w27880>
- Lemoine, D. (2021). Incentivizing Negative Emissions Through Carbon Shares. Retrieved from https://conference.nber.org/conf_papers/f150627/f150627.pdf
- Lemoine, D. (2021). A policy framework for achieving negative emissions *Vox EU CEPR*. Retrieved from <https://voxeu.org/article/policy-framework-achieving-negative-emissions>
- Lemoine, D. M., Fuss, S., Szolgayova, J., Obersteiner, M., & Kammen, D. M. (2012). The influence of negative emission technologies and technology policies on the optimal climate mitigation portfolio. *Climatic Change*, 113(2), 141-162. doi:10.1007/s10584-011-0269-4
- Lempert, R. J., et al. (2018). *Is Climate Restoration an Appropriate Climate Policy Goal?* Retrieved from https://www.rand.org/pubs/research_reports/RR2442.html
- Lemus, R. (2013). Nutrient Management in Biofuel Crop Production. In B. P. Singh (Ed.), *Biofuel*

Crop Sustainability (pp. 301-324).

- Lemus, R., Brummer, E. C., Moore, K. J., Molstad, N. E., Burras, C. L., & Barker, M. F. (2002). Biomass yield and quality of 20 switchgrass populations in southern Iowa, USA. *Biomass and Bioenergy*, 23(6), 433-442. doi:[https://doi.org/10.1016/S0961-9534\(02\)00073-9](https://doi.org/10.1016/S0961-9534(02)00073-9)
- Lemus, R., & Lal, R. (2005). Bioenergy Crops and Carbon Sequestration. *Critical Reviews in Plant Sciences*, 24(1), 1-21. doi:[10.1080/07352680590910393](https://doi.org/10.1080/07352680590910393)
- Lenczewski, M. (2014). *Incorporating Undergraduate Geology, Engineering, and Business Students Into Examining Fluoride and Arsenic Issues in Groundwater in San Miguel de Allende, Mexico*. Paper presented at the 2014 GSA Annual Meeting in Vancouver, British Columbia. https://gsa.confex.com/gsa/2014AM/finalprogram/abstract_250330.htm
- Leng, J. Y., Chen, J. W., Huang, H. C., Lin, S., Liu, M. Z., & Liu, J. B. (2014). Impact of Structure Design of Artificial Upwelling Tube. *Applied Mechanics and Materials*, 496-500, 547-550. doi:[10.4028/www.scientific.net/AMM.496-500.547](https://doi.org/10.4028/www.scientific.net/AMM.496-500.547)
- Leng, L., Li, J., Yuan, X., Li, J., Han, P., Hong, Y., . . . Zhou, W. (2018). Beneficial synergistic effect on bio-oil production from co-liquefaction of sewage sludge and lignocellulosic biomass. *Bioresource Technology*, 251, 49-56. doi:<https://doi.org/10.1016/j.biortech.2017.12.018>
- Leng, L., Yuan, X., Huang, H., Shao, J., Wang, H., Chen, X., & Zeng, G. (2015). Bio-char derived from sewage sludge by liquefaction: characterization and application for dye adsorption. *Applied Surface Science*, 346, 223-231. doi:[10.1016/j.apsusc.2015.04.014](https://doi.org/10.1016/j.apsusc.2015.04.014)
- Leng, L., Yuan, X., Shao, J., Huang, H., Wang, H., Li, H., . . . Zeng, G. (2016). Study on demetalization of sewage sludge by sequential extraction before liquefaction for the production of cleaner bio-oil and bio-char. *Bioresource Technology*, 200, 320 - 327. doi:[10.1016/j.biortech.2015.10.040](https://doi.org/10.1016/j.biortech.2015.10.040)
- Leng, L., Yuan, X., Zeng, G., Shao, J., Chen, X., Wu, Z., . . . Peng, X. (2015). Surface characterization of rice husk bio-char produced by liquefaction and application for cationic dye (Malachite green) adsorption. *Fuel*, 155, 77-85. doi:[10.1016/j.fuel.2015.04.019](https://doi.org/10.1016/j.fuel.2015.04.019)
- Leng, R. A., Inthapanya, S. a., & Preston, T. (2012). Methane production is reduced in an in vitro incubation when the rumen fluid is taken from cattle that previously received biochar in their diet. *Livestock Research for Rural Development*, 24(11). Retrieved from <http://lrrd.cipav.org.co/lrrd24/11/sang24211.htm>
- Leng, R. A., Inthapanya, S., & Preston, T. (2012). Biochar lowers net methane production from rumen fluid in vitro. *Livestock Research for Rural Development*, 24(6). Retrieved from <http://lrrd.cipav.org.co/lrrd24/6/sang24103.htm>
- Leng, R. A., Preston, T., & Inthapanya, S. (2012). Biochar reduces enteric methane and improves growth and feed conversion in local "Yellow" cattle fed cassava root chips and fresh cassava foliage. *Livestock Research for Rural Development*, 24(11). Retrieved from <http://www.lrrd.org/public-lrrd/proofs/lrrd2411/leng24199.htm>
- Lenton, A., et al. (2017). How will Earth respond to plans for carbon dioxide removal? *EOS*, 98. Retrieved from <https://doi.org/10.1029/2017EO068385>
- Lenton, A. (2018). Assessing carbon dioxide removal through global and regional ocean alkalinization under high and low emission pathways. *Earth System Dynamics*, 9, 339-357. Retrieved from <https://www.earth-syst-dynam.net/9/339/2018/esd-9-339-2018-discussion.html>
- Lenton, T. M. (2010). The potential for land-based biological CO₂ removal to lower future atmospheric CO₂ concentration. *Carbon Management*, 1(1), 145-160. Retrieved from <http://www.tandfonline.com/doi/pdf/10.4155/cmt.10.12>
- Lenton, T. M. (2014). The Global Potential for Carbon Dioxide Removal. In R. E. Hester & R. M.

- Harrison (Eds.), *Geoengineering of the Climate System* (pp. 52-79). Cambridge: Royal Soc Chemistry.
- Lenton, T. M., & Huntingford, C. (2003). Global terrestrial carbon storage and uncertainties in its temperature sensitivity examined with a simple model. *Global Change Biology*, 9(10), 1333-1352. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1046/j.1365-2486.2003.00674.x/full>
- Lenton, T. M., & Vaughan, N. E. (2009). The radiative forcing potential of different climate geoengineering options. *Atmospheric Chemistry and Physics*, 9, 5539 -5561.
- Lentz, R. D., et al. (2015). The effects of biochar and manure in silage corn. *Progressive Forage Grower*, 16(2), 26-29. Retrieved from <http://eprints.nwisrl.ars.usda.gov/1584/>
- Lentz, R. D., Ippolito, J. A., & Spokas, K. A. (2014). Biochar and Manure Effects on Net Nitrogen Mineralization and Greenhouse Gas Emissions from Calcareous Soil under Corn. *Soil Science Society of America Journal*, 78(5), 1641. doi:10.2136/sssaj2014.05.0198
- Lenzi, D. (2018). Weigh the ethics of plans to mop up carbon dioxide. *Nature*, 561, 303-305. Retrieved from <https://www.nature.com/magazine-assets/d41586-018-06695-5/d41586-018-06695-5.pdf>
- Lenzi, D. (2021). On the Permissibility (Or Otherwise) of Negative Emissions. *Ethics, Policy & Environment*, 1-14. doi:10.1080/21550085.2021.1885249
- Leonardos, O. H., Fyfe, W. S., & Kronberg, B. I. (1987). The Use of Ground Rocks in Laterite Systems - An Improvement to the Use of Conventional Soluble Fertilizers. *Chemical Geology*, 60, 360-370. Retrieved from https://ac.els-cdn.com/0009254187901434/1-s2.0-0009254187901434-main.pdf?_tid=3f723c0c-c82c-11e7-a0c1-00000aab0f27&acdnat=1510547982_5a416823fd78844e4195de111cd3bcc2
- Leonzio, G., Foscolo, P. U., Zondervan, E., & Bogle, I. D. L. (2020). Scenario Analysis of Carbon Capture, Utilization (Particularly Producing Methane and Methanol), and Storage (CCUS) Systems. *Industrial & Engineering Chemistry Research*, 59(15), 6961-6976. doi:10.1021/acs.iecr.9b05428
- Lepodise, L., et al. (2015). *THz spectroscopic characterization of biochar*. Paper presented at the 2015 40th International Conference on Infrared, Millimeter, and Terahertz waves (IRMMW-THz)2015 40th International Conference on Infrared, Millimeter, and Terahertz waves (IRMMW-THz), Hong Kong, China. http://ieeexplore.ieee.org/xpl/articleDetails.jsp?tp=&arnumber=7327752&url=http%3A%2F%2Fieeexplore.ieee.org%2Fxpls%2Fabs_all.jsp%3Farnumber%3D7327752
- Lessio, M., Sentle, T. P., & Carter, E. A. (2016). Is the Surface Playing a Role during Pyridine-Catalyzed CO₂ Reduction on p-GaP Photoelectrodes? *ACS Energy Lett.*, 1(2), 464-468.
- Letelier, R. M., Björkman, K. M., Church, M. J., Hamilton, D. S., Mahowald, N. M., Scanza, R. A., . . . Karl, D. M. (2019). Climate-driven oscillation of phosphorus and iron limitation in the North Pacific Subtropical Gyre. *Proceedings of the National Academy of Sciences*, 116(26), 12720-12728. doi:10.1073/pnas.1900789116
- Lettens, S., et al. (2003). Energy budget and greenhouse gas balance evaluation of sustainable coppice systems for electricity production. *Biomass & Bioenergy*, 24(3), 179-197. Retrieved from https://www.researchgate.net/publication/223801600_Energy_budget_and_greenhouse_gas_balance_evaluation_of_sustainable_coppice_systems_for_electricity_production
- Leung, D. Y. C., Caramanna, G., & Maroto-Valer, M. M. (2014). An overview of current status of carbon dioxide capture and storage technologies. *Renewable and Sustainable Energy Reviews*, 39, 426-443. doi:<http://dx.doi.org/10.1016/j.rser.2014.07.093>
- Levasseur, M., et al. (2006). DMSP and DMS dynamics during a mesoscale iron fertilization experiment in the Northeast Pacific-Part I: Temporal and vertical distributions. *Deep-Sea*

- Research Part II: Topical Studies in Oceanography*, 53(20-22), 2353-2369. Retrieved from <https://www.scopus.com/search/form.uri?display=basic>
- Levey, S., & Butler, L. (2020). Q&A: Is planting trees the answer to climate change? Retrieved from <https://www.imperial.ac.uk/news/199473/qa-is-planting-trees-answer-climate/>
- Levitin, D. (2010). Refilling the Carbon Sink: Biochar's Potential and Pitfalls. *Yale Environment 360*. Retrieved from https://e360.yale.edu/features/refilling_the_carbon_sink_biochars_potential_and_pitfalls
- Levitt, S. (2021). UK startup raises €8m of funding to convert CO₂ into animal feed. *The Guardian*. Retrieved from <https://www.theguardian.com/environment/2021/mar/22/uk-startup-raises-8m-funding-convert-co2-animal-feed>
- Levy, G. (2019). Getting geoengineering back-to-front. *Ecologist*.
- Lewandowski, I., et al. (2000). Miscanthus: European experience with a novel energy crop. *Biomass and Bioenergy*, 19(4), 209-227. Retrieved from https://www.researchgate.net/profile/Iris_Lewandowski/publication/40137215_Miscanthus_European_experience_with_a_novel_energy_crop/links/0c96051e6421bc9df9000000/Miscanthus-European-experience-with-a-novel-energy-crop.pdf?origin=publication_detail&ev=pub_int_prw_xdl&msrp=dHJAJ3BS76do7FwHWcreNvOfB38C2TaaNcqGgs0a0CP3KsYaHRD_MByN8gUwACKwhCqnF48B8Y7U8BM7SycvYWeP6R4rYB9ak3gusCOthBM.OtEyA3sxiTlr7fJyFHuXC5TPFPzZguFsa7obE0Us_THV63zGD6nOcFjHNkVH58Z6CxVIVFOWKq0J-DFIHRd_CQ.IA-GFZoT03KigYH5GJOcETmuk345jCdwtazSUuSST4yl2ReqmJnjS5YL6JLLoruOuGDdEt0mDHkBUsLZh1rQ.c-sGYbE0L623_CR-kTWKH1bpVUYYdi7aX8pGKKw8_Uery5zwanb8BNydBU8K2OmZYCQIUQ7c8iTefF2J3p3hw
- Lewandowski, I. (2015). Securing a sustainable biomass supply in a growing bioeconomy. *Global Food Security*, 6, 34-42. doi:<https://doi.org/10.1016/j.gfs.2015.10.001>
- Lewis, A. L., Sarkar, B., Wade, P., Kemp, S. J., Hodson, M. E., Taylor, L. L., . . . Beerling, D. J. (2021). Effects of mineralogy, chemistry and physical properties of basalts on carbon capture potential and plant-nutrient element release via enhanced weathering. *Applied Geochemistry*, 105023. doi:<https://doi.org/10.1016/j.apgeochem.2021.105023>
- Lewis, A. L., Sarkar, B., Wade, P., Kemp, S. J., Hodson, M. E., Taylor, L. L., . . . Beerling, D. J. (2021). Effects of mineralogy, chemistry and physical properties of basalts on carbon capture potential and plant-nutrient element release via enhanced weathering. *Applied Geochemistry*, 105023. doi:<https://doi.org/10.1016/j.apgeochem.2021.105023>
- Lewis, J. (2021). Worley wins direct air capture engineering deal from Occidental in US Permian basin *Upstream*. Retrieved from <https://www.upstreamonline.com/energy-transition/worley-wins-direct-air-capture-engineering-deal-from-occidental-in-us-permian-basin/2-1-968120>
- Lewis, M. (2020). Norway funds world's first full-scale carbon capture and storage project. *Electrek*. Retrieved from <https://electrek.co/2020/09/21/norway-world-first-carbon-capture-storage-project/>
- Lewis, S. (2019). Sucking carbon out of the air is no magic fix for the climate emergency. *The Guardian*. Retrieved from https://www.theguardian.com/commentisfree/2019/aug/01/negative-emissions-tech-climate-emergency-carbon-dioxide-emissions?utm_campaign=Carbon%20Brief%20Daily%20Briefing&utm_medium=email&utm_source=Revue%20newsletter
- Lewis, S. L., et al. (2019). Restoring natural forests is the best way to remove atmospheric carbon. *Nature*, 568, 25-28. Retrieved from <https://www.nature.com/magazine-assets/d41586-019-01026-8/d41586-019-01026-8.pdf>

- Lezaun, J. (2021). Hugging the Shore: Tackling Marine Carbon Dioxide Removal as a Local Governance Problem. *Frontiers in Climate*, 3(98). doi:10.3389/fclim.2021.684063
- Li, A., et al. . (2016). Effects of Temperature and Heating Rate on the Characteristics of Molded Bio-char. *BioResources*, 11(2), 3259-3274. Retrieved from http://152.1.0.246/index.php/BioRes/article/view/BioRes_11_2_3259_Li_Temperature_Heating_Rate_Molded_Bio_char
- Li, B., Fan, C. H., Xiong, Z. Q., Li, Q. L., & Zhang, M. (2015). The combined effects of nitrification inhibitor and biochar incorporation on yield-scaled N₂O emissions from an intensively managed vegetable field in southeastern China. *Biogeosciences*, 12(6), 2003 - 2017. doi:10.5194/bg-12-2003-2015
- Li, B., Fan, C. H., Zhang, H., Chen, Z. Z., Sun, L. Y., & Xiong, Z. Q. (2014). Combined effects of nitrogen fertilization and biochar on the net global warming potential, greenhouse gas intensity and net ecosystem economic budget in intensive vegetable agriculture in southeastern China. *Atmospheric Environment*, 100, 10 - 19. doi:10.1016/j.atmosenv.2014.10.034
- Li, B., Fan, C. H., Zhang, H., Chen, Z. Z., Sun, L. Y., & Xiong, Z. Q. (2015). Combined effects of nitrogen fertilization and biochar on the net global warming potential, greenhouse gas intensity and net ecosystem economic budget in intensive vegetable agriculture in southeastern China. *Atmospheric Environment*, 100, 10-19. doi:<https://doi.org/10.1016/j.atmosenv.2014.10.034>
- Li, B., Li, Q.-L., Fan, C.-H., Sun, L.-Y., & Xiong, Z.-Q. (2014). Effects of biochar and nitrification inhibitor incorporation on global warming potential of a vegetable field in Nanjing, China. *Ying yong sheng tai xue bao = The journal of applied ecology / Zhongguo sheng tai xue xue hui, Zhongguo ke xue yuan Shenyang ying yong sheng tai yan jiu suo zhu ban*, 25(9), 2651-2657. Retrieved from <http://europepmc.org/abstract/med/25757318>
- Li, B., Ou, L., Dang, Q., Meyer, P., Jones, S., Brown, R., & Wright, M. (2015). Techno-economic and uncertainty analysis of in situ and ex situ fast pyrolysis for biofuel production. *Bioresource Technology*, 196, 49 - 56. doi:10.1016/j.biortech.2015.07.073
- Li, C., Frolking, S., & Butterbach-Bahl, K. (2005). Carbon Sequestration in Arable Soils is Likely to Increase Nitrous Oxide Emissions, Offsetting Reductions in Climate Radiative Forcing. *Climatic Change*, 72(3), 321-338. doi:10.1007/s10584-005-6791-5
- Li, C., Shi, H., Cao, Y., Kuang, Y., Zhang, Y., Gao, D., & Sun, L. (2015). Modeling and optimal operation of carbon capture from the air driven by intermittent and volatile wind power. *Energy*, 87, 201-211. doi:<https://doi.org/10.1016/j.energy.2015.04.098>
- Li, C. W., & Kanan, M. W. (2012). CO₂ Reduction at Low Overpotential on Cu Electrodes Resulting from the Reduction of Thick Cu₂O Films. *J. Am. Chem. Soc.*, 134, 7231. Retrieved from <https://pubs.acs.org/doi/10.1021/ja309317u>
- Li, D., et al. (2011). Earthworm avoidance of biochar can be mitigated by wetting. *Soil Biology and Biochemistry*, 43, 1732 - 1737.
- Li, D., et al. (2014). Forming Active Carbon Monoliths from HPO-Loaded Sawdust with Addition of Peanut Shell Char. *Bio Resources*, 9(3), 4981-4992. Retrieved from http://www.ncsu.edu/bioresources/BioRes_09/BioRes_09_3_4981_Li_TQ_Conversion_Powder_Bio-char_Highly_Porous_ACM_5657.pdf
- Li, D., Niu, S., & Luo, Y. (2012). Global patterns of the dynamics of soil carbon and nitrogen stocks following afforestation: a meta-analysis. *New Phytologist*, 195(1), 172-181. doi:10.1111/j.1469-8137.2012.04150.x
- Li, D.-C., et al. (2016). Preparation of high adsorption performance and stable biochar granules by FeCl₃-catalyzed fast pyrolysis. *RSC Adv.*, 6(15), 12226 - 12234. doi:10.1039/c5ra22870k

- Li, F., et al. . (2013). Short-term effects of raw rice straw and its derived biochar on greenhouse gas emission in five typical soils in China. *Soil Science and Plant Nutrition*, 59(5), 800-811. Retrieved from <http://www.tandfonline.com/doi/pdf/10.1080/00380768.2013.821391>
- Li, F., Shen, K., Long, X., Wen, J., Xie, X., Zeng, X., . . . Zhong, R. (2016). Preparation and Characterization of Biochars from Eichornia crassipes for Cadmium Removal in Aqueous Solutions. *Plos One*, 11(2), e0148132. doi:10.1371/journal.pone.0148132.t005
- Li, F., & Wang, L. (2015). Activated Carbon Materials Prepared from Pine Branches for Supercapacitors. *Energy and Environment Focus*, 4(1), 24 - 27. doi:10.1166/eef.2015.1134
- Li, G., Hartmann, J., Derry, L. A., West, A. J., You, C.-F., Long, X., . . . Chen, J. (2016). Temperature dependence of basalt weathering. *Earth and Planetary Science Letters*, 443, 59-69. doi:<https://doi.org/10.1016/j.epsl.2016.03.015>
- Li, G., Shen, B., Li, F., Tian, L., Singh, S., & Wang, F. (2015). Elemental mercury removal using biochar pyrolyzed from municipal solid waste. *Fuel Processing Technology*, 133, 43 - 50. doi:10.1016/j.fuproc.2014.12.042
- Li, H., et al. (2014). Selective removal of polycyclic aromatic hydrocarbons (PAHs) from soil washing effluents using biochars produced at different pyrolytic temperatures. *Bioresource Technology*, 163, 193-198. doi:10.1016/j.biortech.2014.04.042
- Li, H., Yan, J., & Campana, P. E. (2012). Feasibility of integrating solar energy into a power plant with amine-based chemical absorption for CO₂ capture. *International Journal of Greenhouse Gas Control*, 9, 272-280. doi:<http://dx.doi.org/10.1016/j.ijggc.2012.04.005>
- Li, H., Yan, J., Yan, J., & Anheden, M. (2009). Impurity impacts on the purification process in oxy-fuel combustion based CO₂ capture and storage system. *Applied Energy*, 86(2), 202-213. doi:<https://doi.org/10.1016/j.apenergy.2008.05.006>
- Li, H., Ye, X., Geng, Z., Zhou, H., Guo, X., Zhang, Y., . . . Wang, G. (2016). The influence of biochar type on long-term stabilization for Cd and Cu in contaminated paddy soils. *Journal of Hazardous Materials*, 304, 40 - 48. doi:10.1016/j.jhazmat.2015.10.048
- Li, H., Yutong, W., Tianpei, W., & Hongrui, M. (2015). Effect of biochar on organic matter conservation and metabolic quotient of soil. *Environmental Progress & Sustainable Energy*, 34(5), 1467-1472. doi:10.1002/ep.12122
- Li, J., et al. (2013). Effectiveness of low-temperature biochar in controlling the release and leaching of herbicides in soil. *Plant and Soil*, 370(1), 333-344. Retrieved from <https://link.springer.com/article/10.1007/s11104-013-1639-7>
- Li, J., et al. (2015). Role of Alumina and Montmorillonite in Changing the Sorption of Herbicides to Biochars. *Journal of Agricultural and Food Chemistry*, 63(24), 5740 - 5746. doi:10.1021/acs.jafc.5b01654
- Li, J., Liang, X., & Cockerill, T. (2011). Getting ready for carbon capture and storage through a 'CCS (Carbon Capture and Storage) Ready Hub': A case study of Shenzhen city in Guangdong province, China. *Energy*, 36(10), 5916-5924. doi:<https://doi.org/10.1016/j.energy.2011.08.030>
- Li, J., & XU, Y. (2014). Immobilization of Cd in paddy soil using moisture management and amendment. *Environmental Science and Pollution Research*, 22(7), 5580-5586. doi:10.1007/s11356-014-3788-5
- Li, J.-h., Lv, G.-h., Bai, W.-b., Liu, Q., Zhang, Y.-c., & Song, J.-q. (2014). Modification and use of biochar from wheat straw Triticum aestivum for nitrate and phosphate removal from water. *Desalination and Water Treatment*, 57(10), 1-13. doi:10.1080/19443994.2014.994104
- Li, K., Zhu, C., Zhang, L., & Zhu, X. (2016). Study on pyrolysis characteristics of lignocellulosic biomass impregnated with ammonia source. *Bioresource Technology*, 209, 142 - 147.

doi:10.1016/j.biortech.2016.02.136

- Li, L., et al. (2014). Mechanisms and Factors Influencing Adsorption of Microcystin-LR on Biochars. *Water, Air, & Soil Pollution*, 225(12), 1-10. doi:10.1007/s11270-014-2220-6
- Li, M., et al. (2012). Cu(II) removal from aqueous solution by *Spartina alterniflora* derived biochar. *Bioresource Technology*, 141, 83-88. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0960852412019542>
- Li, M., et al. (2012). Effects of biochar application on wheat growth and nitrogen balance. *Xinjiang Agricultural Sciences*, 49(4), 589-594. Retrieved from <https://www.cabdirect.org/cabdirect/abstract/20123208039>
- Li, M., et al. (2014). Method To Characterize Acid–Base Behavior of Biochar: Site Modeling and Theoretical Simulation. *ACS Sustainable Chemistry & Engineering*, 2(11), 2501 - 2509. doi:10.1021/sc500432d
- Li, M., et al. (2015). Alkali and alkaline earth metallic (AAEM) species leaching and Cu(II) sorption by biochar. *Chemosphere*, 119, 778 - 785. doi:10.1016/j.chemosphere.2014.08.033
- Li, M., et al., & i. (2015). Change in water extractable organic carbon and microbial PLFAs of biochar during incubation with an acidic paddy soil. *Soil Research*, 53(7), 763-771. Retrieved from http://www.publish.csiro.au/view/journals/dsp_journals_pip_abstract_scholar1.cfm?nid=84&pid=SR14259
- Li, M., Lu, Y., & Huang, M. (2021). Evolution patterns of bioenergy with carbon capture and storage (BECCS) from a science mapping perspective. *Science of The Total Environment*, 766, 144318. doi:<https://doi.org/10.1016/j.scitotenv.2020.144318>
- Li, Q., Li, X., Liu, G., Li, X., Cai, B., Liu, L.-C., . . . Shi, H. (2017). Application of China's CCUS Environmental Risk Assessment Technical Guidelines (Exposure Draft) to the Shenhua CCS Project. *Energy Procedia*, 114, 4270-4278. doi:<https://doi.org/10.1016/j.egypro.2017.03.1567>
- Li, Q., Liu, L.-C., Chen, Z.-A., Zhang, X., Jia, L., & Liu, G. (2014). A Survey of Public Perception of CCUS in China. *Energy Procedia*, 63, 7019-7023. doi:<https://doi.org/10.1016/j.egypro.2014.11.735>
- Li, R., Wang, J. J., Zhou, B., Awasthi, M. K., Ali, A., Zhang, Z., . . . Mahar, A. (2016). Recovery of phosphate from aqueous solution by magnesium oxide decorated magnetic biochar and its potential as phosphate-based fertilizer substitute. *Bioresource Technology*, 215, 209 - 214. doi:10.1016/j.biortech.2016.02.125
- Li, R., Wang, Q., Zhang, Z., Zhang, G., Li, Z., Wang, L., & Zheng, J. (2014). Nutrient transformation during aerobic composting of pig manure with biochar prepared at different temperatures. *Environmental Technology*, 36(5-8), 1 - 12. doi:10.1080/09593330.2014.963692
- Li, S., et al. (2013). Biochar Based Solid Acid Catalyst Hydrolyze Biomass. *Journal of Environmental Chemical Engineering*, 1(4), 1174-1181. Retrieved from <http://www.sciencedirect.com/science/article/pii/S2213343713001693>
- Li, S., Wang, S., Fan, M., Wu, Y., & Shangguan, Z. (2020). Interactions between biochar and nitrogen impact soil carbon mineralization and the microbial community. *Soil and Tillage Research*, 196, 104437. doi:<https://doi.org/10.1016/j.still.2019.104437>
- Li, S.-L., Calmels, D., Han, G., Gaillardet, J., & Liu, C.-Q. (2008). Sulfuric acid as an agent of carbonate weathering constrained by δ13CDIC: Examples from Southwest China. *Earth and Planetary Science Letters*, 270(3), 189-199. doi:<https://doi.org/10.1016/j.epsl.2008.02.039>
- Li, T., Han, X., Liang, C., Shohag, M. J. I., & Yang, X. (2014). Sorption of sulfamethoxazole by the biochars derived from rice straw and alligator flag. *Environmental Technology*, 36(2), 245-253. doi:10.1080/09593330.2014.943299

- Li, W., Ciais, P., Han, M., Zhao, Q., Chang, J., Goll, D. S., . . . Wang, J. (2021). Bioenergy Crops for Low Warming Targets Require Half of the Present Agricultural Fertilizer Use. *Environmental Science & Technology*, 55, 10654–10661. doi:10.1021/acs.est.1c02238
- Li, W., Loyola-Licea, C., Crowley, D. E., & Ahmad, Z. (2016). Performance of a two-phase biotrickling filter packed with biochar chips for treatment of wastewater containing high nitrogen and phosphorus concentrations. *Process Safety and Environmental Protection*, 102, 150 - 158. doi:10.1016/j.psep.2016.03.001
- Li, X., et al. (2013). Dynamics in leachate chemistry of Cu-Au tailings in response to biochar and woodchip amendments: a column leaching study. *Environmental Sciences Europe*, 25, 1-9. Retrieved from <http://www.enveurope.com/content/pdf/2190-4715-25-32.pdf>
- Li, X., et al. . (2013). Functional Groups Determine Biochar Properties (pH and EC) as Studied by Two-Dimensional ¹³C NMR Correlation Spectroscopy. *Plos One*, 8, 1-7. Retrieved from <http://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0065949&type=printable>
- Li, X., Hagaman, E., Tsouris, C., & Lee, J. W. (2003). Removal of Carbon Dioxide from Flue Gas by Ammonia Carbonation in the Gas Phase. *Energy & Fuels*, 17(1), 69-74. doi:10.1021/ef020120n
- Li, X., Wei, N., Liu, Y., Fang, Z., Dahowski, R. T., & Davidson, C. L. (2009). CO₂ point emission and geological storage capacity in China. *Energy Procedia*, 1(1), 2793-2800. doi:<https://doi.org/10.1016/j.egypro.2009.02.051>
- Li, Y., et al. (2011). In situ preparation of biochar coated silica material from rice husk. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 395, 157-160. Retrieved from <http://dx.doi.org/10.1016/j.colsurfa.2011.12.023>
- Li, Y., et al. (2013). Effects of biochar covering on the release of pollutants from sediment. 34(8), 3071-3078.
- Li, Y., et al. (2019). Cryo-EM Structures of Atomic Surfaces and Host-Guest Chemistry in Metal-Organic Frameworks. *Matter*. Retrieved from [https://www.cell.com/matter/fulltext/S2590-2385\(19\)30053-0](https://www.cell.com/matter/fulltext/S2590-2385(19)30053-0)
- Li, Y., Chang, S. X., Tian, L., & Zhang, Q. (2018). Conservation agriculture practices increase soil microbial biomass carbon and nitrogen in agricultural soils: A global meta-analysis. *Soil Biology and Biochemistry*, 121, 50-58. doi:<https://doi.org/10.1016/j.soilbio.2018.02.024>
- Li, Y., Horsman, M., Wu, N., Lan, C. Q., & Dubois-Calero, N. (2008). Biofuels from Microalgae. *Biotechnology Progress*, 24(4), 815-820. doi:10.1021/bp070371k
- Li, Y., Hu, S., Chen, J., Müller, K., Li, Y., Fu, W., . . . Wang, H. (2017). Effects of biochar application in forest ecosystems on soil properties and greenhouse gas emissions: a review. *Journal of Soils and Sediments*. doi:10.1007/s11368-017-1906-y
- Li, Y., Ruan, G., Jalilov, A. S., Tarkunde, Y. R., Fei, H., & Tour, J. M. (2016). Biochar as a renewable source for high-performance CO₂ sorbent. *Carbon*, 107, 344-351. doi:<https://doi.org/10.1016/j.carbon.2016.06.010>
- Li, Y., Shao, J., Wang, X., Deng, Y., Yang, H., & Chen, H. (2014). Characterization of modified biochars derived from bamboo pyrolysis and their utilization for target component (furfural) adsorption. *Energy & Fuels*, 28(8), 5119-5127. doi:10.1021/ef500725c
- Li, Y., Shen, F., Guo, H., Wang, Z., Yang, G., Wang, L., . . . Deng, S. (2015). Phytotoxicity assessment on corn stover biochar, derived from fast pyrolysis, based on seed germination, early growth, and potential plant cell damage. *Environmental Science and Pollution Research*, 22(12), 9534-9543. doi:10.1007/s11356-015-4115-5
- Li, Feiyue, e. a. (2014). Effects of Mineral Additives on Biochar Formation: Carbon Retention, Stability, and Properties. *Environmental Science & Technology*, 48(19), 11211 - 11217. doi:10.1021/es501885n

- Lian, F., et al. . (2014). Physicochemical properties of herb-residue biochar and its sorption to ionizable antibiotic sulfamethoxazole. *Chemical Engineering Journal*, 248, 128-134. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1385894714002952>
- Lian, F., et al. (2015). Effect of humic acid (HA) on sulfonamide sorption by biochars. *Environmental Pollution*, 204, 306 - 312. doi:10.1016/j.envpol.2015.05.030
- Lian Hui Lim, K. (2015). Switching desalination plants from carbon dioxide source to sink. *Chemistry World*, (January 22). Retrieved from <https://www.chemistryworld.com/news/switching-desalination-plants-from-carbon-dioxide-source-to-sink/8170.article>
- Liang, B., et al. (2006). Black Carbon Increases Cation Exchange Capacity in Soils. *Soil Science Society of America Journal*, 70, 1719-1730. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.182.9795&rep=rep1&type=pdf>
- Liang, B., et al. . (2008). Stability of Biomass-Derived Black Carbon in Soils. *Geochimica Et Cosmochimica Acta*, 72(24), 6078-6096. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0016703708005875>
- Liang, B., Lehmann, J., Sohi, S. P., Thies, J. E., O'Neill, B., Trujillo, L., . . . Luizão, F. J. (2010). Black carbon affects the cycling of non-black carbon in soil. *Organic Geochemistry*, 41(2), 206-213. doi:<https://doi.org/10.1016/j.orggeochem.2009.09.007>
- Liang, C., et al. . (2015). Biochar from pruning residues as a soil amendment: Effects of pyrolysis temperature and particle size. *Soil and Tillage Research*, 164, 3-10. doi:10.1016/j.still.2015.10.002
- Liang, C., Zhu, X., Fu, S., Méndez, A., Gascó, G., & Paz-Ferreiro, J. (2014). Biochar alters the resistance and resilience to drought in a tropical soil. *Environmental Research Letters*. Retrieved from <http://iopscience.iop.org/1748-9326/9/6/064013>
- Liang, F., et al. (2014). Crop Yield and Soil Properties in the First 3 Years After Biochar Application to a Calcareous Soil. *Journal of Integrative Agriculture*, 13, 525–532.
- Liang, J., et al. (2015). Progress on biochar preparation and its assessment methods of stability. *Journal of Agricultural Resources and Environment*, 32(5), 423-438. Retrieved from <http://www.cabdirect.org/abstracts/20163033480.html>
- Liang, N.-K., & Peng, H.-K. (2005). A study of air-lift artificial upwelling. *Ocean Engineering*, 32(5), 731-745. doi:<https://doi.org/10.1016/j.oceaneng.2004.10.011>
- Liang, S., et al. (2014). Production and characterization of bio-oil and bio-char from pyrolysis of potato peel wastes. *Biomass Conversion and Biorefinery*, 5(3), 237-246. Retrieved from <http://link.springer.com/article/10.1007/s13399-014-0130-x>
- Liang, X.-Q., et al. (2014). A Simple N Balance Assessment for Optimizing the Biochar Amendment Level in Paddy Soils. *Communications in Soil Science and Plant Analysis*, 45(9), 1247-1258. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/00103624.2013.875192>
- Liang, Y., et al. (2013). Biochar- and phosphate-induced immobilization of heavy metals in contaminated soil and water: implication on simultaneous remediation of contaminated soil and groundwater. *Environmental Science and Pollution Research*, 21(6), 4665-4674. Retrieved from <https://link.springer.com/article/10.1007/s11356-013-2423-1>
- Liang, Y., et al. . (2014). Phosphorus Release from Dairy Manure, the Manure-Derived Biochar, and Their Amended Soil: Effects of Phosphorus Nature and Soil Property. *Journal of Environmental Quality*, 43(4), 1504-1509. Retrieved from <https://dl.sciencesocieties.org/publications/jeq/abstracts/0/0/jeq2014.01.0021?access=0&view=article>
- Liang, Z., et al. (2015). Recent progress and new developments in post-combustion carbon-capture technology with amine based solvents. *International Journal of Greenhouse Gas Control*, 40, 26-54. Retrieved from https://ac.els-cdn.com/S1750583615002704/1-s2.0-S1750583615002704-main.pdf?_tid=8b23eef2-ecd0-11e7-b004-00000aab0f27&acdnat=1514576789_8fe21bb42855f6592431a968023cc613

- Liao, K., et al. (2017). Improving water-alternating-CO₂ flooding of heterogeneous, low permeability oil reservoirs using ensemble optimisation algorithm. *International Journal of Greenhouse Gas Control*, 12(2), 242-260. Retrieved from <http://www.inderscience.com/info/inarticle.php?artid=84509>
- Liao, N., Li, Q., Zhang, W., Zhou, G., Ma, L., Min, W., . . . Hou, Z. (2016). Effects of biochar on soil microbial community composition and activity in drip-irrigated desert soil. *European Journal of Soil Biology*, 72, 27 - 34. doi:10.1016/j.ejsobi.2015.12.008
- Liao, R., Gao, B., & Fang, J. (2013). Invasive plants as feedstock for biochar and bioenergy production. *Bioresource Technology*, 140, 439-442. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0960852413007505>
- Liao, S., Pan, B., Li, H., Zhang, D., & Xing, B. (2014). Detecting Free Radicals in Biochars and Determining Their Ability to Inhibit the Germination and Growth of Corn, Wheat and Rice Seedlings. *Environmental Science & Technology*, 48(15), 8581-8587. doi:10.1021/es404250a
- Liaw, S. B. (2015). *Leaching of inorganic and organic matter from biomass and biochars under various conditions: equilibrium, kinetics and implications*. Curtin University, Retrieved from http://espace.library.curtin.edu.au/R?func=dbin-jump-full&object_id=235315
- Liaw, S. B., & Wu, H. (2015). Tuning Biochar Properties via Partial Gasification: Facilitating Inorganic Nutrients Recycling and Altering Organic Matter Leaching. *Energy & Fuels*, 29(7), 4407 - 4417. doi:10.1021/acs.energyfuels.5b01020
- Liberloo, M., et al. (2010). Bio-Energy Retains Its Mitigation Potential Under Elevated CO₂. *Plos One*, 5(7), 1-7. Retrieved from <http://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0011648&type=printable>
- Libra, J. A., et al. (2011). Hydrothermal carbonization of biomass residuals: a comparative review of the chemistry, processes and applications of wet and dry pyrolysis. *Biofuels*, 2(1), 89-124. doi:10.4155/bfs.10.81
- Libutti, A., Garofalo, P., Rovas, D., Zabaniotou, A., & Monteleone, M. (2015). *MANAGEMENT OF PRUNING RESIDUES FOR BOTH RENEWABLE ENERGY AND SOIL FERTILITY: A WIN-WIN SOLUTION IN A MEDITERRANEAN OLIVE* Paper presented at the 22nd European Biomass Conference and Exhibition. http://www.researchgate.net/profile/Libutti_A/publication/265139733_MANAGEMENT_OF_PRUNING_RESIDUES_FOR_BOTH_RENEWABLE_ENERGY_AND_SOIL_FERTILITY_A_WIN-WIN_SOLUTION_IN_A_MEDITERRANEAN_OLEIVE_FARM/links/54bfd5860cf28a63249fee09.pdf
- Licht, J., McLaughlin, H., Burns, C., Eisen-Cuadra, A., & Morzuch, E. (2013). *Synopses of Biochar and Potting Media Research*. Retrieved from <http://www.botanicalsnursery.com/biochpotsoil.pdf>
- Licht, J., McLaughlin, H., Burns, C., & Shields, F. (2014). Can Biochar Come to the Rescue of Coastal Barren Species? A Controlled Study Reports on the Impact of Biochar Amendment on Their Survival. *BioResources*, 9(4), 6214-6226. Retrieved from http://ojs.cnr.ncsu.edu/index.php/BioRes/article/view/BioRes_09_4_6214_Licht_Biochar_Rescue_Coastal_Barren_Species
- Licht, J., & McLaughlin, H. S. (2015).
- Licht, S. (2009). STEP (Solar Thermal Electrochemical Photo) Generation of Energetic Molecules: A Solar Chemical Process to End Anthropogenic Global Warming. *The Journal of Physical Chemistry C*, 113(36), 16283-16292. doi:10.1021/jp9044644
- Liebeck, M., Dörr, T., & Vogel, G. H. (2014). A Sustainable Concept for the Supply of Pure CO₂ as a C-Source for Solar Fuels—Synergies of Biochar and Biogas. *ChemBioEng Reviews*, 1(2), 60-66. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/cben.201300009/>

abstract

- Liebeck, M., & Vogel, G. H. (2013). A Sustainable Concept for the Supply of Pure CO₂ as a Carbon Source for Solar Fuels - Synergies of Biochar and Biogas. *Chemie Ingenieur Technik*, 85, 618-624.
- Liesch, A. M., Weyers, S. L., Gaskin, J. W., & Das, K. C. (2010). Impact of Two Different Biochars on Earthworm Growth and Survival. *Annals of Environmental Science*, 4, 1-9. Retrieved from <http://hdl.handle.net/2047/d20000234>
- Lievens, C., Mourant, D., Gunawan, R., Hu, X., & Wang, Y. (2014). Organic compounds leached from fast pyrolysis mallee leaf and bark biochars. *Chemosphere*, 138, 659-664. doi:10.1016/j.chemosphere.2014.11.009
- Lii, D., et al. (2014). Improving Maize Growth by Biochar and Biochar-Based Amendment in Light Sierozem in Ningxia. *Applied Mechanics and Materials*, 707, 251 - 254. doi:10.4028/www.scientific.net/AMM.707.251
- Lim, B., & Cachier, H. (1996). Determination of black carbon by chemical oxidation and thermal treatment in recent marine and lake sediments and cretaceous-tertiary clays. *Chemical Geology*, 131(1-4), 143-154. Retrieved from <http://www.sciencedirect.com/science/article/pii/0009254196000319>
- Lim, C. H., Holder, A. M., Hynes, J. T., & Musgrave, C. B. (2015). Catalytic Reduction of CO₂ by Renewable Organohydrides. *J. Phys. Chem. Lett.*, 6, 5078-5092. Retrieved from <https://pubs.acs.org/doi/10.1021/acs.jpclett.5b01827>
- Lim, C.-H., Holder, A. M., & Musgrave, C. B. (2013). Mechanism of Homogeneous Reduction of CO₂ by Pyridine: Proton Relay in Aqueous Solvent and Aromatic Stabilization. *Journal of the American Chemical Society*, 135(1), 142-154. doi:10.1021/ja3064809
- Lim, H. (2018). We Need to Talk About Carbon Removal. *Medium*. Retrieved from <https://medium.com/@hhlim/we-need-to-talk-about-carbon-removal-40685871429c>
- Lim, J. E., et al. (2015). Heavy Metal Stabilization in Soils using Waste Resources - A Critical Review. *Journal of Applied Biological Chemistry*, 58(2), 157 - 174. doi:10.3839/jabc.2015.027
- Lim, J. E., Lee, S. S., & Ok, Y. S. (2015). Efficiency of Poultry Manure Biochar for Stabilization of Metals in Contaminated Soil. *Journal of Applied Biological Chemistry*, 58(1), 39 - 50. doi:10.3839/jabc.2015.008
- Lim, S.-H., Yong, S.-T., Ooi, C.-W., Chai, S.-P., Doshi, V., & Daud, W. R. W. (2014). Pyrolysis of Palm Waste for the Application of Direct Carbon Fuel Cell. *Energy Procedia*, 61, 878 - 881. doi:10.1016/j.egypro.2014.11.986
- Lim, S.-S., Baah-Acheamfour, M., Choi, W.-J., Arshad, M. A., Fatemi, F., Banerjee, S., . . . Chang, S. X. (2018). Soil organic carbon stocks in three Canadian agroforestry systems: From surface organic to deeper mineral soils. *Forest Ecology and Management*, 417, 103-109. doi:<https://doi.org/10.1016/j.foreco.2018.02.050>
- Lim, T. J., Spokas, K. A., Feyereisen, G., & Novak, J. M. (2015). Predicting the impact of biochar additions on soil hydraulic properties. *Chemosphere*. doi:10.1016/j.chemosphere.2015.06.069
- Lim, Y., Kim, J., Jung, J., Lee, C. S., & Han, C. (2013). Modeling and Simulation of CO₂ Capture Process for Coal- based Power Plant Using Amine Solvent in South Korea. *Energy Procedia*, 37, 1855-1862. doi:<https://doi.org/10.1016/j.egypro.2013.06.065>
- Lima, H. N., et al. (2002). Pedogenesis and pre-colombian land use of "terra preta anthrosols" ("indian black earth") of western amazonia. *Geoderma*, 110(1-2), 1-17.
- Lima, I. M., Boateng, A. A., & Klasson, K. T. (2009). Pyrolysis of broiler manure: Char and product gas characterization. *Industrial & Engineering Chemistry Research*, 48(3), 1292-1297. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/ie800989s>
- Lima, I. M., Ro, K. S., Boateng, A. A., & Klasson, K. T. (2011). Biochars from agricultural

residuals as adsorbents for environmental remediation.

- Lima, L. B. d. (2014). *4 COMPARTIMENTOS DE CARBONO EM SOLOS DE CERRADO SOB APLICAÇÃO DE BIOCHAR EM LONGO PRAZO (4 MAGAZINES OF CARBON IN SOILS OF SAVANNA IN APPLICATION OF LONG TERM biochar)*. Universidade Federal de Goiás (Federal University of Goiás), Retrieved from <http://repositorio.bc.ufg.br/tede/bitstream/tde/3024/5/Lima,%20Larissa%20Borges%20de%20-%202014.pdf#page=59>
- Lima, L. B. d. (2014). *Desempenho agronômico da soja, fertilidade e dinâmica da matéria orgânica em solos sob aplicação de biochar no cerrado brasileiro*. Universidade Federal de Goiás (Federal University of Goiás), Retrieved from <http://repositorio.bc.ufg.br/tede/handle/tde/3024>
- Lima, M., Skutsch, M., & Costa, G. d. M. (2011). Deforestation and the Social Impacts of Soy for Biodiesel: Perspectives of Farmers in the South Brazilian Amazon. *Ecology and Society*, 16(4). doi:10.5751/ES-04366-160404
- Lima, S. L., Tamiozzo, S., Palomino, E. C., Petter, F. A., & Marimon-Junior, B. H. (2015). Interactions of Biochar and Organic Compound for Seedlings Production of *Magonia pubescens* A. St.-Hil. *Revista Árvore*, 39(4), 655 - 661. doi:10.1590/0100-67622015000400007
- Limayem, A., & Ricke, S. C. (2012). Lignocellulosic biomass for bioethanol production: Current perspectives, potential issues and future prospects. *Progress in Energy and Combustion Science*, 38(4), 449-467. doi:<http://dx.doi.org/10.1016/j.pecs.2012.03.002>
- Lin, A. C. (2019). Carbon Dioxide Removal after Paris. *Ecology Law Quarterly*, 45, 533-582. Retrieved from <https://scholarship.law.berkeley.edu/elq/vol45/iss3/2/>
- Lin, B.-J., & Chen, W.-H. (2015). Sugarcane bagasse pyrolysis in a carbon dioxide atmosphere with conventional and microwave-assisted heating. *Frontiers in Energy Research*, 3, 1-4. Retrieved from journal.frontiersin.org/Journal/10.3389/fenrg.2015.00004/pdf
- Lin, M., Han, L., Singh, M. R., & Xiang, C. (2019). An Experimental- and Simulation-Based Evaluation of the CO₂ Utilization Efficiency of Aqueous-Based Electrochemical CO₂ Reduction Reactors with Ion-Selective Membranes. *ACS Applied Energy Materials*. doi:10.1021/acsaem.9b00986
- Lin, X., Spokas, K., Venterea, R., Zhang, R., Baker, J., & Feyereisen, G. (2014). Assessing Microbial Contributions to N₂O Impacts Following Biochar Additions. *Agronomy*, 4(4), 478 - 496. doi:10.3390/agronomy4040478
- Lin, X. W., Xie, Z. B., Zheng, J. Y., Liu, Q., Bei, Q. C., & Zhu, J. G. (2015). Effects of biochar application on greenhouse gas emissions, carbon sequestration and crop growth in coastal saline soil. *European Journal of Soil Science*, 66(2), 329 - 338. doi:10.1111/ejss.12225
- Lin, Y., et al. (2012). Migration of dissolved organic carbon in biochars and biochar-mineral complexes. *Pesquisa Agropecuária Brasileira*, 47.
- Lin, Y., et al. (2016). Metal-Organic Frameworks for Carbon Dioxide Capture and Methane Storage. *Advanced Energy Materials*, 7(4), 1-29. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/aenm.201601296/full>
- Lin, Y., Munroe, P., Joseph, S., Ziolkowski, A., Van Zwieten, L., Kimber, S., & Rust, J. (2012). Chemical and structural analysis of enhanced biochars: Thermally treated mixtures of biochar, chicken litter, clay and minerals. *Chemosphere*.
- Lin, Y.-J., & Hwang, G.-S. (2009). Charcoal from biomass residues of a Cryptomeria plantation and analysis of its carbon fixation benefit in Taiwan. *Biomass and Bioenergy*, 33(9), 1289-1294. doi:<https://doi.org/10.1016/j.biombioe.2009.05.015>
- Lin, Z., Liu, Q., Liu, G., Cowie, A. L., Bei, Q., Liu, B., . . . Xie, Z. (2017). Effects of Different Biochars on *Pinus elliottii* Growth, N Use Efficiency, Soil N₂O and CH₄ Emissions and C

- Storage in a Subtropical Area of China. *Pedosphere*, 27(2), 248-261. doi:[https://doi.org/10.1016/S1002-0160\(17\)60314-X](https://doi.org/10.1016/S1002-0160(17)60314-X)
- Lindfeldt, E. G., & Westermark, M. O. (2009). Biofuel production with CCS as a strategy for creating a CO₂ -neutral road transport sector. *Energy Procedia*, 1(1), 4111-4118. doi:<https://doi.org/10.1016/j.egypro.2009.02.219>
- Lindley, S. T., & Barber, R. T. (1998). Phytoplankton response to natural and experimental iron addition. *Deep Sea Research Part II: Topical Studies in Oceanography*, 45(6), 1135-1150. doi:[http://dx.doi.org/10.1016/S0967-0645\(98\)00014-9](http://dx.doi.org/10.1016/S0967-0645(98)00014-9)
- Lindner, M. (2019). Would a large-scale tree restoration effort stop climate change? *European Forest Institute*. Retrieved from <https://blog.efi.int/would-a-large-scale-tree-restoration-effort-stop-climate-change/>
- Lindroos, T. J., Rydén, M., Langørgen, Ø., Pursiheimo, E., & Pikkarainen, T. (2019). Robust decision making analysis of BECCS (bio-CLC) in a district heating and cooling grid. *Sustainable Energy Technologies and Assessments*, 34, 157-172. doi:<https://doi.org/10.1016/j.seta.2019.05.005>
- Lingaiah, N., J., M. R., A. R., M. S., Rao, B., & R, P. B. N. (2015). Esterification of glycerol over a solid acid biochar catalyst derived from waste biomass. *RSC Adv.* doi:[10.1039/c5ra06613a](https://doi.org/10.1039/c5ra06613a)
- Lingamdinne, L. P., Roh, H., Choi, Y.-L., Koduru, J. R., Yang, J.-K., & Chang, Y.-Y. (2015). Influencing factors on sorption of TNT and RDX using rice husk biochar. *Journal of Industrial and Engineering Chemistry*. doi:[10.1016/j.jiec.2015.08.012](https://doi.org/10.1016/j.jiec.2015.08.012)
- Lipow, G. (2012). Sorry, we still don't know if biochar can save our asses. *Grist*. Retrieved from <https://grist.org/climate-energy/sorry-we-still-dont-know-if-biochar-can-save-our-asses/>
- Lipper, L., Dutilly-Diane, C., & McCarthy, N. (2010). Supplying Carbon Sequestration From West African Rangelands: Opportunities and Barriers. *63(1 %J Rangeland Ecology and Management)*, 155-166, 112. Retrieved from <https://doi.org/10.2111/REM-D-09-00009.1>
- Lippke, B., et al. (2011). Life cycle impacts of forest management and wood utilization on carbon mitigation : knowns and unknowns. *Carbon Management*, 2, 303-333. Retrieved from <https://www.fs.usda.gov/treesearch/pubs/38598>
- Lipponen, J., et al. (2017). The politics of large-scale CCS deployment. *Energy Procedia*, 114, 7581-7595. Retrieved from https://ac.els-cdn.com/S1876610217320933/1-s2.0-S1876610217320933-main.pdf?_tid=0d8129fa-ecd6-11e7-8bd6-00000aab0f6c&acdnat=1514579155_284feedd3aef2c3b286bc13ee6cad3ba
- Lisabeth, H. P., Zhu, W., Kelemen, P. B., & Ilgen, A. (2017). Experimental evidence for chemo-mechanical coupling during carbon mineralization in ultramafic rocks. *Earth and Planetary Science Letters*, 474(Supplement C), 355-367. doi:<https://doi.org/10.1016/j.epsl.2017.06.045>
- Lisbona, P., Martínez, A., Lara, Y., & Romeo, L. M. (2010). Integration of Carbonate CO₂ Capture Cycle and Coal-Fired Power Plants. A Comparative Study for Different Sorbents. *Energy & Fuels*, 24(1), 728-736. doi:[10.1021/ef900740p](https://doi.org/10.1021/ef900740p)
- Liska, A. J., & Cassman, K. G. (2009). Responses to "Comment on 'Response to Plevin: Implications for Life Cycle Emissions Regulations'" and "Assessing Corn Ethanol: Relevance and Responsibility". *Journal of Industrial Ecology*, 13(6), 994-995. doi:[10.1111/j.1530-9290.2009.00187.x](https://doi.org/10.1111/j.1530-9290.2009.00187.x)
- Liska, A. J., & Heier, C. D. (2013). The limits to complexity: A thermodynamic history of bioenergy. *Biofuels, Bioproducts and Biorefining*, 7(5), 573-581. doi:[10.1002/bbb.1417](https://doi.org/10.1002/bbb.1417)
- Liska, A. J., Yang, H., Milner, M., Goddard, S., Blanco-Canqui, H., Pelton, M. P., . . . Suyker, A. E. (2014). Biofuels from crop residue can reduce soil carbon and increase CO₂ emissions. *Nature Climate Change*, 4(5), 398-401. doi:[10.1038/nclimate2187](https://doi.org/10.1038/nclimate2187)

- <http://www.nature.com/nclimate/journal/v4/n5/abs/nclimate2187.html#supplementary-information>
- Liss, P., Chuck, A., Bakker, D., & Turner, S. (2005). Ocean fertilization with iron: effects on climate and air quality. *Tellus B*, 57(3), 269-271. doi:10.1111/j.1600-0889.2005.00141.x
- Little, J. B. (2017). Can Meadows Rescue the Planet from CO₂? *Scientific American*. Retrieved from https://www.scientificamerican.com/article/can-meadows-rescue-the-planet-from-co2/?WT.mc_id=SA_ENGYSUS_20170511
- Littlecott, C. (2012). Stakeholder interests and the evolution of UK CCS policy. *Energy and Environment*, 23(2), 425-436. doi:10.1260/0958-305X.23.2-3.425
- Littlejohn, C. P. (2016). *Ecosystem service delivery from bioenergy shelterbelts on dairy farms*. Lincoln University, Retrieved from <https://researcharchive.lincoln.ac.nz/handle/10182/6879>
- Liu, A., Tian, D., Xiang, Y., & Mo, H. (2016). Effects of biochar on growth of Asian lotus (*Nelumbo nucifera* Gaertn.) and cadmium uptake in artificially cadmium-polluted water. *Scientia Horticulturae*, 198, 311 - 317. doi:10.1016/j.scienta.2015.11.030
- Liu, B., Liu, Q., Wang, X., Bei, Q., Zhang, Y., Lin, Z., . . . Xie, Z. (2020). A fast chemical oxidation method for predicting the long-term mineralization of biochar in soils. *Science of The Total Environment*, 137390. doi:<https://doi.org/10.1016/j.scitotenv.2020.137390>
- Liu, C., et al. . (2015). Biochar increased water holding capacity but accelerated organic carbon leaching from a sloping farmland soil in China. *Environmental Science and Pollution Research*, 23(2), 995-1006. doi:10.1007/s11356-015-4885-9
- Liu, C., Gallagher, J. J., Sakimoto, K. K., Nichols, E. M., Chang, C. J., Chang, M. C. Y., & Yang, P. (2015). Nanowire–Bacteria Hybrids for Unassisted Solar Carbon Dioxide Fixation to Value-Added Chemicals. *Nano Letters*, 15(5), 3634-3639. doi:10.1021/acs.nanolett.5b01254
- Liu, C., Lu, M., Cui, J., Li, B., & Fang, C. (2014). Effects of straw carbon input on carbon dynamics in agricultural soils: a meta-analysis. 20(5), 1366-1381. doi:doi:10.1111/gcb.12517
- Liu, C. C. K., & Jin, Q. (1995). Artificial upwelling in regular and random waves. *Ocean Engineering*, 22(4), 337-350. doi:[https://doi.org/10.1016/0029-8018\(94\)00019-4](https://doi.org/10.1016/0029-8018(94)00019-4)
- Liu, C.-M., & Wu, S.-Y. (2016). From biomass waste to biofuels and biomaterial building blocks. *Renewable Energy*, 96, Part B, 1056-1062. doi:<http://dx.doi.org/10.1016/j.renene.2015.12.059>
- Liu, F., Zuo, J., Chi, T., Wang, P., & Yang, B. (2015). Removing phosphorus from aqueous solutions by using ironmodified corn straw biochar. *Frontiers of Environmental Science & Engineering*, 9(6), 1066-1075. doi:10.1007/s11783-015-0769-y
- Liu, G., Li, L., Zhang, K., Wang, X., Chang, J., Sheng, Y., . . . Wen, Y. (2016). Facile Preparation of Water-processable Biochar Based on Pitch Pine and Its Electrochemical Application for Cadmium Ion Sensing. *International Journal of ELECTROCHEMICAL SCIENCE*. Retrieved from <http://www.electrochemsci.org/papers/vol11/110201041.pdf>
- Liu, G., Xie, M., & Zhang, S. (2015). Effect of organic fraction of municipal solid waste (OFMSW)-based biochar on organic carbon mineralization in a dry land soil. *Journal of Material Cycles and Waste Management*. doi:10.1007/s10163-015-0447-y
- Liu, G. C., Zheng, H., & Wang, Z. (2014). Analysis of Material Properties with Biochar Improve Indian Mustard (*Brassica juncea*) Growth in Acidic Soil in Northern China. *Applied Mechanics and Materials*, 540. doi:10.4028/www.scientific.net/AMM.540.239
- Liu, G. X., & Yu, Y. S. (2017). Thermal-Electrochemical Co-drive System for Carbon Capture. *Energy Procedia*, 114, 25-31. doi:<https://doi.org/10.1016/j.egypro.2017.03.1142>
- Liu, H. J., et al. (2017). Worldwide Status of CCUS Technologies and Their Development and Challenges in China. *Geofluids*, 1-25. Retrieved from <https://www.hindawi.com/journals/>

[geofluids/2017/6126505/](https://doi.org/10.1016/j.geofluids.2017.6126505)

- Liu, H. Q., Xu, X., Wu, Z. H., Wei, G. X., & Sun, L. (2015). Removal of Heavy Metals from Aqueous Solution Using Biochar Derived from Biomass and Sewage Sludge. *Applied Mechanics and Materials*, 768, 89 - 95. doi:10.4028/www.scientific.net/AMM.768.89
- Liu, J., et al. (2012). Short-term effect of biochar and compost on soil fertility and water status of a Dystric Cambisol in NE Germany under field conditions. *Journal of Plant Nutrition and Soil Science*, 175(5), 698-707. doi:10.1002/jpln.201100172
- Liu, J., et al. . (2014). Effects of biochar amendment on the net greenhouse gas emission and greenhouse gas intensity in a Chinese double rice cropping system. *European Journal of Soil Biology*, 65, 30 - 39. doi:10.1016/j.ejsobi.2014.09.001
- Liu, J., et al. . (2016). Catalytic Pyrolysis of Tar Model Compound with Various Bio-Char Catalysts to Recycle Char from Biomass Pyrolysis. *BioResources*, 11(2), 3752-3768. Retrieved from https://ojs.cnr.ncsu.edu/index.php/BioRes/article/view/BioRes_11_2_3752_Liu_Catalytic_Pyrolysis_Tar_Model
- Liu, J., Meng, J., & Huang, S. (2011). *The development and prospect of biochar carbon sequestration based on agriculture and forestry resources in China*. Paper presented at the 2011 Second International Conference on Mechanic Automation and Control Engineering (MACE), Inner Mongolia, China.
- Liu, J., Shen, J., Li, Y., Su, Y., Ge, T., Jones, D. L., & Wu, J. (2014). Effects of biochar amendment on the net greenhouse gas emission and greenhouse gas intensity in a Chinese double rice cropping system. *European Journal of Soil Biology*, 65(Supplement C), 30-39. doi:<https://doi.org/10.1016/j.ejsobi.2014.09.001>
- Liu, J., Song, Y., & Qiu, W. (2017). Oleaginous microalgae Nannochloropsis as a new model for biofuel production: Review & analysis. *Renewable and Sustainable Energy Reviews*, 72, 154-162. doi:<https://doi.org/10.1016/j.rser.2016.12.120>
- Liu, K., et al. (2015). Effects of Different Biochar Fertilizer Rates on Early and Late Rice Growth and Yield in Northeast Area of Jiangxi province. *CNKI Journal*. doi:10.3969/j.issn.1006-8082.2015.04.020
- Liu, K., Yu, B., Luo, K., Liu, X., & Bai, L. (2016). Reduced sulfentrazone phytotoxicity through increased adsorption and anionic species in biochar-amended soils. *Environmental Science and Pollution Research*. doi:10.1007/s11356-016-6212-5
- Liu, L., et al. (2014). Effect of Biochar on Nitrous Oxide Emission and Its Potential Mechanisms. *Journal of the Air & Waste Management Association*, 64(8), 894-902. Retrieved from <https://www.tandfonline.com/doi/full/10.1080/10962247.2014.899937>
- Liu, L., Chen, P., Sun, M., Shen, G., & Shang, G. (2014). Effect of biochar amendment on PAH dissipation and indigenous degradation bacteria in contaminated soil. *Journal of Soils and Sediments*. doi:10.1007/s11368-014-1006-1
- Liu, N., et al. (2013). Adsorption Characteristics of Ammonium Nitrogen by Biochar from Diverse Origins in Water. *Advanced Materials Research*, 664, 305-312. Retrieved from <https://www.scientific.net/AMR.664.305>
- Liu, N., et al. . (2013). Study on Characteristics of Ammonium Nitrogen Adsorption by Biochar Prepared in Different Temperature. *Advanced Materials Research*, 724 - 725, 452-456. Retrieved from <https://www.scientific.net/AMR.724-725.452.pdf>
- Liu, N., Charrua, A. B., Weng, C.-H., Yuan, X., & Ding, F. (2015). Characterization of biochars derived from agriculture wastes and their adsorptive removal of atrazine from aqueous solution: A comparative study. *Bioresource Technology*, 198, 55 - 62. doi:10.1016/j.biortech.2015.08.129
- Liu, P., et al. (2014). Aqueous Leaching of Organic Acids and Dissolved Organic Carbon from Various Biochars Prepared at Different Temperatures. In.
- Liu, P., et al. (2016). Mechanisms of mercury removal by biochars produced from different

- feedstocks determined using X-ray absorption spectroscopy. *Journal of Hazardous Materials*, 308, 233-242. doi:10.1016/j.jhazmat.2016.01.007
- Liu, P., Yue, M., & Zhang, H. (2016). Adsorptive performance of Ni(II) from aqueous solutions using biochar made of Phragmites australis by adding ammonium polyphosphate as flame retardant. In.
- Liu, Q., et al. (2015). Carbon footprint of rice production under biochar amendment - a case study in a Chinese rice cropping system. *GCB Bioenergy*, 8(1). doi:10.1111/gcbb.12248
- Liu, Q., et al. (2018). How does biochar influence soil N cycle? A meta-analysis. *Plant and Soil*. Retrieved from https://www.researchgate.net/publication/323827300_How_does_biochar_influence_soil_N_cycle_A_meta-analysis
- Liu, Q.-S., & Li, Y.-J. (2015). Sorption and reduction of hexavalent chromium from aqueous solutions by surface modified biochars. *Separation Science and Technology*, 150629134002004. doi:10.1080/01496395.2015.1062026
- Liu, Q.-y., Yang, F., Liu, Z.-h., & Li, G. (2014). Preparation of SnO₂-Co₃O₄/C biochar catalyst as a Lewis acid for corncob hydrolysis into furfural in water medium. *Journal of Industrial and Engineering Chemistry*, 26, 46-54. doi:10.1016/j.jiec.2014.11.041
- Liu, Q.-y., Yang, F., Sun, X.-f., Liu, Z.-h., & Li, G. (2015). Preparation of biochar catalyst with saccharide and lignocellulose residues of corncob degradation for corncob hydrolysis into furfural. *Journal of Material Cycles and Waste Management*, 19(1), 134-143. doi:10.1007/s10163-015-0392-9
- Liu, S., Tang, W., Yang, F., Meng, J., Chen, W. F., & Li, X. (2016). Influence of biochar application on potassium-solubilising *Bacillus mucilaginosus* as potential biofertilizer. *Preparative Biochemistry and Biotechnology*, 47(1), 32-37. doi:10.1080/10826068.2016.1155062
- Liu, S., Yan, C., He, W., Chen, B., Zhang, Y., Liu, Q., & Liu, E. (2015). Effects of different tillage practices on soil water-stable aggregation and organic carbon distribution in dryland farming in Northern China. *Acta Ecologica Sinica*, 35(4), 65-69. doi:<https://doi.org/10.1016/j.chnaes.2015.06.005>
- Liu, S., Zhang, Y., Zong, Y., Hu, Z., Wu, S., Zhou, J., . . . Zou, J. (2015). Response of soil carbon dioxide fluxes, soil organic carbon and microbial biomass carbon to biochar amendment: a meta-analysis. *GCB Bioenergy*, 8(2), 392-406. doi:10.1111/gcbb.12265
- Liu, S.-b., Tan, X.-f., Liu, Y.-g., Gu, Y.-l., Zeng, G.-m., Hu, X.-j., . . . Zhao, B.-b. (2016). Production of biochars from Ca impregnated ramie biomass (*Boehmeria nivea* (L.) Gaud.) and their phosphate removal potential. *RSC Adv.*, 6(7), 5871 - 5880. doi:10.1039/c5ra22142k
- Liu, S.-C., et al. (2014). Effect of holding time on fuel properties of biochars prepared from the torrefaction of coffee residue. *Biomass Conversion and Biorefinery*, 5(2), 209-214. doi:10.1007/s13399-014-0139-1
- Liu, S.-C., & Tsai, W.-T. (2015). Thermochemical Characteristics of Dairy Manure and its Derived Biochars from a Fixed-Bed Pyrolysis. *International Journal of Green Energy*, 13(10), 963-968. doi:10.1080/15435075.2015.1087851
- Liu, S.-H. (2019). Chapter 16 - Waste-Derived Biochar for CO₂ Sequestration. In Y. S. Ok, D. C. W. Tsang, N. Bolan, & J. M. Novak (Eds.), *Biochar from Biomass and Waste* (pp. 295-304): Elsevier.
- Liu, T., et al. (2016). Biochar-supported carbon nanotube and graphene oxide nanocomposites for Pb(II) and Cd(II) removal. *RSC Adv.*, 6(29), 24314-24319. doi:10.1039/c6ra01895e
- Liu, T., Liu, B., & Zhang, W. (2014). Nutrients and Heavy Metals in Biochar Produced by Sewage Sludge Pyrolysis: Its Application in Soil Amendment. *Pol. J. Environ. Stud.*, 23, 271-275. Retrieved from <http://www.pjoes.com/pdf/23.1/Pol.J.Environ.Stud.Vol.23.No.1.271-275.pdf>

- Liu, W., et al. . (2015). Response of CaCl₂-extractable heavy metals, polychlorinated biphenyls, and microbial communities to biochar amendment in naturally contaminated soils. *Journal of Soils and Sediments*, 16(2), 476-485. doi:10.1007/s11368-015-1218-z
- Liu, W., Teng, L., Rohani, S., Qin, Z., Zhao, B., Xu, C. C., . . . Liang, B. (2021). CO₂ mineral carbonation using industrial solid wastes: A review of recent developments. *Chemical Engineering Journal*, 416, 129093. doi:<https://doi.org/10.1016/j.cej.2021.129093>
- Liu, X., et al. (2014). Sustainable biochar effects for low carbon crop production: A 5-crop season field experiment on a low fertility soil from Central China. *Agricultural Systems*, 129, 22-29. doi:10.1016/j.agsy.2014.05.008
- Liu, X., et al. (2016). Biochar has no effect on soil respiration across Chinese agricultural soils. *Science of The Total Environment*, 554-555, 259 - 265. doi:10.1016/j.scitotenv.2016.02.179
- Liu, X., et al. , Li, L., Bian, R., Chen, D., Qu, J., Kibue, G. W., . . . Zheng, J. (2013). Effect of biochar amendment on soil-silicon availability and rice uptake. *Journal of Plant Nutrition and Soil Science*, 177(1), 91-96. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/jpln.201200582/abstract>
- Liu, X., Li, Z., Zhang, Y., Feng, R., & Mahmood, I. B. (2014). Characterization of human manure-derived biochar and energy-balance analysis of slow pyrolysis process. *Waste Management*, 34(9), 1619-1626. doi:10.1016/j.wasman.2014.05.027
- Liu, X., Mao, P., Li, L., & Ma, J. (2019). Impact of biochar application on yield-scaled greenhouse gas intensity: A meta-analysis. *Science of The Total Environment*, 656, 969-976. doi:<https://doi.org/10.1016/j.scitotenv.2018.11.396>
- Liu, X., Miao, R., Lindberg, P., & Lindblad, P. (2019). Modular engineering for efficient photosynthetic biosynthesis of 1-butanol from CO₂ in cyanobacteria. *Energy & Environmental Science*. doi:10.1039/C9EE01214A
- Liu, X., Saydah, B., Eranki, P., Colosi, L. M., Greg Mitchell, B., Rhodes, J., & Clarens, A. F. (2013). Pilot-scale data provide enhanced estimates of the life cycle energy and emissions profile of algae biofuels produced via hydrothermal liquefaction. *Bioresource Technology*, 148, 163-171. doi:<https://doi.org/10.1016/j.biortech.2013.08.112>
- Liu, X., Yu, Y., & Chen, J. (2017). Upgrading the integration of supercritical coal-fired power plant with post-combustion CO₂ capture process through process simulation. *International Journal of Global Warming*, 12(2), 149-163. Retrieved from <http://www.inderscience.com/info/inarticle.php?artid=84512>
- Liu, X., Zhang, Y., Li, Z., Feng, R., & Zhang, Y. (2014). Characterization of corncob-derived biochar and pyrolysis kinetics in comparison with corn stalk and sawdust. *Bioresource Technology*, 170, 76 - 82. doi:10.1016/j.biortech.2014.07.077
- Liu, X. H., & Zhang, X. C. (2012). Effect of Biochar on pH of Alkaline Soils in the Loess Plateau: Results from Incubation Experiments. *International Journal of Agriculture & Biology I*, 14, 745–750. Retrieved from http://www.fspublishers.org/ijab/past-issues/IJABVOL_14_NO_5/10.pdf
- Liu Xu, L. (2015). *Development of new substrates based on biochar and compost for the propagation and production of Rosmarinus officinalis L. in professional nursery (translated from Spanish)*. Universitat Politècnica de València (Polytechnic University of Valencia), Retrieved from <https://riunet.upv.es/handle/10251/54191>
- Liu, X.-y., et al. (2012). Can biochar amendment be an ecological engineering technology to depress N₂O emission in rice paddies?—A cross site field experiment from South China. *Ecological Engineering*, 42, 168–173. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0925857412000389>
- Liu, Y., et al. . (2011). Reducing CH₄ and CO₂ emissions from waterlogged paddy soil with biochar. *Journal of Soils and Sediments, SOILS, SEC 2 • GLOBAL CHANGE, ENVIRON*

RISK ASSESS, SUSTAINABLE LAND USE. doi:10.1007/s11368-011-0376-x

- Liu, Y., Chen, J., Chen, M., Zhang, B., Wu, D., & Cheng, Q. (2015). Adsorption characteristics and mechanism of sewage sludge-derived adsorbent for removing sulfonated methyl phenol resin in wastewater. *RSC Adv.*, 5(93), 76160 - 76169. doi:10.1039/c5ra17125c
- Liu, Y., He, Z., & Uchimiya, M. (2015). Comparison of Biochar Formation from Various Agricultural By-Products Using FTIR Spectroscopy. *Modern Applied Science*, 9(4), 246-253. doi:10.5539/mas.v9n4p246
- Liu, Y., Piao, S., Gasser, T., Ciais, P., Yang, H., Wang, H., . . . Wang, T. (2019). Field-experiment constraints on the enhancement of the terrestrial carbon sink by CO₂ fertilization. *Nature Geoscience*. doi:10.1038/s41561-019-0436-1
- Liu, Y., & Wilcox, J. (2013). Molecular Simulation Studies of CO₂ Adsorption by Carbon Model Compounds for Carbon Capture and Sequestration Applications. *Environmental Science & Technology*, 47(1), 95-101. doi:10.1021/es3012029
- Liu, Y., Yang, M., Wu, Y., Wang, H., Chen, Y., Wu, W. J. J. o. S., & Sediments. (2011). Reducing CH₄ and CO₂ emissions from waterlogged paddy soil with biochar. 11(6), 930-939. doi:10.1007/s11368-011-0376-x
- Liu, Y., Ye, H.-Z., Diederichsen, K. M., Van Voorhis, T., & Hatton, T. A. (2020). Electrochemically mediated carbon dioxide separation with quinone chemistry in salt-concentrated aqueous media. *Nature Communications*, 11(1), 2278. doi:10.1038/s41467-020-16150-7
- Liu, Y. J., Zhao, L., & Huang, L. (2014). Arsenic bioavailability regulated by magnetite in copper tailings: As mobilization into pore water and plant uptake. In *One Century of the Discovery of Arsenicosis in Latin America*.
- Liu, Y.-x., Lyu, H.-h., Shi, Y., Wang, Y.-f., Zhong, Z.-k., & Yang, S.-m. (2015). Effects of biochar on soil nutrients leaching and potential mechanisms: A review. *Ying yong sheng tai xue bao = The journal of applied ecology / Zhongguo sheng tai xue xue hui, Zhongguo ke xue yuan Shenyang ying yong sheng tai yan jiu suo zhu ban*, 26(1), 304-310. Retrieved from <http://europepmc.org/abstract/med/25985683>
- Liu, Z., et al. (2012). Production of solid biochar fuel from waste biomass by hydrothermal carbonization. *Fuel*, 103, 943-949. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0016236112006308>
- Liu, Z., et al. (2015). Improvement of fuel qualities of solid fuel biochars by washing treatment. *Fuel Processing Technology*, 134, 130-135. doi:10.1016/j.fuproc.2015.01.025
- Liu, Z., & Balasubramanian, R. (2013). A comparative study of nitrogen conversion during pyrolysis of coconut fiber, its corresponding biochar and their blends with lignite. *Bioresource Technology*, 151, 85-90. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/24211487>
- Liu, Z., & Balasubramanian, R. (2013). A comparison of thermal behaviors of raw biomass, pyrolytic biochar and their blends with lignite. *Bioresource Technology*, 146, 371-378. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0960852413011401>
- Liu, Z., Chen, X., Jing, Y., Li, Q., Zhang, J., & Huang, Q. (2014). Effects of biochar amendment on rapeseed and sweet potato yields and water stable aggregate in upland red soil. *CATENA*, 123, 45-51. doi:10.1016/j.catena.2014.07.005
- Liu, Z., Demisie, W., & Zhang, M. (2013). Simulated degradation of biochar and its potential environmental implications. *Environmental Pollution*, 179, 146–152. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0269749113002315>
- Liu, Z., Dugan, B., Masiello, C. A., Barnes, R. T., Gallagher, M. E., & Gonnermann, H. (2016). Impacts of biochar concentration and particle size on hydraulic conductivity and DOC leaching of biochar-sand mixtures. *Journal of Hydrology*, 533, 461 - 472. doi:10.1016/j.jhydrol.2015.12.007
- Liu, Z., & Han, G. (2015). Production of solid fuel biochar from waste biomass by low

- temperature pyrolysis. *Fuel*, 158, 159 - 165. doi:10.1016/j.fuel.2015.05.032
- Liu, Z., Han, Y., Jing, M., & Chen, J. (2015). Sorption and transport of sulfonamides in soils amended with wheat straw-derived biochar: effects of water pH, coexistence copper ion, and dissolved organic matter. *Journal of Soils and Sediments*, 17(3), 771-779. doi:10.1007/s11368-015-1319-8
- Liu, Z., Macpherson, G. L., Groves, C., Martin, J. B., Yuan, D., & Zeng, S. (2018). Large and active CO₂ uptake by coupled carbonate weathering. *Earth-Science Reviews*, 182, 42-49. doi:<https://doi.org/10.1016/j.earscirev.2018.05.007>
- Liu, Z., Mi, B., Wei, P., Jiang, Z., Fei, B., & Liu, X. e. (2015). Combustion characteristics of moso bamboo (*Phyllostachys pubescens*). *European Journal of Wood and Wood Products*, 74(2), 255-259. doi:10.1007/s00107-015-0997-7
- Liu, Z., Xue, Y., Gao, F., Cheng, X., & Yang, K. (2016). Removal of ammonium from aqueous solutions using alkali-modified biochars. *Chemical Speciation & Bioavailability*, 28(1-4), 26 - 32. doi:10.1080/09542299.2016.1142833
- Lively, R. P., Sharma, P., McCool, B. A., Beaudry-Losique, J., Luo, D., Thomas, V. M., . . . Chance, R. R. (2015). Anthropogenic CO₂ as a feedstock for the production of algal-based biofuels. *Biofuels, Bioproducts and Biorefining*, 9(1), 72-81. doi:10.1002/bbb.1505
- LLP, C. B. (2021). Finding the Common Ground for Forests. Retrieved from <https://www.lexology.com/library/detail.aspx?g=ae07a220-ee65-47b8-a86a-c9dde087d48b>
- Lobo, F. L., Wang, H., Huggins, T., Rosenblum, J., Linden, K. G., & Ren, Z. J. (2016). Low-energy hydraulic fracturing wastewater treatment via AC powered electrocoagulation with biochar. *Journal of Hazardous Materials*, 309, 180 - 184. doi:10.1016/j.jhazmat.2016.02.020
- Locatelli, B. (2015). Tropical reforestation and climate change: beyond carbon. *Restoration Ecology*, 23(4), 337-343. doi:doi:10.1111/rec.12209
- Lock, H. (2021). Why Tree Planting Is so Important in the Fight Against Climate Change. *Global Citizen*. Retrieved from <https://www.globalcitizen.org/en/content/why-planting-trees-helps-fight-climate-change/?template=next>
- Lock, S. J., Smallman, M., Lee, M., & Rydin, Y. (2014). "Nuclear energy sounded wonderful 40 years ago": UK citizen views on CCS. *Energy Policy*, 66, 428-435. doi:<https://doi.org/10.1016/j.enpol.2013.11.024>
- Lockley, A. (2020). Compilation of Geoengineering You Tube videos, including many with CDR themes. Retrieved from <https://www.youtube.com/playlist?list=PLF8369A27273314D8>
- A comparative energy and costs assessment and optimization for direct air capture technologies. (2021). Lockley, A. [Mobile application software]. Retrieved from <https://open.spotify.com/episode/3z2ymEOatfuiypM3aMDNka>
- The influence of particle size on the potential of enhanced basalt weathering for carbon dioxide removal - Insights from a regional assessment. (2021). Lockley, A. [Mobile application software]. Retrieved from <https://open.spotify.com/episode/5ZBTd1Fov5BWAy8Op5wUgx>
- Lockley, A., & Coffman, D. M. (2018). Carbon dioxide removal and tradeable put options at scale. *Environmental Research Letters*, 13(5), 054034. doi:10.1088/1748-9326/aabe96
- Lockley, A., Mi, Z., & Coffman, D. M. (2019). Geoengineering and the blockchain: Coordinating Carbon Dioxide Removal and Solar Radiation Management to tackle future emissions. *Frontiers of Engineering Management*, 6(1), 38-51. doi:10.1007/s42524-019-0010-y
- Lockley, A., & von Hippel, T. (2020). The carbon dioxide removal potential of Liquid Air Energy Storage: A high-level technical and economic appraisal. *Frontiers of Engineering Management*. doi:10.1007/s42524-020-0102-8
- Lockley, A. J., & Coffman, D. M. D. (2018). Carbon dioxide removal and tradeable put options at scale. *Environmental Research Letters*, 13(8). Retrieved from <http://iopscience.iop.org/>

10.1088/1748-9326/aabe96

- Lockwood, T. (2017). *Public outreach approaches for carbon capture and storage projects*. Retrieved from
- Loftus, R. (2020). This start-up is turning the tide on climate change. *Secure Futures by Kaspersky*. Retrieved from <https://usa.kaspersky.com/blog/secure-futures-magazine/project-vesta-interview/21699/>
- Lohwasser, R., & Madlener, R. (2013). Relating R&D and investment policies to CCS market diffusion through two-factor learning. *Energy Policy*, 52, 439-452. doi:<https://doi.org/10.1016/j.enpol.2012.09.061>
- Lomax, G. (2016). Chapter 3.2 - The Value of Land Restoration as a Response to Climate Change A2 - Chabay, Ilan. In M. Frick & J. Helgeson (Eds.), *Land Restoration* (pp. 235-245). Boston: Academic Press.
- Lomax, G., Lenton, T. M., Adeosun, A., & Workman, M. (2015). COMMENTARY: Investing in negative emissions. *Nature Climate Change*, 5(6), 498-500. Retrieved from <Go to ISI>:/WOS:000356814800015
- Lomax, G., Workman, M., Lenton, T., & Shah, N. (2015). Reframing the policy approach to greenhouse gas removal technologies. *Energy Policy*, 78, 125-136. doi:<http://dx.doi.org/10.1016/j.enpol.2014.10.002>
- Lonappan, L., Rouissi, T., Das, R. K., Brar, S. K., Ramirez, A. A., Verma, M., . . . Valero, J. R. (2016). Adsorption of methylene blue on biochar microparticles derived from different waste materials. *Waste Management*, 49, 537-544. doi:[10.1016/j.wasman.2016.01.015](https://doi.org/10.1016/j.wasman.2016.01.015)
- Lone, A. H., et al. (2015). Biochar for Sustainable Soil Health: A Review of Prospects and Concerns. *Pedosphere*, 25(5), 639 - 653. doi:[10.1016/s1002-0160\(15\)30045-x](https://doi.org/10.1016/s1002-0160(15)30045-x)
- Long, C., & Ken, C. (2010). Atmospheric carbon dioxide removal: long-term consequences and commitment. *Environmental Research Letters*, 5(2), 024011. Retrieved from <http://stacks.iop.org/1748-9326/5/i=2/a=024011>
- Long, N. V. D., Lee, D. Y., Kwag, C., Lee, Y. M., Lee, S. W., Hessel, V., & Lee, M. (2021). Improvement of marine carbon capture onboard diesel fueled ships. *Chemical Engineering and Processing - Process Intensification*, 108535. doi:<https://doi.org/10.1016/j.cep.2021.108535>
- Longhurst, A. R. (2007). Chapter 5 - NUTRIENT LIMITATION: THE EXAMPLE OF IRON. In A. R. Longhurst (Ed.), *Ecological Geography of the Sea (Second Edition)* (pp. 71-87). Burlington: Academic Press.
- Lopes, J. V. M., Bresciani, A. E., Carvalho, K. M., Kulay, L. A., & Alves, R. M. B. (2021). Multi-criteria decision approach to select carbon dioxide and hydrogen sources as potential raw materials for the production of chemicals. *Renewable and Sustainable Energy Reviews*, 151, 111542. doi:<https://doi.org/10.1016/j.rser.2021.111542>
- López Barreiro, D., Bauer, M., Hornung, U., Posten, C., Kruse, A., & Prins, W. (2015). Cultivation of microalgae with recovered nutrients after hydrothermal liquefaction. *Algal Research*, 9, 99-106. doi:<https://doi.org/10.1016/j.algal.2015.03.007>
- López, R., Díaz, M. J., & González-Pérez, J. A. (2018). Extra CO₂ sequestration following reutilization of biomass ash. *Science of The Total Environment*, 625, 1013-1020. doi:<https://doi.org/10.1016/j.scitotenv.2017.12.263>
- Lopez, V., & Ghezzehei, T. A. (2015). Effect of almond shell biochar addition on the hydro-physical properties of an arable Central Valley soil. *American Geophysical Union, Fall Meeting*. Retrieved from <http://adsabs.harvard.edu/abs/2014AGUFM.B41A0006L>
- Lopez, V. D. (2015). *Biochar as a soil amendment: Impact on hydraulic and physical properties of an arable loamy sand soil*. University of California, Retrieved from <http://gradworks.umi.com/15/84/1584222.html>
- López-Cano, I., Roig, A., Cayuela, M. L., Alburquerque, J. A., & Sánchez-Monedero, M. A.

- (2016). Biochar improves N cycling during composting of olive mill wastes and sheep manure. *Waste Management*, 49, 553-559. doi:10.1016/j.wasman.2015.12.031
- Lopez-Capel, E., et al. . (2016). Biochar properties. In *Biochar in European Soils and Agriculture: Science and Practice*.
- L'Orange Seigo, S., et al. (2014). Predictors of risk and benefit perception of carbon capture and storage (CCS) in regions with different stages of deployment. *International Journal of Greenhouse Gas Control*, 25, 23-32. Retrieved from https://www.researchgate.net/publication/261674577_Predictors_of_risk_andBenefit_perception_of_carbon_capture_and_storage_CCS_in_regions_with_different_stages_of_deployment
- L'Orange Seigo, S., Dohle, S., & Siegrist, M. (2014). Public perception of carbon capture and storage (CCS): A review. *Renewable and Sustainable Energy Reviews*, 38, 848-863. Retrieved from https://www.researchgate.net/publication/278078108_Public_perception_of_carbon_capture_and_storage_CCS_A_review
- Lorenz, K., & Lal, R. (2014). Biochar application to soil for climate change mitigation by soil organic carbon sequestration. *Journal of Plant Nutrition and Soil Science*, 177(5), 651 - 670. doi:10.1002/jpln.201400058
- Lorenz, K., & Lal, R. (2014). Soil organic carbon sequestration in agroforestry systems. A review. *Agronomy for Sustainable Development*, 34(2), 443-454. doi:10.1007/s13593-014-0212-y
- Loria, P., & Bright, M. B. H. (2021). Lessons captured from 50 years of CCS projects. *The Electricity Journal*, 34(7), 106998. doi:<https://doi.org/10.1016/j.tej.2021.106998>
- Lorwood, A. (2021). How a Small California Farm and Tribal Nation are Working Together to Become Part of the Solution to Climate Change. Retrieved from <https://foodtank.com/news/2021/07/how-a-small-california-farm-and-tribal-nation-are-working-together/>
- Lotter, D., Hunter, N., Straub, M., & Msola, D. (2015). Microgasification cookstoves and pellet fuels from waste biomass: A cost and performance comparison with charcoal and natural gas in Tanzania. In.
- Lotze-Campen, H., et al. (2010). Scenarios of global bioenergy production: The trade-offs between agricultural expansion, intensification and trade. *Ecological Modelling*, 221, 2188-2196. Retrieved from http://s3.amazonaws.com/academia.edu.documents/45693634/j.ecolmodel.2009.10.00220160517-26672-1q6r9pl.pdf?AWSAccessKeyId=AKIAIWOWYYGZ2Y53UL3A&Expires=1489788949&Signature=AMxBq8UMjUXDY%2BeatFufvCPv6xI%3D&response-content-disposition=inline%3B%20filename%3DScenarios_of_global_bioenergy_production.pdf
- Lotze-Campen, H., von Lampe, M., Kyle, P., Fujimori, S., Havlik, P., van Meijl, H., . . . Wise, M. (2014). Impacts of increased bioenergy demand on global food markets: an AgMIP economic model intercomparison. *Agricultural Economics*, 45(1), 103-116. doi:10.1111/agec.12092
- Lou, L., Liu, F., Yu, Q., Chen, F., Yang, Q., Hu, B., & Chen, Y. (2013). Influence of humic acid on the sorption of pentachlorophenol by aged sediment amended with rice-straw biochar. *Applied Geochemistry*, 33, 76-83. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0883292713000267>
- Lou, L., Wu, B., Wang, L., Luo, L., Xu, X., Hou, J., . . . Chen, Y. (2010). Sorption and ecotoxicity of pentachlorophenol polluted sediment amended with rice-straw derived biochar. *Bioresource Technology*, 102(5), 4036-4041. doi:10.1016/j.biortech.2010.12.010
- Lou, L., Yao, L., Cheng, G., Wang, L., He, Y., & Hu, B. (2015). Application of Rice-Straw Biochar and Microorganisms in Nonylphenol Remediation: Adsorption-Biodegradation Coupling Relationship and Mechanism. *Plos One*, 10(9). doi:10.1371/journal.pone.0137467.s002
- Lou, Y., et al. (2015). Water Extract from Straw Biochar Used for Plant Growth Promotion: An

- Initial Test. *BioResources*, 11(1), 249-266. Retrieved from <http://ojs.cnr.ncsu.edu/index.php/BioRes/article/view/>
BioRes_11_1_249_Lou_Water_Extract_Straw_Biochar_Plant_Growth
- Lovelock, C. E., & Reef, R. (2020). Variable Impacts of Climate Change on Blue Carbon. *One Earth*, 3(2), 195-211. doi:<https://doi.org/10.1016/j.oneear.2020.07.010>
- Lovelock, C. E., Ruess, R. W., & Feller, I. C. (2011). CO₂ Efflux from Cleared Mangrove Peat. *Plos One*, 6(1), 1-4.
- Lovelock, J. E., & Rapley, C. G. (2007). Ocean pipes could help the Earth to cure itself. *Nature*, 449(7161), 403-403. Retrieved from <http://dx.doi.org/10.1038/449403a>
- Low, S., & Boettcher, M. (2020). Delaying decarbonization: Climate governmentalities and sociotechnical strategies from Copenhagen to Paris. *Earth System Governance*, 5, 100073. doi:<https://doi.org/10.1016/j.esg.2020.100073>
- Low, S., & Buck, H. J. (2020). The practice of responsible research and innovation in “climate engineering”. *WIREs Climate Change*, 11(3), 1-17. doi:[10.1002/wcc.644](https://doi.org/10.1002/wcc.644)
- Low, S., & Honegger, M. (2020). A Precautionary Assessment of Systemic Projections and Promises From Sunlight Reflection and Carbon Removal Modeling. *Risk Analysis*, n/a(n/a). doi:[10.1111/risa.13565](https://doi.org/10.1111/risa.13565)
- Low, S., & Schäfer, S. (2020). Is bio-energy carbon capture and storage (BECCS) feasible? The contested authority of integrated assessment modeling. *Energy Research & Social Science*, 60, 101326. doi:<https://doi.org/10.1016/j.erss.2019.101326>
- Lowe, J. (2016). Guest post: Do we need BECCS to avoid dangerous climate change? *CarbonBrief*. Retrieved from <http://www.carbonbrief.org/guest-post-do-we-need-beccs-to-avoid-dangerous-climate-change>
- Lozano, E. M., Petersen, S. B., Paulsen, M. M., Rosendahl, L. A., & Pedersen, T. H. (2021). Techno-economic evaluation of carbon capture via physical absorption from HTL gas phase derived from woody biomass and sewage sludge. *Energy Conversion and Management: X*, 11, 100089. doi:<https://doi.org/10.1016/j.ecmx.2021.100089>
- Lü, F., et al. (2016). Biochar alleviates combined stress of ammonium and acids by firstly enriching Methanosaeta and then Methanosarcina. *Water Research*, 90, 34 - 43. doi:[10.1016/j.watres.2015.12.029](https://doi.org/10.1016/j.watres.2015.12.029)
- LU, F., WANG, X., HAN, B., OUYANG, Z., DUAN, X., ZHENG, H., & MIAO, H. (2009). Soil carbon sequestrations by nitrogen fertilizer application, straw return and no-tillage in China's cropland. 15(2), 281-305. doi:[doi:10.1111/j.1365-2486.2008.01743.x](https://doi.org/10.1111/j.1365-2486.2008.01743.x)
- Lu, H., et al. (2011). Relative distribution of Pb²⁺ sorption mechanisms by sludge-derived biochar. *Water Research*, 48(3), 854-862. doi:[10.1016/j.watres.2011.11.058](https://doi.org/10.1016/j.watres.2011.11.058)
- Lu, H., et al. (2015). Changes in soil microbial community structure and enzyme activity with amendment of biochar-manure compost and pyroligneous solution in a saline soil from Central China. *European Journal of Soil Biology*, 70, 67 - 76. doi:[10.1016/j.ejsobi.2015.07.005](https://doi.org/10.1016/j.ejsobi.2015.07.005)
- Lu, H., et al. . (2015). Combining phytoextraction and biochar addition improves soil biochemical properties in a soil contaminated with Cd. *Chemosphere*, 119, 209 - 216. doi:[10.1016/j.chemosphere.2014.06.024](https://doi.org/10.1016/j.chemosphere.2014.06.024)
- Lu, H., Hu, X., & Liu, H. (2013). Influence of pyrolysis conditions on stability of biochar. *Environmental Science & Technology (China)*, 36, 11-14.
- Lu, H., Li, Z., Fu, S., Méndez, A., Gascó, G., & Paz-Ferreiro, J. (2015). Effect of Biochar in Cadmium Availability and Soil Biological Activity in an Anthrosol Following Acid Rain Deposition and Aging. *Water, Air, & Soil Pollution*, 226(5). doi:[10.1007/s11270-015-2401-y](https://doi.org/10.1007/s11270-015-2401-y)
- Lu, H. e. a. (2014). Can Biochar and Phytoextractors Be Jointly Used for Cadmium Remediation? *Plos One*, 9(4), e95218. Retrieved from <http://www.plosone.org/article/>

info%3Adoi%2F10.1371%2Fjournal.pone.0095218

- Lu, J., et al. (2012). Using Rice Straw Biochar Simultaneously as the Sustained Release Carrier of Herbicides and Soil Amendment for Their Reduced Leaching. *Journal of Agriculture and Food Chemistry*, 60(26), 6463-6470. doi:10.1021/jf3009734
- Lu, K., Yang, X., Shen, J., Robinson, B., Huang, H., Liu, D., . . . Wang, H. (2014). Effect of bamboo and rice straw biochars on the bioavailability of Cd, Cu, Pb and Zn to Sedum plumbizincicola. *Agriculture, Ecosystems & Environment*, 191, 124-132. doi:<http://dx.doi.org/10.1016/j.agee.2014.04.010>
- Lu, L., et al. (2018). Wastewater treatment for carbon capture and utilization. *Nature Sustainability*, 1, 750-758. Retrieved from https://www.nature.com/articles/s41893-018-0187-9.epdf?author_access_token=jE1cDdPhW80MEB4P0Yp-7dRgN0jAjWel9jnR3ZoTv0MI9dfBew-n2U3AxOPRibsgS5pyl0Ei5ZESPB73SpLlqmsVp9ndk2gprkHwwGb2KuQAwQBcSxh0fG
- Lu Lu, e. a. (2015). Microbial Electrolytic Carbon Capture for Carbon Negative and Energy Positive Wastewater Treatment. *Environmental Science & Technology*, 49, 8193-8201. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/acs.est.5b00875>
- Lu, N., et al. (2014). The effect of biochar on soil respiration in the maize growing season after 5 years of consecutive application. *Soil Research*, 52(5), 505-512. Retrieved from <http://www.publish.csiro.au/sr/SR13239>
- Lu, S. G., Sun, F. F., & Zong, Y. T. (2014). Effect of rice husk biochar and coal fly ash on some physical properties of expansive clayey soil (Vertisol). *CATENA*, 114, 37-44.
- Lu, T., et al. . (2012). On the Pyrolysis of Sewage Sludge: The Influence of Pyrolysis Temperature on Biochar, Liquid and Gas Fractions. *Journal Advanced Materials Research*, 518-523, 3412-3420. doi:10.4028/www.scientific.net/AMR.518-523.3412
- Lu, T., et al. (2015). Characteristic of heavy metals in biochar derived from sewage sludge. *Journal of Material Cycles and Waste Management*, 18(4), 725-733. doi:10.1007/s10163-015-0366-y
- Lu, W., et al. (2014). Biochar suppressed the decomposition of organic carbon in a cultivated sandy loam soil: A negative priming effect. *Soil Biology and Biochemistry*, 76, 12-21. doi:10.1016/j.soilbio.2014.04.029
- Lu, W., et al. (2015). Nitrogen Amendment Stimulated Decomposition of Maize Straw-Derived Biochar in a Sandy Loam Soil: A Short-Term Study. *Plos One*, 10(7), e0133131. doi:10.1371/journal.pone.0133131.t002
- Lu, W., Kang, C., Wang, Y., & Xie, Z. (2015). Influence of Biochar on the Moisture of Dark Brown Soil and Yield of Maize in Northern China. *INTERNATIONAL JOURNAL OF AGRICULTURE & BIOLOGY*. Retrieved from <http://web.a.ebscohost.com/abstract?direct=true&profile=ehost&scope=site&authtype=crawler&jrnld=15608530&AN=10993123&h=ArE%2bumjRhSqj%2fcNNFxdSM8xMjVVTMj4XkFQj101DkGLN%2ffLoXXqRMWkl3Er20UO5UWsLpFLDJQZE01cW3MRcw%3d%3d&crl=c&resultNs=AdminWebAuth&resultLoc>
- Lu, W., & Zhang, H. (2015). Response of biochar induced carbon mineralization priming effects to additional nitrogen in a sandy loam soil. *Applied Soil Ecology*, 96, 165 - 171. doi:10.1016/j.apsoil.2015.08.002
- Lu, W. G., Sculley, J. P., Yuan, D. Q., Krishna, R., & Zhou, H. C. (2013). Carbon Dioxide Capture from Air Using Amine-Grafted Porous Polymer Networks. *Journal of Physical Chemistry C*, 117(8), 4057-4061. doi:10.1021/jp311512q
- Lu, X., Cao, L., Wang, H., Peng, W., Xing, J., Wang, S., . . . McElroy, M. B. (2019). Gasification of coal and biomass as a net carbon-negative power source for environment-friendly electricity generation in China. *116*(17), 8206-8213. doi:10.1073/pnas.1812239116 %J

Proceedings of the National Academy of Sciences

- Lu, X., Li, Y., Wang, H., Singh, B. P., Hu, S., Luo, Y., . . . Li, Y. (2019). Responses of soil greenhouse gas emissions to different application rates of biochar in a subtropical Chinese chestnut plantation. *Agricultural and Forest Meteorology*, 271, 168-179. doi:<https://doi.org/10.1016/j.agrformet.2019.03.001>
- Lu, X., Withers, M. R., Seifkar, N., Field, R. P., Barrett, S. R. H., & Herzog, H. J. (2015). Biomass logistics analysis for large scale biofuel production: Case study of loblolly pine and switchgrass. *Bioresource Technology*, 183, 1-9. doi:<https://doi.org/10.1016/j.biortech.2015.02.032>
- Lubber, M. (2021). The Critical—and Limited—Role That Natural Climate Solutions Play In Getting To Net Zero. *Forbes*. Retrieved from <https://www-forbes-com.cdn.ampproject.org/c/s/www.forbes.com/sites/mindylubber/2021/05/24/the-critical-and-limited-role-that-natural-climate-solutions-play-in-getting-to-net-zero/amp/>
- Lucander, K. A. O. (2015). Biokolets påverkan på markens organiska material - Kan gödsling med biokol bidra till en kolinlagring i marken? (Bio coal effect on soil organic matter - Can fertilization with biochar contribute to carbon storage in the soil?). In.
- Lucchini, P., et al. (2014). Does biochar application alter heavy metal dynamics in agricultural soil? *Agriculture, Ecosystems & Environment*, 184, 149–157. Retrieved from <http://www.sciencedirect.com/science/article/pii/S016788091300412X>
- Lucchini, P., Quilliam, R. S., DeLuca, T. H., Vamerali, T., & Jones, D. L. (2014). Increased bioavailability of metals in two contrasting agricultural soils treated with waste wood-derived biochar and ash. *Environmental Science and Pollution Research*, 21(5), 3230 - 3240. doi:[10.1007/s11356-013-2272-y](https://doi.org/10.1007/s11356-013-2272-y)
- Luckow, P., Wise, M. A., Dooley, J. J., & Kim, S. H. (2010). Large-scale utilization of biomass energy and carbon dioxide capture and storage in the transport and electricity sectors under stringent CO₂ concentration limit scenarios. *International Journal of Greenhouse Gas Control*, 4(5), 865-877. doi:[10.1016/j.ijggc.2010.06.002](https://doi.org/10.1016/j.ijggc.2010.06.002)
- Luderer, G., Vrontisi, Z., Bertram, C., Edelenbosch, O. Y., Pietzcker, R. C., Rogelj, J., . . . Kriegler, E. (2018). Residual fossil CO₂ emissions in 1.5–2 °C pathways. *Nature Climate Change*, 8(7), 626-633. doi:[10.1038/s41558-018-0198-6](https://doi.org/10.1038/s41558-018-0198-6)
- Luedeling, E., Börner, J., Amelung, W., Schiffers, K., Shepherd, K., & Rosenstock, T. (2019). Forest restoration: Overlooked constraints. *Science*, 366(6463), 315-315. doi:[10.1126/science.aay7988](https://doi.org/10.1126/science.aay7988)
- Luedeling, E., Kindt, R., Huth, N. I., & Koenig, K. (2014). Agroforestry systems in a changing climate—challenges in projecting future performance. *Current Opinion in Environmental Sustainability*, 6, 1-7. doi:<https://doi.org/10.1016/j.cosust.2013.07.013>
- Luehrs, D. R. (2015). *Reducing PM Concentrations in Simulated High Temperature Gas Streams*. Texas A & M University, Retrieved from <http://oaktrust.tamu.edu/handle/1969.1/153308?show=full>
- Lugato, E., Leip, A., & Jones, A. (2018). Mitigation potential of soil carbon management overestimated by neglecting N₂O emissions. *Nature Climate Change*, 8(3), 219-223. doi:[10.1038/s41558-018-0087-z](https://doi.org/10.1038/s41558-018-0087-z)
- Lugato, E., Vaccari, F. P., Genesio, L., Baronti, S., Pozzi, A., Rack, M., . . . Miglietta, F. (2013). An energy-biochar chain involving biomass gasification and rice cultivation in Northern Italy. *GCB Bioenergy*, 5(2), 192-201. doi:[10.1111/gcbb.12028](https://doi.org/10.1111/gcbb.12028)
- Luhmann, A. J., Tutolo, B. M., Tan, C., Moskowitz, B. M., Saar, M. O., & Seyfried, W. E. (2017). Whole rock basalt alteration from CO₂-rich brine during flow-through experiments at 150°C and 150bar. *Chemical Geology*, 453, 92-110. doi:<https://doi.org/10.1016/j.chemgeo.2017.02.002>
- Luis, P. (2016). Use of monoethanolamine (MEA) for CO₂ capture in a global scenario:

- Consequences and alternatives. *Desalination*, 380, 93-99. doi:<https://doi.org/10.1016/j.desal.2015.08.004>
- Lum, K. K., Kim, J., & Lei, X. G. (2013). Dual potential of microalgae as a sustainable biofuel feedstock and animal feed. *Journal of Animal Science and Biotechnology*, 4(1), 53. doi:10.1186/2049-1891-4-53
- Lun, L. W., Zainab, H., Assoc Prof Dr Othman, H., & Assoc Prof Dr Ainatul Alia, A. (2015). *Biochar : A green product from biomass waste to boost crop growth*. Paper presented at the International Engineering Invention & Innovation Exhibition. <http://dspace.unimap.edu.my/xmlui/handle/123456789/40410>
- Lund, H., & Mathiesen, B. V. (2012). The role of Carbon Capture and Storage in a future sustainable energy system. *Energy*, 44(1), 469-476. doi:<https://doi.org/10.1016/j.energy.2012.06.002>
- Luo, C., et al. (2015). Application of eco-compatible biochar in anaerobic digestion to relieve acid stress and promote the selective colonization of functional microbes. *Water Research*, 68, 710 - 718. doi:10.1016/j.watres.2014.10.052
- Luo, D., Hu, Z., Choi, D. G., Thomas, V. M., Realff, M. J., & Chance, R. R. (2010). Life Cycle Energy and Greenhouse Gas Emissions for an Ethanol Production Process Based on Blue-Green Algae. *Environmental Science & Technology*, 44(22), 8670-8677. doi:10.1021/es1007577
- Luo, L., Xu, C., Chen, Z., & Zhang, S. (2015). Properties of biomass-derived biochars: Combined effects of operating conditions and biomass types. *Bioresource Technology*, 192, 83 - 89. doi:10.1016/j.biortech.2015.05.054
- Luo, X., Liu, G. C., Xia, Y., Chen, L., Jiang, Z., Zheng, H., & Wang, Z. (2016). Use of biochar-compost to improve properties and productivity of the degraded coastal soil in the Yellow River Delta, China. *Journal of Soils and Sediments*. doi:10.1007/s11368-016-1361-1
- Luo, Y., Durenkamp, M., Nobili, M. D., Lin, Q., & Brookes, P. C. (2011). Short term soil priming effects and the mineralisation of biochar following its incorporation to soils of different pH. *Soil Biology and Biochemistry*, 43(11), 2304-2314. doi:10.1016/j.soilbio.2011.07.020
- Luo, Z., Feng, W., Luo, Y., Baldock, J., & Wang, E. (2017). Soil organic carbon dynamics jointly controlled by climate, carbon inputs, soil properties and soil carbon fractions. 23(10), 4430-4439. doi:doi:10.1111/gcb.13767
- Luo, Z., Wang, E., & Sun, O. J. (2010). Can no-tillage stimulate carbon sequestration in agricultural soils? A meta-analysis of paired experiments. *Agriculture, Ecosystems & Environment*, 139(1), 224-231. doi:<https://doi.org/10.1016/j.agee.2010.08.006>
- Lupi n, M., & J. Herzog, H. (2013). *NER300: Lessons learnt in attempting to secure CCS projects in Europe* (Vol. 19).
- Luque-Moreno, L. C. (2015). *Pyrolysis Based Biorefineries for the Production of Fermentable Substrates*. University of Western Ontario, Retrieved from <http://ir.lib.uwo.ca/etd/3357/>
- Lustgarten, A. (2018). Palm Oil Was Supposed to Help Save the Planet. Instead It Unleashed a Catastrophe. *New York Times Magazine*. Retrieved from <https://www.nytimes.com/2018/11/20/magazine/palm-oil-borneo-climate-catastrophe.html?nl=top-stories&nlid=23306988ries&ref=cta>
- Luth, F., & Setiyono, H. (2019). The Ability of Carbon Agroforestry System to Store Carbon Stock. *Journal of Forestry and Environment*, 1(02), 6-10. Retrieved from <https://journal.uniku.ac.id/index.php/forestry-and-environment/article/view/1671/1300>
- Lutz, S. (2019). Whales are a trillion-dollar climate change fix! *UN Environment GRID ARENDAL*. Retrieved from <https://news.grida.no/whales-are-a-trillion-dollar-climate-change-fix>
- Lutz, S. J. e. a. (2019). Assessment of Oceanic Blue Carbon in the UAE: Policy Options. 1-37. Retrieved from <https://agedi.org/oceanic-blue-carbon-policy-survey-results-now->

available/

- Lutz, S. J. e. a. (2019). *Fish Carbon: Exploring Marine Vertebrate Carbon Services*. Retrieved from https://gridarendal-website-live.s3.amazonaws.com/production/documents/s_document/163/original/Fish-Carbon-2014.pdf?1484140288
- Luyen, P. T., Khang, D. N., & Preston, T. (2012). Effects of biochar from gasifier stove and effluent from biodigester on growth of maize in acid and fertile soils. *Livestock Research for Rural Development*, 24(5). Retrieved from <http://www.lrrd.org/lrrd24/5/luye24075.htm>
- Luyssaert, S., Marie, G., Valade, A., Chen, Y.-Y., Njakou Djomo, S., Ryder, J., . . . McGrath, M. J. (2018). Trade-offs in using European forests to meet climate objectives. *Nature*, 562(7726), 259-262. doi:10.1038/s41586-018-0577-1
- Ly, P., Vu, Q. D., Jensen, L. S., Pandey, A., & de Neergaard, A. (2014). Effects of rice straw, biochar and mineral fertiliser on methane (CH₄) and nitrous oxide (N₂O) emissions from rice (*Oryza sativa* L.) grown in a rain-fed lowland rice soil of Cambodia: a pot experiment. *Paddy and Water Environment*, 13(4), 465-475. doi:10.1007/s10333-014-0464-9
- Lychuk, T. (2014). *Evaluation of Biochar Applications and Irrigation as Climate Change Adaptation Options for Agricultural Systems*. University of Maryland, Retrieved from <http://drum.lib.umd.edu/handle/1903/15342>
- Lychuk, T. E., et al. . (2014). Biochar as a global change adaptation: predicting biochar impacts on crop productivity and soil quality for a tropical soil with the Environmental Policy Integrated Climate (EPIC) model. *Mitigation and Adaptation Strategies for Global Change*, 20(8), 1437-1458. Retrieved from <https://link.springer.com/article/10.1007/s11027-014-9554-7>
- Lynd, L. R. (1996). Overview and Evaluation of Fuel Ethanol from Cellulosic Biomass: Technology, Economics, the Environment, and Policy. *Annual Review of Chemical and Biomolecular Engineering*, 21, 403-465. Retrieved from <http://www.annualreviews.org/doi/10.1146/annurev.energy.21.1.403>
- Lynd, L. R., et al. (2011). A global conversation about energy from biomass: the continental conventions of the global sustainable bioenergy project. *Interface Focus*, 1, 271-279. Retrieved from <http://rsfs.royalsocietypublishing.org/content/royfocus/1/2/271.full.pdf>
- Lyngfelt, A., Johansson, D. J. A., & Lindeberg, E. (2019). Negative CO₂ emissions - An analysis of the retention times required with respect to possible carbon leakage. *International Journal of Greenhouse Gas Control*, 87, 27-33. doi:<https://doi.org/10.1016/j.ijggc.2019.04.022>
- Lyons, K., & Westoby, P. (2014). Carbon colonialism and the new land grab: Plantation forestry in Uganda and its livelihood impacts. *Journal of Rural Studies*, 36, 13-21. doi:<https://doi.org/10.1016/j.jrurstud.2014.06.002>
- Ma, C., Li, W., Zu, Y., Yang, L., & Li, J. (2014). Antioxidant Properties of Pyroligneous Acid Obtained by Thermochemical Conversion of Schisandra chinensis Baill. *Molecules*, 19(12), 20821 - 20838. doi:10.3390/molecules191220821
- Ma, C., Wang, N., Chen, Y., Khokarale, S. G., Bui, T. Q., Weiland, F., . . . Ji, X. (2020). Towards negative carbon emissions: Carbon capture in bio-syngas from gasification by aqueous pentaethylenehexamine. *Applied Energy*, 279, 115877. doi:<https://doi.org/10.1016/j.apenergy.2020.115877>
- Ma, F., et al. (2016). Adsorption of cadmium by biochar produced from pyrolysis of corn stalk in aqueous solution. *Water Science & Technology*, 74(6), 1336-1345. Retrieved from <http://wst.iwaponline.com/content/ppiwawst/74/6/1335.full.pdf>
- Ma, F.-f., Zhao, B.-w., Diao, J.-r., Zhong, J.-k., & Li, A.-b. (2015). Ammonium Adsorption Characteristics in Aqueous Solution by Dairy Manure Biochar. *Huan jing ke xue= Huanjing kexue / [bian ji, Zhongguo ke xue yuan huan jing ke xue wei yuan hui "Huan*

- jing ke xue" bian ji wei yuan hui.], 36(5), 1678-1685. Retrieved from <http://europepmc.org/abstract/med/26314116>*
- Ma, J., Wilson, K., Zhao, Q., Yorkey, G., & Frear, C. (2013). *Odor in Commercial Scale Compost: Literature Review and Critical Analysis*. Retrieved from <https://fortress.wa.gov/ecy/publications/publications/1307066.pdf>
- Ma, J. F. (2004). Role of silicon in enhancing the resistance of plants to biotic and abiotic stresses. *Soil Science and Plant Nutrition*, 50(1), 11-18. doi:10.1080/00380768.2004.10408447
- Ma, L. Q. (2009). Biochar Serves As A Long-Term Soil Carbon Pool. 地学前缘 (*Earth Science Frontiers*). Retrieved from <http://www.sciencemeta.com/index.php/DXQY/article/view/219670>
- Ma, R., Shen, J., Wu, J., Tang, Z., Shen, Q., & Zhao, F.-J. (2014). Impact of agronomic practices on arsenic accumulation and speciation in rice grain. *Environmental Pollution*, 194, 217 - 223. doi:10.1016/j.envpol.2014.08.004
- Ma, X., Zhou, B., Budai, A., Jeng, A., Hao, X., Wei, D., . . . Rasse, D. (2016). Study of Biochar Properties by Scanning Electron Microscope – Energy Dispersive X-Ray Spectroscopy (SEM-EDX). *Communications in Soil Science and Plant Analysis*, 47(5), 593 - 601. doi:10.1080/00103624.2016.1146742
- Ma, Y., Liu, W.-J., Zhang, N., Li, Y.-S., Jiang, H., & Sheng, G.-P. (2014). Polyethyleneimine modified biochar adsorbent for hexavalent chromium removal from the aqueous solution. *Bioresource Technology*. doi:10.1016/j.biortech.2014.07.014
- Ma, Y., Wang, Q., Sun, X., & Wang, X. (2014). A novel magnetic biochar from spent shiitake substrate: characterization and analysis of pyrolysis process. *Biomass Conversion and Biorefinery*. doi:10.1007/s13399-014-0147-1
- Ma, Y. L., & Matsunaka, T. (2013). Biochar derived from dairy cattle carcasses as an alternative source of phosphorus and amendment for soil acidity. *Soil Science and Plant Nutrition*, 59(4), 628-641. Retrieved from <http://www.tandfonline.com/doi/pdf/10.1080/00380768.2013.806205?needAccess=true>
- Mabon, L., & Littlecott, C. (2016). Stakeholder and public perceptions of CO₂-EOR in the context of CCS – Results from UK focus groups and implications for policy. *International Journal of Greenhouse Gas Control*, 49, 128-137. doi:<https://doi.org/10.1016/j.ijggc.2016.02.031>
- Mabon, L., & Shackley, S. (2015). Meeting the targets or re-imagining society? An empirical study into the ethical landscape of carbon dioxide capture and storage in Scotland. *Environmental Values*, 24(4), 465-482. doi:10.3197/096327115X14345368709907
- Mabon, L., Shackley, S., Blackford, J. C., Stahl, H., & Miller, A. (2015). Local perceptions of the QICS experimental offshore CO₂ release: Results from social science research. *International Journal of Greenhouse Gas Control*, 38, 18-25. doi:<http://dx.doi.org/10.1016/j.ijggc.2014.10.022>
- Mabon, L., Shackley, S., & Bower-Bir, N. (2014). Perceptions of sub-seabed carbon dioxide storage in Scotland and implications for policy: A qualitative study. *Marine Policy*, 45, 9-15. doi:<https://doi.org/10.1016/j.marpol.2013.11.011>
- Mabon, L., Vercelli, S., Shackley, S., Anderlucci, J., Battisti, N., Franzese, C., & Boot, K. (2013). 'Tell me what you Think about the Geological Storage of Carbon Dioxide': Towards a Fuller Understanding of Public Perceptions of CCS. *Energy Procedia*, 37, 7444-7453. doi:<https://doi.org/10.1016/j.egypro.2013.06.687>
- Mac Dowell, N., & Fajardy, M. (2017). Inefficient power generation as an optimal route to negative emissions via BECCS? *Environmental Research Letters*, 12(4), 045004. Retrieved from <http://stacks.iop.org/1748-9326/12/i=4/a=045004>
- Mac Dowell, N., Fennell, P. S., Shah, N., & Maitland, G. C. (2017). The role of CO₂ capture and

- utilization in mitigating climate change. *Nature Climate Change*, 7, 243. doi:10.1038/nclimate3231
- Macaulay-Turner, C. (2021). Q&A: Rock-based Negative Emissions Technologies with Corey Myers, Assistant Professor and Researcher at Waseda University, Japan. Retrieved from <https://thefutureforestcompany.com/2021/08/06/rock-based-negative-emissions-technologies/>
- Macdonald, C. A., Delgado-Baquerizo, M., Reay, D. S., Hicks, L. C., & Singh, B. K. (2018). Chapter 6 - Soil Nutrients and Soil Carbon Storage: Modulators and Mechanisms. In B. K. Singh (Ed.), *Soil Carbon Storage* (pp. 167-205): Academic Press.
- Macdonald, L. M., et al. (2015). *SSSA Special Publication Agricultural and Environmental Applications of Biochar: Advances and Barriers Regional Considerations for Targeted Use of Biochar in Agriculture and Remediation in Australia*: Soil Science Society of America, Inc.
- Macdonald, L. M., Williams, M., Oliver, D., & Kookana, R. (2015). Biochar and hydrochar as low-cost sorbents for removing contaminants from water. *Journal of the Australian Water Association*, 42(2), 142-147. Retrieved from <http://search.informit.com.au/documentSummary;dn=269604591550627;res=IELAPA>
- MacDougall, A. H. (2013). Reversing climate warming by artificial atmospheric carbon-dioxide removal: Can a Holocene-like climate be restored? *Geophysical Research Letters*, 40(20), 5480-5485. doi:doi:10.1002/2013GL057467
- Mace, M. J., et al. (2018). *Governing large-scale carbon dioxide removal: are we ready?* Retrieved from <https://www.c2g2.net/wp-content/uploads/C2G2-2018-CDR-Governance-1.pdf>
- Mace, M. J., Fyson, C. L., Schaeffer, M., & Hare, W. L. (2021). Large-Scale Carbon Dioxide Removal to Meet the 1.5°C Limit: Key Governance Gaps, Challenges and Priority Responses. *Global Policy*, 12(S1), 67-81. doi:<https://doi.org/10.1111/1758-5899.12921>
- Macedo, J., et al. (2015). *Enhancing Productivity and Livelihoods among Smallholder Irrigators through Biochar and Fertilizer Amendments at Ekhang Village, Vientiane Province, Lao PDR*. Paper presented at the Climate-Smart Agriculture Conference. www.researchgate.net/profile/Jenkins_Macedo/publication/268076126_Enhancing_Productivity_and_Livelihoods_among_Smallholder_Irrigators_though_Biochar_and_Fertilizer_Amendments_at_Ekhang_Village_Vientiane_Province_Lao_PDR/links/5460dd2a0cf2c1a63bff749b.pdf
- Machdar, I., Firmansyah, Faisal, M., Fatanah, U., & Hamdani. (2014). *PENGEMBANGAN REAKTOR FAST PYROLYSIS KONTINYU PENGHASIL BIO-OIL DARI LIMBAH BIOMASSA INDUSTRI SAWIT (CONTINUOUS PYROLYSIS FAST REACTOR DEVELOPMENT PRODUCER OF BIO-OIL PALM INDUSTRY BIOMASS WASTE)*. Paper presented at the UR-Proceedings: University of Riau.
- Macias, F., & Camps Arbestain, M. (2010). Soil carbon sequestration in a changing global environment. *Mitigation Adapt. Strat. Global Change*, 15, 511-529.
- Macias-Fauria, M., et al. (2020). Pleistocene Arctic megafaunal ecological engineering as a natural climate solution? *Phil. Trans. R. Soc. B*, 375, 1-13. Retrieved from <https://doi.org/10.1098/rstb.2019.0122>
- MacKenzie, K. (2021). Big Oil's Net-Zero Plans Show the Hard Limits of Carbon Offsets. *Bloomberg Green*. Retrieved from [https://www.bloomberg.com/news/articles/2021-03-01/big-oil-s-netzero-plans-show-the-hard-limits-of-carbon-offsets](https://www.bloomberg.com/news/articles/2021-03-01/big-oil-s-net-zero-plans-show-the-hard-limits-of-carbon-offsets)
- Mackenzie, K. (2021). Messy Carbon Offsets Show Markets Aren't Always the Answer. *Bloomberg Green*. Retrieved from <https://www.bloomberg.com/news/articles/2021-01-29/messy-carbon-offsets-show-markets-aren-t-always-the-answer?s=03>
- Mackenzie, K. (2021). Too Many Companies Are Banking on Carbon Capture to Reach Net

- Zero. *Bloomberg Green*. Retrieved from [https://www.bloomberg.com/amp/news/articles/2021-01-15/too-many-companies-are-banking-on-carbon-capture-to-reach-netzero](https://www.bloomberg.com/amp/news/articles/2021-01-15/too-many-companies-are-banking-on-carbon-capture-to-reach-net-zero)
- MacKenzie, M. D., & DeLuca, T. H. (2006). Charcoal and shrubs modify soil processes in ponderosa pine forests of western montana. *Plant and Soil*, 287(1-2), 257-266. Retrieved from <https://link.springer.com/article/10.1007/s11104-006-9074-7>
- Mackey, B., Prentice, I. C., Steffen, W., House, J. I., Lindenmayer, D., Keith, H., & Berry, S. (2013). Untangling the confusion around land carbon science and climate change mitigation policy. *Nature Climate Change*, 3(6), 552-557. doi:10.1038/nclimate1804
- Mackie, K. A., Marhan, S., Ditterich, F., Schmidt, H. P., & Kandeler, E. (2015). The effects of biochar and compost amendments on copper immobilization and soil microorganisms in a temperate vineyard. *Agriculture, Ecosystems & Environment*, 201, 58 - 69. doi:10.1016/j.agee.2014.12.001
- Mackler, S., et al. (2020). *Investing in Climate Innovation: The Environmental Case for Direct Air Capture of Carbon Dioxide*. Retrieved from <https://bipartisanpolicy.org/report/investing-in-climate-innovation-the-environmental-case-for-direct-air-capture-of-carbon-dioxide/>
- Mackler, S. (2020). Testimony on the Development and Deployment of Large-Scale Carbon Dioxide Management Technologies, United States Senate Committee on Energy and Natural Resources. Retrieved from <https://bipartisanpolicy.org/letter/testimony-on-the-development-and-deployment-of-large-scale-carbon-dioxide-management-technologies/>
- Mackler, S., et al. (2021). *The Case for Federal Support to Advance Direct Air Capture*. Retrieved from https://bipartisanpolicy.org/wp-content/uploads/2021/06/BPC_FederalCaseForDAC-final.pdf
- Mackler, S., et al. (2021). *The Commercial Case for Direct Air Capture of Carbon Dioxide*. Retrieved from <https://bipartisanpolicy.org/report/the-commercial-case-for-dac/>
- Mackler, S., Fishman, X., & Broberg, D. (2021). A policy agenda for gigaton-scale carbon management. *The Electricity Journal*, 34(7), 106999. doi:<https://doi.org/10.1016/j.tej.2021.106999>
- Macreadie, P. I., et al. (2014). Quantifying and modelling the carbon sequestration capacity of seagrass meadows--a critical assessment. *Marine Pollution Bulletin*, 83(2), 430-439. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/23948090>
- Macreadie, P. I., et al. (2017). Can we manage coastal ecosystems to sequester more blue carbon? *Frontiers in Ecology and the Environment*, 15(4), 206-213. doi:doi:10.1002/fee.1484
- Macreadie, P. I., Anton, A., Raven, J. A., Beaumont, N., Connolly, R. M., Friess, D. A., . . . Duarte, C. M. (2019). The future of Blue Carbon science. *Nature Communications*, 10(1), 3998. doi:10.1038/s41467-019-11693-w
- Madari, B. E., Lima, L. B., Silva, M. A. S., Novotny, E. H., Alcântara, F. A., Carvalho, M. T. M., & Petter, F. A. (2013). *Carbon Distribution in Humic Substance Fractions Extracted from Soils Treated with Charcoal (Biochar)*. Paper presented at the Functions of Natural Organic Matter in Changing Environment. https://link.springer.com/chapter/10.1007/978-94-007-5634-2_185
- Madden, D., & Curtin, T. (2016). Carbon dioxide capture with amino-functionalised zeolite- β : A temperature programmed desorption study under dry and humid conditions. *Microporous and Mesoporous Materials*, 228, 310-317. doi:<http://dx.doi.org/10.1016/j.micromeso.2016.03.041>
- Madden, D. G., Scott, H. S., Kumar, A., Chen, K.-J., Sanii, R., Bajpai, A., . . . Zaworotko, M. J. (2017). Flue-gas and direct-air capture of CO_2 by porous metal-organic materials. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, 375(2084). doi:10.1098/rsta.2016.0025
- Madiba, O. F., Solaiman, Z. M., Carson, J. K., & Murphy, D. V. (2016). Biochar increases

- availability and uptake of phosphorus to wheat under leaching conditions. *Biology and Fertility of Soils*, 52(4), 439 - 446. doi:10.1007/s00374-016-1099-3
- Madrigal, A. (2008). New Geoengineering Scheme Tackles Ocean Acidification, Too. July 22. Retrieved from <https://www.wired.com/2008/07/new-geoengineer/>
- Maestrini, B., Nannipieri, P., & Abiven, S. (2015). A meta-analysis on pyrogenic organic matter induced priming effect. 7(4), 577-590. doi:10.1111/gcbb.12194
- Maftu'ah, E. (2015). *Prosiding Seminar Nasional Masyarakat Biodiversitas Indonesia Potensi berbagai bahan organik rawa sebagai sumber biochar*. Paper presented at the Seminar Nasional Masyarakat Biodiversitas Indonesia. <http://biodiversitas.mipa.uns.ac.id/M0104/M010417.pdf>
- Magar, L. B. (2018). Total Biomass Carbon Sequestration Ability Under the Changing Climatic Condition by Paulownia tomentosa Steud. *International Journal of Applied Sciences and Biotechnology*, 6(3), 220-226. Retrieved from <https://www.nepjol.info/index.php/IJASBT/article/view/20772>
- Magee, E., et al. . (2013). The Effect of Biochar Application in Microalgal Culture on the Biomass Yield and Cellular Lipids of Chlorella vulgaris. Retrieved from <http://www.conference.net.au/chemeca2013/papers/30442.pdf>
- Magill, B. (2013). Study Shows Carbon Sequestration Can Cause Quakes. *Climate Central*. Retrieved from <https://www.climatecentral.org/news/study-shows-carbon-sequestration-could-cause-earthquakes-16698>
- Magill, B. (2016). Scientists Turn Carbon Dioxide Emissions into Stone. *Scientific American*. Retrieved from <https://www.scientificamerican.com/article/scientists-turn-carbon-dioxide-emissions-into-stone-video/>
- Magill, B. (2016). Scientists Warn Negative Emissions Are a 'Moral Hazard'. *Climate Central*. Retrieved from <http://www.climatecentral.org/news/scientists-warn-negative-emissions-moral-hazard-20785>
- Magill, B. (2017). Budget Guts U.S. Carbon Capture, Storage Research. *Climate Central*. Retrieved from http://www.climatecentral.org/news/budget-guts-us-carbon-capture-storage-research-21478?utm_source=Sailthru&utm_medium=email&utm_campaign=Issue%202017-05-26%20Utility%20Dive%20Newsletter%20%5Bissue:10500%5D&utm_term=Utility%20Dive
- Magill, B. (2017). World's First Commercial CO2 Capture Plant Goes Live. *Climate Central*. Retrieved from <http://www.climatecentral.org/news/first-commercial-co2-capture-plant-live-21494>
- Magill, B. (2018). Carbon Removal Firms See Opportunity in U.N. Climate Report. *Bloomberg News*. Retrieved from <https://www.bna.com/carbon-removal-firms-n73014483159/>
- Magill, B. (2020). Military Researching Ways to Suck Carbon From Air to Make Fuel. *Bloomberg Environment*. Retrieved from <https://news.bloombergenvironment.com/environment-and-energy/military-researching-ways-to-suck-carbon-from-air-to-make-fuel>
- Maginn, E. J. (2010). Molecular Design of High Capacity, Low Viscosity, Chemically Tunable Ionic Liquids for CO₂ Capture. *J. Phys. Chem. Lett.*, 1(24), 3494-3499. Retrieved from <https://pubs.acs.org/doi/abs/10.1021/jz101533k>
- Magnusson, A. (2015). Improving small-scale agriculture and countering deforestation: the case of biochar and biochar producing stoves in Embu County, Kenya. In.
- Magrini-Bair, K. A., et al. (2009). Biomass Derived, Carbon Sequestering, Designed Fertilizers. *Annals of Environmental Science*, 3, 217-225. Retrieved from <http://openjournals.neu.edu/aes/journal/article/view/v3art7>
- Magwood, C. (2019). *Opportunities for Carbon Dioxide Removal and Storage in Building Materials*. (M.A.). Trent University, Retrieved from <https://www.chrismagwood.ca/>

- uploads/1/5/9/3/15931000/
magwood_opportunities_for_co2_capture_and_storage_in_building_materials_copy.pdf
- Mahar, A., et al. (2015). Immobilization of lead and cadmium in contaminated soil using amendments: A review. *Pedosphere*, 25(4), 555-568. Retrieved from http://pedosphere.issas.ac.cn/trqen/ch/reader/view_abstract.aspx?file_no=20150407&flag=1
- Mahdi, Z., et al. . (2015). Date Palm (*Phoenix Dactylifera L.*) Seed Characterization for Biochar Preparation. In.
- Maher, B. (2018). Why Policymakers Should View Carbon Capture and Storage as a Stepping-stone to Carbon Dioxide Removal. *Global Policy*, 9(1).
- Maher, D. T., Call, M., Santos, I. R., & Sanders, C. J. (2018). Beyond burial: lateral exchange is a significant atmospheric carbon sink in mangrove forests. *Biology Letters*, 14(7). doi:10.1098/rsbl.2018.0200
- Maher, K., et al. (2016). A spatially resolved surface kinetic model for forsterite dissolution. *Geochimica Et Cosmochimica Acta*, 174, 313-334. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0016703715006535?via%3Dihub>
- Maher, K., & Chamberlain, C. P. (2014). Hydrologic Regulation of Chemical Weathering and the Geologic Carbon Cycle. *Science*, 343(6178), 1502-1504. doi:10.1126/science.1250770
- Mahinpey, N., Murugan, P., Mani, T., & Raina, R. (2009). Analysis of Bio-Oil, Biogas, and Biochar from Pressurized Pyrolysis of Wheat Straw Using a Tubular Reactor. *Energy Fuels*, 23(5), 2736–2742. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/ef8010959>
- Mahmood, W. M. F. W., et al. (2015). Characterisation and potential use of biochar from gasified oil palm wastes. *Journal of Engineering Science and Technology*(June), 45-64. Retrieved from http://jestec.taylors.edu.my/Special%20Issue%20UKM_ITC%202014/JESTEC-%20UKMITC_6_2015_045_054.pdf
- Mahmoudkhani, M., Heidel, K. R., Ferreira, J. C., Keith, D. W., & Cherry, R. S. (2009). Low energy packed tower and caustic recovery for direct capture of CO₂ from air. *Energy Procedia*, 1(1), 1535-1542. doi:<https://doi.org/10.1016/j.egypro.2009.01.201>
- Mahmoudkhani, M., & Keith, D. W. (2009). Low-energy sodium hydroxide recovery for CO₂ capture from atmospheric air—Thermodynamic analysis. *International Journal of Greenhouse Gas Control*, 3(4), 376-384. doi:<http://dx.doi.org/10.1016/j.ijggc.2009.02.003>
- Mahowald, N. M., et al. (2005). Atmospheric global dust cycle and iron inputs to the ocean. *Global Biogeochemical Cycles*, 19(4), 1-15. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1029/2004GB002402/abstract>
- Mahutga, R. R., Gent, S. P., & Twedt, M. P. (2014). *Developing a Model to Predict the Torrefaction of Biomass*. Paper presented at the ASME 2014 8th International Conference on Energy Sustainability collocated with the ASME 2014 12th International Conference on Fuel Cell Science, Engineering and Technology, Boston, Massachusetts, USA. <http://proceedings.asmedigitalcollection.asme.org/proceeding.aspx?articleid=1920665>
- Maia, C. B. F., Madari, B., & Novotny, E. H. (2011). Advances in Biochar Research in Brazil. In *Dynamic Soil, Dynamic Plant*.
- Maity, J. P., Bundschuh, J., Chen, C.-Y., & Bhattacharya, P. (2014). Microalgae for third generation biofuel production, mitigation of greenhouse gas emissions and wastewater treatment: Present and future perspectives – A mini review. *Energy*, 78, 104-113. doi:<https://doi.org/10.1016/j.energy.2014.04.003>
- Majendie, A., & Parija, P. (2019). How to Halt Global Warming for \$300 Billion. *Bloomberg*. Retrieved from <https://www.bloomberg.com/news/articles/2019-10-23/how-to-halt-global-warming-for-300-billion>
- Major, J., . et al. (2005). Influence of market orientation on food plant diversity of farms located

- on amazonian dark earth in the region of Manaus, Amazonas, Brazil. *Economic Botany*, 59(1), 77-86. Retrieved from [https://link.springer.com/article/10.1663/0013-0001\(2005\)059\[0077:IOMOOF\]2.0.CO;2](https://link.springer.com/article/10.1663/0013-0001(2005)059[0077:IOMOOF]2.0.CO;2)
- Major, J., et al. (2005). Weed Composition and Cover After Three Years of Soil Fertility Management in the Central Brazilian Amazon: Compost, Fertilizer, Manure and Charcoal Applications. *Weed Biology and Management*, 5(2), 69-76. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/j.1445-6664.2005.00159.x/abstract>
- Major, J., et al. (2005). Weed Dynamics on Amazonian Dark Earth and Adjacent Soils of Brazil. *Agriculture, Ecosystems and Environment*, 111(1-4), 1-12. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0167880905002343>
- Major, J., et al. (2009). Biochar Effects on Nutrient Leaching. In *Biochar for Environmental Management: Science and Technology* (pp. 271-288). London, UK: Earthscan.
- Major, J., et al. (2010). Fate of soil-applied black carbon: downward migration, leaching and soil respiration. *Global Change Biology*, 16(4), 1366-1379. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2486.2009.02044.x/abstract>
- Major, J., et al. . (2010). Maize yield and nutrition during 4 years after biochar application to a Colombian savanna oxisol. *Plant and Soil*, 333(1), 117-128. doi:10.1007/s11104-010-0327-0
- Major, J. (2011). *Biochar: a new soil management tool for farmers and gardeners*. Retrieved from <http://www.biochar-international.org/sites/default/files/ASD%20Guide%20to%20Biochar%283%29.pdf>
- Major, J., et al. (2012). Nutrient Leaching in a Colombian Savanna Oxisol Amended with Biochar. *Journal of Environmental Quality*, 41(4), 1076-1086. doi:10.2134/jeq2011.0128
- Major, J., & Hoppe, r. B. (2010). Biochar for Soil Reclamation and More! In (pp. 42 - 45).
- Major, J., Rondon, M., Molina, D., Riha, S. J., & Lehmann, J. (2010). Maize yield and nutrition during 4Â years after biochar application to a Colombian savanna oxisol. *Plant and Soil*, 333. doi:10.1007/s11104-010-0327-0
- Majumdar, A., & Deutch, J. (2018). Research Opportunities for CO₂ Utilization and Negative Emissions at the Gigatonne Scale. *Joule*, 2(5), 805-809. doi:10.1016/j.joule.2018.04.018
- Makarfi, S. M. a. (2015). *The biochemical impact of biochar in soil environments*. Newcastle University, Retrieved from <https://theses.ncl.ac.uk/dspace/handle/10443/2676>
- Mäkelä, A. (2015). *Negative Emissions: The future promises and policy challenges of Carbon Dioxide Removal technologies*. (Bachelor of Arts with Honors Dissertation). University of Lancaster, Retrieved from https://www.academia.edu/24491007/Negative_Emissions_The_future_promises_and_policy_challenges_of_Carbon_Dioxide_Removal_technologies?email_work_card=title
- Makoto, K., et al. (2010). Buried charcoal layer and ectomycorrhizae cooperatively promote the growth of Larix gmelinii seedlings. *Plant and Soil*, 327(1), 143-152. Retrieved from <https://link.springer.com/article/10.1007/s11104-009-0040-z>
- Malatak, J. (2015). Energetic use of solid products of pyrolysis technology. *Agricultural Engineering International: CIGR Journal*(May), 208-217. Retrieved from <http://www.cigrjournal.org/index.php/Ejournal/article/view/3078>
- Malca, J., & Freeire, F. (2010). Uncertainty Analysis in Biofuel Systems: An Application to the Life Cycle of Rapeseed Oil. *Journal of Industrial Ecology*, 14(2), 322-334.
- Malca, J., & Freire, F. (2006). Renewability and life-cycle energy efficiency of bioethanol and bio-ethyl tertiary butyl ether (bioETBE): Assessing the implications of allocation. *Energy*, 31, 3362-3380. Retrieved from <https://eg.sib.uc.pt/bitstream/10316/4215/1/file4488b9aae1b34370b38cb3c54fc14bb2.pdf>
- Malca, J., & Freire, F. (2011). Life-cycle studies of biodiesel in Europe: a review addressing the variability of results and modeling issues. *Renewable and Sustainable Energy Reviews*,

- 15(1), 338-351. Retrieved from <http://www.sciencedirect.com/science/article/pii/S136403211000300X>
- Malghani, S., Gleixner, G., & Trumbore, S. E. (2013). Chars produced by slow pyrolysis and hydrothermal carbonization vary in carbon sequestration potential and greenhouse gases emissions. *Soil Biology and Biochemistry*, 62(Supplement C), 137-146. doi:<https://doi.org/10.1016/j.soilbio.2013.03.013>
- Malhi, Y., Meir, P., & Brown, S. (2002). Forests, carbon and global climate. *Philosophical Transactions of the Royal Society A*, 360(1797), 1567-1591. Retrieved from <http://rsta.royalsocietypublishing.org/content/roypta/360/1797/1567.full.pdf>
- Malhotra, A., & Schmidt, T. S. (2020). Accelerating Low-Carbon Innovation. *Joule*. doi:[10.1016/j.joule.2020.09.004](https://doi.org/10.1016/j.joule.2020.09.004)
- Malińska, K., Zabochnicka-Świątek, M., Cáceres, R., & Marfà, O. (2016). The effect of precomposted sewage sludge mixture amended with biochar on the growth and reproduction of Eisenia fetida during laboratory vermicomposting. *Ecological Engineering*, 90, 35 - 41. doi:[10.1016/j.ecoleng.2016.01.042](https://doi.org/10.1016/j.ecoleng.2016.01.042)
- Malińska, K., Zabochnicka-Świątek, M., & Dach, J. (2014). Effects of biochar amendment on ammonia emission during composting of sewage sludge. *Ecological Engineering*, 71, 474 - 478. doi:[10.1016/j.ecoleng.2014.07.012](https://doi.org/10.1016/j.ecoleng.2014.07.012)
- Malm, A., et al. (2021). Seize the Means of Carbon Removal: The Political Economy of Direct Air Capture. *Historical Materialism*, 1-46.
- Malone, E. J., Dooley, J. J., & Bradbury, J. A. (2010). Moving from misinformation derived from public attitude surveys on carbon dioxide capture and storage towards realistic stakeholder involvement. *International Journal of Greenhouse Gas Control*, 4, 419-425. Retrieved from https://www.researchgate.net/publication/223501901_Moving_from_misinformation_derived_from_public_attitude_surveys_on_carbon_dioxide_capture_and_storage_towards_realistic_stakeholder_involvement
- Malone, E. L., Bradbury, J. A., & Dooley, J. J. (2009). Keeping CCS stakeholder involvement in perspective. *Energy Procedia*, 1(1), 4789-4794. doi:<https://doi.org/10.1016/j.egypro.2009.02.305>
- Manariotis, I. D., Fotopoulou, K. N., & Karapanagioti, H. K. (2015). Preparation and Characterization of Biochar Sorbents Produced from Malt Spent Rootlets. *Industrial & Engineering Chemistry Research*, 54(39), 9577 - 9584. doi:[10.1021/acs.iecr.5b02698](https://doi.org/10.1021/acs.iecr.5b02698)
- Mandal, S., et al. (2013). Biochar: An innovative soil ameliorant for climate change mitigation in NE India. *Current Science*, 105(5), 568-569. Retrieved from https://www.researchgate.net/publication/269688584_Biochar_An_innovative_soil_ameliorant_for_climate_change_mitigation_in_NE_India/link/5497ffb80cf2c5a7e342814a/download
- Mandal, S., et al. (2013). Characteristics of Weed Biomass-derived Biochar and Their Effect on Properties of Beehive Briquettes. *Indian Journal of Hill Farming*, 26, 8-12. Retrieved from http://www.kiran.nic.in/pdf/IJHF/Vol26_1/hillfarming26-1.pdf#page=8
- Mandal, S., Bolan, N. S., Sarkar, B., & Naidu, R. (2015). PREPARATION AND SURFACE MODIFICATION OF BIOCHAR FOR ENVIRONMENTAL REMEDIATION. In.
- Mandal, S., Thangarajan, R., Bolan, N. S., Sarkar, B., Khan, N., Ok, Y. S., & Naidu, R. (2015). Biochar-induced concomitant decrease in ammonia volatilization and increase in nitrogen use efficiency by wheat. *Chemosphere*. doi:[10.1016/j.chemosphere.2015.04.086](https://doi.org/10.1016/j.chemosphere.2015.04.086)
- Mandal, S. H. (2019). Transforming Atmospheric CO₂ into Alternative Fuels: a Metal-Free Approach under Ambient Conditions. *Chem. Sci.* Retrieved from <https://pubs.rsc.org/en/content/articlehtml/2019/sc/c8sc03581d>
- Mander, S., Anderson, K., Larkin, A., Gough, C., & Vaughan, N. (2017). The Role of Bio-energy

- with Carbon Capture and Storage in Meeting the Climate Mitigation Challenge: A Whole System Perspective. *Energy Procedia*, 114, 6036-6043. doi:<https://doi.org/10.1016/j.egypro.2017.03.1739>
- Mander, S., Wood, R., & Gough, C. (2009). Exploring the media framing of carbon capture and storage and its influence on public perceptions. *IOP Conference Series: Earth and Environmental Science*, 6(53), 532014. Retrieved from <http://stacks.iop.org/1755-1315/6/i=53/a=532014>
- Mangal, S., Priya, S. S., Lewis, N. L., & Jonnalagadda, S. (2018). Synthesis and characterization of metal organic framework-based photocatalyst and membrane for carbon dioxide conversion. *Materials Today: Proceedings*, 5(8, Part 3), 16378-16389. doi:<https://doi.org/10.1016/j.matpr.2018.05.134>
- Mangalassery, S., Mooney, S. J., Sparkes, D. L., Fraser, W. T., & Sjögersten, S. (2015). Impacts of zero tillage on soil enzyme activities, microbial characteristics and organic matter functional chemistry in temperate soils. *European Journal of Soil Biology*, 68, 9-17. doi:<https://doi.org/10.1016/j.ejsobi.2015.03.001>
- Mangrich, A. S., Angelo, L. C., & Mantovani, K. M. (2013). Biochar Produced from Chemical Oxidation of Charcoal. *Functions of Natural Organic Matter in Changing Environment*, 997-1001.
- Mangrich, A. S., & Cardoso, E. M. C. (2015). *ACS Symposium Series Water Challenges and Solutions on a Global Scale Improving the Water Holding Capacity of Soils of Northeast Brazil by Biochar Augmentation* (Vol. 1206). Washington, DC: American Chemical Society.
- Manickam, T., Cornelissen, G., Bachmann, R., Ibrahim, I., Mulder, J., & Hale, S. (2015). Biochar Application in Malaysian Sandy and Acid Sulfate Soils: Soil Amelioration Effects and Improved Crop Production over Two Cropping Seasons. *Sustainability*, 7(12), 16756 - 16770. doi:<10.3390/su71215842>
- Manikandan, A., & Subramanian, K. S. (2013). Urea Intercalated Biochar—a Slow Release Fertilizer Production and Characterisation. *Indian Journal of Science and Technology*, 6(12), 5579–5584.
- Manikandan, A., Subramanian, K. S., & Pandian, K. (2015). Effect of high energy ball milling on particle size and surface area of adsorbents for efficient loading of fertilizer. *An Asian Journal of Soil Science*, 8(2), 249-254. Retrieved from http://www.researchgate.net/profile/Angamuthu_Manikandan/publication/267567591_Effect_of_High_Energy_Ball_Milling_on_Particle_Size_and_Surface_Area_of_Adsorbents_for_Efficient>Loading_of_Fertilizer/links/55febdc408aec948c4f3cf67.pdf
- Manivanh, N., & Preston, T. (2015). Protein-enriched cassava root meal improves the growth performance of Moo Lat pigs fed ensiled taro (*Colocasia esculenta*) foliage and banana stem. *Livestock Research for Rural Development* 27. Retrieved from <http://lrrd.cipav.org.co/lrrd27/3/noup27044.html>
- Mankasingh, U., Choi, P.-C., & Ragnarsdottir, V. (2009). Biochar application in Tamil Nadu and the global food crisis. *Geochimica Et Cosmochimica Acta*, 73, A828-A828.
- Mankasingh, U., Choi, P.-C., & Ragnarsdottir, V. (2011). Biochar application in a tropical, agricultural region: a plot scale study in Tamil Nadu, India. *Applied Geochemistry*, 26(Supplement), S218-S221. doi:<10.1016/j.apgeochem.2011.03.108>
- Manna, S., & Singh, N. (2015). Effect of wheat and rice straw biochars on pyrazosulfuron-ethyl sorption and persistence in a sandy loam soil. *Journal of Environmental Science and Health, Part B*, 50(7), 463 - 472. doi:<10.1080/03601234.2015.1018757>
- Manning, D. A. C. (2008). Biological enhancement of soil carbonate precipitation: passive removal of atmospheric CO₂. In *Mineralogical Magazine* (Vol. 72, pp. 639).
- Manning, D. A. C., & Lopez-Capel, E. (2009). Test Procedures for Determining the Quantity of

- Biochar within Soils. In L. Johannes & J. Stephen (Eds.), *Biochar for Environmental Management: Science and Technology* (pp. 301-316). London, UK: Earthscan.
- Manning, D. A. C., & Renforth, P. (2013). Passive Sequestration of Atmospheric CO₂ through Coupled Plant-Mineral Reactions in Urban soils. *Environmental Science & Technology*, 47(1), 135-141. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/es301250j>
- Manning, D. A. C., Renforth, P., Lopez-Capel, E., Robertson, S., & Ghazireh, N. (2013). Carbonate precipitation in artificial soils produced from basaltic quarry fines and composts: An opportunity for passive carbon sequestration. *International Journal of Greenhouse Gas Control*, 17, 309-317. doi:<http://dx.doi.org/10.1016/j.ijggc.2013.05.012>
- Manning, L. (2021). Brief: Biden's climate plan includes 'carbon bank' for farmers who adopt regen practices. Retrieved from <https://agfundernews.com/carbon-bank-bidens-climate-plan-includes-aimed-at-farmers-who-adopt-regen-practices.html>
- Manning, P., Taylor, G., & E. Hanley, M. (2015). Bioenergy, Food Production and Biodiversity – An Unlikely Alliance? , 7(4), 570-576. doi:10.1111/gcbb.12173
- Manoussi, V., Shayegh, S., & Tavoni, M. (2017). *Optimal Carbon Dioxide Removal in Face of Ocean Carbon Sink Feedback*. Retrieved from <http://ageconsearch.umn.edu/record/266288/files/NDL2017-057.pdf>
- Manrique, S. M., & Franco, J. (2020). Tree cover increase mitigation strategy: implications of the "replacement approach" in carbon storage of a subtropical ecosystem. *Mitigation and Adaptation Strategies for Global Change*. doi:10.1007/s11027-020-09930-5
- Mantripragada, H. C., & Rubin, E. S. (2013). Chemical Looping for Pre-combustion CO₂ Capture — Performance and Cost Analysis. *Energy Procedia*, 37, 618-625. doi:<http://dx.doi.org/10.1016/j.egypro.2013.05.149>
- Mantripragada, H. C., & Rubin, E. S. (2014). Calcium Looping Cycle for CO₂ Capture: Performance, Cost And Feasibility Analysis. *Energy Procedia*, 63, 2199-2206. doi:<http://dx.doi.org/10.1016/j.egypro.2014.11.239>
- Manuilova, A., Koiwanit, J., Piewkhaow, L., Wilson, M., Chan, C. W., & Tontiwachwuthikul, P. (2014). Life Cycle Assessment of Post-combustion CO₂ Capture and CO₂-Enhanced Oil Recovery Based on the Boundary Dam Integrated Carbon Capture and Storage Demonstration Project in Saskatchewan. *Energy Procedia*, 63, 7398-7407. doi:<https://doi.org/10.1016/j.egypro.2014.11.776>
- Manyà, J. J. (2012). Pyrolysis for biochar purposes: a review to establish current knowledge gaps and research needs. *Environmental Science & Technology*, 46(15), 7939-7954. doi:10.1021/es301029g
- Manyà, J. J., et al. (2013). Study on the Biochar Yield and Heat Required during Pyrolysis of Two-Phase Olive Mill Waste. *Energy Fuels*, 27(10), 5931-5939. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/ef4012388>
- Manyà, J. J., et al. (2014). Biochar from Slow Pyrolysis of Two-Phase Olive Mill Waste: Effect of Pressure and Peak Temperature on its Potential Stability. *Energy Fuels*, 28(5), 3271-3280. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/ef500654t>
- Manyà, J. J., et al. . (2014). Experimental study on the effect of pyrolysis pressure, peak temperature, and particle size on the potential stability of vine shoots-derived biochar. *Fuel*, 133, 163-172. doi:10.1016/j.fuel.2014.05.019
- Manyà, J. J., Roca, F. X., & Perales, J. F. (2012). TGA study examining the effect of pressure and peak temperature on biochar yield during pyrolysis of two-phase olive mill waste. *Journal of Analytical and Applied Pyrolysis*, 103, 86-95. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0165237012001878>
- Manzolini, G., Sanchez Fernandez, E., Rezvani, S., Macchi, E., Goetheer, E. L. V., & Vlugt, T. J. H. (2015). Economic assessment of novel amine based CO₂ capture technologies integrated in power plants based on European Benchmarking Task Force methodology.

- Appl. Energy*, 138, 546-558. Retrieved from <https://www.sciencedirect.com/science/article/abs/pii/S030626191400419X>
- Mao, J. D., Johnson, R. L., Lehmann, J., Olk, D. C., Neves, E. G., Thompson, M. L., & Schmidt-Rohr, K. (2012). Abundant and Stable Char Residues in Soils: Implications for Soil Fertility and Carbon Sequestration. *Environmental Science & Technology*, 46(17), 9571-9576. doi:10.1021/es301107c
- Maraseni, T. N. (2010). Biochar: maximising the benefits. *International Journal of Environmental Studies*, 67(3), 319-327. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/00207231003612225>
- Maraseni, T. N., Chen, G., & Guangren, Q. (2010). Towards a faster and broader application of biochar: appropriate marketing mechanisms. *International Journal of Environmental Studies*, 67(6), 851-860. Retrieved from <http://www.tandfonline.com/doi/full/10.1080/00207233.2010.533892>
- Marazza, D., Macrelli, S., D'Angeli, M., Righi, S., Hornung, A., & Contin, A. (2019). Greenhouse gas savings and energy balance of sewage sludge treated through an enhanced intermediate pyrolysis screw reactor combined with a reforming process. *Waste Management*, 91, 42-53. doi:<https://doi.org/10.1016/j.wasman.2019.04.054>
- Marba, N. (2015). Impact of seagrass loss and subsequent revegetation on carbon sequestration and stocks. 103, 2(296-302). Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/1365-2745.12370/abstract>
- Marchal, G., et al. . (2012). Comparing the desorption and biodegradation of low concentrations of phenanthrene sorbed to activated carbon, biochar and compost. *Chemosphere*, 90(6), 1767-1778. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0045653512009794>
- Marchal, G., et al. . (2013). Impact of activated carbon, biochar and compost on the desorption and mineralization of phenanthrene in soil. *Environmental Pollution*, 181, 200–210. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0269749113003503>
- Marchese, M., Buffo, G., Santarelli, M., & Lanzini, A. (2021). CO₂ from direct air capture as carbon feedstock for Fischer-Tropsch chemicals and fuels: Energy and economic analysis. *Journal of CO₂ Utilization*, 46, 101487. doi:<https://doi.org/10.1016/j.jcou.2021.101487>
- Marchetti, R., & Castelli, F. (2013). Biochar from Swine Solids and Digestate Influence Nutrient Dynamics and Carbon Dioxide Release in Soil. *Journal of Environmental Quality*, 42(3), 893-901. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/23673957>
- Marchetti, A., Juneau, P., Whitney, F. A., Wong, C.-S., & Harrison, P. J. (2006). Phytoplankton processes during a mesoscale iron enrichment in the NE subarctic Pacific: Part II—Nutrient utilization. *Deep Sea Research Part II: Topical Studies in Oceanography*, 53(20–22), 2114-2130. doi:<http://dx.doi.org/10.1016/j.dsrr.2006.05.031>
- Marchetti, C. (1977). On geoengineering and the CO₂ problem. *Climatic Change*, 1(1), 59-68. Retrieved from <https://link.springer.com/article/10.1007/BF00162777>
- Marchetti, R., et al. (2012). Biochar from swine manure solids: influence on carbon sequestration and Olsen phosphorus and mineral nitrogen dynamics in soil with and without digestate incorporation. *Italian Journal of Agronomy*, 7:(e26), 189-195. Retrieved from <http://agronomy.it/index.php/agro/article/viewFile/ija.2012.e26/407>
- Marcucci, A., Kypreos, S., & Panos, E. (2017). The road to achieving the long-term Paris targets: energy transition and the role of direct air capture. *Climatic Change*, 144(2), 181-193. doi:10.1007/s10584-017-2051-8
- MAREX. (2019). Researchers: Recycle CO₂ in Floating Methanol Power Plants. *The Maritime Executive*. Retrieved from <https://www.maritime-executive.com/article/researchers-recycle-co2-in-floating-methanol-power-plants>

- Marieni, C., Henstock, T. J., & Teagle, D. A. H. (2013). Geological storage of CO₂ within the oceanic crust by gravitational trapping. *Geophysical Research Letters*, 40(23), 6219-6224. doi:10.1002/2013GL058220
- Maries, A., et al. (2017). Sequestration of CO₂ emissions from cement manufacture. *Proceedings of the 37th Cement and Concrete Science Conference*. Retrieved from <http://www.ucl.ac.uk/aim/conference-info/37ccs>
- Marinov, I., et al. (2008). How does ocean biology affect atmospheric pCO₂? Theory and models. *Journal of Geophysical Research*, 113, 1-20. Retrieved from <http://ocean.mit.edu/~mick/Papers/Marinov-etal-JGR2008.pdf>
- Marin-Spiotta, E., & Sharma, S. (2013). Carbon storage in successional and plantation forest soils: a tropical analysis. *Global Ecology and Biogeography*, 22(1), 105-117. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/j.1466-8238.2012.00788.x/full>
- Marion Suiseeya, K. R. (2017). Contesting Justice in Global Forest Governance: The Promises and Pitfalls of REDD+. *Conservation & Society*, 15(2), 189-200. Retrieved from https://www.jstor.org/stable/26393286?seq=1#metadata_info_tab_contents
- Markets, T. o. S. V. C. (2020). *Consultation Document*. Retrieved from https://www.iif.com/Portals/1/Files/TSVCM_Consultation_Document.pdf
- Markewitz, P., Kuckshinrichs, W., Leitner, W., Linssen, J., Zapp, P., Bongartz, R., . . . Müller, T. E. (2012). Worldwide innovations in the development of carbon capture technologies and the utilization of CO₂. *Energy & Environmental Science*, 5(6), 7281-7305. doi:10.1039/C2EE03403D
- Marks, E. A. N., Alcañiz, J. M., & Domene, X. (2014). Unintended effects of biochars on short-term plant growth in a calcareous soil. *Plant and Soil*. doi:10.1007/s11104-014-2198-2
- Marks, E. A. N., Mattana, S., Alcañiz, J. M., Pérez-Herrero, E., & Domene, X. (2016). Gasifier biochar effects on nutrient availability, organic matter mineralization, and soil fauna activity in a multi-year Mediterranean trial. *Agriculture, Ecosystems & Environment*, 215, 30 - 39. doi:10.1016/j.agee.2015.09.004
- Markus, T., & Ginzky, H. (2011). Regulating Climate Engineering: Paradigmatic Aspects of the Regulation of Ocean Fertilization. *Carbon & Climate Law Review*, 5(4), 477-490. Retrieved from <http://www.jstor.org/stable/24324072>
- Markusson, N., et al. (2020). Social Science Sequestered. *Frontiers in Climate*, 2(2), 1-6. Retrieved from https://www.frontiersin.org/articles/10.3389/fclim.2020.00002/full?utm_source=F-NTF&utm_medium=EMLX&utm_campaign=PRD_FEOPS_20170000_ARTICLE
- Markusson, N., & Haszeldine, S. (2009). 'Capture readiness'-lock-in problems for CCS governance. *Energy Procedia*, 1(1), 4625-4632. doi:<https://doi.org/10.1016/j.egypro.2009.02.284>
- Markusson, N., Ishii, A., & Stephens, J. C. (2011). The social and political complexities of learning in carbon capture and storage demonstration projects. *Global Environmental Change*, 21, 293-302. Retrieved from http://www.uvm.edu/giee/pubpdfs/Markusson_2011_Global_Environmental_Change.pdf
- Markusson, N., McLaren, D., & Tyfield, D. (2018). *Towards a cultural political economy of mitigation deterrence by Greenhouse Gas Removal (GGR) techniques*. Retrieved from <http://wp.lancs.ac.uk/amdeg/files/2018/03/AMDEG-Working-Paper-1.pdf>
- Markusson, N., McLaren, D., & Tyfield, D. (2018). Towards a cultural political economy of mitigation deterrence by negative emissions technologies (NETs). *Global Sustainability*, 1, e10. doi:10.1017/sus.2018.10
- Marland, G., & Marland, S. (1992). Should we store carbon in trees? *Water, Air, and Soil Pollution*, 64(1), 181-195. doi:10.1007/BF00477101
- Marland, G., West, T. O., Schlamadinger, B., & Canella, L. (2003). Managing soil organic carbon

- in agriculture: the net effect on greenhouse gas emissions. *Tellus B: Chemical and Physical Meteorology*, 55(2), 613-621. doi:10.3402/tellusb.v55i2.17042
- Marleena, H., Olli-Pekka, P., Tiilikala, K., & Heikki, S. (2013). The effects of biochar, wood vinegar and plants on glyphosate leaching and degradation. *European Journal of Soil Biology*.
- Maroto-Valer, M. M., Fauth, D. J., Kuchta, M. E., Zhang, Y., & Andrésen, J. M. (2005). Activation of magnesium rich minerals as carbonation feedstock materials for CO₂ sequestration. *Fuel Processing Technology*, 86(14), 1627-1645. doi:<https://doi.org/10.1016/j.fuproc.2005.01.017>
- Maroušek, J., et al. . (2014). Processing of residues from biogas plants for energy purposes. *Clean Technologies and Environmental Policy*, 17(3), 797-801. doi:10.1007/s10098-014-0866-9
- Maroušek, J. (2014). Significant breakthrough in biochar cost reduction. *Clean Technologies and Environmental Policy*, 16(8), 1821-1825. Retrieved from <http://link.springer.com/article/10.1007/s10098-014-0730-y>
- Maroušek, J., et al. . (2015). Managerial Preferences in Relation to Financial Indicators Regarding the Mitigation of Global Change. *Science and Engineering Ethics*, 21(1), 203 - 207. doi:10.1007/s11948-014-9531-2
- Maroušek, J., et al. . (2015). Techno-economic assessment of processing the cellulose casings waste. *Clean Technologies and Environmental Policy*, 17(8), 2441-2446. doi:10.1007/s10098-015-0941-x
- Maroušek, J., Maroušková, A., Myšková, K., Váchal, J., Vochozka, M., & Žák, J. (2015). Techno-economic assessment of collagen casings waste management. *International Journal of Environmental Science and Technology*, 12(10), 3385 - 3390. doi:10.1007/s13762-015-0840-z
- Marquart, W., Claeys, M., & Fischer, N. (2021). Conversion of CO₂ and small alkanes to platform chemicals over Mo₂C-based catalysts. *Faraday Discussions*, 230(0), 68-86. doi:10.1039/D0FD00138D
- Marris, E. (2006). Black is the New Green. In (Vol. 442, pp. 624 - 626).
- Marro, R., et al. (2015). In this work, torrefied as well as hydrothermal carbonised biomass have been examined. To evaluate the torrefaction process, grindability, ash melting behaviour and fuel as well as ash composition of untreated and torrefied woods were analysed. For that p. In.
- Marsala, V., Butera, G., Conte, P., & Alonso, G. (2015). *Effect of texture on the dynamics of a water saturated biochar*. Paper presented at the 2nd Mediterranean biochar symposium Environmental impact of biochar and its role in green remediation.
- Marsala, V., Cimò, G., Caporale, A., De Pasquale, C., Pigna, M., & Conte, P. (2015). *Effect of Metals on the Dynamics of Water at the Biochar Solid-Liquid Interface*. Paper presented at the 2nd Mediterranean Biochar Symposium Environmental impact of biochar and its role in green remediation.
- Marshall, M. (2012). Geoengineering with iron might work after all. *New Scientist*, 215(2874), 15. doi:[http://dx.doi.org/10.1016/S0262-4079\(12\)61852-1](http://dx.doi.org/10.1016/S0262-4079(12)61852-1)
- Marshall, M. (2020). Planting trees doesn't always help with climate change. *BBC Future Planet*. Retrieved from <https://www.bbc.com/future/article/20200521-planting-trees-doesnt-always-help-with-climate-change>
- Martens, J. A., et al. (2017). The Chemical Route to a Carbon Dioxide Neutral World. *ChemSusChem*, 10(6), 1039-1055. doi:doi:10.1002/cssc.201601051
- Martin, C. (2017). Exxon Mobil's Futuristic FuelCell Carbon Capture Just Might Work. *Bloomberg Technology*. Retrieved from <https://www.bloomberg.com/news/articles/2017-09-19/exxon-mobil-s-futuristic-fuelcell-carbon-capture-just-might-work>

- Martin, D., et al. . (2017). *Carbon Dioxide Removal Options: A Literature Review Identifying Carbon Removal Potentials and Costs*. (MSc.). University of Michigan, Retrieved from https://deepblue.lib.umich.edu/bitstream/handle/2027.42/136610/315_CarbonDioxideRemovalOptions.pdf?sequence=1&isAllowed=y
- Martin, J. H. (1990). Glacial-interglacial CO₂ change: The Iron Hypothesis. *Paleoceanography*, 5(1), 1-13. doi:doi:10.1029/PA005i001p00001
- Martin, J. H. (1991). Iron, Liebig's law, and the greenhouse. *Oceanography*, 4, 52-55. Retrieved from http://tos.org/oceanography/assets/docs/4-2_martin.pdf
- Martin, J. H., Coale, K. H., Johnson, K. S., Fitzwater, S. E., Gordon, R. M., Tanner, S. J., . . . Tindale, N. W. (1994). Testing the iron hypothesis in ecosystems of the equatorial Pacific Ocean. *Nature*, 371, 123. doi:10.1038/371123a0
- Martin, J. H., Gordon, M., & Fitzwater, S. E. (1991). The case for iron. *Limnology and Oceanography*, 36(8), 1793-1802. doi:doi:10.4319/lo.1991.36.8.1793
- Martin, J. H., Gordon, R. M., Fitzwater, S., & Broenkow, W. W. (1989). Vertex: phytoplankton/iron studies in the Gulf of Alaska. *Deep Sea Research Part A. Oceanographic Research Papers*, 36(5), 649-680. doi:[https://doi.org/10.1016/0198-0149\(89\)90144-1](https://doi.org/10.1016/0198-0149(89)90144-1)
- Martin, J. H., Gordon, R. M., & Fitzwater, S. E. (1990). Iron in Antarctic waters. *Nature*, 345(6271), 156-158. Retrieved from <http://dx.doi.org/10.1038/345156a0>
- Martin, J. M. (1990). A new iron age, or a ferric fantasy. *U.S. JGOFS Newsletter*, 1(4), 5, 11.
- Martín, N., Aurora, Guerrero, G., Gabriel, Ferreiro, P., Jorge, . . . Méndez, A. (2016). *Efecto de la adición de restos de poda y biochar en las propiedades de una turba parda como sustrato de cultivo (Effect of addition of prunings and biochar in the properties of a brown peat as growth substrate)*. Paper presented at the XIII Reunión del Grupo Español del Carbón (XIII Meeting of the Spanish Group Coal). <http://oa.upm.es/35121/>
- Martin, P., van der Looff, M. R., Cassar, N., Vandromme, P., d'Ovidio, F., Stemmann, L., . . . Naqvi, S. W. A. (2013). Iron fertilization enhanced net community production but not downward particle flux during the Southern Ocean iron fertilization experiment LOHAFEX. *Global Biogeochemical Cycles*, 27(3), 871-881. doi:10.1002/gbc.20077
- Martin, R. (2016). The Dubious Promise of Bioenergy Plus Carbon Capture. *MIT Technology Review*. Retrieved from <https://www.technologyreview.com/s/544736/the-dubious-promise-of-bioenergy-plus-carbon-capture/>
- Martin, S. L., Clarke, M. L., Othman, M., Ramsden, S. J., & West, H. M. (2015). Biochar-mediated reductions in greenhouse gas emissions from soil amended with anaerobic digestates. *Biomass and Bioenergy*, 79, 39-49. doi:10.1016/j.biombioe.2015.04.030
- Martindale, A., et al. . (2013). *Construction and Implementation of a Pyrolysis Unit for the Production of Biochar in a Sustainable Greenhouse Heating System*. Retrieved from <https://valley25x25.org/sites/default/files/IMCE/pdf/Greenhouse-Heat-BioChar-Report.pdf>
- Martínez, A., Lara, Y., Lisbona, P., & Romeo, L. M. (2014). Operation of a mixing seal valve in calcium looping for CO₂ capture. *Energy and Fuels*, 28(3), 2059-2068. doi:10.1021/ef402487e
- Martinez, A., & Maier, D. E. (2014). Quantification of Biomass Feedstock Availability to a Biorefinery Based on Multi-Crop Rotation Cropping Systems Using a GIS-Based Method. *Biological Engineering Transactions*, 7(1), 3-16. Retrieved from <http://elibrary.asabe.org/abstract.asp?aid=45086&t=1&redir=&redirType=>
- Martínez Arranz, A. (2016). Hype among low-carbon technologies: Carbon capture and storage in comparison. *Global Environmental Change*, 41, 124-141. doi:<http://doi.org/10.1016/j.gloenvcha.2016.09.001>
- Martínez Arranz, A. (2016). Hype among low-carbon technologies: Carbon capture and storage in comparison. *Global Environmental Change*, 41, 124-141. doi:<https://doi.org/10.1016/>

j.gloenvcha.2016.09.001

- Martínez, I., Murillo, R., Grasa, G., Rodríguez, N., & Abanades, J. C. (2011). Conceptual design of a three fluidised beds combustion system capturing CO₂ with CaO. *International Journal of Greenhouse Gas Control*, 5(3), 498-504. doi:<https://doi.org/10.1016/j.ijggc.2010.04.017>
- Martinez, J. G. (2017). Artificial Leaf Turns Carbon Dioxide Into Liquid Fuel. *Scientific American*(June 26). Retrieved from <https://www.scientificamerican.com/article/liquid-fuels-from-sunshine/>
- Martínez-García, A., Sigman, D. M., Ren, H., Anderson, R. F., Straub, M., Hodell, D. A., . . . Haug, G. H. (2014). Iron Fertilization of the Subantarctic Ocean During the Last Ice Age. *Science*, 343(6177), 1347-1350. doi:10.1126/science.1246848
- Martinko, K. (2021). Canada Is About to Get Its First Carbon-Negative Brewery. *Treehugger*. Retrieved from <https://www.treehugger.com/canada-first-carbon-negative-brewery-5094835>
- Martinsen, V., et al. . (2014). Farmer-led maize biochar trials: Effect on crop yield and soil nutrients under conservation farming. *Journal of Plant Nutrition and Soil Science*, 177(5), 681 - 695. doi:10.1002/jpln.201300590
- Martinsen, V., Alling, V., Nurida, N., Mulder, J., Hale, S. E., Ritz, C., . . . Cornelissen, G. (2015). pH effects of the addition of three biochars to acidic Indonesian mineral soils. *Soil Science and Plant Nutrition*, 1 - 14. doi:10.1080/00380768.2015.1052985
- Maruyama, S., et al. (2003). Artificial Upwelling of Deep Seawater Using the Perpetual Salt Fountain for Cultivation of Ocean Desert. *Journal of Oceanography*, 60, 563-568. Retrieved from <https://www.terrapub.co.jp/journals/JO/pdf/6003/60030563.pdf>
- Maruyama, S., Yabuki, T., Sato, T., Tsubaki, K., Komiya, A., Watanabe, M., . . . Tsukamoto, K. (2011). Evidences of increasing primary production in the ocean by Stommel's perpetual salt fountain. *Deep Sea Research Part I: Oceanographic Research Papers*, 58(5), 567-574. doi:<https://doi.org/10.1016/j.dsr.2011.02.012>
- Marx, S., Chiyanzu, I., & Piyo, N. (2014). Influence of reaction atmosphere and solvent on biochar yield and characteristics. *Bioresource Technology*, 164, 177-183. doi:10.1016/j.biortech.2014.04.067
- Mas Haris, M. R. H., et al. (2011). The sorption of cadmium(II) ions on mercerized rice husk and activated carbon. *Turkish Journal of Chemistry*, 35(6), 1-12. doi:10.3906/kim-1103-62
- Masek, O., et al. (2012). Microwave and Slow Pyrolysis Biochar – Comparison of Physical and Functional Properties. *Journal of Analytical and Applied Pyrolysis*, 100, 41-48. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0165237012002367>
- Mašek, O., Buss, W., Brownsort, P., Rovere, M., Tagliaferro, A., Zhao, L., . . . Xu, G. (2019). Potassium doping increases biochar carbon sequestration potential by 45%, facilitating decoupling of carbon sequestration from soil improvement. *Scientific Reports*, 9(1), 5514-5514. doi:10.1038/s41598-019-41953-0
- Masek, O., . et al., & i. (2011). Influence of production conditions on the yield and environmental stability of biochar. *Fuel*, 103(Janaury), 151-155. doi:10.1016/j.fuel.2011.08.044
- Mašek, O., Ronsse, F., & Dickinson, D. (2016). Biochar production and feedstock. In *Biochar in European Soils and Agriculture: Science and Practice*.
- Masera, O. R., et al. . (2015). Environmental Burden of Traditional Bioenergy Use. *Annual Review of Environment and Resources*, 40(1), 121-150. doi:10.1146/annurev-environ-102014-021318
- Masera, O. R., Garza-Caligaris, J. F., Kanninen, M., Karjalainen, T., Liski, J., Nabuurs, G. J., . . . Mohren, G. M. J. (2003). Modeling carbon sequestration in afforestation, agroforestry and forest management projects: the CO₂FIX V.2 approach. *Ecological Modelling*, 164(2), 177-199. doi:[https://doi.org/10.1016/S0304-3800\(02\)00419-2](https://doi.org/10.1016/S0304-3800(02)00419-2)

- Masiello, C. A. (2004). New directions in black carbon organic geochemistry. *Marine Chemistry*, 92(1-4), 201-213.
- Masiello, C. A., Chen, Y., Gao, X., Liu, S., Cheng, H.-Y., Bennett, M. R., . . . Silberg, J. J. (2013). Biochar and Microbial Signaling: Production Conditions Determine Effects on Microbial Communication. *Environmental Science & Technology*, 47(20), 11496-11503. doi:10.1021/es401458s
- Masiello, C. A., & Druffel, E. R. M. (1998). Black carbon in deep-sea sediments. *Science*, 280(5371), 1911-1913. Retrieved from <http://science.sciencemag.org/content/280/5371/1911>
- Masiello, C. A., Mitra, S., Gustafsson, O., Loucheouarn, P., Houel, S., Elmquist, M., . . . Nguyen, T. H. (2007). Comparison of quantification methods to measure fire-derived (black/elemental) carbon in soils and sediments using reference materials from soil, water, sediment and the atmosphere. *Global Biogeochemical Cycles*, 21(3), 1-18. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1029/2006GB002914/epdf>
- Maslin, M., & Lewis, S. (2019). Reforesting an area the size of the US needed to help avert climate breakdown, say researchers – are they right? *The Conversation*. Retrieved from <https://theconversation.com/reforesting-an-area-the-size-of-the-us-needed-to-help-avert-climate-breakdown-say-researchers-are-they-right-119842?fbclid=IwAR2KZMrYKa3bcGnyJLToaFaZKLzcvAZepkEyMzC0bI7Vw-ERDV168dWK9T8>
- Mason, J. (2013). Understanding the long-term carbon cycle : weathering of rocks - a vitally important carbon-sink. *SkepticalScience*. Retrieved from <https://www.skepticalscience.com/weathering.html>
- Mason, R. (2019). The 1,000 Year Ouch. *Age of Awareness*. Retrieved from <https://medium.com/age-of-awareness/the-1-000-year-ouch-3c8dfaf7ad82>
- Mastali, M., Abdollahnejad, Z., & Pacheco-Torgal, F. (2018). Carbon dioxide sequestration of fly ash alkaline-based mortars containing recycled aggregates and reinforced by hemp fibres. *Construction and Building Materials*, 160, 48-56. doi:<https://doi.org/10.1016/j.conbuildmat.2017.11.044>
- Mastali, M., Abdollahnejad, Z., & Pacheco-Torgal, F. (2018). Performance of waste based alkaline mortars submitted to accelerated carbon dioxide curing. *Resources, Conservation and Recycling*, 129, 12-19. doi:<https://doi.org/10.1016/j.resconrec.2017.10.017>
- Masto, R. E., et al. . (2013). Biochar from water hyacinth (*Eichornia crassipes*) and its impact on soil biological activity. *CATENA*, 111, 64-71. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0341816213001641>
- Masto, R. E., et al. . (2013). Co-application of biochar and lignite fly ash on soil nutrients and biological parameters at different crop growth stages of *Zea mays*. *Ecological Engineering*, 58, 314–322. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0925857413002619>
- Masud, M. M., LI, J.-Y., & Xu, R.-K. (2014). Use of Alkaline Slag and Crop Residue Biochars to Promote Base Saturation and Reduce Acidity of an Acidic Ultisol. *Pedosphere*, 24(6), 791 - 798. doi:10.1016/s1002-0160(14)60066-7
- Masulili, A., et al. . (2010). Rice Husk Biochar for Rice Based Cropping System in Acid Soil 1. The Characteristics of Rice Husk Biochar and Its Influence on the Properties of Acid Sulfate Soils and Rice Growth in West Kalimantan, Indonesia. *Journal of Agricultural Science*, 2(1), 39-47. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.667.2928&rep=rep1&type=pdf>
- Mata, T. M., Martins, A. A., & Caetano, N. S. (2010). Microalgae for biodiesel production and other applications: A review. *Renewable and Sustainable Energy Reviews*, 14(1), 217-232. doi:<https://doi.org/10.1016/j.rser.2009.07.020>

- Matear, R. J., & Elliot, B. (2005). Enhancement of oceanic uptake of anthropogenic CO₂ by macronutrient fertilization. *Journal of Geophysical Research*, 109, 1-14. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1029/2000JC000321/epdf>
- Mathesius, S., Hofmann, M., Caldeira, K., & Schellnhuber, H. J. (2015). Long-term response of oceans to CO₂ removal from the atmosphere. *Nature Climate Change*, 5(12), 1107-1113. doi:10.1038/nclimate2729
- Mathews, J. A. (2008). Carbon-negative biofuels. *Energy Policy*, 36(3), 940-945. doi:<http://dx.doi.org/10.1016/j.enpol.2007.11.029>
- Mathews, J. A. (2009). From the petroeconomy to the bioeconomy: Integrating bioenergy production with agricultural demands. *Biofuels, Bioproducts, and Biorefining*, 3, 613 - 632.
- Mathis, W., & Rathi, A. (2021). Netherlands Pledges \$2.6 Billion Subsidy to Bury CO₂ Under the Sea. *Bloomberg Green*. Retrieved from <https://www.bloomberg.com/news/articles/2021-05-12/netherlands-pledges-2-6-billion-subsidy-to-bury-co-under-the-sea>
- Mathisen, A., & Skagestad, R. (2017). Utilization of CO₂ from Emitters in Poland for CO₂-EOR. *Energy Procedia*, 114, 6721-6729. doi:<https://doi.org/10.1016/j.egypro.2017.03.1802>
- Matich, B. (2021). Australian scientists achieve breakthrough with renewably powered carbon capture. *PV Magazine*. Retrieved from <https://www.pv-magazine.com/2021/03/30/australian-scientists-remarkable-renewably-powered-carbon-capture-breakthrough/>
- Matocha, J., et al. (2012). Climate Change Mitigation: A Low-Hanging Fruit of Agroforestry. In P. K. R. Nair & D. Garrity (Eds.), *Agroforestry - The Future of Global Land Use* (pp. 105-126).
- Matondi, P., et al. (2010). *Biofuels, land grabbing and food security in Africa*. Retrieved from <https://www.diva-portal.org/smash/get/diva2:387049/FULLTEXT01.pdf>
- Matos, J. (2015). Eco-Friendly Heterogeneous Photocatalysis on Biochar-Based Materials Under Solar Irradiation. *Topics in Catalysis*. doi:10.1007/s11244-015-0434-5
- Matos, J. (2015). Photocatalytic Activity of ZnO-Biochar Hybrid Composites. In.
- Matovic, D. (2011). Biochar as a viable carbon sequestration option: Global and Canadian perspective. *Energy*, 36(4), 2011-2016. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0360544210005104>
- Matsubara, Y., Hasegawa, N., & Fukui, H. (2002). Incidence of Fusarium root rot in asparagus seedlings infected with arbuscular mycorrhizal fungus as affected by several soil amendments. *Journal of the Japanese Society for Horticultural Science*, 71(3), 370-374. Retrieved from https://www.researchgate.net/publication/240978005_Incidence_of_Fusarium_Root_Rot_in_Asparagus_Seedlings_Infected_with_Arbuscular_Mycorrhizal_Fungus_as_Affected_by_Several_Soil_Amendments
- Matsumoto, K. (2006). Model simulations of carbon sequestration in the northwest Pacific by patch fertilization. *Journal of Oceanography*, 62(6), 887-902. doi:10.1007/s10872-006-0106-y
- Matt, C. P. (2015). *An assessment of biochar amended soilless media for nursery propagation of northern Rocky Mountain native plants*. The University Of Montana, Retrieved from <http://scholarworks.umt.edu/etd/4420/>
- Matter, J., Broecker, W. S., Gislason, S., Gunnlaugsson, E., Oelkers, E., Stute, M., . . . Sigfusson, B. (2011). The CarbFix Pilot Project - Storing Carbon Dioxide in Basalt. *Energy Procedia*, 4, 5579-5585. doi:10.1016/j.egypro.2011.02.546
- Matter, J. M., Broecker, W. S., Stute, M., Gislason, S. R., Oelkers, E. H., Stefánsson, A., . . . Björnsson, G. (2009). Permanent Carbon Dioxide Storage into Basalt: The CarbFix Pilot Project, Iceland. *Energy Procedia*, 1(1), 3641-3646. doi:<https://doi.org/10.1016/j.egypro.2009.02.160>
- Matter, J. M., & Kelemen, P. B. (2009). Permanent storage of carbon dioxide in geological

- reservoirs by mineral carbonation. *Nature Geoscience*, 2, 837. doi:10.1038/ngeo683
- Matter, J. M., Stute, M., Hall, J., Mesfin, K., Snæbjörnsdóttir, S. Ó., Gislason, S. R., . . . Broecker, W. S. (2014). Monitoring permanent CO₂ storage by in situ mineral carbonation using a reactive tracer technique. *Energy Procedia*, 63, 4180-4185. doi:<https://doi.org/10.1016/j.egypro.2014.11.450>
- Matter, J. M., Stute, M., Snæbjörnsdóttir, S. Ó., Oelkers, E. H., Gislason, S. R., Aradottir, E. S., . . . Broecker, W. S. (2016). Rapid carbon mineralization for permanent disposal of anthropogenic carbon dioxide emissions. *Science*, 352(6291), 1312-1314. doi:10.1126/science.aad8132
- Matter, J. M., Stute, M., Snæbjörnsdóttir, S. Ó., Oelkers, E. H., Gislason, S. R., Aradottir, E. S., . . . Broecker, W. S. (2016). Rapid carbon mineralization for permanent disposal of anthropogenic carbon dioxide emissions. *Science*, 352, 1312-1314. Retrieved from <https://science.scienmag.org/content/352/6291/1312>
- Matter, J. M., Takahashi, T., & Goldberg, D. (2007). Experimental evaluation of in situ CO₂-water-rock reactions during CO₂ injection in basaltic rocks: Implications for geological CO₂ sequestration. *Geochemistry, Geophysics, Geosystems*, 8(2), 1-19. doi:10.1029/2006GC001427
- Matthew, E. B.-H., Nick, F., & Paul, S. F. (2016). Investigations into the effects of volatile biomass tar on the performance of Fe-based CLC oxygen carrier materials. *Environmental Research Letters*, 11(11), 115001. Retrieved from <http://stacks.iop.org/1748-9326/11/i=11/a=115001>
- Matthews, H. D., & Caldeira, K. (2008). Stabilizing climate requires near-zero emissions. *Geophysical Research Letters*, 35(4), 1-5. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1029/2007GL032388/abstract>
- Mattila, T., Grönroos, J., Judl, J., & Korhonen, M.-R. (2012). Is biochar or straw-bale construction a better carbon storage from a life cycle perspective? *Process Safety and Environmental Protection*, 90(6), 452-458. doi:<http://dx.doi.org/10.1016/j.psep.2012.10.006>
- Mattox, E. M., Knox, J. C., & Bardot, D. M. (2013). Carbon dioxide removal system for closed loop atmosphere revitalization, candidate sorbents screening and test results. *Acta Astronautica*, 86, 39-46. doi:<https://doi.org/10.1016/j.actaastro.2012.09.019>
- Matuszewski, M. S., & Detweiler, I. (2020). Chapter 15 New Technology Development for Carbon Capture. In *Carbon Capture and Storage* (pp. 512-535): The Royal Society of Chemistry.
- Maucieri, C., Zhang, Y., McDaniel, M. D., Borin, M., & Adams, M. A. (2017). Short-term effects of biochar and salinity on soil greenhouse gas emissions from a semi-arid Australian soil after re-wetting. *Geoderma*, 307(Supplement C), 267-276. doi:<https://doi.org/10.1016/j.geoderma.2017.07.028>
- Maung, T. A., et al. (2013). Economics of Biomass Feedstocks and Biofuels. In B. P. Singh (Ed.), *Biofuel Food Sustainability* (pp. 407-429).
- Maung, Y. M., et al., Win, T. T., & Oo, A. T. (2015). Preparation and Characterization of Bagasse Ash. *International Journal of Technical Research and Applications*, 3(1), 84-87. Retrieved from www.ijtra.com/download.php?paper=316
- Mauri, M., Farina, M., Patriarca, G., Simonutti, R., Klasson, K. T., & Cheng, H. N. (2014). 129 Xe NMR Studies of Pecan Shell-Based Biochar and Structure-Process Correlations. *International Journal of Polymer Analysis and Characterization*, 29(2), 119-129. doi:10.1080/1023666x.2015.979038
- Maxwell, S. L., Evans, T., Watson, J. E. M., Morel, A., Grantham, H., Duncan, A., . . . Malhi, Y. (2019). Degradation and forgone removals increase the carbon impact of intact forest loss by 626%. *Science Advances*, 5(10), eaax2546. doi:10.1126/sciadv.aax2546

- May, M. M., & Rehfeld, K. (2019). ESD Ideas: Photoelectrochemical carbon removal as negative emission technology. *Earth Systems Dynamics*, 10(1), 1-7. doi:10.5194/esd-10-1-2019
- Mayakaduwa, S. S., Kumarathilaka, P., Herath, I., Ahmad, M., Al-Wabel, M., Ok, Y. S., . . . Vithanage, M. (2015). Equilibrium and kinetic mechanisms of woody biochar on aqueous glyphosate removal. *Chemosphere*. doi:10.1016/j.chemosphere.2015.07.080
- Mayakaduwa, S. S., Vithanage, M., Karunaratne, A., & Mohan, D. (2015). *Use of Biochar Produced from Residue to Remove Carbofuran from Water*. University of Peradeniya , Sri Lanka, Retrieved from <http://www.dlib.pdn.ac.lk/archive/handle/1/4574>
- Mayer, A., Hausfather, Z., Jones, A. D., & Silver, W. L. (2018). The potential of agricultural land management to contribute to lower global surface temperatures. *Science Advances*, 4(8). doi:10.1126/sciadv.aaq0932
- Mayer, B. (2019). Bioenergy with Carbon Capture and Storage: Existing and emerging legal principles. Retrieved from http://benoitmayer.com/wp-content/uploads/2019/09/BECCS_principles.pdf
- Mayer, B. (2019). Bioenergy with Carbon Capture and Storage: Existing and Emerging Legal Principles. *Carbon & Climate Law Review*, 13(2), 113-121. Retrieved from <https://cclr.lexxion.eu/article/CCLR/2019/2/6>
- Mayer, P., Hilber, I., Gouliarmou, V., Hale, S. E., Cornelissen, G., & Bucheli, T. D. (2016). How to Determine the Environmental Exposure of PAHs Originating from Biochar. *Environmental Science & Technology*, 50(4), 1941 - 1948. doi:10.1021/acs.est.5b05603
- Mayer, Z. (2012). *Pyrolysis of contaminated energy crops and the characterisation of the gained biochar*. (Doctorate). Aston University, Retrieved from <http://eprints aston.ac.uk/19249/1/Studentthesis-2013.pdf>
- Mayer, Z. A., et al. . (2013). Characterization of engineered biochar for soil management. *Environmental Progress & Sustainable Energy*, 33(2), 490-496. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/ep.11788/abstract>
- Mayer, Z. A., Apfelbacher, A., & Hornung, A. (2011). Nitrogen Cycle of effluent irrigated energy crop plantations: From Wastewater treatment to thermo-chemical conversion processes. *Journal of Scientific and Industrial Research*. Retrieved from http://eprints aston.ac.uk/16172/1/Nitrogen_cycle_of_effluent_irrigated_energy_crop_plantations.pdf
- Mayer, Z. A., Apfelbacher, A., & Hornung, A. (2012). A comparative study on the pyrolysis of metal- and ash-enriched wood and the combustion properties of the gained char. *Journal of Analytical and Applied Pyrolysis*, 96, 196–202.
- Mayers, J. (2014). *Pyrolysis and Activation of an Invasive Species*. The Florida State University, Retrieved from <http://diginole.lib.fsu.edu/etd/8841/>
- Mayes, W. M., Riley, A. L., Gomes, H. I., Brabham, P., Hamlyn, J., Pullin, H., & Renforth, P. (2018). Atmospheric CO₂ sequestration in iron and steel slag: Consett, Co. Durham, UK. *Environmental Science & Technology*. doi:10.1021/acs.est.8b01883
- Maynard, E. (2014). Midwest Vegetable Trial Report for 2014. *Fruit-Veg Trials*. Retrieved from <http://docs.lib.purdue.edu/fvtrials/61/>
- Mayoral, R., & Guillermo, J. (2015). *Producción de biochar a partir de viñas agotadas mediante pirólisis en reactor a escala piloto y en reactor móvil energéticamente sostenible*. Unibersidad de Leon, Retrieved from <http://buleria.unileon.es/xmlui/handle/10612/4246>
- Mayo-Ramsay, J. (2010). Environmental, legal and social implications of ocean urea fertilization: Sulu sea example. *Marine Policy*, 34(5), 831-835. doi:<http://dx.doi.org/10.1016/j.marpol.2010.01.004>
- Mazari, S. A., et al. (2015). An overview of solvent management and emissions of amine-based CO₂ capture technology. *International Journal of Greenhouse Gas Control*, 34, 129-140. Retrieved from <https://www.sciencedirect.com/science/article/pii/S175058361400396X>
- Mazlan, M. A. F., Uemura, Y., Osman, N. B., & Yusup, S. (2015). Characterizations of Bio-char

- from Fast Pyrolysis of Meranti Wood Sawdust. *Journal of Physics: Conference Series*, 622(1), 1-8. doi:10.1088/1742-6596/622/1/012054
- Mazlan, M. A. F., Uemura, Y., Osman, N. B., & Yusup, S. (2015). Fast pyrolysis of hardwood residues using a fixed bed drop-type pyrolyzer. *Energy Conversion and Management*, 98, 208 - 214. doi:10.1016/j.enconman.2015.03.102
- Mazurek, J., & Menon, S. (2018). 2050 Priorities for Climate Action: Carbon Dioxide Removal is a Necessary Complement to Deep Decarbonization. Retrieved from <https://www.climateworks.org/blog/carbon-dioxide-removal/>
- Mazza, P. (2010). *Building the Biocarbon Economy: How the Northwest Can Lead*. Retrieved from <http://climatesolutions.org/solutions/reports/biocarbon-briefs/building-the-biocarbon-economy-how-the-northwest-can>
- Mazzella, A., Errico, M., & Spiga, D. (2016). CO₂ uptake capacity of coal fly ash: Influence of pressure and temperature on direct gas-solid carbonation. *Journal of Environmental Chemical Engineering*, 4(4, Part A), 4120-4128. doi:<https://doi.org/10.1016/j.jece.2016.09.020>
- Mazzocchi, M. G., et al. (2009). A non-diatom plankton bloom controlled by copepod grazing and amphipod predation: Preliminary results from the LOHAFEX iron-fertilisation experiment. *Globec International Newsletter*, (October), 1-4. Retrieved from http://drs.nio.org/drs/bitstream/handle/2264/3437/Globec_Int_%20Newslett_15_3.pdf;jsessionid=38F8EEA1A7722E339900FD312B93C2EC?sequence=1
- Mazzotti, M. (2018). Mineral carbonation and industrial uses of carbon dioxide. In *Carbon Dioxide Capture and Storage* (pp. 319-338): IPCC.
- Mazzotti, M., Baciocchi, R., Desmond, M. J., & Socolow, R. H. (2013). Direct air capture of CO₂ with chemicals: optimization of a two-loop hydroxide carbonate system using a countercurrent air-liquid contactor. *Climatic Change*, 118(1), 119-135. doi:10.1007/s10584-012-0679-y
- McBeath, A. V., et al. (2013). The influence of feedstock and production temperature on biochar carbon chemistry: A solid-state ¹³C NMR study. *Biomass and Bioenergy*, 60, 121-129. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0961953413004637>
- McBeath, A. V., & Smernik, R. J. (2009). Variation in the degree of aromatic condensation of chars. *Organic Geochemistry*, 40, 1161-1168.
- McBeath, A. V., Smernik, R. J., Schneider, M. P. W., Schmidt, M. W. I., & Plant, E. L. (2011). Determination of the aromaticity and the degree of condensed aromatic condensation of a thermosequence of wood charcoal using NMR. *Organic Geochemistry*, 42, 1194-1202.
- McBeath, A. V., Wurster, C. M., & Bird, M. I. (2015). Influence of feedstock properties and pyrolysis conditions on biochar carbon stability as determined by hydrogen pyrolysis. *Biomass and Bioenergy*, 73, 155 - 173. doi:10.1016/j.biombioe.2014.12.022
- McCalmont, J. P., Hastings, A., McNamara, N. P., Richter, G. M., Robson, P., Donnison, I. S., & Clifton-Brown, J. (2017). Environmental costs and benefits of growing Miscanthus for bioenergy in the UK. *GCB Bioenergy*, 9(3), 489-507. doi:10.1111/gcbb.12294
- McCarl, B. A., Peacock, C., Chrisman, R., Kung, C.-C., & Sands, R. D. (2009). Economics of biochar production, utilization and greenhouse gas offsets. In J. Lehmann & S. Joseph (Eds.), *Biochar for environmental management science and technology*. Washington D.C.: Earthscan, London.
- McCarthy, S. (2021). Are corporations getting trapped in net zero? *Corporate Knights*. Retrieved from <https://www.corporateknights.com/channels/climate-and-carbon/are-corporations-getting-trapped-in-net-zero-16249640/>
- Mcchesney, I. (2016).
- McClimans, T. A., Handå, A., Fredheim, A., Lien, E., & Reitan, K. I. (2010). Controlled artificial

- upwelling in a fjord to stimulate non-toxic algae. *Aquacultural Engineering*, 42(3), 140-147. doi:<https://doi.org/10.1016/j.aquaeng.2010.02.002>
- McCord, S., Armstrong, K., & Styring, P. (2021). Developing a triple helix approach for CO₂ utilisation assessment. *Faraday Discussions*, 230(0), 247-270. doi:10.1039/D1FD00002K
- McCormack, P. C., et al. (2020). Governance of Land-based Negative-emission Technologies to Promote Biodiversity Conservation: Lessons from Australia. *Climate Law*, 10(2), 123-150. Retrieved from https://brill.com/view/journals/clla/10/2/article-p123_123.xml
- McCormack, S. A., et al. (2013). Biochar in bioenergy cropping systems: impacts on soil faunal communities and linked ecosystem processes. *GCB Bioenergy*, 5(2), 81-95. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/gcbb.12046/abstract>
- McCoy, S. T., & Rubin, E. S. (2009). The effect of high oil prices on EOR project economics. *Energy Procedia*, 1(1), 4143-4150. doi:<https://doi.org/10.1016/j.egypro.2009.02.223>
- McCulloch, S., et al. (2020). *Energy Technology Perspectives: Special Report on Carbon Capture Utilisation and Storage*. Retrieved from <https://www.iea.org/reports/ccus-in-clean-energy-transitions>
- McCusker, P. (2017). Could Consett slag heaps have an unlikely role to play in combating climate change? Retrieved from <http://www.chroniclelive.co.uk/business/business-news/could-consett-slag-heaps-unlikely-13287751>
- McDaniel, A. H., Miller, E. C., Arifin, D., Ambrosini, A., Coker, E. N., O'Hare, R., . . . Tong, J. (2013). Sr-and Mn-doped LaAlO₃-δ for solar thermochemical H₂ and CO production. *Energy Environ. Sci.*, 6, 2424.
- McDermott, S. M., Howarth, R. B., & Lutz, D. A. (2015). Biomass Energy and Climate Neutrality: The Case of the Northern Forest. *Land Economics*, 91(2), 197-210. doi:10.3368/le.91.2.197
- McDonald, A. (2019). Can you make climate change with technologies that undo? View. Retrieved from <https://www.kxan36news.com/can-you-make-climate-change-with-technologies-that-undo-view>
- McDonald, T. M. (2016). *Synthesis and Characterization of Alkylamine-Functionalized Metal-Organic Frameworks as Adsorbents for Carbon Dioxide*. (Ph.D.). University of California-Berkeley, Retrieved from <https://search.proquest.com/docview/1780015582/accountid=14496>
- McDonald, T. M., Lee, W. R., Mason, J. A., Wiers, B. M., Hong, C. S., & Long, J. R. (2012). Capture of Carbon Dioxide from Air and Flue Gas in the Alkylamine-Appended Metal-Organic Framework mmen-Mg₂(dobpdc). *Journal of the American Chemical Society*, 134(16), 7056-7065. doi:10.1021/ja300034j
- McDougall, A. H., et al. (2015). Reversing climate warming by artificial atmospheric carbon-dioxide removal: Can a Holocene-like climate be restored? *Geophysical Research Letters*, 40(20), 5480-5485. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/2013GL057467/abstract>
- McElligott, K., Page-Dumroese, D., & Coleman, M. (2011). *Bioenergy Production Systems and Biochar Application in Forests: Potential for Renewable Energy, Soil Enhancement, and Carbon Sequestration*. Retrieved from http://www.fs.fed.us/rm/pubs/rmrs_rn046.pdf
- McElligott, K., Page-Dumroese, D., & Coleman, M. (2011). *Bioenergy production systems and biochar application in forests: potential for renewable energy, soil enhancement, and carbon sequestration. RN-46*. Fort Collins: USDA Rocky Mountain Research Station.
- McElligott, K. M. (2011). *Biochar Amendments to Forest Soils: Effects on Soil Properties and Tree Growth*. University of Idaho, Retrieved from http://forest.moscowfsl.wsu.edu/smp/solo/documents/GTs/McElligott-Kristin_Thesis.pdf
- McGee, J., Brent, K., & Burns, W. (2018). Geoengineering the oceans: an emerging frontier in

- international climate change governance. *Australian Journal of Maritime & Ocean Affairs*, 10(1), 67-80. doi:10.1080/18366503.2017.1400899
- McGeever, A. H., Price, P., McMullin, B., & Jones, M. B. (2019). Assessing the terrestrial capacity for Negative Emission Technologies in Ireland. *Carbon Management*, 10(1), 1-10. doi:10.1080/17583004.2018.1537516
- McGlade, C., et al. (2018). Commentary: Whatever happened to enhanced oil recovery? (November 28). Retrieved from <https://www.iea.org/newsroom/news/2018/november/whatever-happened-to-enhanced-oil-recovery.html>
- McGlade, C. (2019). Commentary: Can CO₂-EOR really provide carbon-negative oil? (April 11). Retrieved from <https://www.iea.org/newsroom/news/2019/april/can-co2-eor-really-provide-carbon-negative-oil.html>
- McGlashan, N., et al. (2012). *Negative Emissions Technologies*. Retrieved from <https://www.imperial.ac.uk/media/imperial-college/grantham-institute/public/publications/briefing-papers/Negative-Emissions-Technologies---Grantham-BP-8.pdf>
- McGlashan, N., Shah, N., Caldecott, B., & Workman, M. (2012). High-level techno-economic assessment of negative emissions technologies. *Process Safety and Environmental Protection*, 90(6), 501-510. doi:<http://dx.doi.org/10.1016/j.psep.2012.10.004>
- McGlynn, E. (2021). To meet Biden's new climate goal, forests and farms must sequester a lot more carbon. *Canary Media*. Retrieved from <https://www.canarymedia.com/articles/to-meet-bidens-new-climate-goal-we-need-forests-and-farms-to-sequester-a-lot-more-carbon/>
- McGrail, B. P., Freeman, C. J., Brown, C. F., Sullivan, E. C., White, S. K., Reddy, S., . . . Steffensen, E. J. (2012). Overcoming business model uncertainty in a carbon dioxide capture and sequestration project: Case study at the Boise White Paper Mill. *International Journal of Greenhouse Gas Control*, 9, 91-102. doi:<https://doi.org/10.1016/j.ijggc.2012.03.009>
- McGrail, B. P., Schaef, H. T., Ho, A. M., Chien, Y.-J., Dooley, J. J., & Davidson, C. L. (2006). Potential for carbon dioxide sequestration in flood basalts. *Journal of Geophysical Research: Solid Earth*, 111(B12), 1-13. doi:10.1029/2005JB004169
- McGrail, B. P., Schaef, H. T., Spane, F. A., Cliff, J. B., Qafoku, O., Horner, J. A., . . . Sullivan, C. E. (2017). Field Validation of Supercritical CO₂ Reactivity with Basalts. *Environmental Science & Technology Letters*, 4(1), 6-10. doi:10.1021/acs.estlett.6b00387
- McGrail, B. P., Schaef, H. T., Spane, F. A., Horner, J. A., Owen, A. T., Cliff, J. B., . . . Sullivan, E. C. (2017). Wallula Basalt Pilot Demonstration Project: Post-injection Results and Conclusions. *Energy Procedia*, 114, 5783-5790. doi:<https://doi.org/10.1016/j.egypro.2017.03.1716>
- McGrail, B. P., Spane, F. A., Amonette, J. E., Thompson, C. R., & Brown, C. F. (2014). Injection and Monitoring at the Wallula Basalt Pilot Project. *Energy Procedia*, 63, 2939-2948. doi:<https://doi.org/10.1016/j.egypro.2014.11.316>
- McGrail, B. P., Spane, F. A., Sullivan, E. C., Bacon, D. H., & Hund, G. (2011). The Wallula basalt sequestration pilot project. *Energy Procedia*, 4, 5653-5660. doi:<https://doi.org/10.1016/j.egypro.2011.02.557>
- McGrath, M. (2016). 'Wrong type of trees' in Europe increased global warming. *BBC News*. Retrieved from <https://www.bbc.com/news/science-environment-35496350>
- McGrath, M. (2017). Climate's magic rabbit: Pulling CO₂ out of thin air. *BBC News*. Retrieved from <http://www.bbc.com/news/science-environment-41816332>
- McGreevy, S. R., & Shibata, A. (2010). A Rural Revitalization Scheme in Japan Utilizing Biochar and Eco-Branding: The Carbon Minus Project, Kameoka City. *Annals of Environmental Science*, 4. Retrieved from <http://iris.lib.neu.edu/aes/vol4/iss1/2/>
- McGreevy, S. R., & Shibata, A. (2015). Mobilizing Biochar: A Multistakeholder Scheme for

- Climate-Friendly Foods and Rural Sustainable Development. In.
- McGurty, J. (2021). AMERICAS REFINING NET ZERO TRACKER: Valero furthers its commitment with CCS pipeline. *S&P Global Platts*.
- McHenry, M. P. (2009). Agricultural bio-char production, renewable energy generation and farm carbon sequestration in Western Australia: Certainty, uncertainty and risk. *Agriculture, Ecosystems & Environment*, 129(1–3), 1-7. doi:<http://dx.doi.org/10.1016/j.agee.2008.08.006>
- McHenry, M. P. (2010). Carbon-based stock feed additives: a research methodology that explores ecologically delivered C biosequestration, alongside live weights, feed use efficiency, soil nutrient retention, and perennial fodder plantations. *Journal of the Science of Food and Agriculture*, 90(2), 183-187. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/20355029>
- McHenry, M. P. (2012). Sensitive variables for applying biochar as a fertiliser substitute and a method to sequester carbon in soils: a wheat crop scenario. In B. J. Ryan & D. E. Anderson (Eds.), *Carbon Sequestration: Technology, Measurement Technologies and Environmental Effects* (pp. 89-108).
- McHenry, M. P. (2014). *Bioenergy Research: Advances and ApplicationsBiochar Processing for Sustainable Development in Current and Future Bioenergy Research*: Elsevier.
- McHenry, M. P. (2014). Chapter 26 - Biochar Processing for Sustainable Development in Current and Future Bioenergy Research. In V. K. Gupta, M. G. Tuohy, C. P. Kubicek, J. Saddler, & F. Xu (Eds.), *Bioenergy Research: Advances and Applications* (pp. 447-456). Amsterdam: Elsevier.
- McKechnie, J., et al. (2011). Forest Bioenergy or Forest Carbon? Assessing Trade-Offs in Greenhouse Gas Mitigation with Wood-Based Fuels. *Environmental Science and Technology*, 45, 789-795. Retrieved from <http://www.pfpi.net/wp-content/uploads/2011/05/McKechnie-et-al-EST-2010.pdf>
- McKelvy, M. J., et al. (2004). Exploration of the Role of Heat Activation in Enhancing Serpentine Carbon Sequestration Reactions. *Environmental Science and Technology*, 38(24), 6897-6903. Retrieved from <https://pubs.acs.org/doi/abs/10.1021/es049473m>
- McKendry, P. (2002). Energy production from biomass (part 1): overview of biomass. *Bioresource Technology*, 83(1), 37-46. doi:[http://dx.doi.org/10.1016/S0960-8524\(01\)00118-3](http://dx.doi.org/10.1016/S0960-8524(01)00118-3)
- McKenney, D. W., Yemshanov, D., Fox, G., & Ramlal, E. (2006). Using bioeconomic models to assess research priorities: a case study on afforestation as a carbon sequestration tool. *Canadian Journal of Forest Research*, 36(4), 886-900. doi:[10.1139/x05-297](https://doi.org/10.1139/x05-297)
- McKenzie, J. (2018). Carbon farming isn't worth it for farmers. Two blockchain companies want to change that. *The New Food Economy*. Retrieved from <https://newfoodeconomy.org/carbon-farming-blockchain-climate-change-regenerative-agriculture/>
- McKey, D., et al. . (2007). Pre-Columbian agricultural landscapes, ecosystem engineers, and self-organized patchiness in Amazonia. *Phil. Trans. R. Soc. B*, 362(1487), 7823-7828. Retrieved from <http://www.pnas.org/content/107/17/7823>
- Mckim, C. (2020). Wyoming Doubles Down On Its Long Support For Carbon Capture. Retrieved from <https://www.npr.org/2020/09/15/912996942/wyoming-doubles-down-on-its-long-support-for-carbon-capture>
- Mckim, C. (2021). Wyoming Ready To Take Advantage Of Massive Federal Carbon Capture Support Retrieved from <https://www.wyomingpublicmedia.org/post/wyoming-ready-take-advantage-massive-federal-carbon-capture-support#stream/0>
- McKinley, D. C., Ryan, M. G., Birdsey, R. A., Giardina, C. P., Harmon, M. E., Heath, L. S., . . . Skog, K. E. (2011). A synthesis of current knowledge on forests and carbon storage in the United States. *Ecological Applications*, 21(6), 1902-1924. doi:[doi:10.1890/10-0697.1](https://doi.org/10.1890/10-0697.1)

- McKone, T. E., Nazaroff, W. W., Berck, P., Auffhammer, M., Lipman, T., Torn, M. S., . . . Horvath, A. (2011). Grand Challenges for Life-Cycle Assessment of Biofuels. *Environmental Science & Technology*, 45(5), 1751-1756. doi:10.1021/es103579c
- McLaren, D. (2011). *Negatonnes - An Initial Assessment of the Potential for Negative Emissions Techniques to Contribute Safely and Fairly to Meeting Carbon Budgets in the 21st Century*. Retrieved from <https://www.foe.co.uk/sites/default/files/downloads/negatonnes.pdf>
- McLaren, D. (2012). A comparative global assessment of potential negative emissions technologies. *Process Safety and Environmental Protection*, 90(6), 489-500. doi:<http://dx.doi.org/10.1016/j.psep.2012.10.005>
- McLaren, D. (2014). Capturing the Imagination: Prospects for Direct Air Capture as a Climate Measure. *Ethics, Politics and Governance: Case Study*, 1-8.
- McLaren, D. (2017). *Mirror, mirror: fairness and justice in climate geoengineering*. (Ph.D.). Lancaster University, Retrieved from [http://www.research.lancs.ac.uk/portal/en/publications/mirror-mirror-fairness-and-justice-in-climate-geoengineering\(20537798-00be-423d-b191-c42085637fdb\).html](http://www.research.lancs.ac.uk/portal/en/publications/mirror-mirror-fairness-and-justice-in-climate-geoengineering(20537798-00be-423d-b191-c42085637fdb).html)
- McLaren, D. (2019). Exaggerating how much CO₂ can be absorbed by tree planting risks deterring crucial climate action. *The Conversation*. Retrieved from <https://theconversation.com/exaggerating-how-much-co2-can-be-absorbed-by-tree-planting-risks-deterring-crucial-climate-action-120170>
- McLaren, D., & Burns, W. (2021). It Would Be Irresponsible, Unethical, and Unlawful to Rely on NETs at Large Scale Instead of Mitigation. In A. Zahar & B. Mayer (Eds.), *Debating Climate Law* (pp. 241-256). Cambridge: Cambridge University Press.
- McLaren, D., & Jarvis, A. (2018). *Quantifying the Potential Scale of Mitigation Deterrence from Greenhouse Gas Removal Techniques*. Retrieved from <http://wp.lancs.ac.uk/amdeg/files/2018/12/AMDEG-Working-Paper-2-Quantifying-MD-GGR.pdf>
- McLaren, D., Krieger, K., & Bickerstaff, K. (2013). Justice in energy system transitions: the case of carbon capture and storage. In K. Bickerstaff, G. Walker, & H. Bulkeley (Eds.), *Energy Justice in a Changing Climate: Social Equity and Low-Carbon Energy* (pp. 158-181).
- McLaren, D. A., Butler, K. L., & Bonilla, J. (2014). *Effects of pine oil, sugar and covers on germination of serrated tussock and kangaroo grass in a pot trial*. Paper presented at the Nineteenth Australasian Weeds Conference. <http://www.caws.org.au/awc/2014/awc201412391.pdf>
- McLaren, D. P. (2012). A Comparative Global Assessment of Potential Negative Emissions Technologies. *Process Safety and Environmental Protection*, 90(6), 489-500. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0957582012001176>
- McLaren, D. P. (2012). Procedural Justice in Carbon Capture and Storage. *Energy & Environment*, 23(2 & 3), 345-365. Retrieved from <http://journals.sagepub.com/doi/pdf/10.1260/0958-305X.23.2-3.345>
- McLaren, D. P., Tyfield, D. P., Willis, R., Szerszynski, B., & Markusson, N. O. (2019). Beyond "Net-Zero": A Case for Separate Targets for Emissions Reduction and Negative Emissions. *Frontiers in Climate*, 1(4). doi:10.3389/fclim.2019.00004
- McLaughlin, H., et al. (2009). *All Biochars are not Created Equal and How to Tell them Apart*. Paper presented at the North American Biochar, Boulder, CO.
- McLaughlin, H., & Clayton, D. (2012). *The "Jolly Roger Ovens" family of Biochar-making devices*. Retrieved from <http://www.biochar-international.org/sites/default/files/J-RO%27s%20-final%20-%20Jan%208%202012.doc>
- McLaughlin, S. B., & Adams Kszos, L. (2005). Development of switchgrass (*Panicum virgatum*) as a bioenergy feedstock in the United States. *Biomass and Bioenergy*, 28(6), 515-535. doi:<http://dx.doi.org/10.1016/j.biombioe.2004.05.006>

- McLaughlin, S. B., & Walsh, M. E. (1998). Evaluating environmental consequences of producing herbaceous crops for bioenergy. *Biomass & Bioenergy*, 14, 317-324. Retrieved from https://www.researchgate.net/publication/222479081_Evaluating_environmental_consequences_of_producing_herbaceous_crops_for_bioenergy
- McLeod, E., Chmura, G. L., Bouillon, S., Salm, R., Björk, M., Duarte, C. M., . . . Silliman, B. R. (2011). A blueprint for blue carbon: toward an improved understanding of the role of vegetated coastal habitats in sequestering CO₂. *Frontiers in Ecology and the Environment*, 9(10), 552-560. doi:10.1890/110004
- McLeod, M., Slavich, P., & Harden, S. (2012). Soil and pasture responses to poultry litter biochar combined with nitrogen fertiliser on a degraded red Vertosol in Tamworth, NSW Australia. *16 Australian Agronomy Conference, 2012*. Retrieved from http://www.regional.org.au/au/asa/2012/climate-change/8004_mcleodmk.htm
- McMahon, J. (2017). The World Needs Carbon Capture, IEA Warns, And It's Not Happening. *Forbes*.
- McNeil, L. A., Mutch, G. A., Iacoviello, F., Bailey, J. J., Triantafyllou, G., Neagu, D., . . . Metcalfe, I. S. (2020). Dendritic silver self-assembly in molten-carbonate membranes for efficient carbon dioxide capture. *Energy & Environmental Science*. doi:10.1039/C9EE03497H
- McQueen, N., Kelemen, P., Dipple, G., Renforth, P., & Wilcox, J. (2020). Ambient weathering of magnesium oxide for CO₂ removal from air. *Nature Communications*, 11(1), 3299. doi:10.1038/s41467-020-16510-3
- McQueen, N., Psarras, P., Pilorgé, H., Liguori, S., He, J., Yuan, M., . . . Wilcox, J. (2020). Cost Analysis of Direct Air Capture and Sequestration Coupled to Low-Carbon Thermal Energy in the United States. *Environmental Science & Technology*. doi:10.1021/acs.est.0c00476
- McQueen, N., Woodall, C. M., Psarras, P., & Wilcox, J. (2020). Chapter 11 CCS in the Iron and Steel Industry. In *Carbon Capture and Storage* (pp. 353-391): The Royal Society of Chemistry.
- McWilliams, G. (2021). Energy firms seize on carbon tech, environmental goals to build new businesses. *Yahoo! Finance*. Retrieved from https://finance.yahoo.com/news/energy-firms-seize-carbon-tech-201716753.html?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xILmNvbS8&guce_referrer_sig=AQAAAF3UCt3no1tySWzLyNIgM8xSB0C-92ysuye-aJAYV7IWcMSWjRpGzzlpz6WarshBPJdCuEiXJt6tEgh1JNb8Mv3_SsPKgh0gR-MSDsmATd2ydTDxBiypnrr7KL84aXNdMKArS-y-VR3y877h5Nrw9wPmjeRIFkJ2tL-aqmpqc
- Md Som, A., Wang, Z., & Al-Tabba, A. (2013). Palm frond biochar production and characterisation. *Earth and Environmental Science Transactions of the Royal Society of Edinburgh*, 103(1), 39-50. Retrieved from <https://www.cambridge.org/core/journals/earth-and-environmental-science-transactions-of-royal-society-of-edinburgh/article/div-classtitlepalm-frond-biochar-production-and-characterisationdiv/52B98A488FDDB5D0CBC5C739F933B54D>
- Medor, R. (2018). Croplands can suck lots of CO₂ from air if treated with crushed rock. *MinnPost*. Retrieved from <https://www.minnpost.com/earth-journal/2018/02/croplands-can-suck-lots-co2-air-if-treated-crushed-rock>
- Meadowcroft, J. (Ed.) (2009). *Caching the Carbon: The Politics and Policy of Carbon Capture and Storage*.
- Meadowcroft, J. (2013). Exploring negative territory Carbon dioxide removal and climate policy initiatives. *Climatic Change*, 118(1), 137-149. doi:10.1007/s10584-012-0684-1
- Meadowcroft, J., & Langhelle, O. (Eds.). (2009). *Caching the Carbon The Politics and Policy of*

Carbon Capture and Storage.

- Meckling, J., & Biber, E. (2021). A policy roadmap for negative emissions using direct air capture. *Nature Communications*, 12(1), 2051. doi:10.1038/s41467-021-22347-1
- Medina, J. (2020). Section 45Q Carbon Capture Credits Guidance – Update Retrieved from <https://www.pillsburylaw.com/en/news-and-insights/section-45q-carbon-capture-credits-guidance-update.html>
- Medlock, K. B., et al. (2020). *BCarbon: A New Standard for a Soil Carbon Storage Market in the CO₂ Mitigation Portfolio*. Retrieved from <https://www.bakerinstitute.org/research/bcarbon-new-soil-carbon-storage-standard/>
- Meena, V. D., Dotaniya, M. L., Coumar, V., Rajendiran, S., Ajay, Kundu, S., & Subba Rao, A. (2014). A Case for Silicon Fertilization to Improve Crop Yields in Tropical Soils. *Proceedings of the National Academy of Sciences, India Section B: Biological Sciences*, 84(3), 505-518. doi:10.1007/s40011-013-0270-y
- Meharg, C., & Meharg, A. A. (2015). Silicon, the silver bullet for mitigating biotic and abiotic stress, and improving grain quality, in rice? *Environmental and Experimental Botany*, 120, 8-17. doi:<https://doi.org/10.1016/j.envexpbot.2015.07.001>
- Mehari, Z. H., Elad, Y., Rav-David, D., Graber, E. R., & Harel, Y. M. (2015). Induced systemic resistance in tomato (*Solanum lycopersicum*) against *Botrytis cinerea* by biochar amendment involves jasmonic acid signaling. *Plant and Soil*. doi:10.1007/s11104-015-2445-1
- Mehmood, K., LI, J.-Y., Jiang, J., MASUD, M. M., & Xu, R.-K. (2015). Effect of low energy-consuming biochars in combination with nitrate fertilizer on soil acidity amelioration and maize growth. *Journal of Soils and Sediments*. doi:10.1007/s11368-015-1219-y
- Mehmood, M. A., Ibrahim, M., Rashid, U., Nawaz, M., Ali, S., Hussain, A., & Gull, M. (2017). Biomass production for bioenergy using marginal lands. *Sustainable Production and Consumption*, 9, 3-21. doi:<https://doi.org/10.1016/j.spc.2016.08.003>
- Mehta, A. (2019). Biomass carbon capture pilot points to a new sector whose time has come. *Chemistry World*. Retrieved from <https://www.chemistryworld.com/news/biomass-carbon-capture-pilot-points-to-a-new-sector-whose-time-has-come/3010037.article>
- Meier, S., et al. (2015). Effects of biochar on copper immobilization and soil microbial communities in a metal-contaminated soil. *Journal of Soils and Sediments*, 1-14. doi:10.1007/s11368-015-1224-1
- Meinshausen, M., Meinshausen, N., Hare, W., Raper, S. C. B., Frieler, K., Knutti, R., . . . Allen, M. R. (2009). Greenhouse-gas emission targets for limiting global warming to 2 °C. *Nature*, 458, 1158. Retrieved from <https://www.nature.com/articles/nature08017>
- Meissner, K. J., McNeil, B. I., Eby, M., & Wiebe, E. C. (2012). The importance of the terrestrial weathering feedback for multimillennial coral reef habitat recovery. *Global Biogeochemical Cycles*, 26(3), 1-20. doi:10.1029/2011GB004098
- Mekuria, W., et al. (2014). Organic and Clay-Based Soil Amendments Increase Maize Yield, Total Nutrient Uptake and Soil Properties in Lao PDR. *Agroecology and Sustainable Food Systems*, 38(8), 936-961. doi:10.1080/21683565.2014.917144
- Mekuria, W., et al. (2015). Soil management for raising crop water productivity in rainfed production systems in Lao PDR. *Archives of Agronomy and Soil Science*, 62(1), 53-68. doi:10.1080/03650340.2015.1037297
- Mekuria, W., Noble, A., Hoanh, C. T., McCartney, M., Sengtaheuanghoun, O., Sipaseuth, N., . . . Getnet, K. (2014). The potential role of soil amendments in increasing agricultural productivity and improving the livelihood of smallholders in Lao PDR. *International Water Management Institute*. Retrieved from <https://cgspace.cgiar.org/handle/10568/67615>
- Melanson, D. (2020). CAER Receives U.S. DOE Grant to Develop Next-Generation Carbon Dioxide Capture Technology [Press release]. Retrieved from <http://uknow.uky.edu/>

research/caer-receives-us-doe-grant-develop-next-generation-carbon-dioxide-capture-technology

- Melara, A. J., Singh, U., & Colosi, L. M. (2020). Is aquatic bioenergy with carbon capture and storage a sustainable negative emission technology? Insights from a spatially explicit environmental life-cycle assessment. *Energy Conversion and Management*, 224, 113300. doi:<https://doi.org/10.1016/j.enconman.2020.113300>
- Melas, G. B. (2014). *Interactions between different types of biochar and soil microbial activity: the effects on the dynamics of labile organic matter and the behaviour of some pesticides*. Universitat Autònoma de Barcelona (Autonomous University of Barcelona), Retrieved from <http://www.tdx.cat/handle/10803/283891>
- Melas, G. B. (2014). *WOULD THE ADDITION OF BIOCHAR MODULATE ADVERSE EFFECTS OF SOME PESTICIDES ON SOIL MICROORGANISMS?* Universitat Autònoma de Barcelona (Autonomous University of Barcelona), Retrieved from <http://www.tdx.cat/bitstream/handle/10803/283891/gbm1de1.pdf?sequence=1#page=108>
- Melias, D. S. (2015). *A Study of Catalytic Carbon Dioxide Methanation Leading to the Development of Dual Function Materials for Carbon Capture and Utilization*. Columbia University, Retrieved from <http://search.proquest.com/socialsciences/docview/1695272841/abstract/57D2EBFFD9D647ACPQ/6?accountid=14496> (3706744)
- Melillo, J. M., Reilly, J. M., Kicklighter, D. W., Gurgel, A. C., Cronin, T. W., Paltsev, S., . . . Schlosser, C. A. (2009). Indirect Emissions from Biofuels: How Important? *Science*, 326(5958), 1397-1399. doi:[10.1126/science.1180251](https://doi.org/10.1126/science.1180251)
- Meller-Harel, Y., et al. (2012). Biochar mediates systemic response of strawberry to foliar fungal pathogens. *Plant and Soil*, 357(1), 245-257. doi:[10.1007/s11104-012-1129-3](https://doi.org/10.1007/s11104-012-1129-3)
- Melo, L. C. A., et al. (2013). Influence of Pyrolysis Tempurature on Cadmium and Zinc Sorption Capacity of Sugar Cane Straw-Derived Biochar. *BioResources*, 8(4), 4992-5004. Retrieved from http://ojs.cnr.ncsu.edu/index.php/BioRes/article/view/BioRes_08_4_Melo_Pyrolysis_Cadmium_Zinc_Sorption
- Melo, L. C. A., Puga, A. P., Coscione, A. R., Beesley, L., Abreu, C. A., & Camargo, O. A. (2015). Sorption and desorption of cadmium and zinc in two tropical soils amended with sugarcane-straw-derived biochar. *Journal of Soils and Sediments*, 16(1), 226-234. doi:[10.1007/s11368-015-1199-y](https://doi.org/10.1007/s11368-015-1199-y)
- Melton, B. (2019). The 45Q Carbon Sequestration Tax Credits: First Steps or Moral Hazard? *Climate Discovery*.
- Melzer, L. S. (2012). *Carbon Dioxide Enhanced Oil Recovery (CO2 EOR): Factors Involved in Adding Carbon Capture, Utilization and Storage (CCUS) to Enhanced Oil Recovery*. Retrieved from http://carboncapturecoalition.org/wp-content/uploads/2018/01/Melzer_CO2EOR_CCUS_Feb2012.pdf
- Mendelevitch, R. (2014). The role of CO2-EOR for the development of a CCTS infrastructure in the North Sea Region: A techno-economic model and applications. *International Journal of Greenhouse Gas Control*, 20, 132-159. doi:<https://doi.org/10.1016/j.ijggc.2013.11.007>
- Mendelsohn, R., Litan, R. E., & Fleming, J. (2021). A framework to ensure that voluntary carbon markets will truly help combat climate change. Retrieved from <https://www.brookings.edu/research/a-framework-to-ensure-that-voluntary-carbon-markets-will-truly-help-combat-climate-change/>
- Mendes, G. d. O., et al. (2014). Biochar enhances *Aspergillus niger* rock phosphate solubilization by increasing organic acid production and alleviating fluoride toxicity. *Applied and Environmental Microbiology*, 80(10), 3081-3085. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4018927/>
- Méndez, A., et al. (2012). Effects of sewage sludge biochar on plant metal availability after application to a Mediterranean soil. *Chemosphere*, 89(11), 1354-1359.

- Méndez, A., et al. (2015). The effect of paper sludge and biochar addition on brown peat and coir based growing media properties. *Scientia Horticulturae*, 193, 225 - 230. doi:10.1016/j.scienta.2015.07.032
- Méndez, A., Paz-Ferreiro, J., Araujo, F., & Gascó, G. (2014). Biochar from pyrolysis of deinking paper sludge and its use in the treatment of a nickel polluted soil. *Journal of Analytical and Applied Pyrolysis*, 107, 46-52. Retrieved from <https://www.sciencedirect.com/science/article/pii/S0165237014000254>
- Méndez, A., Tarquis, A. M., Saa-Requejo, A., Guerrero, F., & Gascó, G. (2013). Influence of pyrolysis temperature on composted sewage sludge biochar priming effect in a loamy soil. *Chemosphere*.
- Méndez, A., Terradillos, M., & Gascó, G. (2013). Physicochemical And Agronomic Properties Of Biochar From Sewage Sludge Pyrolysed At Different Temperatures. *Journal of Analytical and Applied Pyrolysis*.
- Mendhe, V. A., Kamble, A. D., Bannerjee, M., Mishra, S., & Sutay, T. (2017). Coalbed Methane: Present Status and Scope of Enhanced Recovery Through CO₂ Sequestration in India. In M. Goel & M. Sudhakar (Eds.), *Carbon Utilization: Applications for the Energy Industry* (pp. 183-203). Singapore: Springer Singapore.
- Mendiara, T., Gayán, P., García-Labiano, F., de Diego, L. F., Pérez-Astray, A., Izquierdo, M. T., . . . Adánez, J. (2017). Chemical Looping Combustion of Biomass: An Approach to BECCS. *Energy Procedia*, 114, 6021-6029. doi:<https://doi.org/10.1016/j.egypro.2017.03.1737>
- Mendiara, T., Pérez-Astray, A., Izquierdo, M. T., Abad, A., de Diego, L. F., García-Labiano, F., . . . Adánez, J. (2018). Chemical Looping Combustion of different types of biomass in a 0.5kWth unit. *Fuel*, 211, 868-875. doi:<https://doi.org/10.1016/j.fuel.2017.09.113>
- Mendiluce, M. (2021). Your Company Pledged to Reduce Its Carbon Footprint. Now What? . *Harvard Business Review*. Retrieved from <https://hbr.org/2021/06/your-company-pledged-to-reduce-its-carbon-footprint-now-what>
- Menetrez, M. Y. (2012). An Overview of Algae Biofuel Production and Potential Environmental Impact. *Environmental Science & Technology*, 46(13), 7073-7085. doi:10.1021/es300917r
- Meng, A., Zhang, Y., Zhuo, J., Li, Q., & Qin, L. (2014). Investigation on pyrolysis and carbonization of Eupatorium adenophorum Spreng and tobacco stem. *Journal of the Energy Institute*. doi:10.1016/j.joei.2014.10.003
- Meng, C. P., Hanif, A. H. M., Wahid, S. A., & Abdullah, L. C. (2014). Short-Term Field Decomposition and Physico-Chemical Transformation of Jatropha Pod Biochar in Acidic Mineral Soil. *Open Journal of Soil Science*, 04(07), 226 - 234. doi:10.4236/ojss.2014.47025
- Meng, J., et al. . (2013). Physicochemical properties of biochar produced from aerobically composted swine manure and its potential use as an environmental amendment. *Bioresource Technology*.
- Meng, Q., Wang, C., Chen, Y., & Chen, J. (2013). A simplified CFD model for air-lift artificial upwelling. *Ocean Engineering*, 72, 267-276. doi:<https://doi.org/10.1016/j.oceaneng.2013.07.006>
- Meng, X., & Yuan, W. (2014). Can Biochar Couple with Algae to Deal with Desertification? *Journal of Sustainable Bioenergy Systems*, 04(03), 194 - 198. doi:10.4236/jsbs.2014.43018
- Menichetti, E., & Otto, M. (2009). *Energy Balance & Greenhouse Gas Emissions of Biofuels from a Life-Cycle Perspective*. Paper presented at the Proceedings of the Scientific Committee on Problems of the Environment (SCOPE) International Biofuels Project Rapid Assessment. <https://cip.cornell.edu/DPubS/Repository/1.0/Disseminate?>

- view=body&id=pdf_1&handle=scope/1245782005
- Menn, J. (2020). Stripe picks \$1 million in carbon-removal projects to spur industry. *Reuters*. Retrieved from <https://www.reuters.com/article/us-climate-change-stripe/stripe-picks-1-million-in-carbon-removal-projects-to-spur-industry-idUSKBN22U1YK>
- Menyailo, O. V., Lehmann, J., Cravo, M. S., & Zech, W. (2003). Soil Microbial Activities in Tree-Based Systems and Natural Forests of the Central Amazon, Brazil. *Biology and Fertility of Soils*, 38(1), 1-9. Retrieved from <https://link.springer.com/article/10.1007/s00374-003-0631-4>
- Mercedes Maroto-Valer, M., Lu, Z., Zhang, Y., & Tang, Z. (2008). Sorbents for CO₂ capture from high carbon fly ashes. *Waste Management*, 28(11), 2320-2328. doi:<https://doi.org/10.1016/j.wasman.2007.10.012>
- Merchant, N. i. (2021). The Fatal Design Flaw in Most Carbon Offsets. *The Carbon Curve*. Retrieved from <https://carboncurve.substack.com/p/offsets>
- Merchant, N. i. (2021). Making the Shift from Traditional Offsets to Permanent Carbon Removal - Three Pathways. *The Carbon Curve*. Retrieved from <https://carboncurve.substack.com/p/making-the-shift-from-traditional>
- Merchant, N. i. (2021). Six Questions to Ask Before Buying Another Carbon Offset. *The Carbon Curve*. Retrieved from <https://carboncurve.substack.com/p/mobile>
- Merk, C., Klaus, G., Pohlers, J., Ernst, A., Ott, K., & Rehdanz, K. (2019). Public perceptions of climate engineering: Laypersons' acceptance at different levels of knowledge and intensities of deliberation. *GAIA - Ecological Perspectives for Science and Society*, 28(4), 348-355. doi:[10.14512/gaia.28.4.6](https://doi.org/10.14512/gaia.28.4.6)
- Merk, C., Pönnitzsch, G., & Rehdanz, K. (2018). Do climate engineering experts display moral-hazard behaviour? *Climate Policy*, 1-13. doi:[10.1080/14693062.2018.1494534](https://doi.org/10.1080/14693062.2018.1494534)
- Mernit, J. L. (2020). The Scary Politics of Capturing Carbon from Coal. *Capital & Main*. Retrieved from <https://capitalandmain.com/scary-politics-of-capturing-carbon-from-coal-0827>
- Mervine, E. M., Wilson, S. A., Power, I. M., Dipple, G. M., Turvey, C. C., Hamilton, J. L., . . . Southam, G. (2018). Potential for offsetting diamond mine carbon emissions through mineral carbonation of processed kimberlite: an assessment of De Beers mine sites in South Africa and Canada. *Mineralogy and Petrology*, 112(2), 755-765. doi:[10.1007/s00710-018-0589-4](https://doi.org/10.1007/s00710-018-0589-4)
- Merzouk, A., Levasseur, M., Scarratt, M. G., Michaud, S., Rivkin, R. B., Hale, M. S., . . . Li, W. K. W. (2006). DMSP and DMS dynamics during a mesoscale iron fertilization experiment in the Northeast Pacific—Part II: Biological cycling. *Deep Sea Research Part II: Topical Studies in Oceanography*, 53(20–22), 2370-2383. doi:<http://dx.doi.org/10.1016/j.dsr2.2006.05.022>
- Meskhidze, N., Chameides, W. L., & Nenes, A. (2005). Dust and pollution: a recipe for enhanced ocean fertilization? *Journal of Geophysical Research: Atmospheres*, 110(D3), 1-23. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1029/2004JD005082/abstract>
- Messenger, S. P. (2009). *A Cost Benefit Analysis of the Application of Biochar in the Scottish Whisky Industry*.
- Messina, L. G., Bonelli, P. R., & Cukierman, A. L. (2016). Effect of mineral matter removal on pyrolysis of wood sawdust from an invasive species. *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects*, 38(4), 542 - 548. doi:[10.1080/15567036.2013.799616](https://doi.org/10.1080/15567036.2013.799616)
- Mészáros, E., et al. (2007). Do All Carbonized Charcoals Have the Same Chemical Structure? Implications of Thermogravimetry-Mass Spectrometry Measurements. *Industrial and Engineering Chemistry Research*, 46(18), 5943-5953. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/ie0615842>

- Mete, F. Z., et al. (2015). Synergistic Effects of Biochar and NPK Fertilizer on Soybean Yield in an Alkaline Soil. *Pedosphere*, 25(5), 713 - 719. doi:10.1016/s1002-0160(15)30052-7
- Metting, F. B., Smith, J. L., Amthor, J. S., & Izaurralde, R. C. (2001). Science Needs and New Technology for Increasing Soil Carbon Sequestration. *Climatic Change*, 51(1), 11-34. doi:10.1023/a:1017509224801
- Metzger, R. A., & Benford, G. (2001). Sequestering of Atmospheric Carbon through Permanent Disposal of Crop Residue. *Climatic Change*, 49(1), 11-19. doi:10.1023/a:1010765013104
- Metzger, R. A., Benford, G., & Hoffert, M. I. (2002). To Bury or to Burn: Optimum Use of Crop Residues to Reduce Atmospheric CO₂. *Climatic Change*, 54(3), 369-374. doi:10.1023/a:1016136202309
- Meyer, K., & Newman, P. (2020). A Planetary Quota for Carbon Dioxide. In *Planetary Accounting: Quantifying How to Live Within Planetary Limits at Different Scales of Human Activity* (pp. 121-136). Singapore: Springer Singapore.
- Meyer, N. A., Vögeli, J. U., Becker, M., Broadhurst, J. L., Reid, D. L., & Franzidis, J. P. (2014). Mineral carbonation of PGM mine tailings for CO₂ storage in South Africa: A case study. *Minerals Engineering*, 59, 45-51. doi:<https://doi.org/10.1016/j.mineng.2013.10.014>
- Meyer, R. (2019). The Green New Deal Hits Its First Major Snag. *The Atlantic*, (January 18). Retrieved from <https://www.theatlantic.com/science/archive/2019/01/first-fight-about-democrats-climate-green-new-deal/580543/>
- Meyer, R. (2020). A Start-Up's Unusual Plan to Suck Carbon Out of the Sky. *The Atlantic*. Retrieved from <https://www.theatlantic.com/science/archive/2020/11/stripe-climate-carbon-removal/617201/>
- Meyer, R. (2021). The Weekly Planet: Why a Political Philosopher Is Thinking About Carbon Removal. *The Atlantic*. Retrieved from <https://www.theatlantic.com/science/archive/2021/03/why-political-philosopher-thinking-about-carbon-removal/618195/>
- Meyer, S., Bright, R. M., Fischer, D., Schultz, H., & Glaser, B. (2014). Albedo Impact on the Suitability of Biochar Systems To Mitigate Global Warming. *Environmental Science & Technology*, 46, 12726-12734. Retrieved from <http://adsabs.harvard.edu/abs/2012EnST..4612726M>
- Meyer, S., Genesio, L., Vogel, I., Schmidt, H.-P., Soja, G., Someus, E., . . . Glaser, B. (2017). Biochar standardization and legislation harmonization. *Journal of Environmental Engineering and Landscape Management*, 25(2), 175-191. doi:10.3846/16486897.2016.1254640
- Meyer, S., Glaser, B., & Quicker, P. (2011). Technical, Economical, and Climate-Related Aspects of Biochar Production Technologies: A Literature Review. *Environmental Science & Technology*, 45(22), 9473-9483. doi:10.1021/es201792c
- Meyer-Kohlstock, D., Schmitz, T., & Kraft, E. (2015). Organic Waste for Compost and Biochar in the EU: Mobilizing the Potential. In.
- Meyer-Ohlendorf, N. (2020). *EU Framework for CO₂ Removals – Targets and Commitments*. Retrieved from <https://www.ecologic.eu/17666>
- Meylan, F. D., Moreau, V., & Erkman, S. (2015). CO₂ utilization in the perspective of industrial ecology, an overview. *Journal of CO₂ Utilization*, 12, 101-108. doi:<http://dx.doi.org/10.1016/j.jcou.2015.05.003>
- Meynet, P., et al. (2013). Predicting the effects of biochar on volatile petroleum hydrocarbon biodegradation and emanation from soil: A bacterial community finger-print analysis inferred modelling approach. *Soil Biology and Biochemistry*, 68, 20-30. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0038071713003167>
- Meysman, F. J. R., & Montserrat, F. (2017). Negative CO₂ emissions via enhanced silicate weathering in coastal environments. *Biology Letters*, 13(4). doi:10.1098/rsbl.2016.0905

- Mia, S., et al. (2014). Biochar application rate affects biological nitrogen fixation in red clover conditional on potassium availability. *Agriculture, Ecosystems & Environment*, 191, 83-91. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0167880914001303>
- Mia, S., et al. (2015). Production of Biochar for Soil Application: A Comparative Study of Three Kiln Models. *Pedosphere*, 25(5), 696 - 702. doi:10.1016/s1002-0160(15)30050-3
- Mia, S., Dijkstra, F. A., & Singh, B. (2017). Chapter One - Long-Term Aging of Biochar: A Molecular Understanding With Agricultural and Environmental Implications. In D. L. Sparks (Ed.), *Advances in Agronomy* (Vol. 141, pp. 1-51): Academic Press.
- Mia, S., van Groenigen, J. W., van de Voorde, T. F. J., Oram, N. J., Bezemer, T. M., Mommer, L., & Jeffery, S. (2014). Biochar application rate affects biological nitrogen fixation in red clover conditional on potassium availability. *Agriculture, Ecosystems & Environment*, 191, 83-91. doi:<http://dx.doi.org/10.1016/j.agee.2014.03.011>
- Micellia, C. (2020). Earning Potential Towards a new business model for carbon farming. *Carbon Mechanisms Review*, 9(2), 44-50. Retrieved from <https://www.carbon-mechanisms.de/en/publications/details/cmr-02-2021>
- Michael Jerry Antal, J., & Grønli, M. (2003). The Art, Science, and Technology of Charcoal Production. *Industrial and Engineering Chemistry Research*, 42. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/ie0207919>
- Michael, K., Arnot, M., Cook, P., Ennis-King, J., Funnell, R., Kaldi, J., . . . Paterson, L. (2009). CO₂ storage in saline aquifers I—Current state of scientific knowledge. *Energy Procedia*, 1(1), 3197-3204. doi:<https://doi.org/10.1016/j.egypro.2009.02.103>
- Michael, K., Golab, A., Shulakova, V., Ennis-King, J., Allinson, G., Sharma, S., & Aiken, T. (2010). Geological storage of CO₂ in saline aquifers—A review of the experience from existing storage operations. *International Journal of Greenhouse Gas Control*, 4(4), 659-667. doi:<https://doi.org/10.1016/j.ijggc.2009.12.011>
- Michel, K., Terhoeven-Urselmans, T., Nitschke, R., Steffan, P., & Ludwig, B. (2008). Use of near- and mid-infrared spectroscopy to distinguish carbon and nitrogen originating from char and forest-floor material in soils. *Journal of Plant Nutrition and Soil Science-Zeitschrift Fur Pflanzenernahrung Und Bodenkunde*, 172(1), 63-70.
- Michiki, H. (1995). Biological CO₂ fixation and utilization project. *Energy Conversion and Management*, 36(6), 701-705. doi:[https://doi.org/10.1016/0196-8904\(95\)00102-J](https://doi.org/10.1016/0196-8904(95)00102-J)
- Michinori, N. (1998). *Microbial Fertilizers in Japan*. Retrieved from Ibaraki, Japan:
- Microsoft. (2021). Microsoft's FY21 Carbon Removal Portfolio. Retrieved from <https://app.powerbi.com/view?r=eyJrljoiOGM2MGFINGYtMGNINy00YzY5LWEyMTAtOTA0ODEyNzEzYTczliwidCl6ImMxMzZWMwLWZIOTltdVIMC1iZWILTQ2OTg0OTczZTlzMlsImMiOjF9>
- Middelburg, J. J., Soetaert, K., & Hagens, M. (2020). Ocean Alkalinity, Buffering and Biogeochemical Processes. *Reviews of Geophysics*, 58(3), e2019RG000681. doi:10.1029/2019rg000681
- Middleton, R. S. (2013). A new optimization approach to energy network modeling: anthropogenic CO₂ capture coupled with enhanced oil recovery. *International Journal of Energy Research*, 37(14), 1794-1810. doi:10.1002/er.2993
- Middleton, R. S., Levine, J. S., Bielicki, J. M., Viswanathan, H. S., Carey, J. W., & Stauffer, P. H. (2015). Jumpstarting commercial-scale CO₂ capture and storage with ethylene production and enhanced oil recovery in the US Gulf. *Greenhouse Gases: Science and Technology*, 5(3), 241-253. doi:doi:10.1002/ghg.1490
- Miguel Rodríguez, T. (2010). *Biochar as a Strategy for Sustainable Land Management, Poverty Reduction, and Climate Change Mitigation/Adaptation?* (MSc Environment and Resource Management). Vrije Universiteit, Amsterdam. Retrieved from <http://>

- www.biochar-international.org/sites/default/files/Miguel_Rodriguez.pdf
- Mika, A. M., & Keeton, W. S. (2013). Factors contributing to carbon fluxes from bioenergy harvests in the U.S. Northeast: an analysis using field data. *GCB Bioenergy*, 5(3), 290-305. doi:10.1111/j.1757-1707.2012.01183.x
- Mikajlo, I., et al. (2014). Microbial transformation of nitrogen in soil after the biochar addition. Retrieved from http://mnet.mendelu.cz/mendelnet2014/articles/52_mikajlo_1076.pdf
- Mikajlo, I., et al. (2015). Effect of PGPB Inoculation, Addition of Biochar, and Mineral N Fertilization on Mycorrhizal Colonization. *International Journal of Biological, Biomolecular, Agricultural, Food and Biotechnological Engineering*, 9(12), 1189-1192. Retrieved from <http://www.waset.org/publications/10003031>
- Mikajlo, I., et al. (2015). Effect of Plant Growth Promoting Bacteria Inoculation, Addition of Biochar, and Mineral N Fertilization on Mycorrhizal Colonization. *International Journal of Biological, Biomolecular, Agricultural, Food and Biotechnological Engineering*, 9(12), 1235-1238. Retrieved from <http://www.waset.org/publications/10003135>
- Mikkelsen, M., Jørgensen, M., & Krebs, F. C. (2010). The teraton challenge. A review of fixation and transformation of carbon dioxide. *Energy Environ. Sci.*, 3, 43-81. Retrieved from https://pubs.rsc.org/lv/content/articlehtml/2010/ee/b912904a?casa_token=nBOBoCNNBTYAAAAA:9H_AzDKLCbpXxIND4v3ZBwnStbOsGQIYnQuSku3qs707g2CVVS1LRSwsvlAwUniFZ4SAeLGaSzkmx0
- Mikkelsen, M., Jørgensen, M., & Krebs, F. C. (2010). The teraton challenge. A review of fixation and transformation of carbon dioxide. *Energy & Environmental Science*, 3(1), 43-81. doi:10.1039/B912904A
- Mikkelsen, M., Jørgensen, M., & Krebs, F. C. (2010). The teraton challenge. A review of fixation and transformation of carbon dioxide. *Energy & Environmental Science*, 3(1), 43-81. doi:10.1039/B912904A
- Mikulčić, H., Ridjan Skov, I., Dominković, D. F., Wan Alwi, S. R., Manan, Z. A., Tan, R., . . . Wang, X. (2019). Flexible Carbon Capture and Utilization technologies in future energy systems and the utilization pathways of captured CO₂. *Renewable and Sustainable Energy Reviews*, 114, 109338. doi:<https://doi.org/10.1016/j.rser.2019.109338>
- Mikulka, J. (2019). Stanford Study Says Renewable Power Eliminates Argument for Using Carbon Capture with Fossil Fuels. *Desmog*. Retrieved from <https://www.desmogblog.com/2019/11/21/jacobson-stanford-carbon-capture-fossil-fuels-renewables>
- Mikulka, J. (2021). Fossil Fuel Tax Programs to Cut Emissions Lead to Lots of Industry Profit, Little Climate Action. *Desmog*. Retrieved from <https://www.desmog.com/2021/04/04/fossil-fuel-tax-programs-emissions-climate/>
- Mikunda, T., Brunner, L., Skylogianni, E., Monteiro, J., Rycroft, L., & Kemper, J. (2021). Carbon capture and storage and the sustainable development goals. *International Journal of Greenhouse Gas Control*, 108, 103318. doi:<https://doi.org/10.1016/j.ijggc.2021.103318>
- Mikunda, T., & Feenstra, Y. (2009). *Effective communication strategies to engage the public and stakeholders around CCS projects: a review of country experiences*. Retrieved from http://www.globalccsinstitute.com/sites/www.globalccsinstitute.com/files/Effective.communications.strategy_CCS_Brussels_10112010_Wksp_Report_ECN.pdf
- Milano, J., Ong, H. C., Masjuki, H. H., Chong, W. T., Lam, M. K., Loh, P. K., & Vellayan, V. (2016). Microalgae biofuels as an alternative to fossil fuel for power generation. *Renewable and Sustainable Energy Reviews*, 58, 180-197. doi:<http://doi.org/10.1016/j.rser.2015.12.150>
- Milér, T., Hollan, J., & Svobodová, J. (2014). *Biochar Hands-on Education*. Paper presented at the 10th International Conference on Hands-on Science.
- Milla, O., & Huang, W. (2013). Identifying the Advantages of Using MSW Bottom Ash in

- Combination with Rice Husk and Bamboo Biochar Mixtures as Soil Modifiers: Enhancement of the Release of Polyphenols from a Carbon Matrix. *J. Hazard. Toxic Radioact. Waste.*
- Milla, O., Wang, H., & Huang, W. F. (2013). Feasibility Study using Municipal Solid Waste Incineration Bottom Ash and Biochar from Binary Mixtures of Organic Waste as Agronomic Materials. *J. Hazard. Toxic Radioact. Waste.*
- Milla, O. V., et al. (2014). Effects of Pyrolyzation Temperature of Bamboo Biochars on the Germination and Growth Rates of Zea Maize L. and Brassica Rapa. *Journal of Technology*, 29(4), 239-250. Retrieved from <http://jot.ntust.edu.tw/index.php/jot/article/view/191>
- Millar, R. J., & Allen, M. R. (2020). Chapter 2 Understanding the Role of CCS Deployment in Meeting Ambitious Climate Goals. In *Carbon Capture and Storage* (pp. 8-35): The Royal Society of Chemistry.
- Miller, A. Z., Rosa, J. M. D. I., Paneque, M., & Knicker, H. (2016). Development of fugal strains in biochar amended soils. *Geophysical Research Abstracts*. Retrieved from <http://meetingorganizer.copernicus.org/EGU2016/EGU2016-6564.pdf>
- Miller, B. (2015). 8 - Greenhouse gas – carbon dioxide emissions reduction technologies. In *Fossil Fuel Emissions Control Technologies* (pp. 367-438): Butterworth-Heinemann.
- Miller, S., Essen, M., Anderson, N., Page-Dumroese, D., McCollum, D., Bergman, R., & Elder, T. (2015). Burgeoning biomass: Creating efficient and sustainable forest biomass supply chains in the Rockies, Part II. *Science You Can Use Bulletin*, 1-11. Retrieved from <http://www.treesearch.fs.fed.us/pubs/50111>
- Miller-Robbie, L., Ulrich, B. A., Ramey, D. F., Spencer, K. S., Herzog, S. P., Cath, T. Y., . . . Higgins, C. P. (2014). Life cycle energy and greenhouse gas assessment of the co-production of biosolids and biochar for land application. *Journal of Cleaner Production*. doi:10.1016/j.jclepro.2014.12.050
- Miltner, B. C., & Coomes, O. T. (2014). Indigenous innovation incorporates biochar into swidden-fallow agroforestry systems in Amazonian Peru. *Agroforestry Systems*. doi:10.1007/s10457-014-9775-5
- Mimmo, T., et al. (2014). Effect of pyrolysis temperature on miscanthus (*Miscanthus × giganteus*) biochar physical, chemical and functional properties. *Biomass and Bioenergy*, 62, 149-157. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0961953414000051>
- Min, D., et al. (2015). Phosphate adsorption characteristics of La-containing biochar. *Journal of Ecology and Rural Environment*, 31(3), 372-379. Retrieved from <http://www.cabdirect.org/abstracts/20153237691.html?jsessionid=A73C5738283169E150513DC4B40250ED>
- Minang, P. A., Duguma, L. A., Bernard, F., Mertz, O., & van Noordwijk, M. (2014). Prospects for agroforestry in REDD+ landscapes in Africa. *Current Opinion in Environmental Sustainability*, 6, 78-82. doi:<https://doi.org/10.1016/j.cosust.2013.10.015>
- Minang, P. A., van Noordwijk, M., & Swallow, B. M. (2012). High-Carbon-Stock Rural-Development Pathways in Asia and Africa: Improved Land Management for Climate Change Mitigation. In P. K. R. Nair & D. Garrity (Eds.), *Agroforestry - The Future of Global Land Use* (pp. 127-143).
- Minasny, B., Arrouays, D., McBratney, A. B., Angers, D. A., Chambers, A., Chaplot, V., . . . Winowiecki, L. (2018). Rejoinder to Comments on Minasny et al., 2017 Soil carbon 4 per mille *Geoderma* 292, 59–86. *Geoderma*, 309, 124-129. doi:<https://doi.org/10.1016/j.geoderma.2017.05.026>
- Minasny, B., Malone, B. P., McBratney, A. B., Angers, D. A., Arrouays, D., Chambers, A., . . . Winowiecki, L. (2017). Soil carbon 4 per mille. *Geoderma*, 292, 59-86. doi:<https://doi.org/>

- 10.1016/j.geoderma.2017.01.002
- (2020, September 3). *Air Miners* [Retrieved from <https://www.youtube.com/watch?v=SRVnitJlr2c&list=PLF8369A27273314D8&index=3>
- (2020). *Deep Dive on 45Q Tax Credits* [Retrieved from <https://www.youtube.com/watch?v=G2YAQKoLiAl&feature=youtu.be>
- Ming, J., et al. (2014). Geochemistry,Ore Deposits and Petrology: A Study on Cr(VI) Migration and Locking in Biochar-amended Soil. *Geoscience*, 28(6), 1194-1201. Retrieved from <http://www.geoscience.net.cn/EN/abstract/abstract13569.shtml>
- Ming, T., de_Richter, R., Shen, S., & Caillol, S. (2016). Fighting global warming by greenhouse gas removal: destroying atmospheric nitrous oxide thanks to synergies between two breakthrough technologies. *Environmental Science and Pollution Research*, 23(7), 6119-6138. doi:10.1007/s11356-016-6103-9
- Ming, T., Richter, R. d., Dietrich Oeste, F., Tulip, R., & Caillol, S. (2021). A nature-based negative emissions technology able to remove atmospheric methane and other greenhouse gases. *Atmospheric Pollution Research*, 12(5). doi:<https://doi.org/10.1016/j.apr.2021.02.017>
- Ming, T., Richter, R. d., Dietrich Oeste, F., Tulip, R., & Caillol, S. (2021). A nature-based negative emissions technology able to remove atmospheric methane and other greenhouse gases. *Atmospheric Pollution Research*, 12(5), 101035. doi:<https://doi.org/10.1016/j.apr.2021.02.017>
- Mintenig, J., Khabbazan, M. M., & Held, H. (2017). The Role of Bioenergy and Carbon Capture and Storage (BECCS) in the Case of Delayed Climate Policy – Insights from Cost-Risk Analysis. *Earth System Dynamics Discussion Paper*, 2017, 1-30. doi:10.5194/esd-2017-117
- Minx, J., Fuss, S., & Nemet, G. F. (2018). Guest post: Seven key things to know about 'negative emissions'. *CarbonBrief*. Retrieved from <https://www.carbonbrief.org/guest-post-seven-key-things-to-know-about-negative-emissions>
- Minx, J. C., et al. (2018). Negative emissions—Part 1: Research landscape and synthesis. *Environmental Research Letters*, 13(6), 063001. Retrieved from <http://stacks.iop.org/1748-9326/13/i=6/a=063001>
- Minx, J. C., & Colell, A. (2020). The Plan for a Circular Carbon Economy
The market for captured CO₂ products could be worth \$1 trillion. Retrieved from <https://www.berggruen.org/the-worldpost/articles/the-plan-for-a-circular-carbon-economy/>
- Minx, J. C., Lamb, W. F., Callaghan, M. W., Bornmann, L., & Fuss, S. (2017). Fast growing research on negative emissions. *Environmental Research Letters*, 12(3), 1-10. Retrieved from <http://iopscience.iop.org/article/10.1088/1748-9326/aa5ee5/pdf>
- Mishra, S., Hawkins, J., Barclay, T. H., & Harley, M. (2014). Estimating CO₂-EOR Potential and Co-sequestration Capacity in Ohio's Depleted Oil Fields. *Energy Procedia*, 63, 7785-7795. doi:<https://doi.org/10.1016/j.egypro.2014.11.813>
- Mishra, S., Roy, M., & Mohanty, K. (2019). Microalgal bioenergy production under zero-waste biorefinery approach: Recent advances and future perspectives. *Bioresource Technology*, 122008. doi:<https://doi.org/10.1016/j.biortech.2019.122008>
- Mishra, V. (2015). Bamboo and Its Connectivity to the Different Fields of Economics: A Potential Resource of Modern India. *International Journal of Innovative Research and Development*, 4(2), 140-145. Retrieved from <http://www.ijird.com/index.php/ijird/article/view/60391/47256>
- MIT. (2020). Seeding oceans with iron may not impact climate change. *Science Daily*. Retrieved from <https://www.sciencedaily.com/releases/2020/02/200217162348.htm>
- Mitchell, B. G., Brody, E. A., Holm-Hansen, O., McClain, C., & Bishop, J. (1991). Light limitation of phytoplankton biomass and macronutrient utilization in the Southern Ocean.

- Limnology and Oceanography*, 36(8), 1662-1677. doi:10.4319/lo.1991.36.8.1662
- Mitchell, C. E., Santos-Carballal, D., Beale, A. M., Jones, W., Morgan, D. J., Sankar, M., & de Leeuw, N. H. (2021). The role of surface oxidation and Fe–Ni synergy in Fe–Ni–S catalysts for CO₂ hydrogenation. *Faraday Discussions*, 230(0), 30-51. doi:10.1039/D0FD00137F
- Mitchell, D., Allen, M. R., Hall, J. W., Muller, B., Rajamani, L., & Le Quéré, C. (2018). The myriad challenges of the Paris Agreement. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, 376(2119). doi:10.1098/rsta.2018.0066
- Mitchell, K. A. (2015). *The effect of biochar on the growth of agricultural weed species*. PURDUE UNIVERSITY, Retrieved from <http://gradworks.umi.com/15/98/1598059.html>
- Mitchell, P. J., Simpson, A. J., Soong, R., & Simpson, M. J. (2015). Shifts in microbial community and water-extractable organic matter composition with biochar amendment in a temperate forest soil. *Soil Biology and Biochemistry*, 81, 244 - 254. doi:10.1016/j.soilbio.2014.11.017
- Mitchell, S. M., Subbiah, M., Ullman, J. L., Frear, C., & Call, D. R. (2015). Evaluation of 27 different biochars for potential sequestration of antibiotic residues in food animal production environments. *Journal of Environmental Chemical Engineering*, 3(1), 162 - 169. doi:10.1016/j.jece.2014.11.012
- Mitchell, S. R., Harmon, M. E., & O'Connell, K. E. B. (2012). Carbon debt and carbon sequestration parity in forest bioenergy production. *GCB Bioenergy*, 4(6), 818-827. doi:doi:10.1111/j.1757-1707.2012.01173.x
- Mitchell-Larson, E. (2020). Right topics, wrong emphasis: the Carney Taskforce on carbon offsetting misses the mark. Retrieved from <https://www.smithschool.ox.ac.uk/news/articles/201211-right-topics-wrong-emphasis.html>
- Mitra, A., Sundaresan, J., Ali, K. S., Pal, N., Datta, U., Mitra, A., . . . Zaman, S. (2017). Baseline Data of Stored Carbon in Spinifex littoreus from Kadmath Island, Lakshadweep. In M. Goel & M. Sudhakar (Eds.), *Carbon Utilization: Applications for the Energy Industry* (pp. 81-87). Singapore: Springer Singapore.
- Mitra, A., & Zaman, S. (2014). *Carbon Sequestration by Coastal Floral Community: A ground zero observation on blue carbon*: TERI.
- Mitra, S., Bianchi, T. S., McKee, B. A., & Sutula, M. (2002). Black carbon from the Mississippi river: Quantities, sources, and potential implications for the global carbon cycle. *Environmental Science & Technology*, 36(11), 2296-2302. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/es015834b>
- Mitra, S., Singh, P., Manzoor, S., Bhattacharyya, P., Bera, T., Kumar Patra, A., . . . Borah, P. (2015). Can rice and wheat biochar amendment protect the carbon loss from tropical soils-An experimental study. *Environmental Progress & Sustainable Energy*, 35(1), 183-188. doi:10.1002/ep.12193
- Mitterpach, J., Adam, C., & Samešová, D. (2014). Aspects of Ecodesign when Designing a Retort with Decreased Emissions in the Production of Biochar. *Advanced Materials Research*, 1001, 3-14. doi:10.4028/www.scientific.net/AMR.1001.3
- Miyajima, T., et al. (2018). Carbon Sequestration in Sediment as an Ecosystem Function of Seagrass Meadows. In T. Kuwae & M. Hori (Eds.), *Blue Carbon in Shallow Coastal Ecosystems: Carbon Dynamics, Policy, and Implementation* (pp. 33-71).
- Miyake, S., et al. (2012). Land-use and environmental pressures resulting from current and future bioenergy crop expansion: a review. *Journal of Rural Studies*, 28(4), 650-658. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0743016712000770>
- Mo, J.-L., & Zhu, L. (2014). Using Floor Price Mechanisms to Promote Carbon Capture and Storage (CCS) Investment and CO₂ Abatement. 25(3-4), 687-707.

doi:10.1260/0958-305x.25.3-4.687

- Moe, E., & S. Røttereng, J.-K. (2018). The post-carbon society: Rethinking the international governance of negative emissions. *Energy Research & Social Science*, 44, 199-208. doi:<https://doi.org/10.1016/j.erss.2018.04.031>
- Moebius-Clune, B. N., van Es, H. M., Idowu, O. J., Schindelbeck, R. R., Moebius-Clune, D. J., & Wolfe, D. W. (2008). Long-term effects of harvesting maize stover and tillage on soil quality. *Soil Science Society of America Journal*, 72(4), 960-969.
- Moens, J. (2020). Biochar Traps Water and Fixes Carbon in Soil, Helping the Climate. But It's Expensive. *Inside Climate News*.
- Moges, M. E., Eregno, F. E., & Heistad, A. (2015). Performance of biochar and filtralite as polishing step for on-site greywater treatment plant. In.
- Moghannam, R. G., Yan, X., Law, G., Roshani, S., Babb, G., & Herron, W. (2017). Challenges Associated with CO₂ Sequestration and Hydrocarbon Recovery. In Y. Yun (Ed.), *Recent Advances in Carbon Capture and Storage* (pp. Ch. 10). Rijeka: InTech.
- Mohamed, B. A., Kim, C. S., Ellis, N., & Bi, X. (2016). Microwave-assisted catalytic pyrolysis of switchgrass for improving bio-oil and biochar properties. *Bioresource Technology*, 201, 121 - 132. doi:[10.1016/j.biortech.2015.10.096](https://doi.org/10.1016/j.biortech.2015.10.096)
- Mohamed, I., Zhang, G.-s., Li, Z.-g., Liu, Y., Chen, F., & Dai, K. (2015). Ecological restoration of an acidic Cd contaminated soil using bamboo biochar application. *Ecological Engineering*, 84, 67 - 76. doi:[10.1016/j.ecoleng.2015.07.009](https://doi.org/10.1016/j.ecoleng.2015.07.009)
- Mohamed, M. H., Wilson, L. D., Shah, J. R., Bailey, J., Peru, K. M., & Headley, J. V. (2015). A novel solid-state fractionation of naphthenic acid fraction components from oil sands process-affected water. *Chemosphere*, 136, 252 - 258. doi:[10.1016/j.chemosphere.2015.05.029](https://doi.org/10.1016/j.chemosphere.2015.05.029)
- Mohammad, H., Shamim, M., Sultan, A., Md., A., & Purnendu, B. (2015). EFFECT OF BIOCHAR, POULTRY LITTER, COW DUNG AND VERMICOMPOST ON YIELD OF LENTIL. *THE BANGLADESH JOURNAL OF SCIENTIFIC RESEARCH*. Retrieved from http://www.researchgate.net/profile/Shamim_Mia3/publication/281237921_EFFECT_OF_BIOCHAR_POULTRY_LITTER_COW_DUNG_AND_VERMI_COMPOST_ON_YIELD_OF_LENTIL/links/55dc58f108aed6a199ad7cce.pdf
- Mohammad Hariz, A. R., et al. (2015). Local practices for production of rice husk biochar and coconut shell biochar: Production methods, product characteristics, nutrient and field water holding capacity. *Journal of Tropical Agriculture and Food Science*, 43(1), 91-101. Retrieved from <http://rac1.mardi.gov.my/jtafs/43-1/biochar.pdf>
- Mohammadi, A., Cowie, A., Mai, T. L. A., de la Rosa, R. A., Brandão, M., Kristiansen, P., & Joseph, S. (2016). Quantifying the Greenhouse Gas Reduction Benefits of Utilising Straw Biochar and Enriched Biochar. *Energy Procedia*, 97, 254-261. doi:<https://doi.org/10.1016/j.egypro.2016.10.069>
- Mohammadi, A., Cowie, A., Mai, T. L. A., de la Rosa, R. A., Kristiansen, P., Brandão, M., & Joseph, S. (2015). Biochar use for climate-change mitigation in rice cropping systems. *Journal of Cleaner Production*. doi:[10.1016/j.jclepro.2015.12.083](https://doi.org/10.1016/j.jclepro.2015.12.083)
- Mohammed, I. Y., et al. . (2015). Pyrolysis of Napier Grass in a Fixed Bed Reactor: Effect of Operating Conditions on Product Yields and Characteristics. *BioResources*, 10(4), 6457-6478. Retrieved from http://152.1.0.246/index.php/BioRes/article/view/BioRes_10_4_6457_Mohammed_Pyrolysis_Napier_Grass_Fixed_Bed
- Mohan, D., et al. (2011). Modeling and evaluation of chromium remediation from water using low cost bio-char, a green adsorbent. *Journal of Hazardous Materials*, 188(1-3), 319-333. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0304389411001762>
- Mohan, D., et al. (2012). Fluoride Removal from Water using Bio-Char, a Green Waste, Low-

- Cost Adsorbent: Equilibrium Uptake and Sorption Dynamics Modeling. *Industrial and Engineering Chemistry Research (ACS)*, 51, 900–914.
- Mohan, D., Abhishek, K., Sarswat, A., Patel, M., Singh, P., & Pittman, C. U. (2018). Biochar production and applications in soil fertility and carbon sequestration – a sustainable solution to crop-residue burning in India. *RSC Advances*, 8(1), 508-520. doi:10.1039/C7RA10353K
- Mohan, D., Kumar, A., & Pittman, C. U. (2016). *Geostatistical and Geospatial Approaches for the Characterization of Natural Resources in the Environment Sustainable Biochar - A Tool for Climate Change Mitigation, Soil Management and Water and Wastewater Treatment*. Cham: Springer International Publishing.
- Mohan, D., Kumar, S., & Srivastava, A. (2014). Fluoride removal from ground water using magnetic and nonmagnetic corn stover biochars. *Ecological Engineering*, 73, 798 - 808. doi:10.1016/j.ecoleng.2014.08.017
- Mohan, D., Jr., Pittman, C. U., Bricka, M., Smith, F., Yancey, B., & Mohammad, J. (2007). Sorption of arsenic, cadmium, and lead by chars produced from fast pyrolysis of wood and bark during bio-oil production. *Journal of Colloid and Interface Science*, 310(1), 57-73.
- Mohan, D., Sarswat, A., Ok, Y. S., & U., P. J. m. C. (2014). Organic and Inorganic Contaminants Removal from Water with Biochar, a Renewable, Low Cost and Sustainable Adsorbent-a Critical Review. *Bioresource Technology*.
- Mohan, D., Singh, P., Sarswat, A., Steele, P. H., & Pittman, C. U. (2014). Lead sorptive removal using magnetic and nonmagnetic fast pyrolysis energy cane biochars. *Journal of Colloid and Interface Science*, 448, 238-250. doi:10.1016/j.jcis.2014.12.030
- Mohan, S. V., & Karthikeyan, J. (1997). Removal of lignin and tannin colour from aqueous solution by adsorption onto activated charcoal. *Environmental Pollution*, 97(1-2), 183-187. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0269749197000250>
- Mohanty, A., Vivekanandhan, S., Anstey, A., & Misra, M. (2015). *SUSTAINABLE COMPOSITES FROM RENEWABLE BIOCHAR AND ENGINEERING PLASTIC*. Paper presented at the 20th International Conference on Composite Materials. http://www.researchgate.net/profile/Manjusri_Misra/publication/280308180_SUSTAINABLE_COMPOSITES_FROM_RENEWABLE_BIOCHAR_AND_ENGINEERING_PLASTIC/links/55ce024708aee19936f9e5d5.pdf
- Mohanty, S. K., et al. (2014). Efficacy of biochar to remove Escherichia coli from stormwater under steady and intermittent flow. *Water Research*, 61, 288-296. doi:10.1016/j.watres.2014.05.026
- Mohanty, S. K., & Boehm, A. B. (2014). Escherichia coli removal in biochar-augmented biofilter: effect of infiltration rate, initial bacterial concentration, biochar particle size and presence of compost. *Environmental Science & Technology*, 48(19), 11535 - 11542. doi:10.1021/es5033162
- Mohanty, S. K., & Boehm, A. B. (2015). Effect of weathering on mobilization of biochar particles and bacterial removal in a stormwater biofilter. *Water Research*, 85, 208-215. doi:10.1016/j.watres.2015.08.026
- Mohd, A., Ghani, W., Resitanim, N. Z., & Sanyang, L. (2013). A Review: Carbon Dioxide Capture: Biomass-Derived-Biochar and Its Applications. *Journal of Dispersion Science and Technology*, 34(7), 974-984. doi:10.1080/01932691.2012.704753
- Mohd Salleh, M. A., Nsamba, H. K., Yusuf, H. M., Idris, A., & Ghani, W. A. W. A. K. (2015). Effect of Equivalence Ratio and Particle Size on EFB Char Gasification. *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects*, 37(15), 1647 - 1662. doi:10.1080/15567036.2011.555440

- Moioli, S., & Pellegrini, L. A. (2020). Fixed and Capture Level Reduction operating modes for carbon dioxide removal in a Natural Gas Combined Cycle power plant. *Journal of Cleaner Production*, 120016. doi:<https://doi.org/10.1016/j.jclepro.2020.120016>
- Moioli, S., Pellegrini, L. A., Ho, M. T., & Wiley, D. E. (2019). A comparison between amino acid based solvent and traditional amine solvent processes for CO₂ removal. *Chemical Engineering Research and Design*. doi:<https://doi.org/10.1016/j.cherd.2019.04.035>
- Moldenhauer, P., Linderholm, C., Rydén, M., Lyngfelt, A. J. M., & Change, A. S. f. G. (2019). Avoiding CO₂ capture effort and cost for negative CO₂ emissions using industrial waste in chemical-looping combustion/gasification of biomass. doi:[10.1007/s11027-019-9843-2](https://doi.org/10.1007/s11027-019-9843-2)
- Molina, M., Ramanathan, V., Kaniaru, D., Zaelke, D., Sarma, M., & Andersen, S. O. (2009). Reducing abrupt climate change risk using the Montreal Protocol and other regulatory actions to complement cuts in CO₂ emissions. *Proceedings of the National Academy of Sciences (PNAS)*. Retrieved from <http://www.pnas.org/content/early/2009/10/19/0902568106.full.pdf>
- Moline, E. F. d. V., Falcão, N. P. d. S., Pereira da Silva, D., Clement, C. R., & Júnior, J. L. (2015). Efeito da aplicação de biocarvão, cama de frango e formulado NPK no estado nutricional de laranjeira em Terra Mulata (Effect of biochar, poultry litter and NPK on the nutritional status of orange on Terra Mulata). *Web of Science*. Retrieved from <http://repositorio.unesp.br/handle/11449/129160?show=full>
- Molinés Cintora, F., & Ruiz Gómez, N. (2016). *Producción de biochar a partir de purines (Biochar production from liquid manure)*. Universidad de Zaragoza, Retrieved from <https://zaguan.unizar.es/record/48087#>
- Molla, R. (2014). Can Organic Farming Counteract Carbon Emissions? *The Wall Street Journal*. Retrieved from <http://blogs.wsj.com/numbers/can-organic-farming-counteract-carbon-emissions-1373/>
- Moller, G., & Strawn, D. (2015).
- Möller, I. (2020). Political Perspectives on Geoengineering: Navigating Problem Definition and Institutional Fit. *Global Environmental Politics*, 20(20), 57-82. Retrieved from https://www.mitpressjournals.org/doi/abs/10.1162/glep_a_00547?casa_token=InIEkERNgAcAAAAA%3AVsO_xti-EAZBq8c6K3XDW_Cywwl27Q38bea4NF4fEVhwXk2TvgRDlco4XnlObX128ecvj8jYfjM&journalCode=glep&
- Möllersten, K., Gao, L., & Yan, J. (2006). CO₂ Capture in Pulp and Paper Mills: CO₂ Balances and Preliminary Cost Assessment. *Mitigation and Adaptation Strategies for Global Change*, 11(5), 1129-1150. doi:[10.1007/s11027-006-9026-9](https://doi.org/10.1007/s11027-006-9026-9)
- Möllersten, K., Gao, L., Yan, J., & Obersteiner, M. (2004). Efficient energy systems with CO₂ capture and storage from renewable biomass in pulp and paper mills. *Renewable Energy*, 29(9), 1583-1598. doi:<https://doi.org/10.1016/j.renene.2004.01.003>
- Möllersten, K., Yan, J., & R. Moreira, J. (2003). Potential market niches for biomass energy with CO₂ capture and storage—Opportunities for energy supply with negative CO₂ emissions. *Biomass and Bioenergy*, 25(3), 273-285. doi:[https://doi.org/10.1016/S0961-9534\(03\)00013-8](https://doi.org/10.1016/S0961-9534(03)00013-8)
- Möllersten, K., Yan, J., & Westermark, M. (2003). Potential and cost-effectiveness of CO₂ reductions through energy measures in Swedish pulp and paper mills. *Energy*, 28(7), 691-710. doi:[https://doi.org/10.1016/S0360-5442\(03\)00002-1](https://doi.org/10.1016/S0360-5442(03)00002-1)
- Möllersten, K., Yan, J. Y., & Moreira, J. R. (2003). Potential market niches for biomass energy with CO₂ capture and storage - Opportunities for energy supply with negative CO₂ emissions. *Biomass & Bioenergy*, 25(3), 273-285. doi:[10.1016/s0961-9534\(03\)00013-8](https://doi.org/10.1016/s0961-9534(03)00013-8)
- Möllersten K, Y. J. (2001). Economic evaluation of biomass-based energy systems with CO₂ capture and sequestration in kraft pulp mills -The influence of the price of CO₂ emission

- quota. *World Resource Review*, 13(4), 509-525.
- Möllersten K., e. a. (2007). Negative emission biomass technologies in an uncertain climate future. In S. F. Warnmer (Ed.), *Progress in Biomass and Bioenergy* (pp. 53-100).
- Mollinedo, J., Schumacher, T. E., & Chintala, R. (2015). Influence of feedstocks and pyrolysis on biochar's capacity to modify soil water retention characteristics. *Journal of Analytical and Applied Pyrolysis*, 114, 100-108. doi:10.1016/j.jaat.2015.05.006
- Mollinedo, J., Thomas E Schumacher, & Chintala, R. (2015). Biochar effects on phenotypic characteristics of "wild" and "sickle" *Medicago truncatula* genotypes. *Plant and Soil*. doi:10.1007/s11104-015-2708-x
- Molnár, M., Vaszita, E., Farkas, É., Ujaczki, É., Fekete-Kertész, I., Tolner, M., . . . Feigl, V. (2016). Acidic sandy soil improvement with biochar — A microcosm study. *Science of The Total Environment*, 563-564, 855-865. doi:10.1016/j.scitotenv.2016.01.091
- Monastersky, R. (1995). Iron versus the Greenhouse. *Science News*, 148(14), 220-222. Retrieved from <https://www.jstor.org/stable/pdf/4018225.pdf>
- Moncada B, J., Aristizábal M, V., & Cardona A, C. A. (2016). Design strategies for sustainable biorefineries. *Biochemical Engineering Journal*, 116, 122-134. doi:<https://doi.org/10.1016/j.bej.2016.06.009>
- Mondal, B. (2015). *Influence of biochar in combination with different rates of Nitrogen on the bioavailability of phosphorus, potassium and sulfur in Bajoa soil series*. Khulna University, Retrieved from http://www.researchgate.net/profile/Md_Sadiqul_Amin/publication/272788127_Influence_of_biochar_in_combination_with_different_rates_of_Nitrogen_on_the_bioavailability_of_phosphorus_potassium_and_sulfur_in_Bajoa_soil_series/links/54ee057d0cf2e2830863deff.pdf
- Mondal, S., Aikat, K., & Halder, G. (2016). Ranitidine hydrochloride sorption onto superheated steam activated biochar derived from mung bean husk in fixed bed column. *Journal of Environmental Chemical Engineering*, 4(1), 488 - 497. doi:10.1016/j.jece.2015.12.005
- Mondini, C., & Sequi, P. (2008). Implication of soil C sequestration on sustainable agriculture and environment. *Waste Management*, 28(4), 678-684. doi:<http://dx.doi.org/10.1016/j.wasman.2007.09.026>
- Monge, J. J., Bryant, H. L., Gan, J., & Richardson, J. W. (2016). Land use and general equilibrium implications of a forest-based carbon sequestration policy in the United States. *Ecological Economics*, 127, 102-120. doi:<https://doi.org/10.1016/j.ecolecon.2016.03.015>
- Monger, H. C., et al. (2015). Sequestration of inorganic carbon in soil and groundwater. *Geology*, 43(5), 375-378. doi:10.1130/G36449.1
- Mongin, M., Molina, E., & Trull, T. W. (2008). Seasonality and scale of the Kerguelen plateau phytoplankton bloom: A remote sensing and modeling analysis of the influence of natural iron fertilization in the Southern Ocean. *Deep Sea Research Part II: Topical Studies in Oceanography*, 55(5), 880-892. doi:<https://doi.org/10.1016/j.dsret.2007.12.039>
- Monitor, G. (2018). Biochar. *Geoengineering Technology Briefing*. Retrieved from <http://www.geoengineeringmonitor.org/wp-content/uploads/2018/05/Geoengineering-factsheet-BioChar.pdf>
- Monitor, G. (2018). Bioenergy with Carbon Capture and Storage. *Geoengineering Technology Briefing*. Retrieved from <http://www.geoengineeringmonitor.org/wp-content/uploads/2018/05/Geoengineering-factsheet-BECCS.pdf>
- Monitor, G. (2018). Carbon Capture Use and Storage. *Geoengineering Technology Briefing*. Retrieved from <http://www.geoengineeringmonitor.org/wp-content/uploads/2018/05/Geoengineering-factsheet-CCUS.pdf>
- Monitor, G. (2018). Direct Air Capture. *Geoengineering Technology Briefing*. Retrieved from <http://www.geoengineeringmonitor.org/wp-content/uploads/2018/05/Geoengineering-factsheet-DAC.pdf>

- http://www.geoengineeringmonitor.org/wp-content/uploads/2018/05/Geoengineering-factsheet-DirectAirCapture.pdf
- Monitor, G. (2018). Ocean Iron Fertilization. *Geoengineering Technology Briefing*. Retrieved from http://www.geoengineeringmonitor.org/wp-content/uploads/2018/05/Geoengineering-factsheet-OceanFertilization.pdf
- Monitor, G. (2019). GEOENGINEERING DEVELOPMENTS: CARBON CAPTURE, VENTURE CAPITAL AND WOULD-BE MEGAPROJECTS. Retrieved from http://www.geoengineeringmonitor.org/2019/05/geoengineering-developments-carbon-capture-venture-capital-and-would-be-megaprojects/
- Moniz, E. J. (2019). Innovating a Green Real Deal. *364*(6445), 1013-1013. doi:10.1126/science.aay3140 %J Science
- Monkman, S., & MacDonald, M. (2015). Case Studies of CO₂ Utilization in Concrete. *Special Publication*, 303, 33-44.
- Monkman, S., & MacDonald, M. (2017). On carbon dioxide utilization as a means to improve the sustainability of ready-mixed concrete. *Journal of Cleaner Production*, 167(Supplement C), 365-375. doi:https://doi.org/10.1016/j.jclepro.2017.08.194
- Monlau, F., Francavilla, M., Sambusiti, C., Antoniou, N., Solhy, A., Libutti, A., . . . Monteleone, M. (2016). Toward a functional integration of anaerobic digestion and pyrolysis for a sustainable resource management. Comparison between solid-digestate and its derived pyrochar as soil amendment. *Applied Energy*, 169, 652 - 662. doi:10.1016/j.apenergy.2016.02.084
- Montagnini, F., & Nair, P. K. R. (2004). Carbon sequestration: An underexploited environmental benefit of agroforestry systems. *Agroforestry Systems*, 61(1), 281-295. doi:10.1023/b:Agfo.0000029005.92691.79
- Montanarella, L., & Lugato, E. (2013). The Application of Biochar in the EU: Challenges and Opportunities. *Agronomy*, 3(2), 462-473. Retrieved from http://www.mdpi.com/2073-4395/3/2/462/htm
- Monterumici, C., Rosso, D., Montoneri, E., Ginepro, M., Baglieri, A., Novotny, E., . . . Negre, M. (2015). Processed vs. Non-Processed Biowastes for Agriculture: Effects of Post-Harvest Tomato Plants and Biochar on Radish Growth, Chlorophyll Content and Protein Production. *International Journal of Molecular Sciences*, 16(4), 8826 - 8843. doi:10.3390/ijms16048826
- Montes-Hernandez, G., Pérez-López, R., Renard, F., Nieto, J. M., & Charlet, L. (2009). Mineral sequestration of CO₂ by aqueous carbonation of coal combustion fly-ash. *Journal of Hazardous Materials*, 161(2), 1347-1354. doi:https://doi.org/10.1016/j.jhazmat.2008.04.104
- Montserrat, F., Renforth, P., Hartmann, J., Leermakers, M., Knops, P., & Meysman, F. J. R. (2017). Olivine Dissolution in Seawater: Implications for CO₂ Sequestration through Enhanced Weathering in Coastal Environments. *Environmental Science & Technology*, 51(7), 3960–3972. doi:10.1021/acs.est.6b05942
- Moomaw, B. (2018). The EPA says burning wood to generate power is ‘carbon-neutral.’ Is that true? *The Conversation*. Retrieved from https://theconversation.com/the-epa-says-burning-wood-to-generate-power-is-carbon-neutral-is-that-true-95727
- Moomaw, W. R., Masino, S. A., & Faison, E. K. (2019). Intact Forests in the United States: Proforestation Mitigates Climate Change and Serves the Greatest Good. *Frontiers in Forests and Global Change*, 2(27). doi:10.3389/ffgc.2019.00027
- Moon, H., Yoo, H., Seo, H., Park, Y.-K., & Cho, H. H. (2015). Thermal design of heat-exchangeable reactors using a dry-sorbent CO₂ capture multi-step process. *Energy*, 84(Supplement C), 704-713. doi:https://doi.org/10.1016/j.energy.2015.03.034
- Moon. Deok Hyun, e. a. (2013). Immobilization of lead in contaminated firing range soil using

- biochar. *Environmental Science and Pollution Research*, 20(12), 8464-8471. Retrieved from <https://link.springer.com/article/10.1007/s11356-013-1964-7>
- Mooney, C. (2016). The suddenly urgent quest to remove carbon dioxide from the air. *Washington Post*. Retrieved from https://www.washingtonpost.com/news/energy-environment/wp/2016/02/26/weve-reached-the-point-where-we-need-these-bizarre-technologies-to-stop-climate-change/?utm_term=.04b62ad21432
- Mooney, C. (2017). The quest to capture and store carbon – and slow climate change — just reached a new milestone. *Washington Post*. Retrieved from https://www.washingtonpost.com/news/energy-environment/wp/2017/04/10/the-quest-to-capture-and-store-carbon-and-slow-climate-change-just-reached-a-new-milestone/?utm_term=.5eaa2266f674
- Mooney, C., & Dennis, B. (2020). The giant accounting problem that could hamper the world's push to cut emissions. *The Washington Post*. Retrieved from <https://www.washingtonpost.com/climate-environment/2021/04/26/greenhouse-accounting-problem/>
- Moonilall, N. I. (2015). *Impact of Amendments on Soil Properties and Agronomic Productivity in Guyana*. The Ohio State University, Retrieved from https://etd.ohiolink.edu/!etd.send_file?accession=osu1430925071&disposition=inline
- Moore, C. M., Mills, M. M., Arrigo, K. R., Berman-Frank, I., Bopp, L., Boyd, P. W., . . . Ulloa, O. (2013). Processes and patterns of oceanic nutrient limitation. *Nature Geoscience*, 6(9), 701-710. doi:10.1038/ngeo1765
- Moore, J. C., Jevrejeva, S., & Grinsted, A. (2010). *Efficacy of geoengineering to limit 21st century sea-level rise*.
- Moore, J. K., Doney, S. C., Glover, D. M., & Fung, I. Y. (2001). Iron cycling and nutrient-limitation patterns in surface waters of the World Ocean. *Deep Sea Research Part II: Topical Studies in Oceanography*, 49(1), 463-507. doi:[https://doi.org/10.1016/S0967-0645\(01\)00109-6](https://doi.org/10.1016/S0967-0645(01)00109-6)
- Moore, R. M., & Wang, L. (2006). The influence of iron fertilization on the fluxes of methyl halides and isoprene from ocean to atmosphere in the SERIES experiment. *Deep Sea Research Part II: Topical Studies in Oceanography*, 53(20–22), 2398-2409. doi:<http://dx.doi.org/10.1016/j.dsrr.2006.05.025>
- Moore, T. O., Gagnon, A. A., & Partin, J. B. (2015). Community Scale Development of Manure Based Biochars for the Removal of Copper and Lead from Drinking Waters in Developing Countries. *International Journal of Engineering Research and Technology*, 3(9), 526-530. Retrieved from <http://www.ijert.org/view-pdf/11132/community-scale-development-of-manure-based-biochars-for-the-removal-of-copper-and-lead-from-drinking-waters-in-developing-countries>
- Moosdorf, N., Renforth, P., & Hartmann, J. (2014). Carbon Dioxide Efficiency of Terrestrial Enhanced Weathering. *Environmental Science & Technology*, 48(9), 4809-4816. doi:10.1021/es4052022
- Morales, M. M., et al. . (2013). Sorption and desorption of phosphate on biochar and biochar-soil mixtures. *Soil Use and Management*, 29(3), 306-314. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/sum.12047/abstract>
- Morales, V. L., Pérez-Reche, F. J., Hapca, S. M., Hanley, K. L., Lehmann, J., & Zhang, W. (2015). Reverse engineering of biochar. *Bioresource Technology*, 183, 163 - 174. doi:10.1016/j.biortech.2015.02.043
- Morales-Flórez, V., Santos, A., Lemus, A., & Esquivias, L. (2011). Artificial weathering pools of calcium-rich industrial waste for CO₂ sequestration. *Chemical Engineering Journal*, 166(1), 132-137. doi:<https://doi.org/10.1016/j.cej.2010.10.039>
- Moralı, U., & Şensöz, S. (2015). Pyrolysis of hornbeam shell (*Carpinus betulus* L.) in a fixed bed

- reactor: Characterization of bio-oil and bio-char. *Fuel*, 150, 672 - 678. doi:10.1016/j.fuel.2015.02.095
- Morán-Ordóñez, A., Whitehead, A. L., Luck, G. W., Cook, G. D., Maggini, R., Fitzsimons, J. A., & Wintle, B. A. (2017). Analysis of Trade-Offs Between Biodiversity, Carbon Farming and Agricultural Development in Northern Australia Reveals the Benefits of Strategic Planning. *Conservation Letters*, 10(1), 94-104. doi:<https://doi.org/10.1111/conl.12255>
- Moreira, D., & Pires, J. C. M. (2016). Atmospheric CO₂ capture by algae: Negative carbon dioxide emission path. *Bioresource Technology*, 215, 371-379. doi:<http://dx.doi.org/10.1016/j.biortech.2016.03.060>
- Moreira, J. R., Romeiro, V., Fuss, S., Kraxner, F., & Pacca, S. A. (2016). BECCS potential in Brazil: Achieving negative emissions in ethanol and electricity production based on sugar cane bagasse and other residues. *Applied Energy*, 179, 55-63. doi:10.1016/j.apenergy.2016.06.044
- Moreno Barriga, F., Díaz López, V., Méndez, A., José, F., Faz Cano, Á., Belmonte, Z., & Group, R. R. (2016). Influencia de la temperatura y del tiempo de pirólisis en la hidrofobicidad de biocarbón obtenido a partir de purín porcino (Influence of temperature and time pyrolysis biochar hydrophobicity obtained from pig slurry). In.
- Moreno-Garcia, L., Adjallé, K., Barnabé, S., & Raghavan, G. S. V. (2017). Microalgae biomass production for a biorefinery system: Recent advances and the way towards sustainability. *Renewable and Sustainable Energy Reviews*, 76, 493-506. doi:<https://doi.org/10.1016/j.rser.2017.03.024>
- Moreno-Jiménez, E., et al. . (2016). Availability and transfer to grain of As, Cd, Cu, Ni, Pb and Zn in a barley agri-system: Impact of biochar, organic and mineral fertilizers. *Agriculture, Ecosystems & Environment*, 219, 171 - 178. doi:10.1016/j.agee.2015.12.001
- Mores, P., Rodríguez, N., Scenna, N., & Mussati, S. (2012). CO₂ capture in power plants: Minimization of the investment and operating cost of the post-combustion process using MEA aqueous solution. *International Journal of Greenhouse Gas Control*, 10, 148-163. doi:<https://doi.org/10.1016/j.ijggc.2012.06.002>
- Morgan, S. (2020). Norway's €2.1bn carbon-capture mega-project gets approval. *Euractiv*. Retrieved from <https://www.euractiv.com/section/energy/news/norways-e2-1bn-carbon-capture-mega-project-gets-approval/>
- Morgan, S. (2020). World's first 'carbon-capture at sea' set for shipping trials. *Euractiv*. Retrieved from <https://www.euractiv.com/section/shipping/news/worlds-first-carbon-capture-at-sea-set-for-shipping-trials/>
- Moriarty, P., & Honnery, D. (2010). A human needs approach to reducing atmospheric carbon. *Energy Policy*, 38(2), 695-700. doi:<http://dx.doi.org/10.1016/j.enpol.2009.10.043>
- Moriarty, P., & Honnery, D. (2019). Chapter 14 - Bioenergy with carbon capture and storage in a future world. In J. C. Magalhães Pires & A. L. D. Cunha Gonçalves (Eds.), *Bioenergy with Carbon Capture and Storage* (pp. 273-287): Academic Press.
- Moro, C., Francioso, V., & Velay-Lizancos, M. (2021). Modification of CO₂ capture and pore structure of hardened cement paste made with nano-TiO₂ addition: Influence of water-to-cement ratio and CO₂ exposure age. *Construction and Building Materials*, 275, 122131. doi:<https://doi.org/10.1016/j.conbuildmat.2020.122131>
- Morris, P. J., & Charette, M. A. (2013). A synthesis of upper ocean carbon and dissolved iron budgets for Southern Ocean natural iron fertilisation studies. *Deep Sea Research Part II: Topical Studies in Oceanography*, 90, 147-157. doi:<http://dx.doi.org/10.1016/j.dsrr.2013.02.001>
- Morris, S., Bohm, S., Haile-Mariam, S., & Paul, E. A. (2007). Evaluation of carbon accrual in afforested agricultural soils. *Global Change Biology*, 13(6), 1145-1156. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2486.2007.01359.x/abstract>

- Morrow, D., & Thompson, M. (2021). Why Orca matters: long-term climate policy and Climeworks' new direct air capture facility in Iceland.
- Morrow, D., & Thompson, M. (2021). Why Orca matters: long-term climate policy and Climeworks' new direct air capture facility in Iceland. Retrieved from <https://research.american.edu/carbonremoval/2021/09/10/why-orca-matters-the-point-of-climeworks-new-direct-air-capture-facility-in-iceland/>
- Morrow, D., & Thompson, M. S. (2020). *Reduce, Remove, Recycle: Clarifying the Overlap between Carbon Removal and CCUS*. Retrieved from http://research.american.edu/carbonremoval/wp-content/uploads/sites/3/2020/12/reduce-remove-recycle_final.pdf
- Morrow, D. R., et al. (2018). *Why Talk About Carbon Removal?* Retrieved from https://www.american.edu/sis/centers/carbon-removal/upload/CRBP001_why_talk_about_carbon_removal_ICRLP.pdf
- Morrow, D. R. (2020). Integrated Assessment Modeling of Carbon Removal at ICRLP. Retrieved from <https://research.american.edu/carbonremoval/2020/09/08/integrated-assessment-modeling-of-carbon-removal-at-icrlp/>
- Morrow, D. R., Thompson, M. S., Anderson, A., Batres, M., Buck, H. J., Dooley, K., . . . Wilcox, J. (2020). Principles for Thinking about Carbon Dioxide Removal in Just Climate Policy. *One Earth*, 3(2), 150-153. doi:10.1016/j.oneear.2020.07.015
- Morrow, P. R. (2013). *Biochar : saturated hydraulic conductivity and methylene blue sorption characteristics as applied to storm water treatment*. Oregon State University,
- Mortensen, G. M., Bergmo, P. E. S., & Emmel, B. U. (2016). Characterization and Estimation of CO₂ Storage Capacity for the Most Prospective Aquifers in Sweden. *Energy Procedia*, 86, 352-360. doi:<https://doi.org/10.1016/j.egypro.2016.01.036>
- Morton, A. (2021). A shocking failure': Chevron criticised for missing carbon capture target at WA gas project. *The Guardian*. Retrieved from <https://amp.theguardian.com/environment/2021/jul/20/a-shocking-failure-chevron-criticised-for-missing-carbon-capture-target-at-wa-gas-project>
- Morton, E. (2021). Ensuring Good Governance of Carbon Dioxide Removal. Retrieved from <https://www.dayoneproject.org/post/ensuring-good-governance-of-carbon-dioxide-removal>
- Morton, E. V. (2020). *Reframing the Climate Change Problem: Evaluating the Political, Technological, and Ethical Management of Carbon Dioxide Emissions in the United States*. (Ph.D.). Arizona State University, Retrieved from https://drive.google.com/file/d/1VlrHd7YQ_KUL_dqst_aLFYveTS8iknBS/view
- Mosa, A., El-Banna, M. F., & Gao, B. (2016). Biochar filters reduced the toxic effects of nickel on tomato (*Lycopersicon esculentum* L.) grown in nutrient film technique hydroponic system. *Chemosphere*, 149, 254 - 262. doi:10.1016/j.chemosphere.2016.01.104
- Moser, P., Wiechers, G., Schmidt, S., Monteiro, J. G. M.-S., Goetheer, E., Charalambous, C., . . . Garcia, S. (2021). ALIGN-CCUS: Results of the 18-month test with aqueous AMP/PZ solvent at the pilot plant at Niederaussem – solvent management, emissions and dynamic behavior. *International Journal of Greenhouse Gas Control*, 109, 103381. doi:<https://doi.org/10.1016/j.ijggc.2021.103381>
- Mosley, L. M., Willson, P., Hamilton, B., Butler, G., & Seaman, R. (2015). The capacity of biochar made from common reeds to neutralise pH and remove dissolved metals in acid drainage. *Environmental Science and Pollution Research*, 22(19), 15113-15122. doi:10.1007/s11356-015-4735-9
- Mosquera-Losada, M. R., Freese, D., & Rigueiro-Rodríguez, A. (2011). Carbon Sequestration in European Agroforestry Systems. In B. Kumar, et al. (Ed.), *Carbon Sequestration Potential of Agroforestry Systems. Advances in Agroforestry*, (Vol. 8, pp. 43-59).
- Mosquera-Losada, M. R., Santiago-Freijanes, J. J., Rois-Díaz, M., Moreno, G., den Herder, M.,

- Aldrey-Vázquez, J. A., . . . Rigueiro-Rodríguez, A. (2018). Agroforestry in Europe: A land management policy tool to combat climate change. *Land Use Policy*, 78, 603-613. doi:<https://doi.org/10.1016/j.landusepol.2018.06.052>
- Moussa, M., Bader, N., Querejeta, N., Durán, I., Pevida, C., & Ouederni, A. (2017). Toward sustainable hydrogen storage and carbon dioxide capture in post-combustion conditions. *Journal of Environmental Chemical Engineering*, 5(2), 1628-1637. doi:<https://doi.org/10.1016/j.jece.2017.03.003>
- Moussavi, G., & Khosravi, R. (2012). Preparation and characterization of a biochar from pistachio hull biomass and its catalytic potential for ozonation of water recalcitrant contaminants. *Bioresource Technology*, 119, 66-71. Retrieved from <http://dx.doi.org/10.1016/j.biortech.2012.05.101>
- Movagharnejad, K., Emamgholivand, A., Mousavi, H., & Kordkheili, M. S. (2012). Preliminary country-scale assessment of carbon dioxide storage potential in Iran. *Greenhouse Gases: Science and Technology*, 2(3), 151-161. doi:[doi:10.1002/ghg.1288](https://doi.org/10.1002/ghg.1288)
- Moyo, M., Lindiwe, S. T., Sebata, E., Nyamunda, B. C., & Guyo, U. (2015). Equilibrium, kinetic, and thermodynamic studies on biosorption of Cd(II) from aqueous solution by biochar. *Research on Chemical Intermediates*. doi:[10.1007/s11164-015-2089-z](https://doi.org/10.1007/s11164-015-2089-z)
- Mozzetti Monterumici, C., Rosso, D., Montoneri, E., Ginepro, M., Baglieri, A., Novotny, E. H., . . . Negre, M. (2015). Processed vs. non-processed biowastes for agriculture: effects of post-harvest tomato plants and biochar on radish growth, chlorophyll content and protein production. *Chemical & Environmental Science*. Retrieved from <http://ulir.ul.ie/handle/10344/4505?show=full>
- MP, M. (2011). Soil Organic Carbon, Biochar, and Applicable Research Results for Increasing Farm Productivity under Australian Agricultural Conditions. *Communications in Soil Science and Plant Analysis*, 42, 1187-1199.
- Mu, D., Min, M., Krohn, B., Mullins, K. A., Ruan, R., & Hill, J. (2014). Life Cycle Environmental Impacts of Wastewater-Based Algal Biofuels. *Environmental Science & Technology*, 48(19), 11696-11704. doi:[10.1021/es5027689](https://doi.org/10.1021/es5027689)
- Mu, D., Ruan, R., Addy, M., Mack, S., Chen, P., & Zhou, Y. (2017). Life cycle assessment and nutrient analysis of various processing pathways in algal biofuel production. *Bioresource Technology*, 230, 33-42. doi:<https://doi.org/10.1016/j.biortech.2016.12.108>
- Mubarak, N. M., et al. (2013). Statistical optimization and kinetic studies on removal of Zn²⁺ using functionalized carbon nanotubes and magnetic biochar. *Journal of Environmental Chemical Engineering*, 1(3), 486-495. Retrieved from <http://www.sciencedirect.com/science/article/pii/S2213343713000730>
- Mubarak, N. M., et al. . (2014). Statistical Optimization of Zinc Removal Using Activated Carbon and Magnetic Biochar. *Advances in Environmental Biology*, 8(3), 686-691. Retrieved from <http://web.a.ebscohost.com/abstract?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=19950756&AN=95655234&h=9ScNMW%2fuG79cGLLiu6aHdnHQd1Kmmyq8xD03QkjorKGy18mn0aAngKCFMnBFCuX47rLjLfAErj1RiXQLKi3xcg%3d%3d&crl=c>
- Mubarak, N. M., et al. . (2015). Removal of methylene blue and orange-G from waste water using magnetic biochar. *International Journal of Nanoscience*, 14(4), 150125201131009. doi:[10.1142/s0219581x1550009x](https://doi.org/10.1142/s0219581x1550009x)
- Mubarik, S., Saeed, A., Athar, M. M., & Iqbal, M. (2016). Characterization and mechanism of the adsorptive removal of 2,4,6-trichlorophenol by biochar prepared from sugarcane bagasse. *Journal of Industrial and Engineering Chemistry*, 33, 115 - 121. doi:[10.1016/j.jiec.2015.09.029](https://doi.org/10.1016/j.jiec.2015.09.029)
- Muffett, C., & Feit, S. (2019). *Fuel to the Fire: How Geoengineering Threatens to Entrench Fossil Fuels and Accelerate the Climate Crisis*. Retrieved from <https://www.ciel.org/wp->

- content/uploads/2019/02/CIEL_FUEL-TO-THE-FIRE_How-Geoengineering-Threatens-to-Entrench-Fossil-Fuels-and-Accelerate-the-Climate-Crisis_February-2019.pdf
- Mufson, S. (2020). A climate change solution slowly gains ground. *Washington Post*. Retrieved from <https://www.washingtonpost.com/climate-environment/2019/04/19/climate-change-solution-slowly-gains-ground/?arc404=true>
- Mugford, I., et al. (2015). Anthropogenic Charcoal Deposits: A Tool to Assess the Carbon Sequestration Potential of Biochar in Soils? In.
- Mugford, I., et al. (2015). Can Meilers Predict the Long-Term Carbon Sequestration Potential of Biochar? In.
- Mugford, I., et al. (2015). Potential of Anthropogenic Charcoal Deposits for Assessing the Fate of Biochar in European Soils. In.
- Mugo, S. M., & Rusin, C. J. (2014). *Application of biosorbents for the adsorption of cadmium in water*. Paper presented at the Proceedings of the 2014 International Annual Conference on Sustainable Research and Innovation.
- Muhammad, H. A., Sultan, H., Lee, B., Imran, M., Baek, I. H., Baik, Y.-J., & Nam, S. C. (2020). Energy minimization of carbon capture and storage by means of a novel process configuration. *Energy Conversion and Management*, 215, 112871. doi:<https://doi.org/10.1016/j.enconman.2020.112871>
- Muhammad Hisyamuddin, S. (2014). Pyrolysis of Palm Pressed Fibre (PPF) toward maximizing bio-oil yield in a fixed bed reactor. In.
- Muhammad Ijaz, A. S., Sattar, A., Hassan, W., & Naeem, M. (2015). Cumulative Effect of Biochar, Microbes and Herbicide on the Growth and Yield of Wheat (*Triticum aestivum L.*). *Pakistan Journal of Life and Social Sciences*, 13(2), 73. Retrieved from www.pjlsse.edu.pk/pdf_files/Online/375-PJLSS-15.pdf
- Muhammad, N., Brookes, P. C., & Wu, J. (2016). Addition impact of biochar from different feedstocks on microbial community and available concentrations of elements in a Psammaquent and a Plinthudult. *Journal of Soil Science and Plant Nutrition*, 16(1), 137-153. doi:10.4067/s0718-95162016005000010
- Mukherjee, A., & Lal, R. (2013). Biochar Impacts on Soil Physical Properties and Greenhouse Gas Emissions. *Agronomy*, 3(2), 313-339. doi:10.3390/agronomy3020313
- Mukherjee, A., & Lal, R. (2014). *The biochar dilemma*. Retrieved from
- Mukherjee, A., Lal, R., & Zimmerman, A. R. (2014). Effects of biochar and other amendments on the physical properties and greenhouse gas emissions of an artificially degraded soil. *Science of The Total Environment*, 487, 26–36. Retrieved from www.sciencedirect.com/science/article/pii/S0048969714004938
- Mukherjee, A., Lal, R., & Zimmerman, A. R. (2014). Impacts of 1.5-Year Field Aging on Biochar, Humic Acid, and Water Treatment Residual Amended Soil. *Soil Science*, 179(7), 333-339. doi:10.1097/ss.0000000000000076
- Mukherjee, A., Lal, R., & Zimmerman, A. R. (2014). Impacts of biochar and other amendments on soil-carbon and 10 nitrogen stability: A laboratory column study. *Soil Science Society of America Journal*, 78(4), 1258-1266. Retrieved from https://www.researchgate.net/publication/261286742_Impacts_of_Biochar_and_Other_Amendments_on_Soil-Carbon_and_Nitrogen_Stability_A_Laboratory_Column_Study
- Mukherjee, A., Zimmerman, A., & Harris, W. (2011). Surface chemistry variations among a series of laboratory-produced biochars. *Geoderma*, 163(3-4), 247-255. doi:10.1016/j.geoderma.2011.04.021
- Mukherjee, A., & Zimmerman, A. R. (2013). Organic carbon and nutrient release from a range of laboratory-produced biochars and biochar-soil mixtures. *Geoderma*, 193–194, 122–130. Retrieved from www.sciencedirect.com/science/article/pii/S0016706112003382
- Mukherjee, A., Zimmerman, A. R., Hamdan, R., & Cooper, W. T. (2014). Physicochemical

- changes in pyrogenic organic matter (biochar) after 15 months field-aging. *Solid Earth D*, 6, 693-704. Retrieved from <http://www.solid-earth-discuss.net/6/731/2014/sed-6-731-2014.pdf>
- Mukherjee, I. (2009). Effect of Organic Amendments on Degradation of Atrazine. *Bulletin of Environmental Contamination and Toxicology*, 83(6), 832-835. Retrieved from <https://link.springer.com/article/10.1007/s00128-009-9849-7>
- Mukherjee, S., & Halder, G. (2016). Assessment of fluoride uptake performance of raw biomass and activated biochar of Colocasia esculenta Stem: Optimization through response surface methodology. *Environmental Progress & Sustainable Energy*, 35(5), 1305-1316. doi:10.1002/ep.12346
- Mukherjee, S., Tappe, W., Weihermueller, L., Hofmann, D., Köppchen, S., Laabs, V., . . . Burauel, P. (2016). Dissipation of bentazone, pyrimethanil and boscalid in biochar and digestate based soil mixtures for biopurification systems. *Science of The Total Environment*, 544, 192 - 202. doi:10.1016/j.scitotenv.2015.11.111
- Mukherjee, S., Weihermueller, L., Tappe, W., Vereecken, H., & Burauel, P. (2015). Microbial respiration of biochar- and digestate-based mixtures. *Biology and Fertility of Soils*, 52(2), 151-164. doi:10.1007/s00374-015-1060-x
- Mukome, F. N. D., et al. (2013). Use of chemical and physical characteristics to investigate trends in biochar feedstocks. *Journal of Agricultural and Food Chemistry*, 61(9), 2196-2204. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/jf3049142>
- Mukome, F. N. D., & Parikh, S. J. (2015). Chemical, Physical, and Surface Characterization of Biochar. In *Biochar: Production, Characterization, and Applications*.
- Mukome, F. N. D., Six, J., & Parikh, S. J. (2013). The effects of walnut shell and wood feedstock biochar amendments on greenhouse gas emissions from a fertile soil. *Geoderma*, 200–201, 90–98. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0016706113000475>
- Muktham, R., Ball, A. S., Bhargava, S. K., & Bankupalli, S. (2016). Study of thermal behavior of deoiled karanja seed cake biomass: thermogravimetric analysis and pyrolysis kinetics. *Energy Science & Engineering*, n/a - n/a. doi:10.1002/ese3.109
- Mulcahy, D. N., Mulcahy, D. L., & Dietz, D. (2012). Biochar soil amendment increases tomato seedling resistance to drought in sandy soils. *Journal of Arid Environments*, 88, 222–225.
- Mullen, C. A., Boateng, A. A., & Goldberg, N. M. (2014).
- Mullen, C. A., Boateng, A. A., Goldberg, N. M., Lima, I. M., Laird, D. A., & Hicks, K. B. (2010). Bio-oil and bio-char production from corn cobs and stover by fast pyrolysis. *Biomass & Bioenergy*, 34, 67-74.
- Mullen, C. A., Boateng, A. A., Hicks, K. B., Goldberg, N. M., & Moreau, R. A. (2010). Analysis and Comparison of Bio-Oil Produced by Fast Pyrolysis from Three Barley Biomass/ Byproduct Streams. *Energy & Fuels*, 24, 699-706.
- Muller, A. (2009). Sustainable agriculture and the production of biomass for energy use. *Climatic Change*, 94(3), 319-331. doi:10.1007/s10584-008-9501-2
- Müller, A., Schmidhuber, J., Hoogeveen, J., & Steduto, P. (2008). Some insights in the effect of growing bio-energy demand on global food security and natural resources. *Water Policy*, 10(S1), 83-94. doi:10.2166/wp.2008.053
- Müller, P., Bucior, B., Tuci, G., Luconi, L., Getzschmann, J., Kaskel, S., . . . Rossin, A. (2019). Computational screening, synthesis and testing of metal–organic frameworks with a bithiazole linker for carbon dioxide capture and its green conversion into cyclic carbonates. *Molecular Systems Design & Engineering*. doi:10.1039/C9ME00062C
- Müller-Stöver, D. S., Jensen, L. S., Grønlund, M., Jakobsen, I., Hauggaard-Nielsen, H., & Ahrenfeldt, J. (2015). *Return of phosphorus in agricultural residues and urban sewage*

- sludge to soil using biochar from low-temperature gasification as fertilizer product.* Paper presented at the International Biochar Symposium. <http://www.forskningsdatabasen.dk/en/catalog/2291868843>
- Mulligan, J., et al. (2018). *Carbon Removal in Forests and Farms the United States*. Retrieved from <https://wriorg.s3.amazonaws.com/s3fs-public/carbon-removal-forests-farms-united-states.pdf>
- Mulligan, J., et al. (2018). *Technological Carbon Removal in the United States*. Retrieved from <https://wriorg.s3.amazonaws.com/s3fs-public/technological-carbon-removal-united-states.pdf>
- Mulligan, J. (2020). *CarbonShot: Federal Policy Options for Carbon Removal in the United States*. Retrieved from <https://www.wri.org/publication/carbonshot-federal-policy-options-for-carbon-removal-in-the-united-states>
- Mulligan, J., Ellison, G., & Levin, K. (2018). *Foundational Questions on Carbon Removal in the United States*. Retrieved from <https://wriorg.s3.amazonaws.com/s3fs-public/foundational-questions-carbon-removal-united-states.pdf>
- Mulligan, J., & Lashof, D. (2019). A CO₂ Direct Air Capture Plant Will Help Extract Oil in Texas. Could This Actually Be Good for the Climate? Retrieved from <https://www.wri.org/blog/2019/07/co2-direct-air-capture-plant-will-help-extract-oil-texas-could-actually-be-good-climate>
- Mullins, K. A., et al. (2014). Regional allocation of biomass to U.S. energy demands under a portfolio of policy scenarios. *Environmental Science & Technology*, 48(5), 2561-2568. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/24512511>
- Mulyasari, F., Harahap, A. K., Rio, A. O., Sule, R., & Kadir, W. G. A. (2021). Potentials of the public engagement strategy for public acceptance and social license to operate: Case study of Carbon Capture, Utilisation, and Storage Gundih Pilot Project in Indonesia. *International Journal of Greenhouse Gas Control*, 108, 103312. doi:<https://doi.org/10.1016/j.ijggc.2021.103312>
- Mumme, J., et al. . (2014). Use of biochars in anaerobic digestion. *Bioresource Technology*, 164, 189-197. doi:[dx.doi.org/10.1016/j.biortech.2014.05.008](https://doi.org/10.1016/j.biortech.2014.05.008)
- Mumme, J., Eckervogt, L., Pielert, J., Diakité, M., Rupp, F., & Kern, J. (2011). Hydrothermal carbonization of anaerobically digested maize silage. *Bioresource Technology*, 102, 9255 - 9260.
- Mun, M., & Cho, H. (2013). Mineral Carbonation for Carbon Sequestration with Industrial Waste. *Energy Procedia*, 37, 6999-7005. doi:<https://doi.org/10.1016/j.egypro.2013.06.633>
- Munda, S., et al. . (2015). Combined application of rice husk biochar and fly ash improved the yield of low land rice. *Soil, Land Care & Environmental Research*, 54(4), 1-9. Retrieved from http://www.publish.csiro.au/view/journals/dsp_journals_pip_abstract_scholar1.cfm?nid=84&pid=SR15295
- Muñoz, C., Quilodrán, C., & Navia, R. (2014). Evaluation of Biochar-Plant Extracts Complexes on Soil Nitrogen Dynamics. *Journal of Biobased Materials and Bioenergy*, 8(3), 377 - 385. doi:[10.1166/jbmb.2014.1448](https://doi.org/10.1166/jbmb.2014.1448)
- Munoz, L. C. V. (2014). *Spreading The Char: The Importance of Local Compatibility in the Diffusion of Biochar Systems to the Smallholder Agriculture Community Context*. Retrieved from http://scholarship.claremont.edu/pomona_theses/102
- Munson, R. (2017). Negative CO₂ Emissions: Making it Real. *The Energy Collective*. Retrieved from http://www.theenergycollective.com/munson/2404503/negative-co2-emissions-making-real?utm_source=feedburner&utm_medium=email&utm_campaign=The+Energy+Collective+%28all+posts%29
- Muppaneni, T. (2016). *Hydrothermal liquefaction of algae for the production of biofuels*. NEW

- MEXICO STATE UNIVERSITY, Retrieved from <http://gradworks.umi.com/36/64/3664655.html>
- Muraca, B., & Neuber, F. (2018). Viable and convivial technologies: Considerations on Climate Engineering from a degrowth perspective. *Journal of Cleaner Production*, 197(2), 1810-1829. doi:<https://doi.org/10.1016/j.jclepro.2017.04.159>
- Murad, E. (2014). Applying the CHAB concept at horticultural tunnel greenhouses heated with biomass. In.
- Muradov, N. (2014). Industrial Utilization of CO₂: A Win–Win Solution. In *Liberating Energy from Carbon: Introduction to Decarbonization* (pp. 325-383). New York, NY: Springer New York.
- Murali, S., Shrivastava, R., & Mochale, R. K. (2015). Agricultural Residue-Based Power Generation: A Viable Option in India. In *Energy Security and Development* (pp. 393-410).
- Muraoka, D. (2004). Seaweed resources as a source of carbon fixation. *Bulletin of Fisheries Research Agency*, 1, 59-63. Retrieved from <http://tuna.fra.affrc.go.jp/bulletin/bull/bull-b1/09.pdf>
- Muratori, M., et al. (2016). Global economic consequences of deploying bioenergy with carbon capture and storage (BECCS). *Environmental Research Letters*, 11(9), 1-9. Retrieved from <http://stacks.iop.org/1748-9326/11/i=9/a=095004>
- Muratori, M., Bauer, N., Rose, S. K., Wise, M., Daioglou, V., Cui, Y., . . . Weyant, J. (2020). EMF-33 insights on bioenergy with carbon capture and storage (BECCS). *Climatic Change*. doi:[10.1007/s10584-020-02784-5](https://doi.org/10.1007/s10584-020-02784-5)
- Muratori, M., Kheshgi, H., Mignone, B., Clarke, L., McJeon, H., & Edmonds, J. (2017). Carbon capture and storage across fuels and sectors in energy system transformation pathways. *International Journal of Greenhouse Gas Control*, 57, 34-41. doi:<http://dx.doi.org/10.1016/j.ijggc.2016.11.026>
- Muratori, M., Kheshgi, H., Mignone, B., McJeon, H., & Clarke, L. (2017). The Future Role of CCS in Electricity and Liquid Fuel Supply. *Energy Procedia*, 114, 7606-7614. doi:<https://doi.org/10.1016/j.egypro.2017.03.1893>
- Muri, H. (2018). The role of large—scale BECCS in the pursuit of the 1.5°C target: an Earth system model perspective. *Environmental Research Letters*, 13(4), 044010. Retrieved from <http://stacks.iop.org/1748-9326/13/i=4/a=044010>
- Murillo, J. D. (2014). *A multi-scale environmental and kinetics study on the pyrolysis of sustainable biomass feedstock*. TENNESSEE TECHNOLOGICAL UNIVERSITY, Retrieved from <http://gradworks.umi.com/36/16/3616061.html>
- Murphy, C. W., & Kendall, A. (2015). Life cycle analysis of biochemical cellulosic ethanol under multiple scenarios. *GCB Bioenergy*, 7(5), 1019-1033. doi:[10.1111/gcbb.12204](https://doi.org/10.1111/gcbb.12204)
- Murray, B. C., McCarl, B. A., & Lee, H.-C. (2004). Estimating Leakage from Forest Carbon Sequestration Programs. *Land Economics*, 80(1), 109-124. Retrieved from http://www.jstor.org/stable/3147147?seq=1#page_scan_tab_contents
- Murray, E. G., & DiGiorgio, A. L. (2021). Will Individual Actions Do the Trick? Comparing Climate Change Mitigation through Geoengineering versus Reduced Vehicle Emissions. *Earth's Future*, 9(3), 1-14. doi:<https://doi.org/10.1029/2020EF001734>
- Murray, J., Keith, A., & Singh, B. (2015). The stability of low- and high-ash biochars in acidic soils of contrasting mineralogy. *Soil Biology and Biochemistry*, 89, 217 - 225. doi:[10.1016/j.soilbio.2015.07.014](https://doi.org/10.1016/j.soilbio.2015.07.014)
- Murray, J. S. (2021). In defence of net zero. *Business Green*. Retrieved from <https://www.businessgreen.com/blog-post/4030676/defence-net-zero>
- Murthy, J. K., et al. (2013). Carbon sequestration potential of agroforestry systems in India. 4, *Journal of Earth Science & Climatic Change*, 1-7. Retrieved from <https://www.omicsonline.org/carbon-sequestration-potential-of-agroforestry-systems-in->

india-2157-7617.1000131.pdf

- Mussgnug, J. H., et al. (2007). Engineering photosynthetic light capture: impacts on improved solar energy to biomass conversion. *Plant Biotechnology Journal*, 5(6), 802-814. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/17764518>
- Mutch, G. A., Anderson, J. A., & Vega-Maza, D. (2017). Surface and bulk carbonate formation in calcium oxide during CO₂ capture. *Applied Energy*, 202, 365-376. doi:10.1016/j.apenergy.2017.05.130
- Mutch, M. (2020). Drax statement after Extinction Rebellion stage protest at power station. *Hull Daily Mail*. Retrieved from <https://www.hulldailymail.co.uk/news/hull-east-yorkshire-news/drax-extinction-rebellion-protest-lights-4465954>
- Muter, O., Berzins, A., Strikauska, S., Pugajeva, I., Bartkevics, V., Dobele, G., . . . Steiner, C. (2014). The effects of woodchip- and straw-derived biochars on the persistence of the herbicide 4-chloro-2-methylphenoxyacetic acid (MCPA) in soils. *Ecotoxicology and Environmental Safety*, 109, 93 - 100. doi:10.1016/j.ecoenv.2014.08.012
- Muter, O., Lebedeva, G., & Telysheva, G. (2014). Evaluation of the changes induced by gasification biochar in a peat-sand substrateAbstract. *International Agrophysics*, 28(4). doi:10.2478/intag-2014-0037
- Muth, D. J., & Bryden, K. M. (2013). An integrated model for assessment of sustainable agricultural residue removal limits for bioenergy systems. *Environmental Modelling & Software*, 39, 50-69. doi:<https://doi.org/10.1016/j.envsoft.2012.04.006>
- Myers, C., & Nakagaki, T. (2020). Direct mineralization of atmospheric CO₂ using natural rocks in Japan. *Environmental Research Letters*, 15(12), 124018. doi:10.1088/1748-9326/abc217
- Myers, C., & Nakagaki, T. (2021, March 15-18). *Negative emissions using Mg sourced from desalination brine or natural evaporite deposits*. Paper presented at the Proceedings of the 15th Greenhouse Gas Control Technologies Conference.
- Myers, K. (2021). New tools help quantify the sustainable development benefits of carbon offset projects Retrieved from <https://www.ecosystemmarketplace.com/articles/whats-in-a-carbon-credit-new-tools-help-quantify-the-sustainable-development-benefits-of-carbon-offset-projects/>
- Mykleby, P. M., Snyder, P. K., & Twine, T. E. (2017). Quantifying the trade-off between carbon sequestration and albedo in midlatitude and high-latitude North American forests. 44(5), 2493-2501. doi:10.1002/2016gl071459
- Myoung-Jin, K., & Dami, K. (2018). Maximization of CO₂ storage for various solvent types in indirect carbonation using paper sludge ash. *Environmental Science and Pollution Research International*, 25(30), 30101-30109. doi:<http://dx.doi.org/10.1007/s11356-018-2970-6>
- N'Yeurt, A. d. R., Chynoweth, D. P., Capron, M. E., Stewart, J. R., & Hasan, M. A. (2012). Negative carbon via Ocean Afforestation. *Process Safety and Environmental Protection*, 90(6), 467-474. doi:<http://dx.doi.org/10.1016/j.psep.2012.10.008>
- Nabavinia, F., Emami, H., Astaraee, A., & Lakzian, A. (2015). Effect of tannery wastes and biochar on soil chemical and physicochemical properties and growth traits of radishAbstract. *International Agrophysics*, 29(3). doi:10.1515/intag-2015-0040
- Nabuurs, G.-J., Delacote, P., Ellison, D., Hanewinkel, M., Hetemäki, L., & Lindner, M. (2017). By 2050 the Mitigation Effects of EU Forests Could Nearly Double through Climate Smart Forestry. *Forests*, 8(12), 484. Retrieved from <https://www.mdpi.com/1999-4907/8/12/484>
- Nackley, L. L. (2015). *Bioenergy and biological invasions: ecological, agronomic and policy perspectives on minimising riskGood intentions vs good ideas: evaluating bioenergy projects that utilize invasive plant feedstocks*. Wallingford: CABI.
- Nadal Talavera, M. (2015). *Effect of the addition of biochar to the soil and stress abiòtic*

emerging organic contaminants present in irrigation water in the production of biomass Lactuca sativa (translated from Catalan language). Universitat Politecnica De Catalunya (Polytechnic University of Catalonia), Retrieved from <http://upcommons.upc.edu/handle/2117/78334>

- Nadell, S. (2016). Researchers Propose New Biochar Technique to Scrub Atmospheric Carbon Dioxide. *The Cornell Daily Sun*. Retrieved from <https://cornellsun.com/2016/11/28/researchers-propose-new-biochar-technique-to-scrub-atmospheric-carbon-dioxide/>
- Naeem, M. A., Khalid, M., Ahmad, Z., & Naveed, M. (2015). Low Pyrolysis Temperature Biochar Improve Growth and Nutrient Availability of Maize on Typic Calciargid. *Communications in Soil Science and Plant Analysis*. doi:10.1080/00103624.2015.1104340
- Nag, S. K., et al. (2011). Poor efficacy of herbicides in biochar-amended soils as affected by their chemistry and mode of action. *Chemosphere*, 84(11), 1572-1577. doi:10.1016/j.chemosphere.2011.05.052
- Nagabhushan, D. (2016). The Emission Reduction Benefits of Carbon Capture Utilization and Storage Using CO₂ Enhanced Oil Recovery. 1-6.
- Nagabhushan, D. (2019). CCS Could Reduce 49 Million Tonnes of CO₂ Emissions From Coal & Gas Power Plants. *Clean Air Task Force*. Retrieved from <https://www.catf.us/2019/02/ccs-reduce-49-million-tonnes-co2-emissions/>
- Nagabhushan, D., Russell, R. H., Waltzer, K., Thompson, J., Beck, L., & Jaruzel, M. (2021). Carbon capture: Prospects and policy agenda for CO₂-neutral power generation. *The Electricity Journal*, 34(7), 106997. doi:<https://doi.org/10.1016/j.tej.2021.106997>
- Nagabhushan, D., & Thompson, J. (2019). *Carbon Capture & Storage in The United States Power Sector: The Impact of 45Q Federal Tax Credits*. Retrieved from https://www.catf.us/wp-content/uploads/2019/02/CATF_CCS_United_States_Power_Sector.pdf
- Nagao, I., Hashimoto, S., Suzuki, K., Toda, S., Narita, Y., Tsuda, A., . . . Uematsu, M. (2009). Responses of DMS in the seawater and atmosphere to iron enrichment in the subarctic western North Pacific (SEEDS-II). *Deep Sea Research Part II: Topical Studies in Oceanography*, 56(26), 2899-2917. doi:<https://doi.org/10.1016/j.dsr2.2009.07.001>
- Nagarajan, S., Chou, S. K., Cao, S., Wu, C., & Zhou, Z. (2013). An updated comprehensive techno-economic analysis of algae biodiesel. *Bioresource Technology*, 145, 150-156. doi:<https://doi.org/10.1016/j.biortech.2012.11.108>
- Nagor, G. P. i. (2012). Biochar – An Effective Substitute for P-Fertilizers. In (Vol. 5).
- Naims, H. (2016). Economics of carbon dioxide capture and utilization—a supply and demand perspective. *Environmental Science and Pollution Research*, 23(22), 22226-22241. doi:10.1007/s11356-016-6810-2
- Nair, A., Kruse, R., Tillman, J., & Lawson, V. (2013). *Biochar Application in Potato Production*. Retrieved from http://lib.dr.iastate.edu/cgi/viewcontent.cgi?article=3021&context=farms_reports&sei-redir=1&referer=http%3A%2F%2Fscholar.google.com%2Fscholar_url%3Fhl%3Den%26q%3Dhttp%3A%2F%2Flib.dr.iastate.edu%2Fcgi%2Fviewcontent.cgi%253Farticle%253D3021%2526context%253
- Nair, P. K. R. (2012). Carbon sequestration studies in agroforestry systems: a reality-check. *Agroforestry Systems*, 86(2), 243-253. doi:10.1007/s10457-011-9434-z
- Nair, P. K. R. (2012). Climate Change Mitigation: A Low-Hanging Fruit of Agroforestry. In P. K. R. Nair & D. Garrity (Eds.), *Agroforestry - The Future of Global Land Use* (pp. 31-67).
- Nair, P. K. R., Nair, V. D., Kumar, B. M., & Haile, S. G. (2009). Soil carbon sequestration in tropical agroforestry systems: a feasibility appraisal. *Environmental Science & Policy*, 12(8), 1099-1111. doi:<https://doi.org/10.1016/j.envsci.2009.01.010>
- Nair, R., Mehta, C. R., & Sharma, S. (2015). Carbon sequestration in soils-A Review. *Agricultural Reviews*, 36(2), 81. doi:10.5958/0976-0741.2015.00011.2

- Naisse, C., et al. . (2013). Can biochar and hydrochar stability be assessed with chemical methods? *Organic Geochemistry*, 60, 40-44. Retrieved from <https://www.sciencedirect.com/science/article/pii/S0146638013000946>
- Naisse, C., et al. . (2014). Effect of biochar addition on C mineralisation and soil organic matter priming in two subsoil horizons. *Journal of Soils and Sediments*, 15, 825-832. doi:10.1007/s11368-014-1002-5
- Naisse, C. (2015). *Potentiel de séquestration de carbone des biochars et hydrochars, et impact après plusieurs siècles sur le fonctionnement du sol (Carbon sequestration potential of biochar and hydrochars and after several centuries impact on the functioning of the soil)*. Université Pierre et Marie Curie (Pierre and Marie Curie University), Retrieved from <https://tel.archives-ouvertes.fr/tel-01130038/>
- Najafi, G., Ghobadian, B., & Yusaf, T. F. (2011). Algae as a sustainable energy source for biofuel production in Iran: A case study. *Renewable and Sustainable Energy Reviews*, 15(8), 3870-3876. doi:<https://doi.org/10.1016/j.rser.2011.07.010>
- Nakabayashi, K., Matsuo, Y., Isomoto, K., Teshima, K., Ayukawa, T., Shimanoe, H., . . . Yoon, S.-H. (2020). Establishment of innovative carbon nanofiber synthesis technology utilizing carbon dioxide. *ACS Sustainable Chemistry & Engineering*. doi:10.1021/acssuschemeng.9b07253
- Nakamura, F. M., Germano, M. G., & Tsai, S. M. (2014). Capacity of Aromatic Compound Degradation by Bacteria from Amazon Dark Earth. *Diversity*, 6(2), 339-353. Retrieved from <http://www.mdpi.com/1424-2818/6/2/339/htm>
- Nam, H., Capareda, S. C., Ashwath, N., & Kongkasawan, J. (2015). Experimental investigation of pyrolysis of rice straw using bench-scale auger, batch and fluidized bed reactors. *Energy*, 93, 2384 - 2394. doi:10.1016/j.energy.2015.10.028
- Namgay, T., Singh, B., & Singh, B. P. (2010). Influence of biochar application to soil on the availability of As, Cd, Cu, Pb, and Zn to maize (*Zea mays L.*). *Australian Journal of Soil Research*, 48, 638-647.
- Namsaraev, Z. B., Gotovtsev, P. M., Komova, A. V., & Vasilov, R. G. (2018). Current status and potential of bioenergy in the Russian Federation. *Renewable and Sustainable Energy Reviews*, 81, 625-634. doi:<https://doi.org/10.1016/j.rser.2017.08.045>
- Nan, N., DeVallance, D. B., Xie, X., & Wang, J. (2015). The effect of bio-carbon addition on the electrical, mechanical, and thermal properties of polyvinyl alcohol/biochar composites. *Journal of Composite Materials*. doi:10.1177/0021998315589770
- Nan, Q., Wang, C., Wang, H., Yi, Q., Liang, B., Xu, J., & Wu, W. (2019). Biochar drives microbially-mediated rice production by increasing soil carbon. *Journal of Hazardous Materials*, 121680. doi:<https://doi.org/10.1016/j.jhazmat.2019.121680>
- Nanda, S., Dalai, A. K., Berruti, F., & Kozinski, J. A. (2015). Biochar as an Exceptional Bioresource for Energy, Agronomy, Carbon Sequestration, Activated Carbon and Specialty Materials. *Waste and Biomass Valorization*, 7(2), 201-235. doi:10.1007/s12649-015-9459-z
- Nanda, S., Mohanty, P., Kozinski, J. A., & Dalai, A. K. (2014). Physico-Chemical Properties of Bio-Oils from Pyrolysis of Lignocellulosic Biomass with High and Slow Heating Rate. *Energy and Environment Research*, 4(3), 21-32. doi:10.5539/eer.v4n3p21
- Nandakumar, N. T. (2019). Soon, algae might absorb carbon dioxide emissions before they even leave the factory. *Massive Science*. Retrieved from https://massivesci.com/notes/carbon-capture-by-algae-biofuels-bioreactor/?fbclid=IwAR2WyBdnFChl8saKa3sdXu7vYadjvSPoO9pEuXjXDMoWvsfoxR_Mi4wbevs
- Nansubuga, I., Banadda, N., Ronsse, F., Verstraete, W., & Rabaey, K. (2015). Digestion of high rate activated sludge coupled to biochar formation for soil improvement in the tropics. *Water Research*, 81, 216-222. doi:10.1016/j.watres.2015.05.047

- Nansubuga, I. G. (2015). *Optimal recovery of resources from wastewater treatment: aspects of the developing world*. Ghent University, Retrieved from <https://biblio.ugent.be/publication/6938827>
- Nantongo, M. G. (2017). Legitimacy of local REDD+ processes. A comparative analysis of pilot projects in Brazil and Tanzania. *Environmental Science & Policy*, 78, 81-88. doi:<https://doi.org/10.1016/j.envsci.2017.09.005>
- Naqvi, S. R., Uemura, Y., Osman, N., & Yusup, S. (2015). Production and Evaluation of Physicochemical Characteristics of Paddy Husk Bio-char for its C Sequestration Applications. *BioEnergy Research*, 8(4), 1800-1809. doi:[10.1007/s12155-015-9634-x](https://doi.org/10.1007/s12155-015-9634-x)
- Naraharisetti, P. K., Yeo, T. Y., & Bu, J. (2019). New classification of CO₂ mineralization processes and economic evaluation. *Renewable and Sustainable Energy Reviews*, 99, 220-233. doi:<https://doi.org/10.1016/j.rser.2018.10.008>
- Nargi, L. (2017). New Study Shows Organic Farming Traps Carbon in Soil to Combat Climate Change. *Civil Eats*. Retrieved from <http://civileats.com/2017/09/11/new-study-shows-organic-farming-traps-carbon-in-soil-to-combat-climate-change/>
- Narita, D., & Klepper, G. (2015). *Economic incentives for carbon storage under uncertainty: A real options analysis*. Retrieved from <https://www.econstor.eu/bitstream/10419/110974/1/827503377.pdf>
- Nartey, O. D., & Zhao, B. (2014). Biochar Preparation, Characterization, and Adsorptive Capacity and Its Effect on Bioavailability of Contaminants: An Overview. *Advances in Materials Science and Engineering*, 201(1420), 1 - 12. doi:[10.1155/2014/715398](https://doi.org/10.1155/2014/715398)
- Narzari, R., et al. (2015). Biochar: An Overview on its Production, Properties and Potential Benefits. In H. Choudhury (Ed.), *Biology, Biotechnology and Sustainable Development* (pp. 13-40).
- Naser, H., et al. (2016). Simulation of CO₂ Injection in Asmari Reservoir for EOR and Sequestration, and Investigation of Effective Operational Parameters: Case Study. *Petroleum Research*, 25(85-2), 4-14.
- National Academies of Science, U. S. (2015). *Climate Intervention: Carbon Dioxide Removal and Reliable Sequestration*. Retrieved from https://www.nap.edu/login.php?record_id=18805&page=https%3A%2F%2Fwww.nap.edu%2Fdownload%2F18805
- National Academies of Science, U. S. (2018). *Negative Emissions Technologies and Reliable Sequestration: A Research Agenda*. Retrieved from https://download.nap.edu/cart/download.cgi?record_id=25259
- National Academies of Science, U. S. (2019). *Gaseous Carbon Waste Streams Utilization: Status and Research Needs*. Retrieved from <https://www.nap.edu/download/25232>
- National Academies of Sciences, E., & Medicine. (2017). *Coastal Blue Carbon Approaches for Carbon Dioxide Removal and Reliable Sequestration: Proceedings of a Workshop—in Brief*. Washington, DC: The National Academies Press.
- Naudts, K., et al. (2016). Europe's forest management did not mitigate climate warming. *Science*, 351(6273), 597-600. Retrieved from <http://science.sciencemag.org/content/351/6273/597>
- Navarre-Sitchler, A., & Brantley, S. (2007). Basalt weathering across scales. *Earth and Planetary Science Letters*, 261(1), 321-334. doi:<https://doi.org/10.1016/j.epsl.2007.07.010>
- Nave, L. E., Domke, G. M., Hofmeister, K. L., Mishra, U., Perry, C. H., Walters, B. F., & Swanston, C. W. (2018). Reforestation can sequester two petagrams of carbon in US topsoils in a century. *Proceedings of the National Academy of Sciences*, 115(11), 2776-2781. doi:[10.1073/pnas.1719685115](https://doi.org/10.1073/pnas.1719685115)
- Navia, R., & Crowley, D. E. (2010). Closing the loop on organic waste management: biochar for agricultural land application and climate change mitigation. *Waste Management &*

- Research*, 28(6), 479-480. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/20507863>
- Nayak, D., Saetnan, E., Cheng, K., Wang, W., Koslowski, F., Cheng, Y.-F., . . . Smith, P. (2015). Management opportunities to mitigate greenhouse gas emissions from Chinese agriculture. *Agriculture, Ecosystems & Environment*, 209, 108-124. doi:10.1016/j.agee.2015.04.035
- Nazeri, M., Maroto-Valer, M. M., & Jukes, E. (2016). Performance of Coriolis flowmeters in CO₂ pipelines with pre-combustion, post-combustion and oxyfuel gas mixtures in carbon capture and storage. *International Journal of Greenhouse Gas Control*, 54(Part 1), 297-308. doi:<https://doi.org/10.1016/j.ijggc.2016.09.013>
- Ndindeng, S. A., Mbassi, J. E. G., Mbacham, W. F., Manful, J., Graham-Acquaah, S., Moreira, J., . . . Futakuchi, K. (2015). Quality optimization in briquettes made from rice milling by-products. *Energy for Sustainable Development*, 29, 24 - 31. doi:10.1016/j.esd.2015.09.003
- Ndong, R., et al. (2009). Life cycle assessment of biofuels from *Jatropha curcas* in West Africa: a field study. *GCB Bioenergy*, 1(3), 197-210. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/j.1757-1707.2009.01014.x/abstract>
- Ndor, E., Amana, S., & Asadu, C. (2015). Effect of Biochar on Soil Properties and Organic Carbon Sink in Degraded Soil of Southern Guinea Savanna Zone, Nigeria. *International Journal of Plant & Soil Science*, 4(3), 252 - 258. doi:10.9734/ijpss/2015/12376
- Ndor, E., Jayeoba, O., & Asadu, C. (2015). Effect of Biochar Soil Amendment on Soil Properties and Yield of Sesame Varieties in Lafia, Nigeria. *American Journal of Experimental Agriculture*, 9(4), 1 - 8. doi:10.9734/ajea/2015/19637
- Needoba, J. A., Marchetti, A., Henry, M. F., Harrison, P. J., Wong, C.-S., Keith Johnson, W., & Pedersen, T. F. (2006). Stable nitrogen isotope dynamics of a mesoscale iron enrichment experiment in the NE Subarctic Pacific. *Deep Sea Research Part II: Topical Studies in Oceanography*, 53(20–22), 2214-2230. doi:<http://dx.doi.org/10.1016/j.dsr2.2006.05.021>
- Negash, M., & Kanninen, M. (2015). Modeling biomass and soil carbon sequestration of indigenous agroforestry systems using CO₂FIX approach. *Agriculture, Ecosystems & Environment*, 203(Supplement C), 147-155. doi:<https://doi.org/10.1016/j.agee.2015.02.004>
- NEGEM. (2020). The NEGEM project – Assessing the realistic potential of carbon dioxide removal and its contribution to achieving climate neutrality [Press release]. Retrieved from https://www.negemproject.eu/wp-content/uploads/2020/07/NEGEM_PRESS_RELEASE_20200701.pdf
- Negri, V., Galán-Martín, Á., Pozo, C., Fajardó, M., Reiner, D. M., Mac Dowell, N., & Guillén-Gosálbez, G. (2021). Life cycle optimization of BECCS supply chains in the European Union. *Applied Energy*, 298, 117252. doi:<https://doi.org/10.1016/j.apenergy.2021.117252>
- Neimark, B. (2018). Greenwashing: corporate tree planting generates goodwill but may sometimes harm the planet. *The Conversation*. Retrieved from <https://theconversation.com/greenwashing-corporate-tree-planting-generates-goodwill-but-may-sometimes-harm-the-planet-103457>
- Neimark, B. D. (2016). Biofuel imaginaries: The emerging politics surrounding ‘inclusive’ private sector development in Madagascar. *Journal of Rural Studies*, 45, 146-156. doi:<https://doi.org/10.1016/j.jrurstud.2016.03.012>
- Nelissen, V. (2013). *Effects of biochar on soil processes, soil functions and crop growth*. Ghent University,
- Nelissen, V., et al. . (2014). Effect of different biochar and fertilizer types on N₂O and NO

- emissions. *Soil Biology and Biochemistry*, 70, 244-255. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0038071713004707>
- Nelissen, V., et al. (2014). Impact of a woody biochar on properties of a sandy loam soil and spring barley during a two-year field experiment. *European Journal of Agronomy*, 62, 65-78. doi:10.1016/j.eja.2014.09.006
- Nelissen, V., et al. (2014). Short-Term Effect of Feedstock and Pyrolysis Temperature on Biochar Characteristics, Soil and Crop Response in Temperate Soils. *Agronomy*, 4(1), 52-73. Retrieved from <http://www.mdpi.com/2073-4395/4/1/52>
- Nelissen, V., et al. (2014). *Temporal evolution of the impact of a woody biochar on soil nitrogen processes: a 15N tracing study*. Paper presented at the 18th Nitrogen workshop: The nitrogen challenge : building a blueprint for nitrogen use efficiency and food security. <https://biblio.ugent.be/publication/5871963>
- Nelissen, V., Saha, B. K., Ruysschaert, G., & Boeckx, P. (2014). Effect of different biochar and fertilizer types on N₂O and NO emissions. *Soil Biology and Biochemistry*, 70, 244-255. doi:<https://doi.org/10.1016/j.soilbio.2013.12.026>
- Nellemann, C. (2009). *Blue carbon. A UNEP rapid response assessment*.
- Nellemann, C., et al. (2009). *Blue Carbon: The role of health oceans in binding carbon*. Retrieved from <https://grid.cld.bz/Blue-Carbon>
- Nelson, G. (2013). Ocean Carbon Sequestration: Solution to Climate Change or Policy Distraction? *SAIS Review*, XXXIII(2), 155-162.
- Nelson, N. O., Agudelo, S. C., Yuan, W., & Gan, J. (2011). Nitrogen and Phosphorus Availability in Biochar-Amended Soils. *Soil Science*, 176(5), 218-226. doi:10.1097/SS.0b013e3182171eac
- Nemati, M. R., Simard, F., Fortin, J.-P., & Beaudoin, J. (2014). Potential Use of Biochar in Growing Media. *Vadose Zone Journal*. doi:10.2136/vzj2014.06.0074
- Nemet, G. F., et al. (2018). Negative emissions—Part 3: Innovation and upscaling. *Environmental Research Letters*, 13(6), 063003. Retrieved from <http://stacks.iop.org/1748-9326/13/i=6/a=063003>
- Nemet, G. F., & Brandt, A. R. (2012). Willingness to Pay for a Climate Backstop: Liquid Fuel Producers and Direct CO₂ Air Capture. *Energy Journal*, 33, 53-81. Retrieved from <http://www.iaee.org/en/publications/ejarticle.aspx?id=2467>
- Nerome, M., Toyota, K., Islam, T. M. D., Nishijima, T., Matsuoka, T., Sato, K., & Yamaguchi, Y. (2005). Suppression of bacterial wilt of tomato by incorporation of municipal biowaste charcoal into soil. *Soil Microorganisms*, 59, 9-14.
- Nesci, F. S., & Iellamo, N. M. (2014). A Correct Valorisation of Farming and Agro-Industrial Waste. *Advanced Engineering Forum*. Retrieved from <http://www.scientific.net/AEF.11.64>
- Neto, C. J. D., Letti, L. A. J., Karp, S. G., Vítola, F. M. D., & Soccol, C. R. (2019). Chapter 18 - Production of biofuels from algae biomass by fast pyrolysis. In A. Pandey, J.-S. Chang, C. R. Soccol, D.-J. Lee, & Y. Chisti (Eds.), *Biofuels from Algae (Second Edition)* (pp. 461-473): Elsevier.
- Netto, A. L. A., Câmara, G., Rocha, E., Silva, A. L., Andrade, J. C. S., Peyerl, D., & Rocha, P. (2020). A first look at social factors driving CCS perception in Brazil: A case study in the Recôncavo Basin. *International Journal of Greenhouse Gas Control*, 98, 103053. doi:<https://doi.org/10.1016/j.ijggc.2020.103053>
- Network, A. B., Biofuelwatch, & Foundation, G. (2009). *Biochar Land Grabbing: the impacts on Africa*. Retrieved from http://www.biofuelwatch.org.uk/docs/biochar_africa_briefing.pdf
- Network, C. A. (2021). Position: Carbon Capture, Storage and Utilisation. Retrieved from http://www.climatenetwork.org/sites/default/files/can_position_carbon_capture_storage_and_utilisation_january_2021.pdf
- Neuhauser, A. (2019). Carbon Capture: Boon or Boondoggle? *U.S. News & World Report*.

- Retrieved from <https://www.usnews.com/news/the-report/articles/2019-07-26/a-startup-says-it-can-suck-co2-from-the-air-experts-arent-so-sure>
- Neves, R., et al. . (2015). *Comparative study of two standalone thermochemical routes for the production of electricity from sugarcane bagasse*. Paper presented at the Symposium on Biotechnology for Fuels and Chemicals. <https://sim.confex.com/sim/37th/webprogram/Paper29492.html>
- Neville, T. (2020). Here's What a Carbon Offset Actually Looks Like. *Outside*. Retrieved from <https://www.outsideonline.com/2418122/how-carbon-offsets-work>
- Newmark, R. L., Friedmann, S. J., & Carroll, S. A. (2010). Water Challenges for Geologic Carbon Capture and Sequestration. *Environmental Management*, 45, 651-661. Retrieved from http://download.springer.com/static/pdf/823/art%253A10.1007%252Fs00267-010-9434-1.pdf?originUrl=http%3A%2F%2Flink.springer.com%2Farticle%2F10.1007%2Fs00267-010-9434-1&token2=exp=1485135921~acl=%2Fstatic%2Fpdf%2F823%2Fart%25253A10.1007%25252Fs00267-010-9434-1.pdf%3ForiginUrl%3Dhttp%253A%252F%252Flink.springer.com%252Farticle%252F10.1007%252Fs00267-010-9434-1*~hmac=b2356e896a434aae18efca21b2eee9c5241f046d4ada2143d75fba33ab117745
- News, A. (2021). US government approves routes for Wyoming CO₂ pipelines. Retrieved from <https://abcnews.go.com/Technology/wireStory/us-government-approves-routes-wyoming-co2-pipelines-75408458>
- Newstaff, K. (2021). Giant Eagle Announces Net Zero Carbon Emissions Goal For 2040. Retrieved from [https://pittsburgh.cbslocal.com/2021/06/29/giant-eagle-announces-netzero-carbon-emissions-goal-for-2040/](https://pittsburgh.cbslocal.com/2021/06/29/giant-eagle-announces-net-zero-carbon-emissions-goal-for-2040/)
- Ney, R. A., & Schnoor, J. L. (2002). Incremental life cycle analysis: using uncertainty analysis to frame greenhouse gas balances from bioenergy systems for emission trading. *Biomass and Bioenergy*, 22(4), 257-269. doi:[https://doi.org/10.1016/S0961-9534\(02\)00004-1](https://doi.org/10.1016/S0961-9534(02)00004-1)
- Ng, E. L., et al. (2014). Functional stoichiometry of soil microbial communities after amendment with stabilised organic matter. *Soil Biology and Biochemistry*, 76, 170-178. doi:[10.1016/j.soilbio.2014.05.016](https://doi.org/10.1016/j.soilbio.2014.05.016)
- Ng, E. L., & Cavagnaro, T. R. (2016). Chapter 3 - Biochar Effects on Ecosystems: Insights From Lipid-Based Analysis. In *Biochar Application* (pp. 55-77): Elsevier.
- Ng, T. L., Eheart, J. W., Cai, X., & Miguez, F. (2010). Modeling Miscanthus in the Soil and Water Assessment Tool (SWAT) to Simulate Its Water Quality Effects As a Bioenergy Crop. *Environmental Science & Technology*, 44(18), 7138-7144. doi:[10.1021/es9039677](https://doi.org/10.1021/es9039677)
- Ng, W. Y., Low, C. X., Putra, Z. A., Aviso, K. B., Promentilla, M. A. B., & Tan, R. R. (2020). Ranking negative emissions technologies under uncertainty. *Helijon*, 6(12), e05730. doi:<https://doi.org/10.1016/j.heliyon.2020.e05730>
- Nghĩa, N. K., Sang, D. H., Oanh, N. T. K., Quyên, N. T. T., Lăng, L. T., & Viễn, D. M. (2015). HIỆU QUẢ PHÂN HỦY SINH HỌC HOẠT CHẤT PROPOXUR TRONG ĐẤT BỞI DÒNG VI KHUẨN PHÂN LẬP Paracoccus sp. P23-7 CỐ ĐỊNH TRONG BIOCHAR (Biodegradation of the Pesticide Propoxur in soil by Paracoccus sp. P23-7 Immobilized on Biochar). In.
- Ngo, P.-T., et al.i (2013). Biological and chemical reactivity and phosphorus forms of buffalo manure compost, vermicompost and their mixture with biochar. *Bioresource Technology*, 148, 401-407. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0960852413013497>
- Ngo, P.-T., et al. (2013). *Long-term impact of organic amendments (compost, vermicompost and biochar) on soil organic matter quality*.
- Ngo, P.-T., et al. (2014). Use of organic substrates for increasing soil organic matter quality and carbon sequestration of tropical degraded soil: a 3-year mesocosms experiment. *Carbon*

- Management*, 5(2), 155 - 168. doi:10.1080/17583004.2014.912868
- Ngo, T. P. (2014). *Effects of exogenous organic amendments on the composition of organic matter and carbon storage of a degraded by erosion in northern Vietnam soil (translated from French)*. Retrieved from <http://www.theses.fr/2014PA066152>
- Ngoma, H., Pelletier, J., Mulenga, B. P., & Subakanya, M. (2021). Climate-smart agriculture, cropland expansion and deforestation in Zambia: Linkages, processes and drivers. *Land Use Policy*, 107, 105482. doi:<https://doi.org/10.1016/j.landusepol.2021.105482>
- Nguyen, B., et al. . (2008). Long-Term Black Carbon Dynamics in Cultivated Soil. *Biogeochemistry*, 89, 295-308.
- Nguyen, B. T., et al. . (2014). Turnover of Soil Carbon following Addition of Switchgrass-Derived Biochar to Four Soils. *Soil Science Society of America Journal*, 78, 531-537. Retrieved from file:///C:/Users/Gateway/Downloads/ssaj-78-2-531.pdf
- Nguyen, B. T., & Lehmann, J. (2009). Black carbon decomposition under varying water regimes. *Organic Geochemistry*, 40(8), 846-853. Retrieved from <http://www.sciencedirect.com/science/article/pii/S014663800900117X>
- Nguyen, D. H., Biala, J., Grace, P. R., Scheer, C., & Rowlings, D. W. (2013). Effects of rice husk biochar and sugar-mill by-products on methane consumption from two different soils. In *Proc Aust Soc Sugar Cane Technol.*
- Nguyen, D. H., Biala, J., Grace, P. R., Scheer, C., & Rowlings, D. W. (2014). Greenhouse gas emissions from sub-tropical agricultural soils after addition of organic by-products. *SpringerPlus*, 3, 1-14. doi:10.1186/2193-1801-3-491
- Nguyen, D. H., Scheer, C., Rowlings, D. W., & Grace, P. R. (2016). Rice husk biochar and crop residue amendment in subtropical cropping soils: effect on biomass production, nitrogen use efficiency and greenhouse gas emissions. *Biology and Fertility of Soils*, 52(2), 261-270. doi:10.1007/s00374-015-1074-4
- Nguyen, H., Graeme, B., & Guppy, C. (2012). Effect of rice husk biochar and nitrification inhibitor treated urea on N and other macronutrient uptake by maize. *16 Australian Agronomy Conference*. Retrieved from http://www.regional.org.au/asa/2012/nutrition/7895_blair.htm
- Nguyen, H. T. (2015). *A Systems Model for Short-Rotation Coppices: A Case Study of the Whitecourt, Alberta, Trial Site*. University of Alberta, Retrieved from https://era.library.ualberta.ca/public/view/item/uuid:fb7201d1-8d9e-4c2e-9a68-ef0ab817106f/DS1/Nguyen_Huy_T_201409_MSc.pdf
- Nguyen, M.-V., & Lee, B.-K. (2012). Improvement of Yields and Surface Areas of Biochar from Chicken Manure. *Journal of Biobased Materials and Bioenergy*, 6, 714-716.
- Nguyen, M.-V., & Lee, B.-K. (2015). Removal of Dimethyl Sulfide from Aqueous Solution Using Cost-Effective Modified Chicken Manure Biochar Produced from Slow Pyrolysis. *Sustainability*, 7(11), 15057 - 15072. doi:10.3390/su71115057
- Nguyen, T. (2017). Going Negative. *Vice News*. Retrieved from <https://news.vice.com/story/this-factory-will-suck-carbon-out-of-the-air-and-feed-it-to-plants>
- Nguyen, T., Tong, Y., Luc, N., & Liu, C. (2016). Effects of Biochar on Chemical Properties of Three Types of Soil and Nutrient Uptake of Maize under Drought Stress. *Advance Journal of Food Science and Technology*, 9. Retrieved from <http://www.airitilibrary.com/Publication/alDetailedMesh?docid=20424876-201509-201510160012-201510160012-539-545>
- Nguyen, T. H., Brown, R. A., & Ball, W. P. (2004). An evaluation of thermal resistance as a measure of black carbon content in diesel soot, wood char, and sediment. *Organic Geochemistry*, 35(3), 217-234. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0146638003002171>
- Nguyen, T. H., Kim, S., Yoon, M., & Bae, T. H. (2016). *ChemSusChem*, 9, 455.

- Nguyen, T.-H., Tong, Y.-A., Luc, N.-T., & Liu, C. (2015). Effects of Different Ways to Return Biomass on Soil and Crop Nutrient Contents. *Nature Environment and Pollution Technology*, 14(3), 733-738. Retrieved from <http://search.proquest.com/openview/7cdf7dd07dbe11e64db5e440e5d62bc7/1?pq-origsite=gscholar>
- Nguyen, T. T. N., Xu, C.-Y., Tahmasbian, I., Che, R., Xu, Z., Zhou, X., . . . Bai, S. H. (2017). Effects of biochar on soil available inorganic nitrogen: A review and meta-analysis. *Geoderma*, 288, 79-96. doi:<https://doi.org/10.1016/j.geoderma.2016.11.004>
- Ni, J., et al. (2011). Adsorption of Aromatic Carboxylate Ions to Black Carbon (Biochar) Is Accompanied by Proton Exchange with Water. *Environmental Science & Technology*, 45(21), 9240-9248. doi:[10.1021/es201859j](https://doi.org/10.1021/es201859j)
- Nicholson, S. (2021). Carbon Removal and the Dangers of Extractivism. In J. Shapiro & J.-A. McNeish (Eds.), *Our Extractive Age* (pp. 189-203).
- Nicholson, S., Burns, W., & Morrow, D. R. (2020). United Airlines is Investing in Direct Air Capture, What Does That Mean? Retrieved from <https://research.american.edu/carbonremoval/2020/12/11/united-airlines-is-investing-in-direct-air-capture-what-does-that-mean/>
- Nickelsburg, M. (2021). Climate solution or corporate greenwashing? Tech taps farmers to help offset carbon footprint. *Geek Wire*. Retrieved from <https://www.geekwire.com/2021/climate-solution-corporate-greenwashing-tech-taps-farmers-help-offset-carbon-footprint/>
- Nicot, J.-P., Sun, A. Y., Gao, R. S., & Lashgari, H. (2017). Identification of a Minimum Dataset for CO₂-EOR Monitoring at Weyburn, Canada. *Energy Procedia*, 114, 7033-7041. doi:<https://doi.org/10.1016/j.egypro.2017.03.1844>
- Nielsen, H. H., et al. . (2015). Potential use of low-temperature gasification biochar as nutrient provider and soil improver – field evaluation. In.
- Nielsen, M. (2019). The impact of direct air carbon capture on climate change. *Cognitive Medium*. Retrieved from <http://cognitivemedium.com/dac-notes>
- Nielsen, S., et al. (2014). Comparative analysis of the microbial communities in agricultural soil amended with enhanced biochars or traditional fertilisers. *Agriculture, Ecosystems & Environment*, 191, 73-83. doi:[dx.doi.org/10.1016/j.agee.2014.04.006](https://doi.org/10.1016/j.agee.2014.04.006)
- Nielsen, S., Minchin, T., Kimber, S., van Zwieten, L., Gilbert, J., Munroe, P., . . . Thomas, T. (2014). Comparative analysis of the microbial communities in agricultural soil amended with enhanced biochars or traditional fertilisers. *Agriculture, Ecosystems & Environment*, 191, 73-82. doi:[http://dx.doi.org/10.1016/j.agee.2014.04.006](https://doi.org/10.1016/j.agee.2014.04.006)
- Niemi, R. M., Heiskanen, I., & Saarnio, S. (2015). Weak effects of biochar amendment on soil enzyme activities in mesocosms in bare or Phleum pratense soil. *Boreal Environment Research*. Retrieved from <http://web.a.ebscohost.com/abstract?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=12396095&AN=103297766&h=xmTlyBZpRENOUqN3%2bIUILvxPzi0ayjGGLo1zjyWOvoS27t9qnj1MxvrqsjHiVUply%2bvyAyBmlSXjY0JrURpGaQ%3d%3d&crl=c&resultNs=AdminWebAuth&resultLocal>
- Nieto, A., Gascó, G., Paz-Ferreiro, J., Fernández, J. M., Plaza, C., & Méndez, A. (2016). The effect of pruning waste and biochar addition on brown peat based growing media properties. *Scientia Horticulturae*, 199, 142 - 148. doi:[10.1016/j.scienta.2015.12.012](https://doi.org/10.1016/j.scienta.2015.12.012)
- Nieto Martín, A. (2015). *Fabricación, caracterización y utilización de biochar como sustituto de la turba en la preparación de sustratos de cultivo (Fabrication, characterization and use of biochar as a substitute for peat in the preparation of growing media)*. Retrieved from <http://oa.upm.es/37192/>
- Niggli, C., & Schmidt, H. P. (2012). Biochar in European Viticulture: Results of the Season 2011. *Ithaka Journal*, 1/2012, 250–261. Retrieved from <http://www.ithaka-journal.net/druckversionen/e022012-bc-viticulture.pdf>
- Nigussie, A., et al. . (2012). Effect of Biochar Application on Soil Properties and Nutrient Uptake

- of Lettuces (*Lactuca sativa*) Grown in Chromium Polluted Soils. *American-Eurasian J. Agric. & Environ. Sci.*, 12(3), 369-376. Retrieved from [http://idosi.org/aejaes/jaes12\(3\)12/14.pdf](http://idosi.org/aejaes/jaes12(3)12/14.pdf)
- Niiler, E. (2020). Could Carbon Dioxide Be Turned Into Jet Fuel? *Wired*. Retrieved from <https://www.wired.com/story/could-carbon-dioxide-be-turned-into-jet-fuel/>
- Nijhuis, N. (2019). *Article 210 LOSC and the Global Rules on Dumping at Sea - The London Convention, London Protocol and the Rules on Geo-engineering* -. (Public International Law - Environmental and Law of the Sea Masters). Universiteit UtrechtNijhuis, Retrieved from https://www.academia.edu/download/61727103/Ninian_Nijhuis_Article_210_LOSC_and_the_Global_Rules_on_Dumping_at_Sea20200109-8072-636o1w.pdf
- Nijnik, M., Pajot, G., Moffat, A. J., & Slee, B. (2013). An economic analysis of the establishment of forest plantations in the United Kingdom to mitigate climatic change. *Forest Policy and Economics*, 26, 34-42. doi:<https://doi.org/10.1016/j.forpol.2012.10.002>
- Nijesen, M., Smeets, E., Stehfest, E., & van Vuuren, D. P. (2011). An evaluation of the global potential of bioenergy production on degraded lands. *GCB Bioenergy*, 4(2), 130-147. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/j.1757-1707.2011.01121.x/full>
- Nikbakht, A. M., avidi, H., & Rahmati, H. (2014). *Design and Fabrication of a Reactor for Producing Bio-Char from Agricultural Wood Residues*. Paper presented at the International Conference on Food, Agriculture and Biology (FAB-2014) June 11-12, 2014 Kuala Lumpur (Malaysia). <http://iicbe.org/siteadmin/upload/2886C614503.pdf>
- Nikokavoura, A., & Trapalis, C. (2017). Alternative photocatalysts to TiO₂ for the photocatalytic reduction of CO₂. *Applied Surface Science*, 391, Part B, 149-174. doi:<http://dx.doi.org/10.1016/j.apsusc.2016.06.172>
- Nikulshina, V., et al. (2006). CO₂ capture from air and co-production of H₂ via the Ca(OH)₂-CaCO₃ cycle using concentrated solar power. *Energy*, 31(12), 1715-1725. Retrieved from <http://e-citations.ethbib.ethz.ch/view/pub:10056?lang=en>
- Nikulshina, V., et al. (2008). Feasibility of Na-based thermochemical cycles for the capture of CO₂ from air. *Chemical Engineering Journal*, 140(1-3), 62-70. Retrieved from <http://e-citations.ethbib.ethz.ch/view/pub:24928?lang=en>
- Nikulshina, V., Galvez, A., & Steinfeld, A. (2007). Kinetic analysis of the carbonation reactions for the capture of CO₂ from air via the Ca(OH)₂-CaCO₃-CaO solar thermochemical cycle. *Chemical Engineering Journal*, 129(1-3), 75-83. Retrieved from <http://e-citations.ethbib.ethz.ch/view/pub:19875?lang=en>
- Nikulshina, V., Gebald, C., & Steinfeld, A. (2009). CO₂ capture from atmospheric air via consecutive CaO-carbonation and CaCO₃-calcination cycles in a fluidized-bed solar reactor. *Chemical Engineering Journal*, 146(2), 244-248. doi:<http://dx.doi.org/10.1016/j.cej.2008.06.005>
- Nikulshina, V., Hirsch, D., Mazzotti, M., & Steinfeld, A. (2006). CO₂ capture from air and co-production of H₂ via the Ca(OH)₂-CaCO₃ cycle using concentrated solar power-Thermodynamic analysis. *Energy*, 31(12), 1715-1725. doi:<https://doi.org/10.1016/j.energy.2005.09.014>
- Nikulshina, V., & Steinfeld, A. (2009). CO₂ capture from air via CaO-carbonation using a solar-driven fluidized bed reactor. *Chemical Engineering Journal*, 155(3), 867-873. Retrieved from <http://e-citations.ethbib.ethz.ch/view/pub:36792?lang=en>
- Nilsson, S., & Schopfhauser, W. (1995). The carbon-sequestration potential of a global afforestation program. *Climatic Change*, 30(3), 267-293. doi:<10.1007/bf01091928>
- Ningbo, G., Baoling, L., Aimin, L., & Juanjuan, L. (2015). Continuous pyrolysis of pine sawdust at different pyrolysis temperatures and solid residence times. *Journal of Analytical and Applied Pyrolysis*. doi:<10.1016/j.jaat.2015.05.011>

- Nion, Y. A., et al. . (2015). *Pengaruh Suhu, Lama, Dan Ukuran Mesh Dalam Pembuatan Biochar Plus Tandan Kosong Kelapa Sawit Terhadap Retensi Tanah Gambut Dan Podsolik Merah Kuning (EFFECT OF TEMPERATURE, OLD, AND MESH SIZE IN MAKING BIOCHAR PLUS EMPTY PALM BUNCH OF SOIL PEAT AND RETENTION)*. Paper presented at the Simposium dan Seminar Nasional Perhimpunan Agronomi Indonesia di Universitas Sebelas Mare. https://www.academia.edu/23977119/Pengaruh_Suhu_Lama_Dan_Ukuran_Mesh_Dalam_Pembuatan_Biochar_Plus_Tandan_Kosong_Kelapa_Sawit_Terhadap_Retensi_Tanah_Gambut_Dan_Podsolik_Merah_Kuning
- Nisbet, M. (2019). Sciences, Publics, Politics: Carbon Removal Is No Quick Fix. *Issues in Science and Technology*. Retrieved from <https://issues.org/sciences-publics-politics-carbon-removal/>
- Nishio, M. (1996). *Microbial fertilizers in Japan*. Retrieved from Ibaraki, Japan:
- Nishioka, J., Takeda, S., de Baar, H. J. W., Croot, P. L., Boye, M., Laan, P., & Timmermans, K. R. (2005). Changes in the concentration of iron in different size fractions during an iron enrichment experiment in the open Southern Ocean. *Marine Chemistry*, 95(1–2), 51-63. doi:<https://doi.org/10.1016/j.marchem.2004.06.040>
- Nishioka, J., Takeda, S., Kondo, Y., Obata, H., Doi, T., Tsumune, D., . . . Tsuda, A. (2009). Changes in iron concentrations and bio-availability during an open-ocean mesoscale iron enrichment in the western subarctic Pacific, SEEDS II. *Deep Sea Research Part II: Topical Studies in Oceanography*, 56(26), 2796-2809. doi:<https://doi.org/10.1016/j.dsr2.2009.06.006>
- Niswati, A. (2016). Application of biochar produces changes in some soil properties. In *Biochar for future food security: learning from experiences and identifying research priorities*.
- Niu, L.-q., Jia, P., Li, S.-p., Kuang, J.-l., He, X.-x., Zhou, W.-h., . . . Li, J.-t. (2015). Slash-and-char: An ancient agricultural technique holds new promise for management of soils contaminated by Cd, Pb and Zn. *Environmental Pollution*, 205, 333 - 339. doi:[10.1016/j.envpol.2015.06.017](https://doi.org/10.1016/j.envpol.2015.06.017)
- Niu, Y., et al. (2015). Effects of Different Biochar Dosages and Types on Growth, Yield and Output Value of Flue-cured Tobacco in Hanzhong Area. *Agricultural Science & Technology*, 16(11), 2476-2480. Retrieved from <http://web.a.ebscohost.com/abstract?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=10094229&AN=11145926&h=L3x6mN5N2OMOZWfLZRNKUJcAkkm3L%2fPs04fkaRMN6FK4zvmmmdUeqhLaST%2frGw3nSgJOmsiNMchxfWP0Q0aawA%3d%3d&crl=c&resultNs=AdminWebAuth&resultLocal>
- Niu, Y., Cai, Y., Chen, Z., Luo, J., Di, H. J., Yu, H., . . . Ding, W. (2019). No-tillage did not increase organic carbon storage but stimulated N₂O emissions in an intensively cultivated sandy loam soil: A negative climate effect. *Soil and Tillage Research*, 195, 104419. doi:<https://doi.org/10.1016/j.still.2019.104419>
- Niu, Y., Tan, H., & Hui, S. e. (2016). Ash-related issues during biomass combustion: Alkali-induced slagging, silicate melt-induced slagging (ash fusion), agglomeration, corrosion, ash utilization, and related countermeasures. *Progress in Energy and Combustion Science*, 52, 1-61. doi:<https://doi.org/10.1016/j.pecs.2015.09.003>
- Niu, Z., Li, Q., Wei, X., Li, X., & Li, X. (2017). Numerical Simulation of a Hidden Fault at Different Stages of Evolution in a Carbon Dioxide-Enhanced Saline Water Recovery Site. *Journal of Petroleum Science and Engineering*, 154, 367-381. doi:<https://doi.org/10.1016/j.petrol.2017.04.039>
- Njoku, C., Uguru, B. N., & Chibuike, C. C. (2016). Use of Biochar to Improve Selected Soil Chemical Properties, Carbon Storage and Maize Yield in an Ultisol in Abakaliki Ebonyi State, Nigeria. *International Journal of Environmental & Agriculture Research*, 2(1),

- 15-22. Retrieved from <http://ijoear.com/Paper-January-2016/IJOEAR-JAN-2016-4.pdf>
- NOAA, O. o. G. C. Carbon Capture and Storage in Sub-Seabed Geological Formations Retrieved from https://www.gc.noaa.gov/gcil_carbon_capture_storage.html
- Nobutoki, M., Yoshihara, S., & Kuwae, T. (2018). Carbon Offset Utilizing Coastal Waters: Yokohama Blue Carbon Project. In T. Kuwae & M. Hori (Eds.), *Blue Carbon in Shallow Coastal Ecosystems: Carbon Dynamics, Policy, and Implementation* (pp. 321-346). Singapore: Springer Singapore.
- Nocera, D. G. (2012). The artificial leaf. *Acc. Chem. Res.*, 45(5), 767.
- Nocito, F., & Dibenedetto, A. (2020). Atmospheric CO₂ mitigation technologies: carbon capture utilization and storage. *Current Opinion in Green and Sustainable Chemistry*, 21, 34-43. doi:<https://doi.org/10.1016/j.cogsc.2019.10.002>
- Nodder, S. D., Charette, M. A., Waite, A. M., Trull, T. W., Boyd, P. W., Zeldis, J., & Buesseler, K. O. (2001). Particle transformations and export flux during an in situ iron-stimulated algal bloom in the Southern Ocean. *Geophysical Research Letters*, 28(12), 2409-2412. doi:[10.1029/2001GL013008](https://doi.org/10.1029/2001GL013008)
- Nodder, S. D., & Waite, A. M. (2001). Is Southern Ocean organic carbon and biogenic silica export enhanced by iron-stimulated increases in biological production? Sediment trap results from SOIREE. *Deep Sea Research Part II: Topical Studies in Oceanography*, 48(11–12), 2681-2701. doi:[http://dx.doi.org/10.1016/S0967-0645\(01\)00014-5](http://dx.doi.org/10.1016/S0967-0645(01)00014-5)
- Nogrady, B. (2017). Negative emissions tech: can more trees, carbon capture or biochar solve our CO₂ problem? *The Guardian*. Retrieved from <https://www.theguardian.com/sustainable-business/2017/may/05/negative-emissions-tech-can-more-trees-carbon-capture-or-biochar-solve-our-co2-problem>
- Noguera, D., et al. . (2010). Contrasted effect of biochar and earthworms on rice growth and resource allocation in different soils. *Soil Biology and Biochemistry*, 42(7), 1017-1027. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0038071710000866>
- Noguera, D., et al. (2012). Biochar but not earthworms enhances rice growth through increased protein turnover. *Soil Biology and Biochemistry*, 52, 13-20. Retrieved from <http://www.sciencedirect.com/science/article/pii/S003807171200140X>
- Noiri, Y., Kudo, I., Kiyosawa, H., Nishioka, J., & Tsuda, A. (2005). Influence of iron and temperature on growth, nutrient utilization ratios and phytoplankton species composition in the western subarctic Pacific Ocean during the SEEDS experiment. *Progress in Oceanography*, 64(2), 149-166. doi:<https://doi.org/10.1016/j.pocean.2005.02.006>
- Nooker, E. (2014). *Impact of management practices on Minnesota's specialty crop production: from biochar to tillage practices*. University of Minnesota, Retrieved from <http://conservancy.umn.edu/handle/11299/167302>
- Noor, N. M., Shariff, A., & Abdullah, N. (2012). Slow Pyrolysis of Cassava Wastes for Biochar Production and Characterization. *Iranica Journal of Energy & Environment, Special Issue on Environmental Technology*, 60-65. Retrieved from [https://idosi.org/ijee/3\(S\)12/10.pdf](https://idosi.org/ijee/3(S)12/10.pdf)
- (2017, December 17). *Dr. David Goldberg, Lamont Research Professor Columbia University: Ocean Carbon Sequestration (storing carbon in basalt formations)* [Retrieved from <https://nori.eco/podcast/4-dr-david-goldberg-lamont-research-professor-at-columbia-university>
- (2017). *Jeremy Kaufman and Ethan Steinberg of Propagate Ventures (Afforestation)* [Retrieved from <https://nori.eco/podcast/3-jeremy-kaufman-and-ethan-steinberg-of-propagate-ventures>
- (2018, January 3). *Jane Flegal of UC Berkeley, and Dr. Andrew Maynard of Arizona State University (Netative emissions Technologies models and* [Retrieved from <https://nori.eco/podcast/5-jane-flegal-of-uc-berkeley-and-dr-andrew-maynard-of-arizona-state-university>

- Nori (Producer). (2018, July 12). Nori Kickoff Webinar: Reversing Climate Change. Retrieved from <https://www.youtube.com/watch?v=d12-JVIXRU4>
- Nori. (2019). Indigo Ag announces The Terraton Initiative for soil carbon sequestration. Retrieved from <http://carbonremovalnewsroom.libsyn.com/indigo-ag-announces-the-terraton-initiative-for-soil-carbon-sequestration>
- (2020, December 1). *Climeworks & European carbon removal—w/ Christoph Beuttler, CDR Manager at Climeworks* [Retrieved from https://nori.com/podcasts/reversing-climate-change/S2E41-Climeworks--European-carbon-removalw-Christoph-Beuttler--CDR-Manager-at-Climeworks-en63vq?utm_medium=email&_hs_mi=101536068&_hsenc=p2ANqtz-8F3oePcN43Br4TLk3XMFDY5-beNaK4vC7WYfw5_6P38YGCOkrleRPfmrUIZEgUuIHZj83Mpqgd56sbL9QUJw65Qo9Eaw&utm_content=101536068&utm_source=hs_email]
- Norman, A. L., & Wadleigh, M. A. (2007). *Dimethyl sulphide (DMS) and its oxidation to sulphur dioxide downwind of an ocean iron fertilization study, SERIES: A model for DMS flux* (Vol. 17).
- Northrup, D. L., Basso, B., Wang, M. Q., Morgan, C. L. S., & Benfey, P. N. (2021). Novel technologies for emission reduction complement conservation agriculture to achieve negative emissions from row-crop production. *Proceedings of the National Academy of Sciences*, 118(28), e2022666118. doi:10.1073/pnas.2022666118
- Northup, J. (2013). *Biochar as a replacement for perlite in greenhouse soilless substrates*. (Master of Science). Iowa State University, Retrieved from <http://lib.dr.iastate.edu/etd/13399>
- Notoya, M. (2011). Production of Biofuel by Macroalgae with Preservation of Marine Resources and Environment. In A. Israel (Ed.), *Seaweeds and their Role in Globally Changing Environments* (pp. 219-228).
- Nouha, K., Kumari, A., Yan, S., Tyagi, R. D., Surampalli, R. Y., & Zhang, T. C. (2014). Carbon Immobilization by Enhanced Photosynthesis of Plants. In *Carbon Capture and Storage*.
- Novak, J., Sigua, G., Watts, D., Cantrell, K., Shumaker, P., Szogi, A., . . . Spokas, K. (2015). Biochars impact on water infiltration and water quality through a compacted subsoil layer. *Chemosphere*. doi:10.1016/j.chemosphere.2015.06.038
- Novak, J. M., et al. (2009). Characterization of Designer Biochar Produced at Different Temperatures and Their Effects on a Loamy Sand. *Annals of Environmental Science*, 3, 195-206. Retrieved from <https://www.ars.usda.gov/ARSUserFiles/60820000/Manuscripts/2009/Man822.pdf>
- Novak, J. M., et al. (2009). Impact of Biochar Amendment on Fertility of a Southeastern Coastal Plain Soil. *Soil Science*, 174(2), 105-112. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.585.3355&rep=rep1&type=pdf>
- Novak, J. M., et al. (2012). Biochars Impact on Soil-Moisture Storage in an Ultisol and Two Aridisols. *Soil Science*, 177(5), 310-320. Retrieved from https://www.researchgate.net/publication/254996404_Biochars_Impact_on_Soil-Moisture_Storage_in_an_Ultisol_and_Two_Aridisols
- Novak, J. M., Busscher, W. J., Watts, D. W., Laird, D. A., Ahmedna, M. A., & Niandou, M. A. S. (2010). Short-term CO₂ mineralization after additions of biochar and switchgrass to a Typic Kandiudult. *Geoderma*, 154, 281-288. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0016706109003322>
- Novak, J. M., Moore, E., Spokas, K. A., Hall, K., & Williams, A. (2019). Chapter 22 - Future Biochar Research Directions**USDA is an equal opportunity provider and employer. In Y. S. Ok, D. C. W. Tsang, N. Bolan, & J. M. Novak (Eds.), *Biochar from Biomass and Waste* (pp. 423-435): Elsevier.

- Novitskii, E. G., Bazhenov, S. D., & Volkov, A. V. Optimization of Methods for Purification of Gas Mixtures to Remove Carbon Dioxide (A Review). In.
- Novoselov, A. (2021). Carbon sequestration: a critical but less-understood piece of the climate puzzle. Retrieved from <https://www.ioes.ucla.edu/article/carbon-sequestration-a-critical-but-less-understood-piece-of-the-climate-puzzle/>
- Novotny, E. H., et al. (2012). Characterization of phosphate structures in biochar from swine bones. *Pesquisa Agropecuária Brasileira*, 47, 672-676. Retrieved from <https://seer.sct.embrapa.br/index.php/pab/article/viewFile/10029/6914>
- Novotny, E. H., et al. (2015). Biochar: Pyrogenic Carbon for Agricultural Use - A Critical Review. *Revista Brasileira de Ciencia do Solo*, 39(2), 321 - 344. doi:10.1590/01000683rbcs20140818
- Novotny, E. H., Accaise, R., Lima, L. B., & Madari, B. E. (2013). Characterisation of Humic Substances Extracted from Soil Treated with Charcoal (Biochar). In J. Xu, J. Wu, & Y. He (Eds.), *Functions of Natural Organic Matter in Changing Environment* (pp. 971-974).
- Novotny, E. H., deAzevedo, E. R., Bonagamba, T. J., Cunha, T. J. F., Madari, B. E., & Benites, V. d. M. (2007). Studies of the compositions of humic acids from amazonian dark earth soils. *Environmental Science & Technology*, 41(2), 400-405. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/es060941x>
- Novotny, E. H., deAzevedo, E. R., de Souza, A. A., Song, G., Nogueira, C. M., Mangrich, A. S., . . . Bonagamba, T. J. (2009). Lessons from the Terra Preta de Indios of the Amazon Region for the Utilisation of Charcoal for Soil Amendment. *Journal of the Brazilian Chemical Society*, 20(6), 1003 - 1010. Retrieved from http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0103-50532009000600002
- Novotny, E. H., Hayes, M. H. B., deAzevedo, E. R., & Bonagamba, T. J. (2006). Characterisation of black carbon-rich samples by C-13 solid-state nuclear magnetic resonance. *Naturwissenschaften*, 93(9), 447-450. Retrieved from <https://link.springer.com/article/10.1007/s00114-006-0126-x>
- Nowak, D. J., & Crane, D. E. (2002). Carbon storage and sequestration by urban trees in the USA. *Environmental Pollution*, 116(3), 381-389. doi:[https://doi.org/10.1016/S0269-7491\(01\)00214-7](https://doi.org/10.1016/S0269-7491(01)00214-7)
- Noyce, G. L., Basiliko, N., Fulthorpe, R., Sackett, T. E., & Thomas, S. C. (2015). Soil microbial responses over 2 years following biochar addition to a north temperate forest. *Biology and Fertility of Soils*, 51(6), 649-659. doi:10.1007/s00374-015-1010-7
- Noyce, G. L., Winsborough, C., Fulthorpe, R., & Basiliko, N. (2016). The microbiomes and metagenomes of forest biochars. *Scientific Reports*, 6, 1-12. doi:10.1038/srep26425
- NPR (Writer). (2017). Cleaning up the Carbon Dioxide in our Skies. In.
- Nriagu, J. (2019). Carbon Farming. In J. Nriagu (Ed.), *Encyclopedia of Environmental Health (Second Edition)* (pp. 509-516). Oxford: Elsevier.
- Nsamba, H. K., Hale, S. E., Cornelissen, G., & Bachmann, R. T. (2014). Improved Gasification of Rice Husks for Optimized Biochar Production in a Top Lit Updraft Gasifier. *Journal of Sustainable Bioenergy Systems*, 04(04), 225 - 242. doi:10.4236/jsts.2014.44021
- Nsamba, H. K., Hale, S. E., Cornelissen, G., & Bachmann, R. T. (2015). Designing and Performance Evaluation of Biochar Production in a Top-Lit Updraft Up-scaled Gasifier. *Journal of Sustainable Bioenergy Systems*, 05(02), 41 - 55. doi:10.4236/jsts.2015.52004
- Nsamba, H. K., Hale, S. E., Cornelissen, G., & Bachmann, R. T. (2015). Sustainable Technologies for Small-Scale Biochar Production—A Review. *Journal of Sustainable Bioenergy Systems*, 05(01), 10-31. doi:10.4236/jsts.2015.51002
- Nunez-Lopez, V. (2019). *FINAL REPORT: Carbon Life Cycle Analysis of CO2-EOR for Net Carbon Negative Oil (NCNO) Classification*

- WORK PERFORMED UNDER AGREEMENT DE-FE0024433.* Retrieved from https://www.researchgate.net/publication/336375814_FINAL_REPORT_Carbon_Life_Cycle_Analysis_of_CO2-EOR_for_Net_Carbon_Negative_Oil_NCNO_Classification_WORK_PERFORMED_UNDER AGREEMENT_DE-FE0024433
- Nuñez-López, V., Gil-Egui, R., Gonzalez-Nicolas, A., & Hovorka, S. (2017). Carbon Balance of CO₂-EOR for NCNO Classification. *Energy Procedia*, 114, 6597-6603. doi:<https://doi.org/10.1016/j.egypro.2017.03.1803>
- Núñez-López, V., Gil-Egui, R., & Hosseini, S. A. (2019). Environmental and Operational Performance of CO₂-EOR as a CCUS Technology: A Cranfield Example with Dynamic LCA Considerations. *Energies*, 12(3), 448. Retrieved from <https://www.mdpi.com/1996-1073/12/3/448>
- Núñez-López, V., & Moskal, E. (2019). Potential of CO₂-EOR for Near-Term Decarbonization. *Frontiers in Climate*, 1(5), 1-14. doi:[10.3389/fclim.2019.00005](https://doi.org/10.3389/fclim.2019.00005)
- Nuno-Santin, & Denman, H. (2013). *Anthropogenic Charcoal Deposits long a Climatic Gradient: A Tool to Assess the Functioning of Biochar in European Soils?* Paper presented at the 1st Mediterranean Biochar Symposium. www.researchgate.net/profile/ian_Mugford/publication/271073836_Anthropogenic_Charcoal_Deposits_long_a_Climatic_Gradient_A_Tool_to_Assess_the_Functioning_of_Biochar_in_European_Soils/links/54bcff130cf218da938febef.pdf
- Nur, M. S. M., Islami, T., Handayanto, E., Nugroho, W. H., & Utomo, W. H. (2014). The use of biochar fortified compost on calcareous soil of East Nusa Tenggara, Indonesia: 2. Effect on the yield of maize (*Zea mays* L) and phosphate absorption. *American-Eurasian Journal of Sustainable Agriculture* 2014, 8(5), 105-111. Retrieved from <http://www.cabdirect.org/abstracts/20143270833.html?jsessionid=75C7463AB6A81AC3E24DAD48A8729689>
- Nurhidayati, N., & Mariati, M. (2014). Utilization of maize cob biochar and rice husk charcoal as soil amendment for improving acid soil fertility and productivity. *Journal of Degraded and Mining Lands Management*, 2(1), 223-230. Retrieved from <http://jdmlm.ub.ac.id/index.php/jdmlm/article/view/88>
- Nuwara, J. (2020). Should We Build More Noah's Arks to Store Carbon Emission? *Energy Central*. Retrieved from https://www.energycentral.com/c/ec/should-we-build-more-noah%20%99s-arks-store-carbon-emission?utm_medium=eNL&utm_campaign=TEC&utm_content=510132&utm_source=2020_01_31
- Nyakatawa, E. Z., Mays, D. A., Tolbert, V. R., Green, T. H., & Bingham, L. (2006). Runoff, sediment, nitrogen, and phosphorus losses from agricultural land converted to sweetgum and switchgrass bioenergy feedstock production in north Alabama. *Biomass and Bioenergy*, 30(7), 655-664. doi:<http://dx.doi.org/10.1016/j.biombioe.2006.01.008>
- Nyami, B. L., Sudi, C. K., & Lejoly, J. (2016). Effect of the use of biochar and leaves of *Tithonia diversifolia* combined with mineral fertilizer on maize (*Zea mays* L.) and the properties of ferrallitic soil in Kinshasa (DRC) [translated from French language]. *Biotechnologie, Agronomie, Société et Environnement (Biotechnology, Agronomy, Society and Environment)*, 20(1), 57-67. Retrieved from <http://www.pressesagro.be/base/text/v20n1/57.pdf>
- Nykqvist, B. (2013). Ten times more difficult: Quantifying the carbon capture and storage challenge. *Energy Policy*, 55, 683-689. doi:<https://doi.org/10.1016/j.enpol.2012.12.026>
- Nzanza, B., Marais, D., & Soundy, P. (2012). Effect of Arbuscular Mycorrhizal Fungal Inoculation and Biochar Amendment on Growth and Yield of Tomato. *INTERNATIONAL JOURNAL*

- OF AGRICULTURE & BIOLOGY*, 14, 965–969. Retrieved from http://www.fspublishers.org/ijab/past-issues/IJABVOL_14_NO_6/17.pdf
- Nzediegwu, C., et al. (2015). *ROLE OF PLANTAIN PEEL BIOCHAR IN ENHANCING SAFE USE OF UNTREATED WASTEWATER*. Paper presented at the 22nd Canadian Hydrotechnical Conference. http://www.researchgate.net/profile/Jaskaran_Dhiman/publication/275660533_ROLE_OF_PLANTAIN_PEEL_BIOCHAR_IN_ENHANCING_SAFE_USE_OF_UNTREATED_WASTEWATER/links/554461920cf24107d3965050.pdf
- O’Beirne, P., Battersby, F., Mallett, A., Aczel, M., Makuch, K., Workman, M., & Heap, R. (2020). The UK net-zero target: Insights into procedural justice for greenhouse gas removal. *Environmental Science & Policy*, 112, 264-274. doi:<https://doi.org/10.1016/j.envsci.2020.06.013>
- O'Driscoll, C. (2008). Adding Lime To Seawater May Cut Carbon Dioxide Levels Back To Pre-industrial Levels. *ScienceDaily*. Retrieved from <https://www.sciencedaily.com/releases/2008/07/080721001742.htm>
- O'Halloran, T., L., & Ryan, M. B. (2017). More diverse benefits from timber versus dedicated bioenergy plantations for terrestrial carbon dioxide removal. *Environmental Research Letters*, 12(2), 021001. Retrieved from <http://stacks.iop.org/1748-9326/12/i=2/a=021001>
- O'Riordan, K. (2017). Smart Grids Energy Futures, Carbon Capture and Geoengineering. In *Unreal Objects* (pp. 75-103): Pluto Press.
- Ober, H. (2021). Is it feasible to remove carbon dioxide from the atmosphere? Retrieved from <https://phys.org/news/2021-06-feasible-carbon-dioxide-atmosphere.html>
- Obernosterer, I., Christaki, U., Lefèvre, D., Catala, P., Van Wambeke, F., & Lebaron, P. (2008). Rapid bacterial mineralization of organic carbon produced during a phytoplankton bloom induced by natural iron fertilization in the Southern Ocean. *Deep Sea Research Part II: Topical Studies in Oceanography*, 55(5–7), 777-789. doi:<http://dx.doi.org/10.1016/j.dsr2.2007.12.005>
- Obersteiner, M., Alexandrov, G., Benítez, P. C., McCallum, I., Kraxner, F., Riahi, K., . . . Yamagata, Y. (2006). Global Supply of Biomass for Energy and Carbon Sequestration from Afforestation/Reforestation Activities. *Mitigation and Adaptation Strategies for Global Change*, 11(5), 1003-1021. doi:[10.1007/s11027-006-9031-z](https://doi.org/10.1007/s11027-006-9031-z)
- Obersteiner, M., Azar, C., Kauppi, P., Möllersten, K., Moreira, J., Nilsson, S., . . . van Ypersele, J.-P. (2001). Managing Climate Risk. *Science*, 294(5543), 786-787. doi:[10.1126/science.294.5543.786b](https://doi.org/10.1126/science.294.5543.786b)
- Obersteiner, M., Bednar, J., Wagner, F., Gasser, T., Ciais, P., Forsell, N., . . . Schmidt-Traub, G. (2018). How to spend a dwindling greenhouse gas budget. *Nature Climate Change*, 8(1), 7-10. doi:[10.1038/s41558-017-0045-1](https://doi.org/10.1038/s41558-017-0045-1)
- Obersteiner, M., Böttcher, H., & Yamagata, Y. (2010). Terrestrial ecosystem management for climate change mitigation. *Current Opinion in Environmental Sustainability*, 2(4), 271-276. doi:<http://dx.doi.org/10.1016/j.cosust.2010.05.006>
- Obia, A., et al. (2016). In situ effects of biochar on aggregation, water retention and porosity in light-textured tropical soils. *Soil and Tillage Research*, 155, 35 - 44. doi:[10.1016/j.still.2015.08.002](https://doi.org/10.1016/j.still.2015.08.002)
- Obia, A., Cornelisse, G., Mulder, J., & Dörsch, P. (2015). Effect of Soil pH Increase by Biochar on NO, N₂O and N₂ Production during Denitrification in Acid Soils. *Plos One*, 10(9), e0138781. doi:[10.1371/journal.pone.0138781.s003](https://doi.org/10.1371/journal.pone.0138781.s003)
- Obidzinski, K., et al. (2012). Environmental and Social Impacts of Oil Palm Plantations and their Implications for Biofuel Production in Indonesia. *Ecology and Society*, 17(1), Article 25. doi:[10.5751/ES-04775-170125](https://doi.org/10.5751/ES-04775-170125)

- O'Brien, A. (2018). *The liability framework for the shipping phase of carbon capture and storage: A critical study of the liability regime for CO₂ leakage during cross-border CO₂-shipping activities in the North Sea.* (M.Sc.). University of Oslo, Retrieved from <https://www.duo.uio.no/handle/10852/66478>
- Ocando, A. (2021). Looking to the Future: Carbon Capture and Storage. *Oilman Magazine*. Retrieved from <https://oilmanmagazine.com/article/looking-to-the-future-carbon-capture-and-storage/>
- Ocean-Based Climate Solutions, I. (2021). Restore Phytoplankton. Reverse Climate Change. Retrieved from <https://ocean-based.com/>
- Ochoa, A., Aramburu, B., Ibáñez, M., Valle, B., Bilbao, J., Gayubo, A. G., & Castaño, P. (2014). Compositional Insights and Valorization Pathways for Carbonaceous Material Deposited During Bio-Oil Thermal Treatment. *ChemSusChem*, 7(9), 2597 - 2608. doi:10.1002/cssc.201402276
- Ocone, R. (2019). Carbon capture on power stations burning woodchips is not the green gamechanger many think it is. *The Conversation*. Retrieved from <https://theconversation.com/carbon-capture-on-power-stations-burning-woodchips-is-not-the-green-gamechanger-many-think-it-is-110475>
- O'Connor, W. K., et al. (2001). *Carbon Dioxide Sequestration by Direct Mineral Carbonation: Results from Recent Studies and Current Status*. Retrieved from https://www.netl.doe.gov/publications/proceedings/01/carbon_seq/6c2.pdf
- Odesola, I. F., & Owoseni, T. A. (2011). Development of Local Technology for a Small-Scale Biochar Production Processes from Agricultural Wastes. *Journal of Emerging Trends in Engineering and Applied Sciences (JETEAS)*, 1(2), 205-208. Retrieved from <http://jeteas.scholarlinkresearch.org/articles/Development%20of%20Local%20Technology%20for%20a%20Small-Scale%20Biochar%20Production%20Processes%20from%20Agricultural%20Wastes.pdf>
- Odesola, I. F., & Owoseni, T. A. (2011). Small Scale Biochar Production Technologies: A Review. *Journal of Emerging Trends in Engineering and Applied Sciences (JETEAS)*, 1. Retrieved from <http://jeteas.scholarlinkresearch.org/articles/Small%20Scale%20Biochar%20Production%20Technologies.pdf>
- Odlare, M., Arthurson, V., Pell, M., Svensson, K., Nehrenheim, E., & Abubaker, J. (2011). Land application of organic waste – Effects on the soil ecosystem. *Applied Energy*, 88(6), 2210-2218. doi:<https://doi.org/10.1016/j.apenergy.2010.12.043>
- Oelbermann, M., Dil, M., & Oelbermann, M. (2015). *Sustainable agroecosystems in climate change mitigation Chapter 13. Evaluating the long-term effects of pre-conditioned biochar on soil organic carbon in two southern Ontario soils using the century model*. Wageningen Academic Publishers.
- Oelkers, E. H., & Cole, D. R. (2008). Carbon Dioxide Sequestration A Solution to a Global Problem. *Elements*, 4(5), 305-310. doi:10.2113/gselements.4.5.305
- Oelkers, E. H., Declercq, J., Saldi, G. D., Gislason, S. R., & Schott, J. (2018). Olivine dissolution rates: A critical review. *Chemical Geology*, 500, 1-19. doi:<https://doi.org/10.1016/j.chemgeo.2018.10.008>
- Oelkers, E. H., Gislason, S. R., & Matter, J. (2008). Mineral Carbonation of CO₂. *Elements*, 4, 333-337. Retrieved from https://notendur.hi.is/sigrg/ELEM_v4n5_OelkersGM.PDF
- Oeste, F. D., et al. (2017). Climate engineering by mimicking natural dust climate control: the iron salt aerosol method. *Earth System Dynamics*, 8, 1-54. Retrieved from <https://www.earth-syst-dynam.net/8/1/2017/esd-8-1-2017.pdf>
- Ofanos, A., et al. (2015). Sorption of Methylene Blue onto Food Industry Byproducts. In. Offermann-van Heek, J., Arning, K., Sternberg, A., Bardow, A., & Ziefle, M. (2020). Assessing

- public acceptance of the life cycle of CO₂-based fuels: Does information make the difference? *Energy Policy*, 143, 111586. doi:<https://doi.org/10.1016/j.enpol.2020.111586>
- Ofori, K. (2017). *The Role of CCS and CCU to Achieve the Climate Change Mitigation Goals*. Retrieved from https://www.academia.edu/attachments/54001847/download_file?s=work_strip&ct=MTUwMjY3OTUwMSwxNTAyNjgwODQ0LDI1NDM4NQ==
- Ofori, R. A. (2014). *Integrated Waste Management-Source Separation and Composting Of Household Waste in the Ayuom Farming Community in the Bosomtwe District of the Ashanti Region*. Kwame Nkrumah University of Science and Technology, Retrieved from <http://datad.aau.org/handle/123456789/8404>
- Ogawa, M. (1984). Controlling of soil microorganisms by charcoal. *Res. J. Food and Agriculture*, 41-46. Retrieved from <http://agris.fao.org/agris-search/search.do?recordID=JP8404136>
- Ogawa, M. (1998). Utilization of Symbiotic Microorganisms and Charcoal for Desert Greening. *Green age*(March), 5-9. Retrieved from <http://www.geocities.jp/yasizato/File0015.PDF>
- Ogawa, M., & Okimori, Y. (2010). Pioneering works in biochar research, Japan. *Australian Journal of Soil Research*, 48, 489- 500. doi:10.1071/sr10006
- Ogawa, M., Okimori, Y., & Takahashi, F. (2006). Carbon Sequestration by Carbonization of Biomass and Forestation: Three Case Studies. *Mitigation and Adaptation Strategies for Global Change*, 11(2), 421-436. Retrieved from <http://dx.doi.org/10.1007/s11027-005-9007-4>
- Ogbonnaya, O. U., Adebisi, O. O., & Semple, K. T. (2014). The impact of biochar on the bioaccessibility of 14 C-phenanthrene in aged soil. *Environmental Science: Processes Impacts*, 16(11), 2635 - 2643. doi:10.1039/c4em00396a
- Ogbonnaya, U., et al. (2014). Influence of Wood Biochar on Phenanthrene Catabolism in Soils. *Environments*, 1(1), 60 - 74. doi:10.3390/environments1010060
- Ogbonnaya, U., & Semple, K. T. (2013). Impact of Biochar on Organic Contaminants in Soil: A Tool for Mitigating Risk? *Agronomy*, 3, 349-375. Retrieved from www.mdpi.com/journal/agronomy
- Ogden, J., & Johnson, N. (2010). Techno-economic analysis and modeling of carbon dioxide (CO₂) capture and storage (CCS) technologies A2 - Maroto-Valer, M. Mercedes. In *Developments and Innovation in Carbon Dioxide (CO₂) Capture and Storage Technology* (Vol. 1, pp. 27-63): Woodhead Publishing.
- Ogle, K. (2018). Hyperactive soil microbes might weaken the terrestrial carbon sink. *Nature*. Retrieved from https://www.nature.com/articles/d41586-018-05842-2?utm_source=briefing-wk&utm_medium=email&utm_campaign=briefing&utm_content=20180803
- Ogliore, T. (2019). Study shows how electricity-eating microbes use electrons to fix carbon dioxide. *Phys.org*. Retrieved from <https://phys.org/news/2019-03-electricity-eating-microbes-electrons-carbon-dioxide.html?fbclid=IwAR2APu3lwMKJMPadMDb5wPwm9Jffg0dqDeX9mhRRxIQIAIFrgd1ZRE3AA38>
- Ogundiran, M. B., Lawal, O. O., & Adejumo, S. A. (2015). Stabilisation of Pb in Pb Smelting Slag-Contaminated Soil by Compost-Modified Biochars and Their Effects on Maize Plant Growth. *Journal of Environmental Protection*, 06(08), 771 - 780. doi:10.4236/jep.2015.68070
- Oguntunde, P. G., Abiodun, B. J., Ajayi, A. E., & van de Giesen, N. (2008). Effects of charcoal production on soil physical properties in Ghana. *Journal of Plant Nutrition and Soil Science*, 171(4), 591-596. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/jpln.200625185/abstract>
- Oguntunde, P. G., Fosu, M., Ajayi, A. E., & van de Giesen, N. (2004). Effects of charcoal production on maize yield, chemical properties and texture of soil. *Biology and Fertility of Soils*, 39(4), 295-299. Retrieved from <http://link.springer.com/article/10.1007/s00374-004-0870-1>

s00374-003-0707-1

- Oh, N. H., & Raymond, P. A. (2006). Contribution of agricultural liming to riverine bicarbonate export and CO₂ sequestration in the Ohio River basin. *Global Biogeochemical Cycles*, 20(3). doi:doi:10.1029/2005GB002565
- Oh, S.-Y., & Seo, Y.-D. (2014). Sorptive Removal of Nitro Explosives and Metals Using Biochar. *Journal of Environment Quality*, 43(5), 1663-1671. doi:10.2134/jeq2014.02.0097
- Oh, S.-Y., & Seo, Y.-D. (2015). Factors Affecting Sorption of Nitro Explosives to Biochar: Pyrolysis Temperature, Surface Treatment, Competition, and Dissolved Metals. *Journal of Environment Quality*, 44(3), 833-840. doi:10.2134/jeq2014.12.0525
- Oh, S.-Y., & Seo, Y.-D. (2015). Sorption of halogenated phenols and pharmaceuticals to biochar: affecting factors and mechanisms. *Environmental Science and Pollution Research*, 23(2), 951-961. doi:10.1007/s11356-015-4201-8
- Oh, S.-Y., Seo, Y.-D., Kim, B., Kim, I. Y., & Cha, D. K. (2016). Microbial reduction of nitrate in the presence of zero-valent iron and biochar. *Bioresource Technology*, 200, 891 - 896. doi:10.1016/j.biortech.2015.11.021
- Oh, S.-Y., & Shin, D.-S. (2013). Removal of total dissolved solids in spent caustic using biochar: Pretreatment for subsequent biological treatment†. *CLEAN – Soil, Air, Water*, 43(1), 92-95. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/clen.201300784/pdf>
- Oh, S.-Y., Son, J.-G., & Chiu, P. C. (2012). Biochar-mediated reductive transformation of nitro herbicides and explosives. *Environmental Toxicology and Chemistry*, 32(3), 501-508. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/23334991>
- Oh, S.-Y., Son, J.-G., & Chiu, P. C. (2014). Black carbon-mediated reductive transformation of nitro compounds by hydrogen sulfide. *Environmental Earth Sciences*, 73(4), 1813-1822. doi:10.1007/s12665-014-3535-8
- Oh, S.-Y., & Yoon, H.-S. (2016). Biochar Amendment for Reducing Leachability of Nitro Explosives and Metals from Contaminated Soils and Mine Tailings. *Journal of Environment Quality*, 45(3), 993-1002. doi:10.2134/jeq2015.05.0222
- Oh, S.-Y., & Yoon, M.-K. (2013). Biochar for Treating Acid Mine Drainage. *Environmental Engineering Science*, 30(10), 589-593. Retrieved from <http://online.liebertpub.com/doi/pdf/10.1089/ees.2013.0063>
- Oh, T.-K., et al. . (2012). Effect of pH Conditions on Actual and Apparent Fluoride Adsorption by Biochar in Aqueous Phase. *Water, Air, & Soil Pollution*, 223(7), 3729-3738. doi:10.1007/s11270-012-1144-2
- O'Halloran, T. L., & Bright, R. (2017). More diverse benefits from timber versus dedicated bioenergy plantations for terrestrial carbon dioxide removal. *Environmental Research Web Talking Point*. Retrieved from <http://environmentalresearchweb.org/cws/article/opinion/68083>
- Ohira, T. (2012). *Functional substances obtained through biomass pyrolysis - Functions of acid liquid, bamboo vinegar, etc.* Retrieved from http://www.biochar-international.org/sites/default/files/Bamboo_Vinegar_Japan_2012.pdf
- Ohsowski, B. M. (2015). *Restoring grasslands in southern Ontario sandpits : plant and soil food web responses to arbuscular mycorrhizal fungal inoculum, biochar, and municipal compost*. University of British Columbia, Retrieved from <https://circle.ubc.ca/handle/2429/53097?show=full>
- Oidde, M. R., Dutta, J., & Jadhav, S. (2011). Comparative adsorption studies on Activated Rice Husk and Rice Husk Ash by using Methylene Blue as dye. *INTERNATIONAL CONGRESS ON ENVIRONMENTAL RESEARCH AT BITS PILANI GOA, 08-09*. Retrieved from http://www.bvucopune.edu.in/pdf's/Publications_2004-2011/Publications_2008-09/IC_2008-09/IC7_2008-09.pdf
- Oil, S. (2016). *A Better Life with a Healthy Planet*. Retrieved from <http://www.shell.com/energy>

- and-innovation/the-energy-future/scenarios/a-better-life-with-a-healthy-planet/_jcr_content/par/textimage.stream/1475857466913/a1aa5660d50ab79942f7e4a629fcb37ab93d021afb308b92c1b77696ce6b2ba6/scenarios-nze-brochure-interactive-afwv9-interactive.pdf
- Ojeda, G., Mattana, S., Ávila, A., Alcañiz, J. M., Volkmann, M., & Bachmann, J. (2015). Are soil–water functions affected by biochar application? *Geoderma*, 249–250, 1 - 11. doi:10.1016/j.geoderma.2015.02.014
- Ok, S. Y., Uchimiya, S. M., Chang, S., & Bolan, N. (2016). *Biochar: Production, Characterization, and Applications*.
- Ok, Y. S., et al. (2015). SMART biochar technology—A shifting paradigm towards advanced materials and healthcare research. *Environmental Technology & Innovation*, 4, 206 - 209. doi:10.1016/j.eti.2015.08.003
- Oka, H., et al. (1993). *Improvement of sandy soil in the Northeast by using carbonized rice husk*. Retrieved from <http://www.geocities.jp/yasizato/uti004003.pdf>
- Okagawa, A., Masui, T., Akashi, O., Hijioka, Y., Matsumoto, K., & Kainuma, M. (2012). Assessment of GHG emission reduction pathways in a society without carbon capture and nuclear technologies. *Energy Economics*, 34, S391-S398. doi:<https://doi.org/10.1016/j.eneco.2012.07.011>
- Oke, D., & Olatiulu, A. (2011). Carbon Storage in Agroecosystems: A Case Study of the Cocoa Based Agroforestry in Ogbese Forest Reserve, Ekiti State, Nigeria. *Journal of Environmental Protection*, 2, 1069-1075. Retrieved from http://www.worldcocoafoundation.org/wp-content/uploads/files_mf/oke2011.pdf
- Okesola, A. A., et al. (2018). Direct Air Capture: A Review of Carbon Dioxide Capture from the Air. *IOP Conference Series: Materials Science and Engineering*, 413(1), 012077. Retrieved from <http://stacks.iop.org/1757-899X/413/i=1/a=012077>
- Okimori, Y., Ogawa, M., & Takahashi, F. (2003). Potential of CO₂ emission reductions by carbonizing biomass waste from industrial tree plantation in South Sumatra, Indonesia. *Mitigation and Adaptation Strategies for Global Change*, 8(3), 261-280. Retrieved from <http://link.springer.com/article/10.1023/B:MITI.0000005643.79908.5a>
- Okoroigwe, E. C., et al. (2015). Bio-oil yield potential of some tropical woody biomass. *Journal of Energy in Southern Africa*, 26(2), 33-41. Retrieved from <http://www.scielo.org.za/pdf/jesa/v26n2/04.pdf>
- Olah, G. A., Goeppert, A., & Prakash, G. K. S. (2009). Chemical Recycling of Carbon Dioxide to Methanol and Dimethyl Ether: From Greenhouse Gas to Renewable, Environmentally Carbon Neutral Fuels and Synthetic Hydrocarbons. *The Journal of Organic Chemistry*, 74(2), 487-498. doi:10.1021/jo801260f
- Olah, G. A., Prakash, G. K. S., & Goeppert, A. (2011). Anthropogenic chemical carbon cycle for a sustainable future. *J. Am. Chem. Soc.*, 133, 12881.
- Olaizola, M. J. B., & Engineering, B. (2003). Microalgal removal of CO₂ from flue gases: Changes in medium pH and flue gas composition do not appear to affect the photochemical yield of microalgal cultures. 8(6), 360-367. doi:10.1007/bf02949280
- Olajire, A. A. (2013). A review of mineral carbonation technology in sequestration of CO₂. *Journal of Petroleum Science and Engineering*, 109, 364-392. doi:<https://doi.org/10.1016/j.petrol.2013.03.013>
- Olaniyan, J. O., Isimikalu, T. O., Raji, B. A., Affinnih, K. O., Alasinrin, S. Y., & Ajala, O. N. (2020). An investigation of the effect of biochar application rates on CO₂ emissions in soils under upland rice production in southern Guinea Savannah of Nigeria. *Heliyon*, 6(11), e05578. doi:<https://doi.org/10.1016/j.heliyon.2020.e05578>
- Olarieta, J. R., et al. (2010). ‘Formiguers’, a historical system of soil fertilization (and biochar production?). *Agriculture, Ecosystems & Environment*, 140(1-2), 27-33. Retrieved from

<http://www.sciencedirect.com/science/article/pii/S0167880910002975>

- Oldenburg, C. M. (2019). Geologic Carbon Sequestration: Sustainability and Environmental Risk. In J. W. LaMoreaux (Ed.), *Environmental Geology* (pp. 219-234). New York, NY: Springer US.
- Oldenburg, C. M., & Torn, M. S. (2008). *Biologically Enhanced Carbon Sequestration: Research Needs and Opportunities*. Retrieved from <https://cloudfront.escholarship.org/dist/prd/content/qt1dz2q8mp/qt1dz2q8mp.pdf>
- Oleszczuk, P., et al. (2012). Influence of activated carbon and biochar on phytotoxicity of air-dried sewage sludges to *Lepidium sativum*. *Ecotoxicology and Environmental Safety*, 80, 321-326. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0147651312001029>
- Oleszczuk, P., et al. (2013). Effect of pesticides on microorganisms, enzymatic activity and plant in biochar-amended soil. *Geoderma*, 214-215, 10-18.
- Oleszczuk, P., et al. . (2014). Microbiological, biochemical and ecotoxicological evaluation of soils in the area of biochar production in relation to polycyclic aromatic hydrocarbon content. *Geoderma*, 213, 502–511. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0016706113003091>
- Oleszczuk, P., Hale, S. E., Lehmann, J., & Cornelissen, G. (2012). Activated carbon and biochar amendments decrease pore-water concentrations of polycyclic aromatic hydrocarbons (PAHs) in sewage sludge. *Bioresource Technology*, 111, 84-91. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0960852412002593>
- Oleszczuk, P., Josko, I., & Kusmierz, M. (2013). Biochar properties regarding to contaminants content and ecotoxicological assessment. *Journal of Hazardous Materials*, 260, 375-382. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0304389413003750>
- Olga, P., Fabrizio, G., Elio, D., & Paolo, B. (2014). Improved pig slurry mechanical separation using chitosan and biochar. *Biosystems Engineering*, 127, 115 - 124. doi:10.1016/j.biosystemseng.2014.08.009
- Olgun, N., Duggen, S., Croot, P. L., Delmelle, P., Dietze, H., Schacht, U., . . . Garbe-Schonberg, D. (2011). Surface ocean iron fertilization: The role of airborne volcanic ash from subduction zone and hot spot volcanoes and related iron fluxes into the Pacific Ocean. *Global Biogeochemical Cycles*, 25. doi:10.1029/2009gb003761
- Olgun, N., Duggen, S., Langmann, B., Hort, M., Waythomas, C. F., Hoffmann, L., & Croot, P. (2013). Geochemical evidence of oceanic iron fertilization by the Kasatochi volcanic eruption in 2008 and the potential impacts on Pacific sockeye salmon. *Marine Ecology Progress Series*, 481, 81-88. Retrieved from <http://www.int-res.com/abstracts/meps/v488/p81-88/>
- Olick, D. (2021). These companies are sucking carbon out of the atmosphere — and investors are piling in. Retrieved from <https://www.cnbc.com/2021/07/23/these-companies-are-sucking-carbon-from-the-atmosphere.html>
- Oliveira, F. R., Patel, A. K., Jaisi, D. P., Adhikari, S., Lu, H., & Khanal, S. K. (2017). Environmental application of biochar: Current status and perspectives. *Bioresource Technology*, 246, 110-122. doi:<https://doi.org/10.1016/j.biortech.2017.08.122>
- Oliveira, P. R., et al. (2015). Electrochemical determination of copper ions in spirit drinks using carbon paste electrode modified with biochar. *Food Chemistry*, 171, 426 - 431. doi:10.1016/j.foodchem.2014.09.023
- Oliver, C. D., Nassar, N. T., Lippke, B. R., & McCarter, J. B. (2014). Carbon, Fossil Fuel, and Biodiversity Mitigation With Wood and Forests. *Journal of Sustainable Forestry*, 33(3), 248-275. doi:10.1080/10549811.2013.839386
- Oliver, J., & Tucker, S. (2019). Geoengineering at Sea: Ocean Fertilization as a Policy Option. In

- P. Harris (Ed.), *Climate Change and Ocean Governance: Politics and Policy for Threatened Seas* (pp. 425-436).
- Oliver, R. J., Blyth, E., Taylor, G., & Finch, J. W. (2015). Water use and yield of bioenergy poplar in future climates: modelling the interactive effects of elevated atmospheric CO₂ and climate on productivity and water use. *GCB Bioenergy*, 7(5), 958-973. doi:10.1111/gcbb.12197
- Olivier, C. F. (2011). *An investigation into the degradation of biochar and its interactions with plants and soil microbial community.* (MS Agriculture). Stellenbosch University, Retrieved from http://scholar.sun.ac.za/bitstream/handle/10019.1/17944/olivier_investigation_2011.pdf?sequence=1
- Olivier, P., & Hyman, T. (2011). *Making Waste our Greatest Resource: The Small-Scale Production of Food, Fuel, Feed and Fertilizer.* Retrieved from <http://dl.dropbox.com/u/22013094/Paper/composting.pdf>
- Olivier, P. A., et al. (2014). *Empowering the Poor Through Waste Transformation: An Unconventional Way Of Raising Pigs, Chickens and Cows.* Retrieved from <https://dl.dropboxusercontent.com/u/22013094/Paper/Summaries/Alternative%20to%20Biodigestion.pdf>
- Olmo, M., Alburquerque, J. A., Barrón, V., del Campillo, M. C., Gallardo, A., Fuentes, M., & Villar, R. (2014). Wheat growth and yield responses to biochar addition under Mediterranean climate conditions. *Biology and Fertility of Soils*, 50(8), 1177 - 1187. doi:10.1007/s00374-014-0959-y
- Olmo, M., Villar, R., Salazar, P., & Alburquerque, J. A. (2015). Changes in soil nutrient availability explain biochar's impact on wheat root development. *Plant and Soil*, 399(1), 333-343. doi:10.1007/s11104-015-2700-5
- Olofsson, M., Lindehoff, E., Frick, B., Svensson, F., & Legrand, C. (2015). Baltic Sea microalgae transform cement flue gas into valuable biomass. *Algal Research*, 11, 227-233. doi:<https://doi.org/10.1016/j.algal.2015.07.001>
- Ologeh, I. O., et al. (2018). Carbon Sequestration Implementation through Sustainable Agricultural Land Management (SALM) Methodology in Nigeria. *International Journal of Environment and Sustainability*, 7(1), 1-9. Retrieved from <https://www.scientetarget.com/Journal/index.php/IJES/article/view/878/226>
- Oloman, C., & Li, H. (2008). Electrochemical Processing of Carbon Dioxide. *ChemSusChem*, 1(5), 385-391. doi:<https://doi.org/10.1002/cssc.200800015>
- Olorunfemi, I. E., Komolafe, A. A., Fasinmirin, J. T., & Olufayo, A. A. (2019). Biomass carbon stocks of different land use management in the forest vegetative zone of Nigeria. *Acta Oecologica*, 95, 45-56. doi:<https://doi.org/10.1016/j.actao.2019.01.004>
- Oloye, O., & O'Mullane, A. P. (2021). Electrochemical Capture and Storage of CO₂ as Calcium Carbonate. *ChemSusChem*, 14(7), 1767-1775. doi:<https://doi.org/10.1002/cssc.202100134>
- Olshevski, S., et al. . (2015). Particulate Emissions from Biochar-Amended Soils: A Potential Health Hazard? In.
- Olson, K. R. (2013). Soil organic carbon sequestration, storage, retention and loss in U.S. croplands: Issues paper for protocol development. *Geoderma*, 195-196, 201-206. doi:<https://doi.org/10.1016/j.geoderma.2012.12.004>
- Olson, K. R., Al-Kaisi, M. M., Lal, R., & Lowery, B. (2014). Experimental Consideration, Treatments, and Methods in Determining Soil Organic Carbon Sequestration Rates. *Soil Science Society of America Journal*, 78(2), 348-360. doi:10.2136/sssaj2013.09.0412
- Olsson, J., et al. (2012). Olivine reactivity with CO₂ and H₂O on a microscale: Implications for carbon sequestration. *Geochimica Et Cosmochimica Acta*, 77, 86-97. Retrieved from

- [http://orbit.dtu.dk/en/publications/olivine-reactivity-with-co2-and-h2o-on-a-microscale-implications-for-carbon-sequestration\(81cf28d8-0de1-40ae-966b-b1698a27c5d1\).html](http://orbit.dtu.dk/en/publications/olivine-reactivity-with-co2-and-h2o-on-a-microscale-implications-for-carbon-sequestration(81cf28d8-0de1-40ae-966b-b1698a27c5d1).html)
- Olsson, J., Stipp, S. L. S., Makovicky, E., & Gislason, S. R. (2014). Metal scavenging by calcium carbonate at the Eyjafjallajökull volcano: A carbon capture and storage analogue. *Chemical Geology*, 384, 135-148. doi:<https://doi.org/10.1016/j.chemgeo.2014.06.025>
- Olsson, L., & Jerneck, A. (2010). Farmers fighting climate change—from victims to agents in subsistence livelihoods. *Wiley Interdisciplinary Reviews: Climate Change*, 1(3), 363-373. doi:[doi:10.1002/wcc.44](https://doi.org/10.1002/wcc.44)
- Olsson, O., et al. (2020). *Deployment of BECCS/U value chains*. Retrieved from <https://www.ieabioenergy.com/publications/new-publication-deployment-of-beccs-u-value-chains-technological-pathways-policy-options-and-business-models/>
- Oltra, C., et al. (2012). Public Responses to Co2 Storage Sites: Lessons from Five European Cases. *Energy & Environment*, 23(2-3), 227-248. doi:[doi:10.1260/0958-305X.23.2-3.227](https://doi.org/10.1260/0958-305X.23.2-3.227)
- Oltra, C., Sala, R., Solà, R., Di Masso, M., & Rowe, G. (2010). Lay perceptions of carbon capture and storage technology. *International Journal of Greenhouse Gas Control*, 4(4), 698-706. doi:<https://doi.org/10.1016/j.ijggc.2010.02.001>
- Omar, H. M., & Rohani, S. (2017). Removal of CO2 from landfill gas with landfill leachate using absorption process. *International Journal of Greenhouse Gas Control*, 58, 159-168. doi:<https://doi.org/10.1016/j.ijggc.2017.01.011>
- Omarjee, L. (2021). Pilot site for carbon capture project due to be up and running in 2024 Retrieved from <https://www.news24.com/fin24/economy/pilot-site-for-carbon-capture-project-due-to-be-up-and-running-in-2024-20210824>
- Önal, E., et al. . (2014). Performance Evaluation of the Bio-char Heavy Metal Removal Produced from Tomato Factory Waste. In I. Dincer (Ed.), *Progress in Energy, Energy, and the Environment* (pp. 733 - 740).
- Onana, L. G., et al. (2015). *Production and characterization of slow pyrolysis biochar of tropical wood logs in Cameroon: case of okan, Cylicodiscus gabonensis*. Paper presented at the Symposium des ANS e.V. 2015. <https://biblio.ugent.be/publication/6951704>
- Onarheim, K., Mathisen, A., & Arasto, A. (2015). Barriers and opportunities for application of CCS in Nordic industry—A sectorial approach. *International Journal of Greenhouse Gas Control*, 36, 93-105. doi:<https://doi.org/10.1016/j.ijggc.2015.02.009>
- Onarheim, K., Santos, S., Kangas, P., & Hankalin, V. (2017). Performance and costs of CCS in the pulp and paper industry part 1: Performance of amine-based post-combustion CO2 capture. *International Journal of Greenhouse Gas Control*, 59, 58-73. doi:<https://doi.org/10.1016/j.ijggc.2017.02.008>
- Ondrey, G. (2020). Construction Started on Climeworks' New Large-Scale Direct Air Capture and Storage Plant. *Chemical Engineering*. Retrieved from <https://www.chemengonline.com/construction-started-on-climeworks-new-large-scale-direct-air-capture-storage-plant/?printmode=1>
- Ono, E., & Cuello, J. L. (2003). *Selection of optimal microalgae species for CO2 sequestration*. Paper presented at the Department of Energy.
- Ono, E., & Cuello, J. L. (2007). Carbon Dioxide Mitigation using Thermophilic Cyanobacteria. *Biosystems Engineering*, 96(1), 129-134. doi:<https://doi.org/10.1016/j.biosystemseng.2006.09.010>
- Oo, A. Z., et al. (2018). Effect of dolomite and biochar addition on N2O and CO2 emissions from acidic tea field soil. *Plos One*, 1-23. Retrieved from <https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0192235&type=printable>
- Oohara, K., et al. (2014). Pyrolysis of glycerol : Steamgasification using char as a catalyst. *The Japan Institute of Energy*, 22, 54-55. Retrieved from <http://ci.nii.ac.jp/naid/110009799275/>

- Opatokun, S. A., Kan, T., Al Shoaibi, A., Srinivasakannan, C., & Strezov, V. (2015). Characterization of Food Waste and Its Digestate as Feedstock for Thermochemical Processing. *Energy & Fuels*, 30(3), 1589-1597. doi:10.1021/acs.energyfuels.5b02183
- Oral, I. (2015). Determination of elastic constants of epoxy resin/biochar composites by ultrasonic pulse echo overlap method. *Polymer Composites*, 37(9), 2708-2715. doi:10.1002/pc.23488
- Oram, N. J., van de Voorde, T. F. J., Ouwehand, G.-J., Bezemer, T. M., Mommer, L., Jeffery, S., & Groenigen, J. W. V. (2014). Soil amendment with biochar increases the competitive ability of legumes via increased potassium availability. *Agriculture, Ecosystems & Environment*, 191, 92-98. doi:<http://dx.doi.org/10.1016/j.agee.2014.03.031>
- Orbach, M. K. (2008). Cultural context of ocean fertilization. *Marine Ecology Progress Series*, 364, 235-242. Retrieved from <http://www.int-res.com/abstracts/meps/v364/p235-242/>
- Orcutt, M. (2011). Don't Count on Geoengineering the Oceans. *MIT Technology Review*. Retrieved from <https://www.technologyreview.com/s/540071/dont-count-on-geoengineering-the-oceans/>
- Orcutt, M. (2015). Researcher Demonstrates How to Suck Carbon from Air, Make Stuff from It. *MIT Technology Review*. Retrieved from <https://www.technologyreview.com/s/540706/researcher-demonstrates-how-to-suck-carbon-from-the-air-make-stuff-from-it/>
- Oreska, M. P. J., et al. (2018). Comment on Geoengineering with seagrasses: is credit due where credit is given? *Environmental Research Letters*, 13, 1-6. Retrieved from <http://iopscience.iop.org/article/10.1088/1748-9326/aaae72/pdf>
- Oreska, M. P. J., McGlathery, K. J., Aoki, L. R., Berger, A. C., Berg, P., & Mullins, L. (2020). The greenhouse gas offset potential from seagrass restoration. *Scientific Reports*, 10(1), 7325. doi:10.1038/s41598-020-64094-1
- Orge, R. F., & Abon, J. E. O. (2014). Cogeneration of Biochar and Heat from Rice Hull: Its Application in the Poultry Industry. *OIDA International Journal of Sustainable Development*, 7(8), 105-114. Retrieved from http://papers.ssrn.com/sol3/Papers.cfm?abstract_id=2543229
- Oriaku, T. O. (2014). *The impact of nutrient and biodiesel amendments on the biodegradation of hydrocarbons in contaminated soil*. Newcastle University, Retrieved from <https://theses.ncl.ac.uk/dspace/handle/10443/2345>
- Orland, K. (2020). Bid to Cut Carbon-Capture Cost 80% Gets Nudge in Joint Venture. *Bloomberg Green*. Retrieved from <https://www.bloomberg.com/news/articles/2020-01-27/bid-to-cut-carbon-capture-cost-80-gets-nudge-in-joint-venture>
- Ormerod, W. G., Webster, I. C., Audus, H., & Riemer, P. W. F. (1993). An overview of large scale CO₂ disposal options. *Energy Conversion and Management*, 34(9), 833-840. doi:[https://doi.org/10.1016/0196-8904\(93\)90026-7](https://doi.org/10.1016/0196-8904(93)90026-7)
- Ormsby, R., Kastner, J. R., & Miller, J. (2012). Hemicellulose hydrolysis using solid acid catalysts generated from biochar. *Catalysis Today*, 190(1), 89-97. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0920586112001411>
- Ornella, A. D. (2019). "Why nature won't save us from climate change but technology will": Creating a New Heaven and a New Earth Through Carbon Capture Technologies (DRAFT Feedback). 1-35. Retrieved from <https://ornella.info/why-nature-wont-save-us-from-climate-change-but-technology-will-creating-a-new-heaven-and-a-new-earth-through-carbon-capture-technologies/>
- Ornstein, L., Aleinov, I., & Rind, D. (2009). Irrigated afforestation of the Sahara and Australian Outback to end global warming. *Climatic Change*, 97, 409-437. Retrieved from <http://link.springer.com/article/10.1007%2Fs10584-009-9626-y>
- Oroschakoff, K. (2018). Europe mulls stripping carbon from the skies. *Politico*. Retrieved from <https://www.politico.eu/article/geoengineering-co2-paris-agreement-carbon-europe->

- mulls-stripping-from-the-skies/amp/?__twitter_impression=true
- Orr, F. M., Jr. (2018). Carbon Capture, Utilization, and Storage: An Update. *SPE Journal*, 23(06), 2444-2455. doi:10.2118/194190-pa
- Orr, J. C., & Sarmiento, J. L. (1992). Potential of marine macroalgae as a sink for CO₂: Constraints from a 3-D general circulation model of the global ocean. *Water, Air, and Soil Pollution*, 64(1), 405-421. doi:10.1007/bf00477113
- Ortiz, C., Valverde, J. M., & Chacartegui, R. (2016). Energy Consumption for CO₂ Capture by means of the Calcium Looping Process: A Comparative Analysis using Limestone, Dolomite, and Steel Slag. *Energy Technology*, 4(10), 1317-1327. doi:10.1002/ente.201600390
- Orton, A. E. (2015). *Removal of CO₂ from the terrestrial atmosphere to curtail global warming: From methodology to laboratory prototype*. (M.S.). Purdue University, Retrieved from <https://search.proquest.com/docview/1729570311?accountid=14496> (1603085)
- Osaka, S., Bellamy, R., & Castree, N. Framing “nature-based” solutions to climate change. *WIREs Climate Change*, n/a(n/a), e729. doi:<https://doi.org/10.1002/wcc.729>
- Oschlies, A., Koeve, W., Rickels, W., & Rehdanz, K. (2010). Side effects and accounting aspects of hypothetical large-scale Southern Ocean iron fertilization. *Biogeosciences*, 7(12), 4017-4035. doi:10.5194/bg-7-4017-2010
- Oschlies, A., Pahlow, M., Yool, A., & Matear, R. J. (2010). Climate engineering by artificial ocean upwelling: Channelling the sorcerer's apprentice. *Geophysical Research Letters*, 37(4), 1-5. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1029/2009GL041961/epdf>
- Osman, K. (2014). *Carbon dioxide removal from coal power plants : a review of current capture techniques and an investigation of carbon dioxide absorption using hybrid solvents*. (Doctorate). University of Kwazulu-Natal, Retrieved from <https://researchspace.ukzn.ac.za/handle/10413/11010>
- Osseweijer, P., et al. (2015). Bioenergy and Food Security. In G. Mendes Soutz, R. L. Vicotria, C. A. Joly, & L. M. Verdade (Eds.), *Bioenergy & Sustainability: Bridging the Gaps* (Vol. 90-136).
- Ostfeld, R., & Reiner, D. M. (2020). Public views of Scotland's path to decarbonization: Evidence from citizens' juries and focus groups. *Energy Policy*, 140, 111332. doi:<https://doi.org/10.1016/j.enpol.2020.111332>
- Ostle, N. J., Levy, P. E., Evans, C. D., & Smith, P. (2009). UK land use and soil carbon sequestration. *Land Use Policy*, 26, S274-S283. doi:<https://doi.org/10.1016/j.landusepol.2009.08.006>
- Ostovari, H., Sternberg, A., & Bardow, A. (2020). Rock 'n' use of CO₂: carbon footprint of carbon capture and utilization by mineralization. *Sustainable Energy & Fuels*, 4(9), 4482-4496. doi:10.1039/D0SE00190B
- O'Sullivan, F. O., & Poon, L. (2021). The Darker Side of Tree-Planting Pledges. *Bloomberg CityLab*. Retrieved from <https://www.bloomberg.com/news/features/2021-07-30/what-happens-after-pledges-to-plant-millions-of-trees>
- Osuri, A. M., Gopal, A., Raman, T. R. S., DeFries, R., Cook-Patton, S. C., & Naeem, S. (2020). Greater stability of carbon capture in species-rich natural forests compared to species-poor plantations. *Environmental Research Letters*, 15(3), 034011. doi:10.1088/1748-9326/ab5f75
- Otani, S., & Endo, T. (2018). CO₂ Flux in Tidal Flats and Salt Marshes. In T. Kuwae & M. Hori (Eds.), *Blue Carbon in Shallow Coastal Ecosystems: Carbon Dynamics, Policy, and Implementation* (pp. 223-250). Singapore: Springer Singapore.
- Otoo, E., et al. (2016). In Vivo Yam (*Dioscorea* spp.) Vine Multiplication Technique: The Plausible Solution to Seed Yam Generation Menace. *Journal of Agricultural Science*, 8(2), 88. doi:10.5539/jas.v8n2p88

- O'Toole, A., et al. . (2016). Current and future applications for biochar. In *Biochar in European Soils and Agriculture: Science and Practice*.
- Otorbaev, D. (2021). Carbon capture technology: What governments should do. Retrieved from <https://news.cgtn.com/news/2021-06-11/Carbon-capture-technology-What-governments-should-do--10Z1uNs6RMs/index.html>
- Otto, A., Grube, T., Schiebahn, S., & Stolten, D. (2015). Closing the loop: captured CO₂ as a feedstock in the chemical industry. *Energy & Environmental Science*, 8(11), 3283-3297. doi:10.1039/C5EE02591E
- Ouchi, K., Otsuka, K., & Omura, H. (2005). *Recent Advances of Ocean Nutrient Enhancer "TAKUMI" Project*. Paper presented at the Sixth ISOPE Ocean Mining Symposium.
- Ou-Yang, C., Chen, H.-W., Ho, C.-H., Chou, J.-C., Yuan, Y.-T., Ho, C.-L., . . . Chao, L. K. (2018). Value chain analysis of algal bioenergy and carbon capture integrated with a biotechnology innovation. *Journal of Cleaner Production*, 180, 349-359. doi:<https://doi.org/10.1016/j.jclepro.2018.01.148>
- Ouyang, L., et al. . (2013). Effects of biochar amendment on soil aggregates and hydraulic properties. *Journal of Soil Science and Plant Nutrition*, 13(4), 991-1002. Retrieved from http://www.scielo.cl/scielo.php?pid=S0718-95162013005000078&script=sci_arttext
- Ouyang, W., Geng, X., Huang, W., Hao, F., & Zhao, J. (2015). Soil respiration characteristics in different land uses and response of soil organic carbon to biochar addition in high-latitude agricultural area. *Environmental Science and Pollution Research*, 23(3), 2279-2287. doi:10.1007/s11356-015-5306-9
- Ouyang, W., Zhao, X., Tysklind, M., & Hao, F. (2016). Typical agricultural diffuse herbicide sorption with agricultural waste-derived biochars amended soil of high organic matter content. *Water Research*, 92, 156 - 163. doi:10.1016/j.watres.2016.01.055
- Ouyang, W., Zhao, X., Tysklind, M., Hao, F., & Wang, F. (2015). Optimisation of corn straw biochar treatment with catalytic pyrolysis in intensive agricultural area. *Ecological Engineering*, 84, 278 - 286. doi:10.1016/j.ecoleng.2015.09.003
- Overmars, K., Edwards, R., Padella, M., Prins, A. G., & Marelli, L. (2015). *Estimates of indirect land use change from biofuels based on historical data*. Retrieved from http://publications.jrc.ec.europa.eu/repository/bitstream/JRC91339/eur26819_online.pdf
- Overmars, K. P., Stehfest, E., Ros, J. P. M., & Gerdie Prins, A. (2011). Indirect land use changes emissions related to EU biofuel consumption: an analysis based on historical data. *Environmental Science & Policy*, 14, 248-257. Retrieved from [http://www.pbl.nl/sites/default/files/cms/publicaties/Overmars_et_al_envsci14%20\(2\).pdf](http://www.pbl.nl/sites/default/files/cms/publicaties/Overmars_et_al_envsci14%20(2).pdf)
- Oviedo, A. M., Langer, G., & Ziveri, P. (2014). Effect of phosphorus limitation on coccolith morphology and element ratios in Mediterranean strains of the coccolithophore *Emiliania huxleyi*. *Journal of Experimental Marine Biology and Ecology*, 459, 105-113. doi:<https://doi.org/10.1016/j.jembe.2014.04.021>
- Owen-Jones, J. (2018). NETL solvent technology for CO₂ capture. *mtech*.
- Ozansoy, C. (2016). Development of revised R1 thermal energy efficiency guidelines for energy from waste plants. *International Journal of Energy Research*, 40(9), 1178 - 1192. doi:10.1002/er.3494
- Özbay, G. (2015). Pyrolysis of Firwood (*Abies bornmülleriana* Mattf.) Sawdust: Characterization of Bio-Oil and Bio-Char. *Drvna industrija*, 66(2), 105 - 114. doi:10.5552/drind.2015.1359
- Özbay, G., Özçifçi, A., Kökten, E. S., Toker, H., & Baysal, E. (2015). *Bio-Char Production from Pyrolysis of Furniture Products Waste*. Paper presented at the Proceedings of the 27th International Conference, Research for Furniture Industry. http://www.researchgate.net/profile/Guenay_Oezbay/publication/281863740_BIO-CHAR_PRODUCTION_FROM_PYROLYSIS_OF_FURNITURE_PRODUCTS_WASTE/links/55fc328208aeba1d9f3bd40d.pdf

- Ozcan, D. C., Macchi, A., Lu, D. Y., Kierzkowska, A. M., Ahn, H., Müller, C. R., & Brandani, S. (2015). Ca–Cu looping process for CO₂ capture from a power plant and its comparison with Ca-looping, oxy-combustion and amine-based CO₂ capture processes. *International Journal of Greenhouse Gas Control*, 43(Supplement C), 198–212. doi:<https://doi.org/10.1016/j.ijggc.2015.10.021>
- Özçimen, D. (2013). *An Approach to the Characterization of Biochar and Bio-Oil*. Yildiz Technical University, Turkey.
- Özçimen, D. (2015). *Algal BiorefineriesUtilization Alternatives of Algal Wastes for Solid Algal Products*. Cham: Springer International Publishing.
- Ozcimen, D., & Ersoy-Mericboyu, A. (2008). A study on the carbonization of grapeseed and chestnut shell. *Fuel Processing Technology*, 89(11), 1041–1046.
- Ozcimen, D., & Ersoy-Mericboyu, A. (2010). Characterization of biochar and bio-oil samples obtained from carbonization of various biomass materials. *Renewable Energy*, 35, 1319–1324.
- Ozcimen, D., & Karaosmanoglu, F. (2004). Production and characterization of bio-oil and biochar from rapeseed cake. *Renewable Energy*, 29(5), 779–787.
- Ozin, G. (2020). Flying high on carbon dioxide: Decarbonizing aviation. *Advanced Science News*. Retrieved from <https://www.advancedsciencenews.com/flying-high-on-carbon-dioxide-decarbonizing-aviation/>
- HootPostID=09599269-4eca-47fc-961b-6eb6399aefb9&Socialprofile=advscinews&SocialInetwork=twitter
- Ozin, G. (2021). Direct air capture trains. *Advanced Science News*. Retrieved from <https://www.advancedsciencenews.com/direct-air-capture-trains/>
- Ozin, G. (2021). Electro swing direct air capture. *Advanced Science News*. Retrieved from <https://www.advancedsciencenews.com/electro-swing-direct-air-capture/>
- Ozkan, M. (2021). Direct air capture of CO₂: A response to meet the global climate targets. *MRS Energy & Sustainability*. doi:10.1557/s43581-021-00005-9
- Ozyurtkan, M. H., Ozcimen, D., & Mericboyu, A. E. (2008). Investigation of the carbonization behavior of hybrid poplar. *Fuel Processing Technology*, 89(9), 858–863.
- Paarlberg, R. (2021). President Biden, Please Don't Get Into Carbon Farming. *Wired*. Retrieved from <https://www.wired.com/story/president-biden-please-dont-get-into-carbon-farming/>
- Pace, G., & Sheehan, S. W. (2021). Scaling CO₂ Capture With Downstream Flow CO₂ Conversion to Ethanol. *Frontiers in Climate*, 3(35). doi:10.3389/fclim.2021.656108
- Pacioni, T. R., Moreira, R. F. P. M., & Jose, H. J. (2015). *GASEIFICAÇÃO DE BIOCHAR OBTIDO DA PIRÓLISE DE BAGAÇO DE MAÇÃ VISANDO SUA UTILIZAÇÃO PARA GERAÇÃO DE ENERGIA (GASIFICATION biochar GOT AIMING APPLE POMACE PYROLYSIS YOUR USE FOR POWER GENERATION)*. Paper presented at the Blucher Chemical Engineering Proceedings: XX Congresso Brasileiro de Engenharia Química. <http://www.proceedings.blucher.com.br/article-details/gaseificacao-de-biochar-obtido-da-pirlose-de-bagao-de-ma-visando-sua-utilizao-para-gerao-de-energia-18013>
- Packer, M. (2009). Algal capture of carbon dioxide; biomass generation as a tool for greenhouse gas mitigation with reference to New Zealand energy strategy and policy. *Energy Policy*, 37(9), 3428–3437. doi:<https://doi.org/10.1016/j.enpol.2008.12.025>
- Page Bailey, M. (2021). Celanese announces expansion of methanol production using recycled CO₂ feedstock. *Chemical Engineering*. Retrieved from <https://www.chemengonline.com/celanese-announces-expansion-of-methanol-production-using-recycled-co2-feedstock/>
- Page, S. C., Williamson, A. G., & Mason, I. G. (2009). Carbon capture and storage: Fundamental thermodynamics and current technology. *Energy Policy*, 37(9), 3314–3324. doi:<https://doi.org/10.1016/j.enpol.2008.10.028>
- Page-Dumroese, D. S., et al. . (2015). Water Repellency of Two Forest Soils after Biochar

- Addition. *Transactions of the ASABE*, 58(2), 335 - 342. doi:10.13031/trans.58.10586
- Pagliari, P., et al. . (2014). *Biochar Effects on Phosphorus Pools in Three Soils from Minnesota*. University of Minnesota, Retrieved from https://scisoc.confex.com/scisoc/2014am/webprogram/Handout/Paper86757/2014_Pagliari%20et%20al%20Biochar_SSSA%20meetings_final.pdf
- Pagliaro, M., Konstandopoulos, A. G., Ciriminna, R., & Palmisano, G. (2010). Solar hydrogen: Fuel or the near future. *Energy Environ. Sci.*, 3, 279.
- Palanivelu, K. (2017). Climate Change Mitigation via Utilization of Carbon Dioxide. In M. Goel & M. Sudhakar (Eds.), *Carbon Utilization: Applications for the Energy Industry* (pp. 131-141). Singapore: Springer Singapore.
- Palansooriya, K. N., Ok, Y. S., Awad, Y. M., Lee, S. S., Sung, J.-K., Koutsospyros, A., & Moon, D. H. (2019). Impacts of biochar application on upland agriculture: A review. *Journal of Environmental Management*, 234, 52-64. doi:<https://doi.org/10.1016/j.jenvman.2018.12.085>
- Palmer, J. (2020). Putting Forests to Work? Enrolling Vegetal Labor in the Socioecological Fix of Bioenergy Resource Making. *Annals of the American Association of Geographers*, 1-16. doi:10.1080/24694452.2020.1749022
- Palmer, J., & Carton, W. (2021). Carbon Removal as Carbon Revival? Bioenergy, Negative Emissions, and the Politics of Alternative Energy Futures. *Frontiers in Climate*, 3(60). doi:10.3389/fclim.2021.678031
- Palmeros Parada, M., Osseweijer, P., & Posada Duque, J. A. (2017). Sustainable biorefineries, an analysis of practices for incorporating sustainability in biorefinery design. *Industrial Crops and Products*, 106, 105-123. doi:<https://doi.org/10.1016/j.indcrop.2016.08.052>
- Palmgren, C. R., Morgan, M. G., Bruine de Bruin, W., & Keith, D. W. (2004). Initial Public Perceptions of Deep Geological and Oceanic Disposal of Carbon Dioxide. *Environmental Science & Technology*, 38(24), 6441-6450. doi:10.1021/es040400c
- Pamplaniyil, A. T. (2017). *Justice in Climate Engineering: Towards a Rawlsian Appropriation*. (Ph.D.). Dublin City University, Retrieved from http://doras.dcu.ie/21975/1/Augustine_Pamplany_Ph.D_Thesis_Justice_in_Climate_Engineering_%2821%29.pdf
- Pan, A., Pourziaei, B., & Huang, H. X. (2011). Effect of Ocean Iron Fertilization on the Phytoplankton Biological Carbon Pump. *Advances in Applied Mathematics and Mechanics*, 3(1), 52-64. doi:10.4208/aamm.10-m1023
- Pan, G., Crowley, D., & Lehmann, J. (2011). *Burn to air or burial in soil: The fate of China's straw residues*. Retrieved from http://www.biochar-international.org/sites/default/files/Straw_burning_revised0708.pdf
- Pan, J., et al. (2015). Orthogonal experiment on biogas production characteristics of chicken manure with biochar. *Nongye Jixie Xuebao = Transactions of the Chinese Society for Agricultural Machinery*, 45(12), 229-233. Retrieved from <http://www.cabdirect.org/abstracts/20153052378.html;jsessionid=5B3750E0999EE6F6C9303FD0383612D5>
- Pan, J.-j., et al. (2013). Removal of Cr(VI) from aqueous solutions by Na₂SO₃/FeSO₄ combined with peanut straw biochar. *Chemosphere*, 101, 71-76. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/24380440>
- Pan, J.-j., et al. . (2015). Arsenate Adsorption from Aqueous Solution onto Fe(III)-Modified Crop Straw Biochars. *Environmental Engineering Science*, 32(11), 922 - 929. doi:10.1089/ees.2014.0540
- Pan, S.-Y., Lorente Lafuente, A. M., & Chiang, P.-C. (2016). Engineering, environmental and economic performance evaluation of high-gravity carbonation process for carbon capture and utilization. *Applied Energy*, 170, 269-277. doi:<https://doi.org/10.1016/j.apenergy.2016.02.103>
- Pan, S.-Y., Shah, K. J., Chen, Y.-H., Wang, M.-H., & Chiang, P.-C. (2017). Deployment of

- Accelerated Carbonation Using Alkaline Solid Wastes for Carbon Mineralization and Utilization Toward a Circular Economy. *ACS Sustainable Chemistry & Engineering*, 5(8), 6429-6437. doi:10.1021/acssuschemeng.7b00291
- Pan, Y., et al. (2018). Achieving Highly Efficient Atmospheric CO₂ Uptake by Artificial Upwelling. *Sustainability*, 10(664), 1-19. Retrieved from <http://www.mdpi.com/2071-1050/10/3/664/pdf>
- Pan, Y., et al. (2019). A sea trial of air-lift concept artificial upwelling in the East China Sea. *Journal of Atmospheric and Oceanic Technology*. doi:<https://doi.org/10.1175/JTECH-D-18-0238.1>
- Pan, Y., Fan, W., Huang, T.-H., Wang, S.-L., & Chen, C.-T. A. (2015). Evaluation of the sinks and sources of atmospheric CO₂ by artificial upwelling. *Science of The Total Environment*, 511, 692-702. doi:<https://doi.org/10.1016/j.scitotenv.2014.11.060>
- Pan, Y., Fan, W., Zhang, D., Chen, J., Huang, H., Liu, S., . . . Chen, Y. (2016). Research progress in artificial upwelling and its potential environmental effects. *Science China Earth Sciences*, 59(2), 236-248. doi:10.1007/s11430-015-5195-2
- Pan, Z., et al. (2015). Effects of biochar and lime on soil physicochemical properties and tobacco seedling growth in red soil. *Journal of Agricultural Resources and Environment*, 32(6), 590-595. Retrieved from <http://www.cabdirect.org/abstracts/20163044527.html;jsessionid=E8F18C4E5E5817F118BED179DE910A32>
- Panda, A. K., et al. (2015). Fast pyrolysis of Kaner (*Thevetia peruviana*) Seed to Fuel and Chemicals. *International Journal of Analytical and Applied Chemistry*, 1(1), 53-61. Retrieved from <http://chemical.journalspub.info/index.php/JAAC/article/view/32>
- Panda, S. S. (2013). Geospatial Modeling Applications for Biofuel Sustainability Assessment. In B. P. Singh (Ed.), *Biofuel Food Sustainability* (pp. 431-448).
- Pandey, A., Mai, V. T., Vu, D. Q., Bui, T. P. L., Mai, T. L. A., Jensen, L. S., & de Neergaard, A. (2014). Organic matter and water management strategies to reduce methane and nitrous oxide emissions from rice paddies in Vietnam. *Agriculture, Ecosystems & Environment*, 196, 137 - 146. doi:10.1016/j.agee.2014.06.010
- Pandey, D. N. (2002). Carbon sequestration in agroforestry systems. *Climate Policy*, 2(4), 367-377. doi:10.3763/cpol.2002.0240
- Pandey, N. D. (2002). Global climate change and carbon management in multifunctional forests. *Current Science*, 83(5), 593-602. Retrieved from <https://www.mendeley.com/research/global-climate-change-carbon-management-multifunctional-forests-8/>
- Pandey, S., et al. (2019). Enhancing carbon stocks accumulation through forest protection and regeneration. A review. *International Journal of Environment*, 8(1), 16-21. Retrieved from https://www.academia.edu/38383919/Enhancing_carbon_stocks_accumulation_through_forest_protection_and_regeneration._A_review
- Pandey, V., Patel, A., & Patra, D. D. (2016). Biochar ameliorates crop productivity, soil fertility, essential oil yield and aroma profiling in basil (*Ocimum basilicum* L.). *Ecological Engineering*, 90, 361 - 366. doi:10.1016/j.ecoleng.2016.01.020
- Pandian, K., Subramaniyan, P., Gnasekaran, P., & Chitraputhirapillai, S. (2016). Effect of Biochar Amendment on Soil Physical, Chemical and Biological Properties and Groundnut Yield in Rainfed Alfisol of Semi-Arid Tropics. *Archives of Agronomy and Soil Science*, 62(9), 1293-1320. doi:10.1080/03650340.2016.1139086
- Panek, R., Wdowin, M., Franus, W., Czarna, D., Stevens, L. A., Deng, H., . . . Snape, C. E. (2017). Fly ash-derived MCM-41 as a low-cost silica support for polyethyleneimine in post-combustion CO₂ capture. *Journal of CO₂ Utilization*, 22, 81-90. doi:<https://doi.org/10.1016/j.jcou.2017.09.015>
- Pang, M., Zhang, L., Liang, S., Liu, G., Wang, C., Hao, Y., . . . Xu, M. (2017). Trade-off between

- carbon reduction benefits and ecological costs of biomass-based power plants with carbon capture and storage (CCS) in China. *Journal of Cleaner Production*, 144, 279-286. doi:<https://doi.org/10.1016/j.jclepro.2017.01.034>
- Pangala, S. R., Enrich-Prast, A., Basso, L. S., Peixoto, R. B., Bastviken, D., Hornibrook, E. R. C., . . . Gauci, V. (2017). Large emissions from floodplain trees close the Amazon methane budget. *Nature*, 552, 230. doi:10.1038/nature24639
<https://www.nature.com/articles/nature24639#supplementary-information>
- Pannirselvam, P. V., et al. (2016). FOOD PRODUCTION, ANIMAL FEED AND ENERGY BIOMASS FROM PRODUCED IN toy system EMBRAPA; EXPERIENCES OF NORTHEAST BRAZIL (translated from Brazilian language). *Agrener*, 1-10. Retrieved from <http://www.iee.usp.br/agrener2015/sites/default/files/tematica1/909.pdf>
- Paquay, F. S., & Zeebe, R. E. (2013). Assessing possible consequences of ocean liming on ocean pH, atmospheric CO₂ concentration and associated costs. *International Journal of Greenhouse Gas Control*, 17, 183-188. doi:<http://dx.doi.org/10.1016/j.ijggc.2013.05.005>
- Parada, M. P., Asveld, L., Osseweijer, P., & Posada, J. A. (2018). Setting the design space of biorefineries through sustainability values, a practical approach. *Biofuels, Bioproducts and Biorefining*, 12(1), 29-44. doi:10.1002/bbb.1819
- Paramashivam, D., Clough, T. J., Dickinson, N. M., Horswell, J., Lense, O., Clucas, L., & Robinson, B. H. (2016). Effect of Pine Waste and Pine Biochar on Nitrogen Mobility in Biosolids. *Journal of Environment Quality*, 45(1), 360. doi:10.2134/jeq2015.06.0298
- Paraskova, T. (2020). Can Bioengineered Plants Solve Our Carbon Problem? Retrieved from <https://oilprice.com/Energy/Energy-General/Can-Bioengineered-Plants-Solve-Our-Carbon-Problem.html>
- Pardon, P., Reubens, B., Reheul, D., Mertens, J., De Frenne, P., Coussetment, T., . . . Verheyen, K. (2017). Trees increase soil organic carbon and nutrient availability in temperate agroforestry systems. *Agriculture, Ecosystems & Environment*, 247, 98-111. doi:<https://doi.org/10.1016/j.agee.2017.06.018>
- Parekh, P., Follows, M. J., & Boyle, E. (2004). Modeling the global ocean iron cycle. *Global Biogeochemical Cycles*, 18(1), 1-15. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1029/2003GB002061/epdf>
- Parenti, C. (2021). A Left Defense of Carbon Dioxide Removal. In J. P. Sapinski, et al. (Ed.), *Has It Come to This?* (pp. 130-142).
- Pari, G. (2015). Biochar Technology as a Go Green Movement in Indonesia. *Indonesian Journal of Wetlands Environmental Management*, 2(1), 84-90. Retrieved from <http://ijwem.unlam.ac.id/index.php/ijwem/article/view/35/21>
- Parikh, S. J. (2017). *Biochar Basics and Current Research*. Retrieved from <http://calclimateag.org/wp-content/uploads/2017/03/Biochar.pdf>
- Paris, A. R., et al. (2019). Electrochemical and Photoelectrochemical Transformations of Aqueous CO₂. In M. Aresta, I. Karimi, & S. Kawi (Eds.), *An Economy Based on Carbon Dioxide and Water: Potential of Large Scale Carbon Dioxide Utilization* (pp. 239-286). Retrieved from https://link.springer.com/chapter/10.1007/978-3-030-15868-2_7
- Parisien, M., A., Zeeb, B., A, & Rutter, A. (2014). *EFFECT OF CADMIUM BIOAVAILABILITY ON PHYTOEXTRACTION FEASIBILITY AND ECOLOGICAL RISK IN A COMPOST-BASED SOIL*. Retrieved from <http://espace.rmc.ca/handle/11264/341>
- Park, A.-h. A., & Ferguson, T. E. (2015).
- Park, J., et al. . (2013). Activated carbon from biochar: Influence of its physicochemical properties on the sorption characteristics of phenanthrene. *Bioresource Technology*, 149, 383-389. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0960852413015174>
- Park, J. B. K., Craggs, R. J., & Shilton, A. N. (2011). Wastewater treatment high rate algal ponds

- for biofuel production. *Bioresource Technology*, 102(1), 35-42. doi:<https://doi.org/10.1016/j.biortech.2010.06.158>
- Park, J. H., et al. . (2011). Biochar reduces the bioavailability and phytotoxicity of heavy metals. *Plant and Soil*, 348, 439-451. doi:10.1007/s11104-011-0948-y
- Park, J. H., Ok, Y. S., Kim, S. H., Cho, J. S., Heo, J. S., Delaune, R. D., & Seo, D. C. (2015). Evaluation of phosphorus adsorption capacity of sesame straw biochar on aqueous solution: influence of activation methods and pyrolysis temperatures. *Environmental Geochemistry and Health*, 37(6), 969-983. doi:10.1007/s10653-015-9709-9
- Park, J. H., Ok, Y. S., Kim, S. H., Kang, S. W., Cho, J. S., Heo, J. S., . . . Seo, D. C. (2015). Characteristics of biochars derived from fruit tree pruning wastes and their effects on lead adsorption. *Journal of the Korean Society for Applied Biological Chemistry*, 58(5), 751 - 760. doi:10.1007/s13765-015-0103-1
- Park, J.-H., Cho, J.-S., Ok, Y. S., Kim, S.-H., Heo, J.-S., Delaune, R. D., & Seo, D.-C. (2015). Comparison of single and competitive metal adsorption by pepper stem biochar. *Archives of Agronomy and Soil Science*, 1 - 16. doi:10.1080/03650340.2015.1074186
- Park, J.-H., Cho, J.-S., Ok, Y. S., Kim, S.-H., Kang, S.-W., Choi, I.-W., . . . Seo, D.-C. (2015). Competitive adsorption and selectivity sequence of heavy metals by chicken bone-derived biochar: Batch and column experiment. *Journal of Environmental Science and Health, Part A*, 50(11), 1194 - 1204. doi:10.1080/10934529.2015.1047680
- Park, J.-H., Kim, S.-H., Shin, J.-H., Kim, H. C., & Seo, D. C. (2015). Competitive Adsorption Characteristics of Copper and Cadmium Using Biochar Derived from Phragmites communis. *Korean Journal of Environmental Agriculture*, 34(1), 21 - 29. doi:10.5338/kjea.2015.34.1.10
- Park, J.-H., Ok, Y. S., Kim, S.-H., Cho, J.-S., Heo, J.-S., Delaune, R. D., & Seo, D.-C. (2015). Competitive adsorption of heavy metals onto sesame straw biochar in aqueous solutions. *Chemosphere*. doi:10.1016/j.chemosphere.2015.05.093
- Park, S. H., Cho, H. J., Ryu, C., & Park, Y.-K. (2016). Removal of copper(II) in aqueous solution using pyrolytic biochars derived from red macroalgae *Porphyra tenera*. *Journal of Industrial and Engineering Chemistry*, 36, 314 - 319. doi:10.1016/j.jiec.2016.02.021
- Park, W.-K., Kim, G.-Y., Lee, S.-I., Shin, J.-D., Jang, H.-Y., & So, K.-H. (2014). Characteristics of Greenhouse Gas Emission in the Upland Soil Applied with Agricultural Biomass. *한국토양비료학회지 제 (Korea Journal of fertilizers)*. Retrieved from <http://www.dbpia.co.kr/Journal/ArticleDetail/3524204>
- Parkin, B. (2017). The Climate Engineers Sucking CO₂ From the Atmosphere—and Making Money Doing It. *Bloomberg Businessweek*. Retrieved from <https://www.bloomberg.com/news/articles/2017-09-05/the-climate-engineers-sucking-co2-from-the-atmosphere-and-making-money-doing-it>
- Parliament, U. H. o. (2010). *Biochar PostNote*. Retrieved from <http://www.parliament.uk/documents/post/postpn358-biochar.pdf>
- Parlindungan Situmeang, Y., et al. . (2015). Effect of Dose Biochar Bamboo, Compost, and Phonska on Growth of Maize (*Zea mays L.*) in Dryland. In.
- Parr, K., & Lehmann, C. (2019). When tree planting actually damages ecosystems. *The Conversation*. Retrieved from <https://theconversation.com/when-tree-planting-actually-damages-ecosystems-120786>
- Parra, C., et al. (2016). Plant development effects of biochars from different raw materials. *Geophysical Research Abstracts*, 17. Retrieved from <http://oa.upm.es/37653/>
- Parra, C., et al. (2016). Viability of the biochar production from different manure wastes in the Ambles Valley (Ávila, Spain). *Geophysical Research Abstracts*, 17, 1. Retrieved from <http://oa.upm.es/37654/>
- Parry, W. (2012). Could Fertilizing the Oceans Reduce Global Warming? *LiveScience*.

- Retrieved from <http://www.livescience.com/21684-geoengineering-iron-fertilization-climate.html>
- Parson, E. A. (2006). Reflections on Air Capture: the political economy of active intervention in the global environment. *Climatic Change*, 74(1), 5-15. doi:10.1007/s10584-005-9032-z
- Parson, E. A., & Buck, H. J. (2020). Large-Scale Carbon Dioxide Removal: The Problem of Phasedown. *Global Environmental Politics*, 20(3), 70-92. Retrieved from https://www.mitpressjournals.org/doi/abs/10.1162/glep_a_00575
- Partain, R. A. (2020). Regulatory Frameworks for South Korea's Offshore Carbon Capture and Storage (CCS) Activities. *Kyungpook Natl. Univ. Law Journal*, 69, 63-115. Retrieved from https://www.kci.go.kr/kciportal/landing/article.kci?arti_id=ART002582475
- Partain, R. A., & Faure, M. G. (2017). Development of a regulatory framework for CDM-enabled offshore carbon capture and storage (OCCS) in China. In S. E. Weishaar, N. Philipsen, & W. Xu (Eds.), *Regulatory Reform in China and the EU* (pp. 165-199).
- Partanen, A.-I., Keller, D. P., Korhonen, H., & Matthews, H. D. (2016). Impacts of sea spray geoengineering on ocean biogeochemistry. *Geophysical Research Letters*, 43(14), 7600-7608. doi:10.1002/2016GL070111
- Partanen, R. (2017). Bioenergy increases emissions in Europe. *Energy Post*. Retrieved from <http://energypost.eu/bioenergy-increases-emissions-europe/>
- Partey, S. T., Preziosi, R. F., & Robson, G. D. (2014). Short-Term Interactive Effects of Biochar, Green Manure, and Inorganic Fertilizer on Soil Properties and Agronomic Characteristics of Maize. *Agricultural Research*, 3(2), 128-136. doi:10.1007/s40003-014-0102-1
- Parvage, M. M., et al. (2012). Phosphorus availability in soils amended with wheat residue char. *Biology and Fertility of Soils*, 49(2), 245-250. Retrieved from <https://link.springer.com/article/10.1007/s00374-012-0746-6>
- Pasgaard, M., Sun, Z., Müller, D., & Mertz, O. (2016). Challenges and opportunities for REDD+: A reality check from perspectives of effectiveness, efficiency and equity. *Environmental Science & Policy*, 63, 161-169. doi:<https://doi.org/10.1016/j.envsci.2016.05.021>
- Passos, A. M. A. d., Rezende, P. M. d., Carvalho, E. R., & Aker, A. M. (2014). Residual Effects of the Organic Amendments Poultry Litter, Farmyard Manure and Biochar on Soybean Crop. *Agricultural Sciences*, 05(14), 1376 - 1383. doi:10.4236/as.2014.514148
- Pastor-Villegas, J., Rodriguez, J. M. M., Pastor-Valle, J. F., & Garcia, M. G. (2007). Changes in commercial wood charcoals by thermal treatments. *Journal of Analytical and Applied Pyrolysis*, 80(2), 507-514. Retrieved from https://www.researchgate.net/publication/223915164_Changes_in_commercial_wood_charcoals_by_thermal_treatments
- Pasztor, J. (2017). The Need for Governance of Climate Geoengineering. *Ethics & International Affairs*, 31(4), 419-430. doi:10.1017/S0892679417000405
- Pasztor, J. (2020). Governing Carbon Dioxide Removal. Retrieved from <https://globalchallenges.org/governing-carbon-dioxide-removal/>
- Patania, F., et al. (2015). An Applied Research to Supply Energy Coming from Exploitation of Biomass Scraps to "Little and Middle Enterprise (LME) (Part One). *European Scientific Journal*(November). Retrieved from <http://eujournal.org/index.php/esj/article/view/6525>
- Patel, B., Guo, M., Izadpanah, A., Shah, N., & Hellgardt, K. (2016). A review on hydrothermal pre-treatment technologies and environmental profiles of algal biomass processing. *Bioresource Technology*, 199, 288 - 299. doi:10.1016/j.biortech.2015.09.064
- Patel, M., Zhang, X. L., & Kumar, A. (2016). Techno-economic and life cycle assessment on lignocellulosic biomass thermochemical conversion technologies: A review. *Renewable Sustainable Energy Rev*, 53. doi:10.1016/j.rser.2015.09.070
- Patel, P. (2019). What's the best way to lock up carbon emissions—and make money doing it? *Anthropocene*. Retrieved from <http://www.anthropocenemagazine.org/2019/12/what-are-the-best-ways-to-use-carbon-dioxide-emissions/?>

- utm_source=Anthropocene&utm_campaign=6055ae6a92-Anthropocene+science+to+AM&utm_medium=email&utm_term=0_ececcea89a-6055ae6a92-294293021
- Patel, P. (2021). To stop the climate clock, fund technologies to pull carbon dioxide from air, researchers say. *Anthropocene*. Retrieved from <https://www.anthropocenemagazine.org/2021/01/to-reverse-the-climate-clock-fund-technologies-to-pull-carbon-dioxide-from-air-researchers-say/>
- Patel, V., Sharma, B. K., Zheng, W., Liu, P. P., & Toosi, M. (2015). *Evaluate Feasibility of Sustainable and Economical Utilization of Biomass Gasification Byproducts*. Retrieved from <https://www.ideals.illinois.edu/handle/2142/75953>
- Pati, S., Pal, B., Badole, S., Hazra, G. C., & Mandal, B. (2016). Effect of Silicon Fertilization on Growth, Yield, and Nutrient Uptake of Rice. *Communications in Soil Science and Plant Analysis*, 47(3), 284-290. doi:10.1080/00103624.2015.1122797
- Patrionos, A., et al. (2020). *From the Ground Up: Cutting Edge Approaches for Land-Based Carbon Dioxide Removal*. Retrieved from <https://energyfuturesinitiative.org/efi-reports>
- Patrizio, P., Fajard, M., Bui, M., & Dowell, N. M. (2021). CO₂ mitigation or removal: The optimal uses of biomass in energy system decarbonization. *IScience*, 24(7), 102765. doi:<https://doi.org/10.1016/j.isci.2021.102765>
- Patrizio, P., Leduc, S., Kraxner, F., Fuss, S., Kindermann, G., Spokas, K., . . . Obersteiner, M. (2019). Chapter 11 - Killing two birds with one stone: a negative emissions strategy for a soft landing of the US coal sector. In J. C. Magalhães Pires & A. L. D. Cunha Gonçalves (Eds.), *Bioenergy with Carbon Capture and Storage* (pp. 219-236): Academic Press.
- Patterson, B. D., Mo, F., Borgschulte, A., Hillestad, M., Joos, F., Kristiansen, T., . . . van Bokhoven, J. A. (2019). Renewable CO₂ recycling and synthetic fuel production in a marine environment. *Proceedings of the National Academy of Sciences*, 116(25), 12212-12219. doi:10.1073/pnas.1902335116 %J Proceedings of the National Academy of Sciences
- Paukert, A. N. (2012). Reaction path modeling of enhanced in situ CO₂ mineralization for carbon sequestration in the peridotite of the Samail Ophiolite, Sultanate of Oman. *Chemical Geology*, 330-331, 86-100. Retrieved from https://ac.els-cdn.com/S0009254112003725/1-s2.0-S0009254112003725-main.pdf?_tid=a0afa5b5-ab6d-4346-86a5-5880d8ae339f&acdnat=1525309531_091948b78dbbe845d4d4be221bf90de0
- Paul, K. I., Polglase, P. J., Nyakuengama, J. G., & Khanna, P. K. (2002). Change in soil carbon following afforestation. *Forest Ecology and Management*, 168(1-3), 241-257. doi:[http://dx.doi.org/10.1016/S0378-1127\(01\)00740-X](http://dx.doi.org/10.1016/S0378-1127(01)00740-X)
- Paulo, C., Power, I. M., Stubbs, A. R., Wang, B., Zeyen, N., & Wilson, S. A. (2021). Evaluating feedstocks for carbon dioxide removal by enhanced rock weathering and CO₂ mineralization. *Applied Geochemistry*, 104955. doi:<https://doi.org/10.1016/j.apgeochem.2021.104955>
- Paulos, B. (2017). Biopower (part 2): Climate science for bioenergy is lost in the woods. *EnergyPost*. Retrieved from <http://eujournal.org/index.php/esj/article/view/6525/6250>
- Paulos, B. (2017). Biopower (part 3): what does the future hold? *EnergyPost*. Retrieved from http://energypost.eu/biopower-part-3-what-does-the-future-hold/?utm_campaign=shareaholic&utm_medium=linkedin&utm_source=socialnetwork
- Paulos, B. (2017). Myths and facts about biopower (part 1 of 3). *EnergyPost*. Retrieved from <http://energypost.eu/myths-and-facts-about-biopower-part-1-of-3/>
- Paulson, K. (2014). *Methylmercury Production in Riverbank Sediments of the South River, Virginia (USA) and Assessment of Biochar as a Mercury Treatment Option*. University of Waterloo,

- Paustian, K., et al. (1997). Agricultural soils as a sink to mitigate CO₂ emissions. *Soil Use and Management*, 13, 230-244. Retrieved from <https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1475-2743.1997.tb00594.x>
- Paustian, K. (2014). Soil: Carbon Sequestration in Agricultural Systems. In N. K. Van Alfen (Ed.), *Encyclopedia of Agriculture and Food Systems* (pp. 140-152). Oxford: Academic Press.
- Paustian, K., Collier, S., Baldock, J., Burgess, R., Creque, J., DeLonge, M., . . . Jahn, M. (2019). Quantifying carbon for agricultural soil management: from the current status toward a global soil information system. *Carbon Management*, 10(6), 567-587. doi:10.1080/17583004.2019.1633231
- Paustian, K., Larson, E., Kent, J., Marx, E., & Swan, A. (2019). Soil C Sequestration as a Biological Negative Emission Strategy. *Frontiers in Climate*, 1(8). doi:10.3389/fclim.2019.00008
- Paustian, K., Lehmann, J., Ogle, S., Reay, D., Robertson, G. P., & Smith, P. (2016). Climate-smart soils. *Nature*, 532, 49. doi:10.1038/nature17174
- Pavlik, D., Zhong, Y., Daiek, C., Liao, W., Morgan, R., Clary, W., & Liu, Y. (2017). Microalgae cultivation for carbon dioxide sequestration and protein production using a high-efficiency photobioreactor system. *Algal Research*, 25, 413-420. doi:<https://doi.org/10.1016/j.algal.2017.06.003>
- Pawar, R. J., Bromhal, G. S., Carey, J. W., Foxall, W., Korre, A., Ringrose, P. S., . . . White, J. A. (2015). Recent advances in risk assessment and risk management of geologic CO₂ storage. *International Journal of Greenhouse Gas Control*, 40(Supplement C), 292-311. doi:<https://doi.org/10.1016/j.ijggc.2015.06.014>
- Pawar, R. J., Warpinski, N. R., Benson, R. D., Grigg, R. B., Krumhansl, J. L., & Stubbs, B. A. (2004). *Geologic Sequestration of CO₂ in a Depleted Oil Reservoir: An Overview of a Field Demonstration Project*. Paper presented at the SPE Annual Technical Conference and Exhibition, Houston, Texas. <https://doi.org/10.2118/90936-MS>
- Pawlak, D., et al. (2018). Grasslands may be more reliable carbon sinks than forests in California. *Environmental Research Letters*, 13(7), 074027. Retrieved from <http://stacks.iop.org/1748-9326/13/i=7/a=074027>
- Paz-Ferreiro, J., et al. (2013). Interactive effects of biochar and the earthworm *Pontoscolex corethrurus* on plant productivity and soil enzyme activities. *Journal of Soils and Sediments*, 14(3), 483-494. Retrieved from <https://link.springer.com/article/10.1007/s11368-013-0806-z>
- Paz-Ferreiro, J., et al. . (2013). Use of phytoremediation and biochar to remediate heavy metal polluted soils: a review. *Solid Earth Discuss*, 5, 2155–2179. Retrieved from <http://www.solid-earth-discuss.net/5/2155/2013/sed-5-2155-2013.pdf>
- Paz-Ferreiro, J., et al. (2014). Biochar modifies the thermodynamic parameters of soil enzyme activity in a tropical soil. *Journal of Soils and Sediments*, 15(3), 578-583. doi:10.1007/s11368-014-1029-7
- Paz-Ferreiro, J., et al. . (2014). Preface: Environmental benefits of biochar. *Solid Earth*, 5(2), 1301 - 1303. doi:10.5194/se-5-1301-2014
- Paz-Ferreiro, J., et al. (2014). Use of phytoremediation and biochar to remediate heavy metal polluted soils: a review. *Solid Earth*, 5, 65-75. Retrieved from <http://www.solid-earth.net/5/65/2014/se-5-65-2014.pdf>
- Paz-Ferreiro, J., et al. (2015). The Effect of Biochar and Its Interaction with the Earthworm *Pontoscolex corethrurus* on Soil Microbial Community Structure in Tropical Soils. *Plos One*, 10(4), e0124891. doi:10.1371/journal.pone.0124891.t003
- Paz-Ferreiro, J., Gascó, G., Gutiérrez, B., & Méndez, A. (2011). Soil biochemical activities and the geometric mean of enzyme activities after application of sewage sludge and sewage

- sludge biochar to soil. *Biology and Fertility of Soils*. doi:10.1007/s00374-011-0644-3
- Peacock, K. A. (2021). As Much as Possible, as Soon As Possible: Getting Negative About Emissions. *Ethics, Policy & Environment*, null-null. doi:10.1080/21550085.2021.1904497
- Peake, L. (2015). *Biochar amendment to improve soil productivity with particular emphasis on the influence of soil type*. University of East Anglia, Retrieved from <http://ethos.bl.uk/OrderDetails.do?uin=uk.bl.ethos.656154>
- Peake, L., Freddo, A., & Reid, B. J. (2014). Sustaining Soils and Mitigating Climate Change Using Biochar. In *Sustainability Science and Technology: An Introduction*: CRC Press.
- Peake, L. R., Reid, B. J., & Tang, X. (2014). Quantifying the influence of biochar on the physical and hydrological properties of dissimilar soils. *Geoderma*, 235-236, 182 - 190. doi:10.1016/j.geoderma.2014.07.002
- Pearce, F. (2017). Planting trees could mop up ten years' worth of greenhouse gases. *New Scientist*. Retrieved from <https://www.newscientist.com/article/2152648-planting-trees-could-mop-up-ten-years-worth-of-greenhouse-gases/>
- Pearce, F. (2019). The natural solutions to climate change held in the ocean. *Chinadialogue.com*. Retrieved from <https://chinadialogueocean.net/11915-coastal-ecosystem-natural-solutions-climate-change/>
- Pearce, F. (2020). Planting a trillion trees really can help us fight climate change. *New Scientist*. Retrieved from <https://www.newscientist.com/article/mg24532640-800-planting-a-trillion-trees-really-can-help-us-fight-climate-change/#ixzz6GPSzFBUT>
- Pearce, F. (2021). Net-Zero Emissions: Winning Strategy or Destined for Failure? *Yale Environment 360*. Retrieved from <https://e360.yale.edu/features/net-zero-emissions-winning-strategy-or-destined-for-failure>
- Pearson, H. (2019). Sea creatures store carbon in the ocean – could protecting them help slow climate change? *The Conversation*, (April 17). Retrieved from <https://theconversation.com/sea-creatures-store-carbon-in-the-ocean-could-protecting-them-help-slow-climate-change-108872>
- Pearson, R. J., et al. (2020). Energy Storage via Carbon-Neutral Fuels Made From CO₂, Water, and Renewable Energy. *Proceedings of the IEEE*, 100(2), 439-460. Retrieved from <https://ieeexplore.ieee.org/abstract/document/6070946>
- Peck, W. D., Azzolina, N. A., Ge, J., Gorecki, C. D., Gorz, A. J., & Melzer, L. S. (2017). Best Practices for Quantifying the CO₂ Storage Resource Estimates in CO₂ Enhanced Oil Recovery. *Energy Procedia*, 114, 4741-4749. doi:<https://doi.org/10.1016/j.egypro.2017.03.1613>
- Peckham, S. D., & Gower, S. T. (2011). Simulated long-term effects of harvest and biomass residue removal on soil carbon and nitrogen content and productivity for two Upper Great Lakes forest ecosystems. *GCB Bioenergy*, 3(2), 135-147. doi:10.1111/j.1757-1707.2010.01067.x
- Pečkytė, J., & Baltrėnaitė, E. (2015). Assessment of heavy metals leaching from (bio)char obtained from industrial sewage sludge. *Mokslas - Lietuvos ateitis*, 7(4), 399 - 406. doi:10.3846/mla.2015.811
- Pedersen, T. H., & Rosendahl, L. A. (2015). Production of fuel range oxygenates by supercritical hydrothermal liquefaction of lignocellulosic model systems. *Biomass and Bioenergy*, 83, 206 - 215. doi:10.1016/j.biombioe.2015.09.014
- Pedram Bahrami, M., & Mohammadi, T. (2017). Simulation of Carbon Dioxide Removal by Three Amine Mixture of Diethanolamine, Methyldiethanolamine, and 2-Amino-2-Methyl-1-Propanol in a Hollow Fiber Membrane Contactor Using Computational Fluid Dynamics. *Periodica Polytechnica. Chemical Engineering*, 61(3), 227-235. doi:<http://dx.doi.org/10.3311/PPch.9789>
- Pehlken, A., et al. (2020). More Sustainable Bioenergy by Making Use of Regional Alternative

- Biomass? *Sustainability*, 12(19), 1-22. Retrieved from <https://www.mdpi.com/2071-1050/12/19/7849/htm>
- Pehnt, M., & Henkel, J. (2009). Life cycle assessment of carbon dioxide capture and storage from lignite power plants. *International Journal of Greenhouse Gas Control*, 3(1), 49-66. doi:<https://doi.org/10.1016/j.ijgac.2008.07.001>
- PeiChen, L., Wei, W., FengSong, Z., DaiYi, W., & Jie, H. (2015). Structural characteristics of straw biochars and sorption of 17 β -estradiol on straw biochar. *Research of Environmental Sciences*. Retrieved from <http://www.cabdirect.org/abstracts/20153339861.html>
- Pellegrini, A. F. A., McLauchlan, K. K., Hobbie, S. E., Mack, M. C., Marcotte, A. L., Nelson, D. M., . . . Whittinghill, K. (2020). Frequent burning causes large losses of carbon from deep soil layers in a temperate savanna. *Journal of Ecology*, 108(4), 1426-1441. doi:<https://doi.org/10.1111/1365-2745.13351>
- Pellegrini, A. F. A., Refsland, T., Averill, C., Terrer, C., Staver, A. C., Brockway, D. G., . . . Jackson, R. B. (2021). Decadal changes in fire frequencies shift tree communities and functional traits. *Nature Ecology & Evolution*. doi:[10.1038/s41559-021-01401-7](https://doi.org/10.1038/s41559-021-01401-7)
- Pellera, F.-M., & Gidarakos, E. (2015). Effect of dried olive pomace – derived biochar on the mobility of cadmium and nickel in soil. *Journal of Environmental Chemical Engineering*, 3(2), 1163-1176. doi:[10.1016/j.jece.2015.04.005](https://doi.org/10.1016/j.jece.2015.04.005)
- Pelley, J. (2008). Can wetland restoration cool the planet? *Environmental Science & Technology*, 42(24), 8994-8994. doi:[10.1021/es802790q](https://doi.org/10.1021/es802790q)
- Peloquin, J., Hall, J., Safi, K., Ellwood, M., Law, C. S., Thompson, K., . . . Pickmere, S. (2011). Control of the phytoplankton response during the SAGE experiment: A synthesis. *Deep Sea Research Part II: Topical Studies in Oceanography*, 58(6), 824-838. doi:<https://doi.org/10.1016/j.dsrr.2010.10.019>
- Peloquin, J., Hall, J., Safi, K., Smith, W. O., Wright, S., & van den Enden, R. (2011). The response of phytoplankton to iron enrichment in Sub-Antarctic HNLCLSi waters: Results from the SAGE experiment. *Deep Sea Research Part II: Topical Studies in Oceanography*, 58(6), 808-823. doi:<https://doi.org/10.1016/j.dsrr.2010.10.021>
- Peltz, C. D., & Harley, A. (2015). *SSSA Special Publication Agricultural and Environmental Applications of Biochar: Advances and Barriers Biochar Application for Abandoned Mine Land Reclamation*: Soil Science Society of America, Inc.
- Peltz, C. D., Zillich, C., & Brown, K. L. (2014). A Combination of Acid B Extra TM and Biochar to Reduce Metal Concentrations in Acid Mine Drainage. *Journal American Society of Mining and Reclamation*, 3(1), 100-116. Retrieved from http://scholar.google.com.ph/scholar?hl=en&as_sdt=0,5&q=biochar&scisbd=1
- Peña, M. A. (2003). Modelling the response of the planktonic food web to iron fertilization and warming in the NE subarctic Pacific. *Progress in Oceanography*, 57(3), 453-479. doi:[https://doi.org/10.1016/S0079-6611\(03\)00110-1](https://doi.org/10.1016/S0079-6611(03)00110-1)
- Pendleton, L., et al. (2012). Estimating Global “Blue Carbon” Emissions from Conversion and Degradation of Vegetated Coastal Ecosystems. *Plos One*, 7(9), e43542. Retrieved from <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0043542>
- Peng, T.-H. (1991). Factors limiting the reduction of atmospheric CO₂ by iron fertilization. *Limnology and Oceanography*, 36(8), 1919-1927. Retrieved from http://aslo.net/lo/toc/vol_36/issue_8/1919.pdf
- Peng, T. H., & Broecker, W. S. (1991). Dynamical Limitations on the Antarctic Iron Fertilization Strategy. *Nature*, 349(6306), 227-229.
- Peng, X., et al. (2011). Temperature- and duration-dependent rice straw-derived biochar: Characteristics and its effects on soil properties of an Ultisol in southern China. *Soil and Tillage Research*, 112(2), 159-166. doi:[10.1016/j.still.2011.01.002](https://doi.org/10.1016/j.still.2011.01.002)

- Peng, X., et al. (2016). The impact of manure, straw and biochar amendments on aggregation and erosion in a hillslope Ultisol. *CATENA*, 138, 30 - 37. doi:10.1016/j.catena.2015.11.008
- PengHan, F., Ren, L., & Zhang, X.-C. (2016). Effect of biochar on the soil nutrients about different grasslands in the Loess Plateau. *CATENA*, 137, 554 - 562. doi:10.1016/j.catena.2015.11.002
- Penman, D. E., Caves Rugenstein, J. K., Ibarra, D. E., & Winnick, M. J. (2020). Silicate weathering as a feedback and forcing in Earth's climate and carbon cycle. *Earth-Science Reviews*, 209, 103298. doi:<https://doi.org/10.1016/j.earscirev.2020.103298>
- Penner, D. (2017). A Crucial Climate Mystery Hides Just Beneath Your Feet. *Wired*. Retrieved from <https://www.wired.com/2017/04/crucial-climate-mystery-just-feet/>
- Pepper, E., Skene, J., & Stashwick, S. (2021). Drax Purchase Would Implicate the United Kingdom in Loss of Canadian Forests. Retrieved from <https://www.nrdc.org/experts/elly-pepper/drax-purchase-would-implicate-united-kingdom-loss-canadian-forests>
- Perciasepe, B., & Bonnie, R. (2020). Wood energy as a climate change solution. *The Hill*. Retrieved from <https://thehill.com/opinion/energy-environment/494708-wood-energy-as-a-climate-change-solution?rl=1>
- Pereira, E. I. P., Suddick, E. C., Mansour, I., Mukome, F. N. D., Parikh, S. J., Scow, K., & Six, J. (2015). Biochar alters nitrogen transformations but has minimal effects on nitrous oxide emissions in an organically managed lettuce mesocosm. *Biology and Fertility of Soils*, 51(5), 573-582. doi:10.1007/s00374-015-1004-5
- Pereira, R. C., & Yarish, C. (2008). Mass production of marine macroalgae. In S. R. Jorgensen & B. D. Fath (Eds.), *Ecological Engineering, Encyclopedia of Ecology* (Vol. 3, pp. 2236-2247).
- Pereira, R. G., et al. (2012). Transpiration response of upland rice to water deficit changed by different levels of eucalyptus biochar. *Pesquisa Agropecuária Brasileira*, 47(5), 716-721. Retrieved from http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0100-204X2012000500012
- Pereiraa, C. C., & Pinhob, C. (2014). Influence of particle fragmentation and non-sphericity on the determination of diffusive and kinetic fluidized bed biochar combustion data. *Fuel*, 131, 77-88. doi:10.1016/j.fuel.2014.04.072
- Pérez, A., Libardoni, B. G., & Sanders, C. J. (2018). Factors influencing organic carbon accumulation in mangrove ecosystems. *Biology Letters*, 14(10). doi:10.1098/rsbl.2018.0237
- Pérez-Fortes, M., Bocin-Dumitriu, A., & Tzimas, E. (2014). CO₂ Utilization Pathways: Techno-Economic Assessment and Market Opportunities. *Energy Procedia*, 63, 7968-7975. doi:<https://doi.org/10.1016/j.egypro.2014.11.834>
- Pérez-Gallent, E., Vankani, C., Sánchez-Martínez, C., Anastasopol, A., & Goetheer, E. (2021). Integrating CO₂ Capture with Electrochemical Conversion Using Amine-Based Capture Solvents as Electrolytes. *Industrial & Engineering Chemistry Research*, 60(11), 4269-4278. doi:10.1021/acs.iecr.0c05848
- Peridas, G., & Mordick Schmidt, B. (2021). The role of carbon capture and storage in the race to carbon neutrality. *The Electricity Journal*, 34(7), 106996. doi:<https://doi.org/10.1016/j.tej.2021.106996>
- Perkins, S. (2019). Scubalike technology could suck carbon dioxide from smokestacks. *Science*. Retrieved from <http://www.sciencemag.org/news/2019/01/scubalike-technology-could-suck-carbon-dioxide-smokestacks>
- Perry, D. (2017). NRL Receives US Patent for Carbon Capture Device: A Key Step in Synthetic Fuel Production from Seawater. Retrieved from <https://www.nrl.navy.mil/news/releases/nrl-receives-us-patent-carbon-capture-device-key-step-synthetic-fuel-production->

seawater

- Perry, S. C., Mavrikis, S., Wegener, M., Nazarovs, P., Wang, L., & Ponce de León, C. (2021). Hydrophobic thiol coatings to facilitate a triphasic interface for carbon dioxide reduction to ethylene at gas diffusion electrodes. *Faraday Discussions*, 230(0), 375-387. doi:10.1039/D0FD00133C
- Pershing, A. J., et al. (2010). The Impact of Whaling on the Ocean Carbon Cycle: Why Bigger Was Better. *Plos One*, 5(8), 1-9. Retrieved from <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0012444>
- Persson, U. M. (2015). The impact of biofuel demand on agricultural commodity prices: a systematic review. *Wiley Interdisciplinary Reviews: Energy and Environment*, 4(5), 410-428. doi:doi:10.1002/wene.155
- Pervaiz, M., & Sain, M. M. (2003). Carbon storage potential in natural fiber composites. *Resources, Conservation and Recycling*, 39(4), 325-340. doi:[http://dx.doi.org/10.1016/S0921-3449\(02\)00173-8](http://dx.doi.org/10.1016/S0921-3449(02)00173-8)
- Pessenda, L. C. R., Gouveia, S. E. M., & Aravena, R. (2001). Radiocarbon dating of total soil organic matter and humin fraction and its comparison with C-14 ages of fossil charcoal. *Radiocarbon*, 43(2B), 595-601.
- Petelina, E., Klyashtorin, A., & Yankovich, T. (2014). *Field trials on use of biochar versus peat for land reclamation purposes*. Retrieved from <https://circle.ubc.ca/handle/2429/51149>
- Petelina, E., Klyashtorin, A., & Yankovich, T. (2014). *Greenhouse trials on use of biochar versus peat for land reclamation purposes*. Paper presented at the British Columbia Mine Reclamation Symposium. <https://circle.ubc.ca/handle/2429/51148?show=full>
- Petelina, E., Sanscartier, D., MacWilliam, S., & Ridsdale, R. (2015). *Environmental, social, and economic benefits of biochar application for land reclamation purposes*. Paper presented at the B.C. Mine Reclamation Symposium 2014. <http://cypress.library.ubc.ca/handle/2429/51133>
- Peters, A. (2018). CO₂-sucking factories could anchor a new, clean economy. *FastCompany*. Retrieved from <https://www.fastcompany.com/90255654/co2-sucking-factories-could-anchor-a-new-clean-economy>
- Peters, A. (2019). We have the tech to suck CO₂ from the air—but can it suck enough to make a difference? *Fast Company*. Retrieved from <https://www.fastcompany.com/90356326/we-have-the-tech-to-suck-co2-from-the-air-but-can-it-suck-enough-to-make-a-difference>
- Peters, A. (2020). Ever been to a green sand beach? The newest geohack to fight climate change. Retrieved from <https://www.fastcompany.com/90510254/ever-been-to-a-green-sand-beach-the-newest-geohack-to-fight-climate-change>
- Peters, A. (2020). Forget about planting trees: This company is making carbon offsets by putting seaweed on the ocean floor. *Fast Company*. Retrieved from <https://www.fastcompany.com/90548820/forget-planting-trees-this-company-is-making-carbon-offsets-by-putting-seaweed-on-the-ocean-floor>
- Peters, A. (2020). Horizon will become the first ‘carbon positive’ national dairy in the U.S. *Fast Company*. Retrieved from <https://www.fastcompany.com/90469745/horizon-will-become-the-first-carbon-positive-national-dairy-in-the-u-s>
- Peters, A. (2021). This carbon-capture tech removes CO₂ from the ocean by making seashells. Retrieved from <https://www.fastcompany.com/90642340/this-carbon-capture-tech-removes-co2-from-the-ocean-by-making-seashells>
- Peters, A. (2021). Using artificial photosynthesis, Twelve creates CO₂-based chemicals that can be used to make everything from car parts to laundry detergent. Retrieved from <https://www.fastcompany.com/90652611/petrochemicals-are-in-allsorts-of-products-this-startup-makes-the-same-compounds-out-of-captured-co2>
- Peters, G., & Geden, O. (2017). Guest post: Who will deliver the negative emissions needed to

- avoid 2C warming? *CarbonBrief*. Retrieved from <https://www.carbonbrief.org/guest-post-who-will-deliver-the-negative-emissions-needed-to-avoid-2c-warming>
- Peters, G. P., & Geden, O. (2017). Catalysing a political shift from low to negative carbon. *Nature Climate Change*, 7, 619-621. doi:10.1038/nclimate3369
- Peters, G. P., & Sognnaes, I. (2019). *The role of carbon capture and storage in the mitigation of climate change*. Retrieved from <https://cicero.oslo.no/en/publications/internal/2900>
- Peters, J. F., Iribarren, D., & Dufour, J. (2015). Biomass Pyrolysis for Biochar or Energy Applications? A Life Cycle Assessment. *Environmental Science & Technology*, 49(8), 5195-5202. doi:10.1021/es5060786
- Petersen, H. A., & Luca, O. R. (2021). Application-specific thermodynamic favorability zones for direct air capture of carbon dioxide. *Physical Chemistry Chemical Physics*. doi:10.1039/D1CP01670A
- Peterson, D. (2015). Climate-Informed Scrub Oak Restoration on the Florence County Forest, Wisconsin. In.
- Peterson, K. S. (2021). Climate: Proforestation vs. more old-growth logging. *The Nelson Daily*. Retrieved from <http://thenelsondaily.com/news/climate-proforestation-vs-more-old-growth-logging>
- Peterson, L. (2020). North Dakota's carbon capture project Tundra another 'expensive greenwashing' attempt to bail out coal power. *Nation of Change*. Retrieved from <https://www.nationofchange.org/2020/03/23/north-dakotas-carbon-capture-project-tundra-another-expensive-greenwashing-attempt-to-bail-out-coal-power/>
- Peterson, S. C. (2012). Utilization of low-ash biochar to partially replace carbon black in styrene–butadiene rubber composites. *Journal of Elastomers and Plastics*, 45(5), 487-497. Retrieved from <http://journals.sagepub.com/doi/pdf/10.1177/0095244312459181>
- Peterson, S. C., et al. . (2013). Comparing Corn Stover and Switchgrass Biochar: Characterization and Sorption Properties. *Journal of Agricultural Science*, 5(1), 1-8.
- Peters-Stanley, M., Hamilton, K. E., & Trends, E. M. F. (2012). *Developing Dimension State of the Voluntary Carbon Markets 2012*. Retrieved from http://www.forest-trends.org/publication_details.php?publicationID=3164
- Petropoulou, E., Petousi, V., & Theodorakopoulou, I. (2018). To Cultivate or Not to Cultivate? An Exploratory Analysis of What Influences Greek Farmers' Decisions Towards the Cultivation of Bioenergy Crops. In W. Leal Filho, D. M. Pociovalișteanu, P. R. Borges de Brito, & I. Borges de Lima (Eds.), *Towards a Sustainable Bioeconomy: Principles, Challenges and Perspectives* (pp. 435-455). Cham: Springer International Publishing.
- Petrucelli, R., Bonetti, A., Traversi, M. L., Faraloni, C., Valagussa, M., & Pozzi, A. (2015). The Influence of biochar application on nutritional quality of tomato (*Lycopersicon esculentum* Mill.). *Crop and Pasture Science*. Retrieved from http://www.publish.csiro.au/view/journals/dsp_journals_pip_abstract_Scholar1.cfm?nid=40&pid=CP14247
- Petruzzelli, L., Subedi, R., Bertora, C., Remogna, E., & Grignani, C. (2014). Biochar: factors influencing its quality. *Informatore Agrario Supplemento 2014*. Retrieved from <http://www.cabdirect.org/abstracts/20143255864.html;jsessionid=7AF6954CD84A2F29F0E7D42A874C40AB>
- Petter, F. A., Lima, L. B. d., Júnior, B. H. M., Alves de Morais, L., & Marimon, B. S. (2016). Impact of biochar on nitrous oxide emissions from upland rice. *Journal of Environmental Management*, 169, 27 - 33. doi:10.1016/j.jenvman.2015.12.020
- Petter, F. A., & Madari, B. E. (2012). Biochar: Agronomic and environmental potential in Brazilian savannah soils. *Revista Brasileira de Engenharia Agrícola e Ambiental*, 16, 761–768. Retrieved from <http://www.agriambi.com.br/revista/v16n07/v16n07a09.pdf>
- Petter, F. A., Madari, B. E., Silva, M. A. S. d., Carneiro, M. A. C., Carvalho, M. T. d. M., Júnior, B.

- H. M., & Pacheco, L. P. (2012). Soil fertility and upland rice yield after biochar application in the Cerrado. *Pesquisa Agropecuária Brasileira*, 47, 699-706.
- Petter, F. A., Marimon Junior, B. H., Andrade, F. R., Schossler, T. R., Gonçalves, L. G., & Marimon, B. S. (2012). Biochar conditioner as substrate for the production of lettuce. Biochar como condicionador de substrato para a produção de mudas de alface. *Revista Agrarian*, 5, 243-250.
- Pettinari, C., & Tombesi, A. (2020). Metal–organic frameworks for carbon dioxide capture. *MRS Energy & Sustainability*, 7, E35. doi:10.1557/mre.2020.30
- Pfaff, I., Oexmann, J., & Kather, A. (2010). Optimised integration of post-combustion CO₂ capture process in greenfield power plants. *Energy*, 35(10), 4030-4041. doi:<https://doi.org/10.1016/j.energy.2010.06.004>
- Phalan, B. (2009). The social and environmental impacts of biofuels in Asia: An overview. *Applied Energy*, 86, Supplement 1, S21-S29. doi:<https://doi.org/10.1016/j.apenergy.2009.04.046>
- Pham, V. T. H., Lu, P., Aagaard, P., Zhu, C., & Hellevang, H. (2011). On the potential of CO₂–water–rock interactions for CO₂ storage using a modified kinetic model. *International Journal of Greenhouse Gas Control*, 5(4), 1002-1015. doi:<https://doi.org/10.1016/j.ijggc.2010.12.002>
- Phiddian, E. (2021). Less carbon = greater food cost? *Cosmos*. Retrieved from <https://cosmosmagazine.com/earth/sustainability/less-carbon-greater-food-cost/>
- Phinney, L., Richard Leitch, W., Lohmann, U., Boudries, H., Worsnop, D. R., Jayne, J. T., . . . Shantz, N. (2006). Characterization of the aerosol over the sub-arctic north east Pacific Ocean. *Deep Sea Research Part II: Topical Studies in Oceanography*, 53(20–22), 2410-2433. doi:<http://dx.doi.org/10.1016/j.dsrr.2006.05.044>
- Phondani, P. C., Maikhuri, R. K., Rawat, L. S., & Negi, V. S. (2020). Assessing farmers' perception on criteria and indicators for sustainable management of indigenous agroforestry systems in Uttarakhand, India. *Environmental and Sustainability Indicators*, 5, 100018. doi:<https://doi.org/10.1016/j.indic.2019.100018>
- Phongpanith, S., Inthapanya, S., & Preston, T. R. (2013). Effect on feed intake, digestibility and N balance in goats of supplementing a basal diet of *Muntingia* foliage with biochar and water spinach (*Ipomoea aquatica*). *Livestock Research for Rural Development*, 25(2). Retrieved from <http://www.lrrd.org/lrrd25/2/seng25035.htm>
- Phuong, H. T., Uddin, M. A., & Kato, Y. (2015). Characterization of Biochar from Pyrolysis of Rice Husk and Rice Straw. *Journal of Biobased Materials and Bioenergy*, 9(4), 439 - 446. doi:10.1166/jbmb.2015.1539
- Phy, C., et al. (2014). Biochar Amendment to Different Paddy Soils on CH₄ Production, Labile Organic Carbon, pH and Electrical Conductivity Dynamics: Incubation Experiment. *IJERD – International Journal of Environmental and Rural Development*, 5(1), 58-64. Retrieved from <http://iserd.net/ijerd51/51010.pdf>
- Phyconomy. (2021). A database of seaweed organisations. In.
- Phys.org. (2018). 'Electrogeochemistry' captures carbon, produces fuel, offsets ocean acidification. *Phys.org*. Retrieved from <https://phys.org/news/2018-06-electrogeochemistry-captures-carbon-fuel-offsets.html>
- Pi, L., Jiang, R., Zhou, W., Zhu, H., Xiao, W., Wang, D., & Mao, X. (2015). g-C₃N₄ Modified biochar as an adsorptive and photocatalytic material for decontamination of aqueous organic pollutants. *Applied Surface Science*, 358(Part A), 231-239. doi:10.1016/j.apsusc.2015.08.176
- Pianta, S., Rinscheid, A., & Weber, E. U. (2021). Carbon Capture and Storage in the United States: Perceptions, preferences, and lessons for policy. *Energy Policy*, 151, 112149. doi:<https://doi.org/10.1016/j.enpol.2021.112149>

- Picchi, A. (2019). Climate-smart farming: Save the Earth -- and make money? *CBS News*, (May 17). Retrieved from https://www.cbsnews.com/amp/news/climate-smart-farming-save-the-earth-and-make-money/?__twitter_impression=true
- Piccoli, I., Chiarini, F., Carletti, P., Furlan, L., Lazzaro, B., Nardi, S., . . . Morari, F. (2016). Disentangling the effects of conservation agriculture practices on the vertical distribution of soil organic carbon. Evidence of poor carbon sequestration in North- Eastern Italy. *Agriculture, Ecosystems & Environment*, 230, 68-78. doi:<https://doi.org/10.1016/j.agee.2016.05.035>
- Piccolo, A., Pietramellara, G., & Mbagwu, J. S. C. (1996). Effects of coal derived humic substances on water retention and structural stability of Mediterranean soils. *Soil Use and Management*, 12(4), 209-213.
- Pickard, S., Daood, S. S., Nimmo, W., Lord, R., & Pourkashanian, M. (2013). Bio-CCS: Co-firing of established greenfield and novel, brownfield biomass resources under air, oxygen-enriched air and oxy-fuel conditions. In T. Dixon & K. Yamaji (Eds.), *Ghgt-11* (Vol. 37, pp. 6062-6069). Amsterdam: Elsevier Science Bv.
- Pidgeon, N. F., & Spence, E. (2017). Perceptions of enhanced weathering as a biological negative emissions option. *Biology Letters*, 13(4), 1-5. Retrieved from <http://rsbl.royalsocietypublishing.org/content/13/4/20170024>
- Pielke Jr, R. A. (2009). An idealized assessment of the economics of air capture of carbon dioxide in mitigation policy. *Environmental Science & Policy*, 12(3), 216-225. doi:<http://dx.doi.org/10.1016/j.envsci.2009.01.002>
- Pierrehumbert, R. (2019). There is no Plan B for dealing with the climate crisis. *Bulletin of the Atomic Scientists*, 75(5), 215-221. doi:[10.1080/00963402.2019.1654255](https://doi.org/10.1080/00963402.2019.1654255)
- Pietikainen, J., Kiikkila, O., & Fritze, H. (2000). Charcoal as a habitat for microbes and its effect on the microbial community of the underlying humus. *Oikos*, 89(2), 231-242. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1034/j.1600-0706.2000.890203.x/abstract>
- Pietrowski, M., et al. . (2019). *Technological Carbon Removal: Recent Economic and Political Trends in the United States*. Retrieved from <https://www.climateadvisers.com/wp-content/uploads/2019/04/Carbon-Removal-Final-2.pdf>
- Pietzner, K., Schumann, D., Tvedt, S. D., Torvatn, H. Y., Næss, R., Reiner, D. M., . . . Ziogou, F. (2011). Public awareness and perceptions of carbon dioxide capture and storage (CCS): Insights from surveys administered to representative samples in six European countries. *Energy Procedia*, 4, 6300-6306. doi:<http://dx.doi.org/10.1016/j.egypro.2011.02.645>
- Pighinelli, A. L. M. T., et al. (2014). Evaluation of Brazilian biomasses as feedstocks for fuel production via fast pyrolysis. *Energy for Sustainable Development*, 21, 42-50. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0973082614000441>
- Pignatello, J. J., Kwon, S., & Lu, Y. (2006). Effect of natural organic substances on the surface and adsorptive properties of environmental black carbon (char): Attenuation of surface activity by humic and fulvic acids. *Environmental Science & Technology*, 40(24), 7757-7763. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/es061307m>
- Pilkington, B. (2021). Eliminating Fossil-Based Plastics with Carbon-Negative Biochar Alternatives. *AZO Cleantech*. Retrieved from <https://www.azocleantech.com/article.aspx?ArticleID=1230>
- Piloto-Rodríguez, R., Sánchez-Borrotto, Y., Melo-Espinosa, E. A., & Verhelst, S. (2017). Assessment of diesel engine performance when fueled with biodiesel from algae and microalgae: An overview. *Renewable and Sustainable Energy Reviews*, 69, 833-842. doi:<https://doi.org/10.1016/j.rser.2016.11.015>
- Pimental, D., & Patzek, T. W. (2005). Ethanol production using corn, switchgrass, and wood: biodiesel prodution using soybean and sunflower. *Natural Resources Forum*, 14(1), 65-76. Retrieved from <http://s3.amazonaws.com/academia.edu.documents/31141200/>

- LOL-EXH-48.pdf?
AWSAccessKeyId=AKIAIWOWYYGZ2Y53UL3A&Expires=1495400598&Signature=PBgcIDdBiAYccqTZV0cZtcTrIAE%3D&response-content-disposition=inline%3B%20filename%3DEthanol_production_using_corn_switchgras.pdf
- Pind Aradóttir, E. S., & Hjálmarsson, E. (2018). CarbFix – public engagement and transparency. *Energy Procedia*, 146, 115-120. doi:<https://doi.org/10.1016/j.egypro.2018.07.015>
- Pinder, C. (2014). Moving Below Zero: Understanding Bioenergy with Carbon Capture and Storage [Press release]. Retrieved from http://www.climateinstitute.org.au/verve/_resources/MovingBelowZero_SpotlightReport_April2014.pdf
- Pindilli, E., Sleeter, R., & Hogan, D. (2018). Estimating the Societal Benefits of Carbon Dioxide Sequestration Through Peatland Restoration. *Ecological Economics*, 154, 145-155. doi:<https://doi.org/10.1016/j.ecolecon.2018.08.002>
- Pinheiro, É. F. M., de Campos, D. V. B., de Carvalho Balieiro, F., dos Anjos, L. H. C., & Pereira, M. G. (2015). Tillage systems effects on soil carbon stock and physical fractions of soil organic matter. *Agricultural Systems*, 132, 35-39. doi:<https://doi.org/10.1016/j.aggsy.2014.08.008>
- Pinho, C., et al. . (2015). *Obtaining Difusive and Kinetic Data from Batch Combustion of Invasive Species Char Pellets*. Paper presented at the 15th Brazilian Congress of Thermal Sciences and Engineering.
- Piper, K. (2019). The climate renegade. Vox, (May 31). Retrieved from <https://www.vox.com/the-highlight/2019/5/24/18273198/climate-change-russ-george-unilateral-geoengineering>
- Pires, J. C. M. (2017). COP21: The algae opportunity? *Renewable and Sustainable Energy Reviews*, 79, 867-877. doi:<https://doi.org/10.1016/j.rser.2017.05.197>
- Pires, J. C. M. (2019). Negative emissions technologies: A complementary solution for climate change mitigation. *Science of The Total Environment*, 672, 502-514. doi:<https://doi.org/10.1016/j.scitotenv.2019.04.004>
- Pires, J. C. M., Alvim-Ferraz, M. C. M., Martins, F. G., & Simões, M. (2012). Carbon dioxide capture from flue gases using microalgae: Engineering aspects and biorefinery concept. *Renewable and Sustainable Energy Reviews*, 16(5), 3043-3053. doi:<https://doi.org/10.1016/j.rser.2012.02.055>
- Pires, J. C. M., Goncalves, A. L., Martins, F. G., Alvim-Ferraz, M. C. M., & Simoes, M. (2014). Effect of light supply on CO₂ capture from atmosphere by Chlorella vulgaris and Pseudokirchneriella subcapitata. *Mitigation and Adaptation Strategies for Global Change*, 19(7), 1109-1117. doi:[10.1007/s11027-013-9463-1](https://doi.org/10.1007/s11027-013-9463-1)
- Pirker, J., Mosnier, A., Kraxner, F., Havlík, P., & Obersteiner, M. (2016). What are the limits to oil palm expansion? *Global Environmental Change*, 40, 73-81. doi:<http://dx.doi.org/10.1016/j.gloenvcha.2016.06.007>
- Piscitelli, L., Shaaban, A., Mondelli, D., Mezzapesa, G. N., Miano, T. M., & Dumontet, S. (2015). Use of Olive Mill Pomace Biochar as a Support for Soil Microbial Communities in an Italian Sandy Soil. *Soil Horizons*, 56(6), 1-7. doi:[10.2136/sh15-02-0006](https://doi.org/10.2136/sh15-02-0006)
- Pistorius, T., et al. (2014). Target to Implementation: Perspectives for the International Governance of Forest Landscape Restoration. *Forests*, 5, 482-497. Retrieved from <https://www.mdpi.com/1999-4907/5/3/482>
- Pitchford, J. W., & Brindley, J. (1999). Iron limitation, grazing pressure and oceanic high nutrient-low chlorophyll (HNLC) regions. *Journal of Plankton Research*, 21(3), 525-547. Retrieved from <https://academic.oup.com/plankt/article/21/3/525/1395829>
- Pittman, J. K., Dean, A. P., & Osundeko, O. (2011). The potential of sustainable algal biofuel production using wastewater resources. *Bioresource Technology*, 102(1), 17-25. doi:<https://doi.org/10.1016/j.biortech.2010.06.035>
- Pituello, C., Francioso, O., Simonetti, G., Pisi, A., Torreggiani, A., Berti, A., & Morari, F. (2014).

- Characterization of chemical–physical, structural and morphological properties of biochars from biowastes produced at different temperatures. *Journal of Soils and Sediments*. doi:10.1007/s11368-014-0964-7
- Piyo, N. (2014). *Liquefaction of sunflower husks for biochar production*. North-West University, Retrieved from <http://dspace.nwu.ac.za/handle/10394/11942>
- Plácido, J., & Capareda, S. (2015). Production of silicon compounds and fulvic acids from cotton wastes biochar using chemical depolymerization. *Industrial Crops and Products*, 67, 270 - 280. doi:10.1016/j.indcrop.2015.01.027
- Placido, J., Capareda, S., & Karthikeyan, R. (2016). Production of humic substances from cotton stalks biochar by fungal treatment with Ceriporiopsis subvermispora. *Sustainable Energy Technologies and Assessments*, 13, 31 - 37. doi:10.1016/j.seta.2015.11.004
- Platform, E. B. T. (2014). *Biomass with CO₂ Capture and Storage (Bio-CCS): The Way Forward for Europe*. Retrieved from https://network.bellona.org/content/uploads/sites/3/EBTP_ZEP_Report_Bio-CCS_The_Way_Foward.pdf
- Platform, E. B. T. P. Z. E. (2012). *Biomass with CO₂ Capture and Storage (Bio-CCS): The Way Forward for Europe*. Retrieved from <http://www.biofuelstp.eu/downloads/bioccsjtf/EBTP-ZEP-Report-Bio-CCS-The-Way-Forward.pdf>
- Platform, N. E. (2020). Additional input to the consultation on ReFuelEU Aviation strategy. Retrieved from https://www.negative-emissions.org/s/Additional-input_SAF-consultation.pdf
- Platform, N. E. (2020). Public Consultation Response to a Proposal for Scaling Voluntary Carbon Markets and Avoiding Double Counting Post-2020. Retrieved from https://www.negative-emissions.org/s/Scaling-Voluntary-Carbon-Markets-and-Avoiding-Double-Counting-Post-2020-_NEP-3.pdf
- Platform, N. E. (2020). Statement on the Environment Committee draft report on Climate Law prop. 1-4. Retrieved from https://www.negative-emissions.org/s/Climate-Law-report-ENVI-Cmttee_-NEP-statement.pdf
- Platt, D., Workman, M., & Hall, S. (2018). A novel approach to assessing the commercial opportunities for greenhouse gas removal technology value chains: Developing the case for a negative emissions credit in the UK. *Journal of Cleaner Production*, 203, 1003-1018. doi:<https://doi.org/10.1016/j.jclepro.2018.08.291>
- Plaven, G. (2019). Machine converts forest debris into biochar. *Capital Press*(February 4). Retrieved from https://www.capitalpress.com/nation_world/science_and_tech/machine-converts-forest-debris-into-biochar/article_cd95da56-24e8-11e9-ad88-a361ce6d5a57.html
- Plaza, C., et al. . (2015). Effects of biochar on organic matter dynamics in unamended soils and soils amended with municipal solid waste compost and sewage sludge. *Geophysical Research Abstracts*, 17. Retrieved from http://www.researchgate.net/profile/Claudio_Zaccone/publication/275037092_Effects_of_biochar_on_organic_matter_dynamics_in_unamended_soils_and_soils_amended_with_municipal_solid_waste_compost_and_sewage_sludge/links/5530a22d0cf2f2a588ab25ad.pdf
- Plaza, C., Pawlett, M., Fernández, J. M., Méndez, A., Gascó, G., & Ritz, K. (2015). Does biochar interfere with standard methods for determining soil microbial biomass and phenotypic community structure? *Soil Biology and Biochemistry*, 81, 143 - 146. doi:10.1016/j.soilbio.2014.11.010
- Plaza, J. M., & Rochelle, G. T. (2011). Modeling pilot plant results for CO₂ capture by aqueous piperazine. *Energy Procedia*, 4, 1593-1600. doi:<http://dx.doi.org/10.1016/j.egypro.2011.02.029>
- Plaza, J. M., Van Wagener, D., & Rochelle, G. T. (2010). Modeling CO₂ capture with aqueous

- monoethanolamine. *International Journal of Greenhouse Gas Control*, 4(2), 161-166. doi:<http://dx.doi.org/10.1016/j.ijggc.2009.09.017>
- Plaza, M. G., et al. (2007). CO₂ capture by adsorption with nitrogen enriched carbons. *Fuel*, 86, 2204-2212. Retrieved from https://www.researchgate.net/profile/Cova_Pevida/publication/222186261_CO2_capture_by_adsorption_with_nitrogen_enriched_carbons/links/5554686308aeaaff3bf1bdd5.pdf
- Plaza, M. G., Durán, I., Querejeta, N., Rubiera, F., & Pevida, C. (2016). Experimental and Simulation Study of Adsorption in Postcombustion Conditions Using a Microporous Biochar. 1. CO ₂ and N ₂ Adsorption. *Industrial & Engineering Chemistry Research*, 55(11), 3097 - 3112. doi:10.1021/acs.iecr.5b04856
- Plaza, M. G., González, A. S., Rubiera, F., & Pevida, C. (2014). Evaluation of Microporous Biochars Produced by Single-step Oxidation for Postcombustion CO₂ Capture under Humid Conditions. *Energy Procedia*, 63, 693 - 702. doi:10.1016/j.egypro.2014.11.077
- Pleasant, B. (2009). Make Biochar--This Ancient Technique will Improve your Soil. In.
- Plechaty, D., Amador, G., & Mazurek, J. (2019). 2050 Priorities for Climate Action: How Philanthropy Can Help to Scale Carbon Removal. Retrieved from <https://www.climateworks.org/blog/how-philanthropy-can-help-to-scale-carbon-removal/>
- Plevin, R. J. (2017). Assessing the Climate Effects of Biofuels Using Integrated Assessment Models, Part I: Methodological Considerations. *Journal of Industrial Ecology*, 21(6), 1478-1487. doi:10.1111/jiec.12507
- Plevin, R. J., Beckman, J., Golub, A. A., Witcover, J., & O'Hare, M. (2015). Carbon Accounting and Economic Model Uncertainty of Emissions from Biofuels-Induced Land Use Change. *Environmental Science & Technology*, 49(5), 2656-2664. doi:10.1021/es505481d
- Plevin, R. J., Delucchi, M. A., & Creutzig, F. (2014). Using Attributional Life Cycle Assessment to Estimate Climate-Change Mitigation Benefits Misleads Policy Makers. *Journal of Industrial Ecology*, 18(1), 73-83. doi:10.1111/jiec.12074
- Plevin, R. J., O'Hare, M., Jones, A. D., Torn, M. S., & Gibbs, H. K. (2010). Greenhouse gas emissions from biofuels' indirect land use change are uncertain but may be much greater than previously estimated. *Environmental Science & Technology*, 44(21), 8015-8021. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2942480/>
- Pluer, W. (2015). *Controls Influencing The Treatment Of Excess Agricultural Nitrate With Denitrifying Bioreactors*. Cornell University, Retrieved from <https://ecommons.cornell.edu/handle/1813/41042>
- Plumer, B. (2015). Can we build power plants that actually take carbon dioxide out of the air? Vox. Retrieved from <https://www.vox.com/2015/3/11/8190243/carbon-negative-power-plants>
- Plumer, B. (2017). How carbon capture could become a rare bright spot on climate policy in the Trump era. Vox. Retrieved from <http://www.vox.com/energy-and-environment/2017/4/12/15269628/carbon-capture-trump>
- Plumer, B. (2020). Businesses Aim to Pull Greenhouse Gases From the Air. It's a Gamble. *New York Times*, (January 18). Retrieved from <https://www.nytimes.com/2021/01/18/climate/carbon-removal-technology.html>
- Poeplau, C., & Don, A. (2015). Carbon sequestration in agricultural soils via cultivation of cover crops – A meta-analysis. *Agriculture, Ecosystems & Environment*, 200, 33-41. doi:<https://doi.org/10.1016/j.agee.2014.10.024>
- Poerschmann, J., Weiner, B., Wedwitschka, H., Zehnsdorf, A., Koehler, R., & Kopinke, F.-D. (2015). Characterization of biochars and dissolved organic matter phases obtained upon hydrothermal carbonization of *Elodea nuttallii*. *Bioresource Technology*, 189, 145 - 153. doi:10.1016/j.biortech.2015.03.146
- Pogge von Strandmann, P. A. E., Burton, K. W., Snæbjörnsdóttir, S. O., Sigfusson, B., Aradóttir,

- E. S., Gunnarsson, I., . . . Gislason, S. R. (2019). Rapid CO₂ mineralisation into calcite at the CarbFix storage site quantified using calcium isotopes. *Nature Communications*, 10(1), 1983. doi:10.1038/s41467-019-10003-8
- Pogge von Strandmann, P. A. E., Renforth, P., West, A. J., Murphy, M. J., Luu, T.-H., & Henderson, G. M. (2020). The lithium and magnesium isotope signature of olivine dissolution in soil experiments. *Chemical Geology*, 120008. doi:<https://doi.org/10.1016/j.chemgeo.2020.120008>
- Poggio, M. (2019). Carbon Capture: Will It Save the Climate, or the Fossil Fuel Industry? *Climate Liability News*. Retrieved from <https://www.climateliabilitynews.org/2019/03/13/carbon-capture-fossil-fuels-ciel-report/>
- Pogson, E. M., Horvat, J., Lewis, R. A., & Joseph, S. D. (2010). *Detection of biochar components for soil fertility using THz-TDs*. Paper presented at the 35th International Conference on Infrared Millimeter and Terahertz Waves (IRMMW-THz), Rome, Italy.
- Pogson, M., Hastings, A., & Smith, P. (2013). How does bioenergy compare with other land-based renewable energy sources globally? *GCB Bioenergy*, 5(5), 513-524. doi:10.1111/gcbb.12013
- Pokharel, P., & Chang, S. X. (2019). Manure pellet, woodchip and their biochars differently affect wheat yield and carbon dioxide emission from bulk and rhizosphere soils. *Science of The Total Environment*, 659, 463-472. doi:<https://doi.org/10.1016/j.scitotenv.2018.12.380>
- Pokharel, P., Kwak, J.-H., Ok, Y. S., & Chang, S. X. (2018). Pine sawdust biochar reduces GHG emission by decreasing microbial and enzyme activities in forest and grassland soils in a laboratory experiment. *Science of The Total Environment*, 625, 1247-1256. doi:<https://doi.org/10.1016/j.scitotenv.2017.12.343>
- Pokrovsky, O. S., & Schott, J. (2000). Forsterite surface composition in aqueous solutions: A combined potentiometric, electrokinetic, and spectroscopic approach. *Geochimica Et Cosmochimica Acta*, 64(9), 3299-3312. Retrieved from https://www.researchgate.net/profile/Jacques_Schott/publication/221720722_Forsterite_surface_composition_in_aqueous_solutions_A_combined_potentiometric_electrokinetic_and_spectroscopic_approach/links/0046352b856fe27bd9000000.pdf
- Polglase, P. J., Reeson, A., Hawkins, C. S., Paul, K. I., Siggins, A. W., Turner, J., . . . Almeida, A. (2013). Potential for forest carbon plantings to offset greenhouse emissions in Australia: economics and constraints to implementation. *Climatic Change*, 121(2), 161-175. doi:10.1007/s10584-013-0882-5
- Policy, I. f. C. R. L. (2020). What is Direct Air Capture? *Fact Sheets*. Retrieved from https://www.american.edu/sis/centers/carbon-removal/upload/ICRLP_fact_sheet_DACS_2020_UPDATE.pdf
- (2021). *Net Zero Targets: The Good, the Bad and the Ugly* [Retrieved from <https://www.youtube.com/watch?v=JN7rUazmvaw>]
- Pollak, M. F., & Wilson, E. J. (2009). Regulating Geologic Sequestration in the United States: Early Rules Take Divergent Approaches. *Environmental Science & Technology*, 43(9), 3035-3041. doi:10.1021/es803094f
- Pollard, R., Sanders, R., Lucas, M., & Statham, P. (2007). The Crozet Natural Iron Bloom and Export Experiment (CROZEX). *Deep Sea Research Part II: Topical Studies in Oceanography*, 54(18), 1905-1914. doi:<https://doi.org/10.1016/j.dsr2.2007.07.023>
- Pollard, R. T., Salter, I., Sanders, R. J., Lucas, M. I., Moore, C. M., Mills, R. A., . . . Zubkov, M. V. (2009). Southern Ocean deep-water carbon export enhanced by natural iron fertilization. *Nature*, 457(7229), 577-580. doi:http://www.nature.com/nature/journal/v457/n7229/suppinfo/nature07716_S1.html

- Pollyea, R. M., & Rimstidt, J. D. (2017). Rate equations for modeling carbon dioxide sequestration in basalt. *Applied Geochemistry*, 81(Supplement C), 53-62. doi:<https://doi.org/10.1016/j.apgeochem.2017.03.020>
- Pommier, T., Merroune, A., Bettarel, Y., Got, P., Janeau, J.-L., Jouquet, P., . . . Rochelle-Newall, E. (2014). Off-site impacts of agricultural composting: role of terrestrially derived organic matter in structuring aquatic microbial communities and their metabolic potential. *FEMS Microbiology Ecology*, 90(3), 622-632. doi:[10.1111/1574-6941.12421](https://doi.org/10.1111/1574-6941.12421)
- Pomponi, F., Hart, J., Arehart, J. H., & D'Amico, B. (2020). Buildings as a Global Carbon Sink? A Reality Check on Feasibility Limits. *One Earth*, 3(2), 157-161. doi:[10.1016/j.oneear.2020.07.018](https://doi.org/10.1016/j.oneear.2020.07.018)
- Pongratz, J., Reick, C. H., Raddatz, T., Caldeira, K., & Claussen, M. (2011). Past land use decisions have increased mitigation potential of reforestation. *Geophysical Research Letters*, 38(15), 1-5. doi:[10.1029/2011GL047848](https://doi.org/10.1029/2011GL047848)
- Ponnusamy, S., Reddy, H. K., Muppaneni, T., Downes, C. M., & Deng, S. (2014). Life cycle assessment of biodiesel production from algal bio-crude oils extracted under subcritical water conditions. *Bioresource Technology*, 170, 454-461. doi:<https://doi.org/10.1016/j.biortech.2014.07.072>
- Pontecorvo, E. (2020). What if net-zero isn't enough? Inside the push to 'restore' the climate. *Grist*. Retrieved from <https://grist.org/climate/can-we-restore-the-climate-these-young-activists-want-us-to-try/>
- Pontecorvo, E. (2021). 'Orca,' the largest carbon removal facility to date, is up and running *Grist*. Retrieved from <https://grist.org/technology/orca-the-largest-carbon-removal-facility-to-date-is-up-and-running/>
- Pontecorvo, E., & Osaka, S. (2020). This Oregon forest was supposed to store carbon for 100 years. Now it's on fire. *Grist*. Retrieved from <https://grist.org/climate/this-oregon-forest-was-supposed-to-store-carbon-for-100-years-now-its-on-fire/>
- Ponton, R. (2020). Women Launch First Voluntary Scalable Marketplace For 'Carbon Removal' To Help Corporations Reach Net Zero. *Forbes*. Retrieved from <https://www.forbes.com/sites/rebeccaponton/2020/09/22/woman-owned-finnish-carbon-capture-and-storage-company-puroearth-created-to-help-corporations-reach-net-zero/?sh=598fe90d5e85>
- Popescu, A. (2019). This scientist thinks she has the key to curb climate change: super plants. *The Guardian*, (April 16). Retrieved from https://www.theguardian.com/environment/2019/apr/16/super-plants-climate-change-joanne-chory-carbon-dioxide?CMP=Share_AndroidApp_Gmail
- Popescu, C.-M., Hill, C. A. S., Anthony, R., Ormondroyd, G., & Curling, S. (2014). Equilibrium and dynamic vapour water sorption properties of biochar derived from apple wood. *Polymer Degradation and Stability*, 111, 263-268. doi:[10.1016/j.polymdegradstab.2014.10.014](https://doi.org/10.1016/j.polymdegradstab.2014.10.014)
- Popkin, G. (2019). The forest question. *Nature*, 565, 280-282. Retrieved from <https://www.nature.com/magazine-assets/d41586-019-00122-z/d41586-019-00122-z.pdf>
- Popkin, G. (2020). Can 'Carbon Smart' Farming Play a Key Role in the Climate Fight? *Yale Environment 360*. Retrieved from <https://e360.yale.edu/features/can-carbon-smart-farming-play-a-key-role-in-the-climate-fight>
- Popkin, G. (2020). Is carbon farming a climate boon, or boondoggle? Retrieved from https://thefern.org/2020/03/is-carbon-farming-a-climate-boon-or-boondoggle/amp/?__twitter_impression=true
- Popkin, G. (2021). Planting crops — and carbon, too. *Washington Post*. Retrieved from https://www.washingtonpost.com/graphics/2021/climate-solutions/climate-regenerative-agriculture/?itid=sf_climate-solutions
- Popova, E. E., Pollard, R. T., Lucas, M. I., Venables, H. J., & Anderson, T. R. (2007). Real-time

- forecasting of ecosystem dynamics during the CROZEX experiment and the roles of light, iron, silicate, and circulation. *Deep Sea Research Part II: Topical Studies in Oceanography*, 54(18–20), 1966–1988. doi:<http://dx.doi.org/10.1016/j.dsr2.2007.06.018>
- Popova, E. E., Ryabchenko, V. A., & Fasham, M. J. R. (2000). Biological pump and vertical mixing in the southern ocean: Their impact on atmospheric CO₂. *Global Biogeochemical Cycles*, 14(1), 477–498. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1029/1999GB900090/abstract>
- Popp, A., et al. (2010). Food Consumption, Diet Shifts and Associated Non-CO₂ Greenhouse Gases from Agricultural Production. *Global Environmental Change*, 20(3), 451–462. Retrieved from https://www.researchgate.net/publication/200803881_Food_Consumption_Diet_Shifts_and_Associated_Non-CO2_Greenhouse_Gases_from_Agricultural_Production
- Popp, A., et al. (2011). The economic potential of bioenergy for climate change mitigation with special attention given to implications for the land system. *Environmental Research Letters*, 6(3), 034017. Retrieved from <http://stacks.iop.org/1748-9326/6/i=3/a=034017>
- Popp, A., Humpenoder, F., Weindl, I., Bodirsky, B. L., Bonsch, M., Lotze-Campen, H., . . . Dietrich, J. P. (2014). Land-use protection for climate change mitigation. *Nature Climate Change*, 4(12), 1095–1098. doi:<10.1038/nclimate2444>
- <http://www.nature.com/nclimate/journal/v4/n12/abs/nclimate2444.html#supplementary-information>
- Popp, A., Krause, M., Dietrich, J. P., Lotze-Campen, H., Leimbach, M., Beringer, T., & Bauer, N. (2012). Additional CO₂ emissions from land use change — Forest conservation as a precondition for sustainable production of second generation bioenergy. *Ecological Economics*, 74, 64–70. doi:<http://dx.doi.org/10.1016/j.ecolecon.2011.11.004>
- Popp, A., Lotze-Campen, H., Leimbach, M., Knopf, B., Beringer, T., Bauer, N., & Bodirsky, B. (2011). On sustainability of bioenergy production: Integrating co-emissions from agricultural intensification. *Biomass and Bioenergy*, 35(12), 4770–4780. doi:<https://doi.org/10.1016/j.biombioe.2010.06.014>
- Popp, A., Rose, S. K., Calvin, K., Van Vuuren, D. P., Dietrich, J. P., Wise, M., . . . Kriegler, E. (2014). Land-use transition for bioenergy and climate stabilization: model comparison of drivers, impacts and interactions with other land use based mitigation options. *Climatic Change*, 123(3), 495–509. doi:<10.1007/s10584-013-0926-x>
- Popp, J. (2013). Food, Farming, and Biofuels. In B. P. Singh (Ed.), *Biofuel Crop Sustainability* (pp. 325–355).
- Popper, N. (2019, May 7). Start-Ups Hoping to Fight Climate Change Struggle as Other Tech Firms Cash In. *New York Times*. Retrieved from <https://www.nytimes.com/2019/05/07/business/carbon-removal-technology-start-ups.html?smid=nytcore-ios-share>
- Poralla, M., et al. (2021). *Sewage Treatment for the Skies: Mobilising carbon dioxide removal through public policies and private financing*. Retrieved from https://climatestrategies.org/wp-content/uploads/2021/03/CS-NR_Mobilising-CDR-report-1.2.pdf
- Porras, R. C., Hicks Pries, C. E., Torn, M. S., & Nico, P. S. (2018). Synthetic iron (hydr)oxide-glucose associations in subsurface soil: Effects on decomposability of mineral associated carbon. *Science of The Total Environment*, 613–614, 342–351. doi:<https://doi.org/10.1016/j.scitotenv.2017.08.290>
- Portugal-Pereira, J., Soria, R., Rathmann, R., Schaeffer, R., & Szklo, A. (2015). Agricultural and agro-industrial residues-to-energy: Techno-economic and environmental assessment in Brazil. *Biomass and Bioenergy*, 81, 521–533. doi:<https://doi.org/10.1016/j.biombioe.2015.08.010>
- Posada, J. A., Brentner, L. B., Ramirez, A., & Patel, M. K. (2016). Conceptual design of

- sustainable integrated microalgae biorefineries: Parametric analysis of energy use, greenhouse gas emissions and techno-economics. *Algal Research*, 17, 113-131. doi:<https://doi.org/10.1016/j.algal.2016.04.022>
- Postlethwaite, V. R., et al. (2018). Low blue carbon storage in eelgrass (*Zostera marina*) meadows on the Pacific Coast of Canada. *Plos One*, 13(6), e0198348. Retrieved from <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0198348>
- Potouroglou, M. (2017). How Big, How Blue, How Beautiful: seagrasses help fight climate change in Norway. *GRID-ARENDAL*. Retrieved from <http://news.grida.no/how-big-how-blue-how-beautiful-seagrasses-help-fight-climate-change-in-norway>
- Potter, C., Klooster, S., Hiatt, S., Fladeland, M., Genovese, V., & Gross, P. (2007). Satellite-derived estimates of potential carbon sequestration through afforestation of agricultural lands in the United States. *Climatic Change*, 80(3), 323-336. doi:10.1007/s10584-006-9109-3
- Potter, M. E., Cho, K. M., Lee, J. J., & Jones, C. W. (2017). Role of Alumina Basicity in CO₂ Uptake in 3-Aminopropylsilyl-Grafted Alumina Adsorbents. *ChemSusChem*, 10(10), 2192-2201. doi:10.1002/cssc.201700115
- Poulton, P., Johnston, J., Macdonald, A., White, R., & Powlson, D. (2018). Major limitations to achieving “4 per 1000” increases in soil organic carbon stock in temperate regions: Evidence from long-term experiments at Rothamsted Research, United Kingdom. *Global Change Biology*, 21, 2563-2584. doi:10.1111/gcb.14066
- Poupak, Y., & Reddy, K. R. (2011). *Characteristics of Biochar-Amended Soil Cover for Landfill Gas Mitigation*. Paper presented at the 2011 Pan Am CGS GeoTechnical Conference. <http://geoserver.ing.puc.cl/info/conferences/PanAm2011/panam2011/pdfs/GEO11Paper684.pdf>
- Pour, N. (2019). Chapter 5 - Status of bioenergy with carbon capture and storage—potential and challenges. In J. C. Magalhães Pires & A. L. D. Cunha Gonçalves (Eds.), *Bioenergy with Carbon Capture and Storage* (pp. 85-107): Academic Press.
- Pour, N. (2019). Chapter 13 - Economics and policy of bioenergy with carbon capture and storage. In J. C. Magalhães Pires & A. L. D. Cunha Gonçalves (Eds.), *Bioenergy with Carbon Capture and Storage* (pp. 257-271): Academic Press.
- Pour, N., Webley, P. A., & Cook, P. J. (2017). A Sustainability Framework for Bioenergy with Carbon Capture and Storage (BECCS) Technologies. *Energy Procedia*, 114, 6044-6056. doi:<https://doi.org/10.1016/j.egypro.2017.03.1741>
- Pour, N., Webley, P. A., & Cook, P. J. (2018). Opportunities for application of BECCS in the Australian power sector. *Applied Energy*, 224, 615-635. doi:<https://doi.org/10.1016/j.apenergy.2018.04.117>
- Pour, N., Webley, P. A., & Cook, P. J. (2018). Potential for using municipal solid waste as a resource for bioenergy with carbon capture and storage (BECCS). *International Journal of Greenhouse Gas Control*, 68(Supplement C), 1-15. doi:<https://doi.org/10.1016/j.ijggc.2017.11.007>
- Pourhashem, G., Hung, S. Y., Medlock, K. B., & Masiello, C. A. (2019). Policy support for biochar: Review and recommendations. *GCB Bioenergy*, 11(2), 364-380. doi:<https://doi.org/10.1111/gcbb.12582>
- Powar, R. V., & Gangil, S. (2015). Effect of temperature on iodine value and total carbon contain in bio-char produced from soybean stalk in continuous feed reactor. *International Journal of Agricultural Engineering*. Retrieved from <http://www.cabdirect.org/abstracts/20153268206.html;jsessionid=027D56883A59910883858425AB819CC0>
- Powell, C. S. (2017). Can a Carbon 'Vacuum Cleaner' Save the Planet? Retrieved from <https://www.nbcnews.com/mach/science/can-carbon-vacuum-cleaner-save-planet-ncna816376>
- Powell, H. (2007). Fertilizing the Ocean with Iron. *Oceanus*. Retrieved from <https://www.oceanusmagazine.org/article/fertilizing-ocean-with-iron>

- www.whoi.edu/oceanus/feature/fertilizing-the-ocean-with-iron/
- Powell, H. (2008). Dumping Iron and Trading Carbon. *Oceanus*, 46(1). Retrieved from <http://www.whoi.edu/oceanus/feature/dumping-iron-and-trading-carbon>
- Powell, H. (2008). Lessons from Nature, Models, and the Past. *Oceanus*, 46(1). Retrieved from <http://www.whoi.edu/oceanus/feature/lessons-from-nature--models--and-the-past>
- Powell, H. (2008). Proposals Emerge to Transfer Excess Carbon into the Ocean. *Oceanus*, 46(1). Retrieved from <http://www.whoi.edu/oceanus/feature/proposals-emerge-to-transfer-excess-carbon-into-the-ocean>
- Powell, H. (2008). Should we add iron to the sea to help reduce greenhouse gases in the air? *Oceanus*, 46(1). Retrieved from <http://www.whoi.edu/oceanus/feature/fertilizing-the-ocean-with-iron>
- Powell, H. (2008). What Are the Possible Side Effects? *Oceanus*, 46(1). Retrieved from <http://www.whoi.edu/oceanus/feature/what-are-the-possible-side-effects>
- Powell, H. (2008). Will Ocean Iron Fertilization Work? *Oceanus*, 46(1). Retrieved from <http://www.whoi.edu/oceanus/feature/will-ocean-iron-fertilization-work>
- Powell, T. W. R., & Lenton, T. M. (2012). Future carbon dioxide removal via biomass energy constrained by agricultural efficiency and dietary trends. *Energy & Environmental Science*, 5(8), 8116-8133. doi:10.1039/C2EE21592F
- Power, I. M., et al. (2013). Carbon Mineralization: From Natural Analogues to Engineered Systems. *Reviews in Mineralogy and Geochemistry*, 77(1), 305-360. Retrieved from <https://pubs.geoscienceworld.org/msa/rimg/article/77/1/305-360/140975>
- Power, I. M., Dipple, G. M., Bradshaw, P. M. D., & Harrison, A. L. (2020). Prospects for CO₂ mineralization and enhanced weathering of ultramafic mine tailings from the Baptiste nickel deposit in British Columbia, Canada. *International Journal of Greenhouse Gas Control*, 94, 102895. doi:<https://doi.org/10.1016/j.ijggc.2019.102895>
- Power, I. M., McCutcheon, J., Harrison, A. L., Wilson, S. A., Dipple, G. M., Kelly, S., . . . Southam, G. (2014). Strategizing Carbon-Neutral Mines: A Case for Pilot Projects. *Minerals*, 4(2), 399-436. Retrieved from <https://www.mdpi.com/2075-163X/4/2/399>
- Power, I. M., Paulo, C., Long, H., Lockhart, J. A., Stubbs, A. R., French, D., & Caldwell, R. (2021). Carbonation, Cementation, and Stabilization of Ultramafic Mine Tailings. *Environmental Science & Technology*. doi:10.1021/acs.est.1c01570
- Power, I. M., Paulo, C., Long, H., Lockhart, J. A., Stubbs, A. R., French, D., & Caldwell, R. (2021). Carbonation, Cementation, and Stabilization of Ultramafic Mine Tailings. *Environmental Science & Technology*, 55(14), 10056-10066. doi:10.1021/acs.est.1c01570
- Power, I. M., Wilson, S. A., & Dipple, G. M. (2013). Serpentinite Carbonation for CO₂ Sequestration. *Elements*, 9(2), 115-121. doi:10.2113/gselements.9.2.115
- Powlson, D. S., Riche, A. B., Coleman, K., Glendining, M. J., & Whitmore, A. P. (2008). Carbon sequestration in European soils through straw incorporation: Limitations and alternatives. *Waste Management*, 28(4), 741-746. doi:<http://dx.doi.org/10.1016/j.wasman.2007.09.024>
- Powlson, D. S., Stirling, C. M., Jat, M. L., Gerard, B. G., Palm, C. A., Sanchez, P. A., & Cassman, K. G. (2014). Limited potential of no-till agriculture for climate change mitigation. *Nature Climate Change*, 4(8), 678-683. doi:10.1038/nclimate2292
- Powlson, D. S., Stirling, C. M., Jat, M. L., Gerard, B. G., Palm, C. A., Sanchez, P. A., & Cassman, K. G. (2015). Reply to 'No-till agriculture and climate change mitigation'. *Nature Climate Change*, 5(6), 489 - 489. doi:10.1038/nclimate2654
- Powlson, D. S., Whitmore, A. P., & Goulding, K. W. T. (2011). Soil carbon sequestration to mitigate climate change: A critical re-examination to identify the true and the false. *European Journal of Soil Science*, 62(1), 42-55. Retrieved from <https://doi.org/10.1111/j.1365-2389.2010.02422.x>

- www.researchgate.net/publication/
 227853256_Soil_carbon_sequestration_to_mitigate_climate_change_A_critical_re-examination_to_identify_the_true_and_the_false
- Pownall, A. (2019). Salk Institute develops a plant that offers a solution to climate change. *de Zeen*. Retrieved from <https://www.dezeen.com/2019/05/30/salk-institute-ideal-plant-climate-change/>
- Pozo, C., Galán-Martín, Á., Reiner, D. M., Mac Dowell, N., & Guillén-Gosálbez, G. (2020). Equity in allocating carbon dioxide removal quotas. *Nature Climate Change*. doi:10.1038/s41558-020-0802-4
- Prabha, B., et al. (2015). Design and development of semi-indirect non-electric pyrolytic reactor for biochar production from farm waste. *The Indian Journal of Agricultural Sciences*, 85(4), 585-591. Retrieved from <http://epubs.icar.org.in/ejournal/index.php/IJAgS/article/view/47951>
- Prabha, S. V., et al. (2013). A Study of the Fertility and Carbon Sequestration Potential of Rice Soil with Respect to the Application of Biochar and Selected Amendments. *Annals of Environmental Science*, 7, 17-30. Retrieved from <http://openjournals.neu.edu/aes/journal/article/view/v7art2/v7p17-30>
- Prabowo, B., Aziz, M., Umeki, K., Susanto, H., Yan, M., & Yoshikawa, K. (2015). CO₂-recycling biomass gasification system for highly efficient and carbon-negative power generation. *Applied Energy*, 158, 97-106. doi:<http://dx.doi.org/10.1016/j.apenergy.2015.08.060>
- Prabowo, B., Aziz, M., Umeki, K., Yan, M., Susanto, H., & Yoshikawa, K. (2015). Utilization of Rice Husk in the CO₂-Recycling Gasification System for the Effective Implementation of Bioenergy with Carbon Capture and Storage (BECCS) Technology. In F. Jin, L. N. He, & Y. H. Hu (Eds.), *Advances in Co₂ Capture, Sequestration, and Conversion* (Vol. 1194, pp. 323-340).
- Pradhan, D., Singh, R. K., Bendu, H., & Mund, R. (2016). Pyrolysis of Mahua seed (*Madhuca indica*) – Production of biofuel and its characterization. *Energy Conversion and Management*, 108, 529 - 538. doi:10.1016/j.enconman.2015.11.042
- Pradhan, R. R., Pradhan, R. R., Das, S., Dubey, B., & Dutta, A. (2017). Bioenergy Combined with Carbon Capture Potential by Microalgae at Flue Gas-Based Carbon Sequestration Plant of NALCO as Accelerated Carbon Sink. In M. Goel & M. Sudhakar (Eds.), *Carbon Utilization: Applications for the Energy Industry* (pp. 231-244). Singapore: Springer Singapore.
- Pradhan, U. (2015). *Physical treatments for reducing biomass ash and effect of ash content on pyrolysis products*. Auburn University, Retrieved from <http://holocron.lib.auburn.edu/handle/10415/4726>
- Prajapati, A., & Singh, M. R. (2019). Assessment of Artificial Photosynthetic Systems for Integrated Carbon Capture and Conversion. *ACS Sustainable Chemistry & Engineering*, 7(6), 5993-6003. doi:10.1021/acssuschemeng.8b04969
- Prakongkep, N., et al. (2013). The Effects of Pyrolysis Conditions on the Chemical and Physical Properties of Rice Husk Biochar. *International Journal of Material Science (IJMSCI)*, 3(3), 97-103. Retrieved from https://www.researchgate.net/publication/283347475_The_Effects_of_Pyrolysis_Conditions_on_the_Chemical_and_Physical_ProPERTIES_of_Rice_Husk_Biochar
- Prakongkep, N., Gilkes, R. J., & Wiriayakithnateekul, W. (2014). Agronomic benefits of durian shell biochar. *Journal of Metals, Materials and Minerals*, 24(1), 7-11. Retrieved from file:///C:/Users/Gateway/Downloads/93-364-1-PB.pdf
- Prakongkep, N., Gilkes, R. J., & Wiriayakithnateekul, W. (2015). Forms and solubility of plant nutrient elements in tropical plant waste biochars. *Journal of Plant Nutrition and Soil Science*, 178(5), 732 - 740. doi:10.1002/jpln.201500001

- Prakosa, R. A., Putera, A. D. P., Kusumastuti, F. R., Satriawan, H. B., Tri Bayu Murti Petrus, W., & Tri Bayu Murti Petrus, H. (2014). *Release characteristic of modified fertilizer using rice husk biochar*. Paper presented at the Chemeca 2014: Processing excellence; Powering our future <http://search.informit.com.au/documentSummary;dn=713074993685921;res=IELENG>
- Prapagdee, S., et al. . (2014). Application of Biochar for Enhancing Cadmium and Zinc Phytostabilization in Vigna radiata L. Cultivation. *Water, Air, & Soil Pollution*, 225(12). doi:10.1007/s11270-014-2233-1
- Prapagdee, S., Piyatiratitivorakul, S., & Petsom, A. (2014). Activation of Cassava Stem Biochar by Physico-Chemical Method for Stimulating Cadmium Removal Efficiency from Aqueous Solution. *Environment Asia*, 7(2), 60-69. Retrieved from <http://www.tshe.org/ea/pdf/vol7no2-08.pdf>
- Prapagdee, S., Piyatiratitivorakul, S., & Petsom, A. (2016). Physico-chemical Activation on Rice Husk Biochar for Enhancing of Cadmium Removal from Aqueous Solution. *Asian Journal of Water, Environment and Pollution*, 13(1), 27 - 34. doi:10.3233/ajw-160004
- Prasad, J. V. N. S., Rao, C. S., Srinivas, K., Jyothi, C. N., Venkateswarlu, B., Ramachandrapa, B. K., . . . Mishra, P. K. (2016). Effect of ten years of reduced tillage and recycling of organic matter on crop yields, soil organic carbon and its fractions in Alfisols of semi arid tropics of southern India. *Soil and Tillage Research*, 156, 131-139. doi:<https://doi.org/10.1016/j.still.2015.10.013>
- Prasad, P. S. R., et al. (2009). Geological sequestration of carbon dioxide in Deccan basalts: preliminary laboratory study. *Current Science*, 96, 288-291.
- Prasad, P. S. R., & Eswari, C. V. V. (2017). Clathrate Hydrates: A Powerful Tool to Mitigate Greenhouse Gas. In M. Goel & M. Sudhakar (Eds.), *Carbon Utilization: Applications for the Energy Industry* (pp. 157-168). Singapore: Springer Singapore.
- Prasad, S., Kumar, A., & Muralikrishna, K. S. (2014). Biofuels production: A sustainable solution to combat climate change. *Indian Journal of Agricultural Sciences*, 84(12), 1443-1452. Retrieved from <Go to ISI>:/WOS:000346464300001
- Prasai, T. P., et al. . (2016). Effect of biochar, zeolite and bentonite feed supplements on egg yield and excreta attributes. *Animal Production Science*, A-J. Retrieved from <http://www.publish.csiro.au/AN/pdf/AN16290>
- Pratt, K., & Moran, D. (2010). Evaluating the cost-effectiveness of global biochar mitigation potential. *Biomass & Bioenergy*, 34(8), 1149-1158. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0961953410000991>
- Prayogo, C., et al. (2013). Impact of biochar on mineralisation of C and N from soil and willow litter and its relationship with microbial community biomass and structure. *Biology and Fertility of Soils*, 50(4), 695-702. Retrieved from <http://link.springer.com/article/10.1007/s00374-013-0884-5>
- Prendergast-Miller, M. T., Duvall, M., & Sohi, S. P. (2011). Localisation of nitrate in the rhizosphere of biochar-amended soils. *Soil Biology and Biochemistry*, 43(11), 2243-2246. doi:10.1016/j.soilbio.2011.07.019
- Prendergast-Miller, M. T., Duvall, M., & Sohi, S. P. (2013). Biochar–root interactions are mediated by biochar nutrient content and impacts on soil nutrient availability. *European Journal of Soil Science*.
- Press, A. (2017). Scientists seek holy grail of climate change in Oman's hills. *Fox News World*. Retrieved from <http://www.foxnews.com/world/2017/04/13/scientists-seek-holy-grail-climate-change-in-oman-hills.html>
- Preston, C. M., & Schmidt, M. W. I. (2006). Black (pyrogenic) carbon: a synthesis of current knowledge and uncertainties with special consideration of boreal regions. *Biogeosciences*, 3(4), 397-420. Retrieved from <http://hal.archives-ouvertes.fr/docs/>

00/29/75/71/PDF/bg-3-397-2006.pdf

- Preston, M. (2020). Carbon Dioxide Removal: Now is the time for an honest conversation about carbon dioxide removal. Retrieved from <https://bellona.org/news/carbon-dioxide-removal/2020-10-now-is-the-time-for-an-honest-conversation-about-carbon-dioxide-removal>
- Preston, R., & Rodríguez, L. (2014). *Sustainable Agriculture Reviews* Sustainable Agriculture Reviews 14 Food and Energy Production from Biomass in an Integrated Farming System (Vol. 14). Cham: Springer International Publishing.
- Preston, T. (2009). Environmentally sustainable production of food, feed and fuel from natural resources in the tropics. *Tropical Animal Health and Production*, 41, 873-882.
- Price, P., et al. (2018). *A Post-Paris Literature Review of Negative Emissions Technology, and Potential for Ireland*. Retrieved from <http://doras.dcu.ie/22230/1/Lit-Review-2018-01.pdf>
- Prieto, G. (2017). Carbon Dioxide Hydrogenation into Higher Hydrocarbons and Oxygenates: Thermodynamic and Kinetic Bounds and Progress with Heterogeneous and Homogeneous Catalysis. *ChemSusChem*, 10(6), 1056-1070. doi:doi:10.1002/cssc.201601591
- Primeau, F. W., Holzer, M., & DeVries, T. (2013). Southern Ocean nutrient trapping and the efficiency of the biological pump. 118(5), 2547-2564. doi:10.1002/jgrc.20181
- Pritchard, C., Yang, A., Holmes, P., & Wilkinson, M. (2015). Thermodynamics, economics and systems thinking: What role for air capture of CO₂? *Process Safety and Environmental Protection*, 94, 188-195. doi:<http://dx.doi.org/10.1016/j.psep.2014.06.011>
- Prithvi, S. (2014). Use of urea adsorbed KOH-activated Napier grass biochar for soil conditioning—A step towards biochar tailoring. *Spanish Journal of Rural Development*, 33 - 48. doi:10.5261/2014.gen4.04
- Prodana, M., Bastos, A. C., Amaro, A., Cardoso, D., Morgado, R., Machado, A. L., . . . Loureiro, S. (2019). Biomonitoring tools for biochar and biochar-compost amended soil under viticulture: Looking at exposure and effects. *Applied Soil Ecology*, 137, 120-128. doi:<https://doi.org/10.1016/j.apsoil.2019.01.007>
- Proelss, A., & Hong, C. (2012). Ocean Upwelling and International Law. *Ocean Development & International Law*, 43(4), 371-385. doi:10.1080/00908320.2012.726843
- Programme, U. N. E. (2017). Chapter 7, Bridging the Gap – Carbon dioxide removal. In *Emissions Gap Report 2017* (pp. 58-66): UNEP.
- Project, S. EU to Incentivise CO₂ Utilisation. Retrieved from <http://www.scotproject.org/images/Briefing%20paper%20EU%20ETS%20final.pdf>
- Pröll, T., Afif, R. A., Schaffer, S., & Pfeifer, C. (2017). Reduced Local Emissions and Long-term Carbon Storage through Pyrolysis of Agricultural Waste and Application of Pyrolysis Char for Soil Improvement. *Energy Procedia*, 114, 6057-6066. doi:<https://doi.org/10.1016/j.egypro.2017.03.1742>
- Pröll, T., Zerobin, F. J. M., & Change, A. S. f. G. (2019). Biomass-based negative emission technology options with combined heat and power generation. 24(7), 1307-1324. doi:10.1007/s11027-019-9841-4
- Prommer, J., et al. (2014). Biochar Decelerates Soil Organic Nitrogen Cycling but Stimulates Soil Nitrification in a Temperate Arable Field Trial. *Plos One*, 9(1). Retrieved from <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0086388#pone-0086388-g004>
- Prost, K., et al. . (2012). Biochar Affected by Composting with Farmyard Manure. *Journal of Environmental Quality*, 42, 164-172. Retrieved from https://s3.amazonaws.com/academia.edu.documents/45651957/Biochar_Affected_by_Composting_with_Farm20160515-10629-18emll4.pdf?AWSAccessKeyId=AKIAIWOWYYGZ2Y53UL3A&Expires=1550371638&Signature=OgR

- un6Qm4rHIVi39SLGR91WHFSg%3D&response-content-disposition=inline%3B%20filename%3DBiochar_Affected_by_Composting_with_Farm.pdf
- Psarras, P., et al. (2017). Slicing the pie: how big could carbon dioxide removal be? *WIREs Energy and Environment*, 6(5), 1-21. doi:10.1002/wene.253
- PTI. (2019). Centre approves strategy to create carbon sink of 3 billion tonnes from forests by 2030. *Financial Express*, (March 8). Retrieved from <https://www.financialexpress.com/lifestyle/science/centre-approves-strategy-to-create-carbon-sink-of-3-billion-tonnes-from-forests-by-2030/1509824/>
- Puga, A. P., Abreu, C. A., Melo, L. C. A., & Beesley, L. (2015). Biochar application to a contaminated soil reduces the availability and plant uptake of zinc, lead and cadmium. *Journal of Environmental Management*, 159, 86 - 93. doi:10.1016/j.jenvman.2015.05.036
- Puga, A. P., Abreu, C. A., Melo, L. C. A., Paz-Ferreiro, J., & Beesley, L. (2015). Cadmium, lead, and zinc mobility and plant uptake in a mine soil amended with sugarcane straw biochar. *Environmental Science and Pollution Research*, 22(22), 17606–17614. doi:10.1007/s11356-015-4977-6
- Puga, A. P., Grutzmacher, P., Cerri, C. E. P., Ribeirinho, V. S., & Andrade, C. A. d. (2020). Biochar-based nitrogen fertilizers: Greenhouse gas emissions, use efficiency, and maize yield in tropical soils. *Science of The Total Environment*, 704, 135375. doi:<https://doi.org/10.1016/j.scitotenv.2019.135375>
- Puga, A. P., Melo, L. C. A., de Abreu, C. A., Coscione, A. R., & Paz-Ferreiro, J. (2016). Leaching and fractionation of heavy metals in mining soils amended with biochar. *Soil and Tillage Research*, 164, 25-33. doi:10.1016/j.still.2016.01.008
- Pugliese, M., Gullino, M. L., & Garibaldi, A. (2015). The REFERTIL Project: standardization of compost and biochar quality and results in Piedmont, Italy. *Protezione delle Colture (Crop protection)*. Retrieved from <http://www.cabdirect.org/abstracts/20153403131.html>
- Pulighe, G., Altobelli, F., Bonati, G., & Lupia, F. (2021). Challenges and Opportunities for Growing Bioenergy Crops in the EU: Linking Support Schemes With Sustainability Issues Towards Carbon Neutrality. In *Reference Module in Earth Systems and Environmental Sciences*: Elsevier.
- Pulighe, G., Altobelli, F., Bonati, G., & Lupia, F. (2021). Challenges and Opportunities for Growing Bioenergy Crops in the EU: Linking Support Schemes With Sustainability Issues Towards Carbon Neutrality. In *Reference Module in Earth Systems and Environmental Sciences*: Elsevier.
- Pultarova, T. (2017). A small effort to extract CO₂ from the atmosphere aims to create big change. *Washington Post*. Retrieved from https://www.washingtonpost.com/national/health-science/a-small-effort-to-extract-co2-from-the-atmosphere-aims-to-create-big-change/2017/06/02/7de79a04-4622-11e7-a196-a1bb629f64cb_story.html?utm_term=.d0befea5f9dd
- Pulver, C. (2014). *Preferential rooting in biochars*. Paper presented at the SEMINAR SERIES FALL 2014, Cornell University 135 Emerson Hall. <https://css.cals.cornell.edu/sites/css.cals.cornell.edu/files/shared/CSSseminar-10-30-14.pdf>
- Purakayastha, T. J., et al. (2016). Effect of pyrolysis temperatures on stability and priming effects of C3 and C4 biochars applied to two different soils. *Soil and Tillage Research*, 155, 107 - 115. doi:10.1016/j.still.2015.07.011
- Purakayastha, T. J., Kumari, S., & Pathak, H. (2015). Characterisation, stability, and microbial effects of four biochars produced from crop residues. *Geoderma*, 239-240, 293 - 303. doi:10.1016/j.geoderma.2014.11.009
- Purevsuren, B., Avid, B., Tesche, B., & Davaajav, Y. (2003). A biochar from casein and its properties. *Journal of Materials Science*, 38(11), 2347-2351. Retrieved from <https://>

- link.springer.com/article/10.1023%2FA%3A1023980429410?LI=true
- Puro.earth. (2019). *Reversing Climate Change with Puro CO₂ Removal Certificate Marketplace*. Retrieved from <https://puro.earth/app/uploads/2019/04/Puro-whitepaper.pdf>
- Puro.earth. (2020). Puro.earth CO₂ Removal Marketplace. Retrieved from https://static.puro.earth/live/uploads/tinymce/Puro_Documents/Puro-Rules-CO2-removal-marketplace_v2.0_final.pdf
- Puro.earth. (2021). BECCS and Geologically Stored Carbon Methodology Webinar Retrieved from <https://puro.earth/articles/beccs-and-geologically-stored-carbon-methodology-webinar-584#>
- Pye, S., Broad, O., Bataille, C., Brockway, P., Daly, H. E., Freeman, R., . . . Watson, J. (2020). Modelling net-zero emissions energy systems requires a change in approach. *Climate Policy*, 1-10. doi:10.1080/14693062.2020.1824891
- Pyle, L., Hockaday, W. C., Boutton, T. W., Zygourakis, K., Kinney, T., & Masiello, C. A. (2015). Chemical and Isotopic Thresholds in Charring: Implications for the Interpretation of Charcoal Mass and Isotopic Data. *American Geophysical Union, Fall Meeting*. Retrieved from <http://adsabs.harvard.edu/abs/2014AGUFM.B41A0008P>
- Qayyum, M. F., et al. (2011). Kinetics of Carbon Mineralization of Biochars Compared with Wheat Straw in Three Soils. *Journal of Environmental Quality*, 41(4), 1210-1220. doi:doi:10.2134/jeq2011.0058
- Qayyum, M. F., et al. . (2014). Biochars influence differential distribution and chemical composition of soil organic matter. *Plant Soil Environment*, 60(8), 337-343. Retrieved from <http://www.agriculturejournals.cz/publicFiles/128953.pdf>
- Qayyum, M. F., et al. (2015). Effect of biochar, lime, and compost application on phosphorus adsorption in a Ferralsol. *Journal of Plant Nutrition and Soil Science*, 178(4), 576-581. doi:10.1002/jpln.201400552
- Qi, R.-P., Zhang, L., Yan, Y.-H., Wen, M., & Zheng, J.-Y. (2014). Effects of biochar addition into soils in semiarid land on water infiltration under the condition of the same bulk density. *The Journal of Applied Ecology*, 25(8), 2281-2288. Retrieved from <http://europepmc.org/abstract/med/25509079>
- Qian, K., et al. . (2015). Recent advances in utilization of biochar. *Renewable and Sustainable Energy Reviews*, 42, 1055 - 1064. doi:10.1016/j.rser.2014.10.074
- Qian, L., et al. . (2016). Effective removal of heavy metal by biochar colloids under different pyrolysis temperatures. *Bioresource Technology*, 206, 217 - 224. doi:10.1016/j.biortech.2016.01.065
- Qian, L., & Chen, B. (2013). Interactions of Aluminum with Biochars and Oxidized Biochars: Implications for the Biochar Aging Process. *Journal of Agricultural and Food Chemistry*, 62(2), 373-380. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/jf404624h>
- Qian, L., Chen, B., & Hu, D. (2013). Effective Alleviation of Aluminum Phytotoxicity by Manure-derived Biochar. *Environmental Science and Technology*, 47(6), 2737-2745. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/es3047872>
- Qian, L., Chen, M., & Chen, B. (2015). Competitive adsorption of cadmium and aluminum onto fresh and oxidized biochars during aging processes. *Journal of Soils and Sediments*, 15(5), 1130-1138. doi:10.1007/s11368-015-1073-y
- Qian, L. I., et al. . (2014). Biochar compound fertilizer as an option to reach high productivity but low carbon intensity in rice agriculture of China. *Carbon Management*, 5(2), 145 - 154. doi:10.1080/17583004.2014.912866
- Qian, T., et al. (2016). A new insight into the immobilization mechanism of Zn on biochar: the role of anions dissolved from ash. *Scientific Reports*, 6(33630), 1-10. Retrieved from <file:///C:/Users/Gateway/Downloads/srep33630.pdf>
- Qian, T.-T., et al. (2013). Effects of environmental conditions on the release of phosphorus from

- biochar. *Chemosphere*, 93(9), 2069-2075. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0045653513010254>
- Qiao, J., Liu, Y., Hong, F., & Zhang, J. (2014). A review of catalysts for the electroreduction of carbon dioxide to produce low-carbon fuels. *Chem. Soc. Rev.*, 43, 631-675. Retrieved from https://pubs.rsc.org/en/content/articlehtml/2013/cs/c3cs60323g?casa_token=j-B9-fpGvngAAAAAJS4kGiUZOXpqDHQi1dSC31GD7WfRd8URz4oLE2oXOLo87O8boOmvomdMDBJy8D76SQm-g2lgEZdk1s
- Qiao, Y., Crowley, D., Wang, K., Zhang, H., & Li, H. (2015). Effects of biochar and Arbuscular mycorrhizae on bioavailability of potentially toxic elements in an aged contaminated soil. *Environmental Pollution*, 206, 636 - 643. doi:[10.1016/j.envpol.2015.08.029](https://doi.org/10.1016/j.envpol.2015.08.029)
- QiKai, W., et al. . (2015). Combined effects of biochar and fertilizer on cadmium contaminated soil remediation. *Journal of Agricultural Resources and Environment*, 32(6), 583-589. Retrieved from <http://www.cabdirect.org/abstracts/20163044526.html>
- Qin, G., Dan, G., & Fan, M.-Y. (2013). Bioremediation of petroleum-contaminated soil by biostimulation amended with biochar. *International Biodeterioration & Biodegradation*, 85, 150–155.
- Qin, X., et alo. (2006). Switchgrass as an alternate feedstock for power generation: an integrated environmental, energy and economic life-cycle assessment. *Clean Technologies and Environmental Policy*, 8, 233-349.
- Qin, X., Li, Y. e., Wang, H., Liu, C., Li, J., Wan, Y., . . . Liao, Y. (2016). Long-term effect of biochar application on yield-scaled greenhouse gas emissions in a rice paddy cropping system: A four-year case study in south China. *Science of The Total Environment*, 569–570, 1390-1401. doi:<http://dx.doi.org/10.1016/j.scitotenv.2016.06.222>
- Qin, Z., Zhuang, Q., Cai, X., He, Y., Huang, Y., Jiang, D., . . . Wang, M. Q. (2018). Biomass and biofuels in China: Toward bioenergy resource potentials and their impacts on the environment. *Renewable and Sustainable Energy Reviews*, 82, 2387-2400. doi:<https://doi.org/10.1016/j.rser.2017.08.073>
- Qin, Z.-z. (2015). Photocatalytic Reduction of Carbon Dioxide. In E. Lighthouse, J. Schwarzbauer, & R. Didier (Eds.), *Hydrogen Production and Remediation of Carbon and Pollutants* (pp. 61-98).
- Qiu, M., Sun, K., Jin, J., Han, L., Sun, H., Zhao, Y., . . . Xing, B. (2015). Metal/metalloid elements and polycyclic aromatic hydrocarbon in various biochars: The effect of feedstock, temperature, minerals, and properties. *Environmental Pollution*, 206, 298 - 305. doi:[10.1016/j.envpol.2015.07.026](https://doi.org/10.1016/j.envpol.2015.07.026)
- Qiu, Y., et al. . (2013). Enhanced irreversible sorption of carbaryl to soils amended with crop-residue-derived biochar. *Chemosphere*, 93(1), 69-74. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0045653513006954>
- QiuTong, X., et al. (2014). Effects of biochar application on transformation and chemical forms of C, N and P in soils with different pH. *Journal of Zhejiang University (Agriculture and Life Sciences)*, 40, 303-313. Retrieved from <http://www.cabdirect.org/abstracts/20143299103.html>;jsessionid=9C87787FCF9A6782AB7D31A9A379C72C
- Quader, M. A., & Ahmed, S. (2017). Chapter Four - Bioenergy With Carbon Capture and Storage (BECCS): Future Prospects of Carbon-Negative Technologies. In *Clean Energy for Sustainable Development* (pp. 91-140): Academic Press.
- Quan, G., Sun, W., Yan, J. L., & Lan, Y. (2014). Nanoscale Zero-Valent Iron Supported on Biochar: Characterization and Reactivity for Degradation of Acid Orange 7 from Aqueous Solution. *Water, Air, & Soil Pollution*, 225(11). doi:[10.1007/s11270-014-2195-3](https://doi.org/10.1007/s11270-014-2195-3)
- Quéguiner, B. (2013). Iron fertilization and the structure of planktonic communities in high nutrient regions of the Southern Ocean. *Deep Sea Research Part II: Topical Studies in Oceanography*, 90, 43-54. doi:<http://dx.doi.org/10.1016/j.dsrr.2012.07.024>

- Quesada Kimzey, J. (2015). The carbonization of biomass waste: an exploration with exciting prospects. *Tecnología en Marcha*, 25(5). Retrieved from <http://repositoriotec.tec.ac.cr/handle/2238/4086?show=full>
- Quesne, M. G., Catlow, C. R. A., & de Leeuw, N. H. (2021). How bulk and surface properties of Ti₄SiC₃, V₄SiC₃, Nb₄SiC₃ and Zr₄SiC₃ tune reactivity: a computational study. *Faraday Discussions*, 230(0), 87-99. doi:10.1039/D1FD00004G
- Quilliam, R. S., et al. (2013). Is biochar a source or sink for polycyclic aromatic hydrocarbon (PAH) compounds in agricultural soils? *GCB Bioenergy*, 5(2), 96-103. doi:10.1111/gcbb.12007
- Quilliam, R. S., DeLuca, T. H., & Jones, D. L. (2012). Biochar application reduces nodulation but increases nitrogenase activity in clover. *Plant and Soil*. doi:10.1007/s11104-012-1411-4
- Quilliam, R. S., Marsden, K. A., Gertler, C., Rousk, J., DeLuca, T. H., & Jones, D. L. (2012). Nutrient dynamics, microbial growth and weed emergence in biochar amended soil are influenced by time since application and reapplication rate. *Agriculture, Ecosystems & Environment*, 158, 192–199. Retrieved from <http://www.sciencedirect.com/science/article/pii/S016788091200237X>
- Quin, P., et al. (2015). Lowering N₂O emissions from soils using eucalypt biochar: the importance of redox reactions. *Scientific Reports*, 5, 1-14. doi:10.1038/srep16773
- Quin, P. R., Cowie, A. L., Flavel, R. J., Keen, B. P., Macdonald, L. M., Morris, S. G., . . . Van Zwieten, L. (2014). Oil mallee biochar improves soil structural properties—A study with x-ray micro-CT. *Agriculture, Ecosystems & Environment*, 191, 142-149. doi:<http://dx.doi.org/10.1016/j.agee.2014.03.022>
- Quinby, E. F. (2018). Regulating Geoengineering: Applications of GMO Trade and Ocean Dumping Regulation. *Vanderbilt Journal of Transnational Law*, 51, 211-246. Retrieved from <https://heinonline.org/HOL/Page?handle=hein.journals/vantl51&id=221&collection=journals&index=>
- Quinn, D. (2015). Biochar: Industrial Applications A White Paper. In.
- Quinn, J. C., & Davis, R. (2015). The potentials and challenges of algae based biofuels: A review of the techno-economic, life cycle, and resource assessment modeling. *Bioresource Technology*, 184, 444-452. doi:<https://doi.org/10.1016/j.biortech.2014.10.075>
- Quinn, P. K., & Bates, T. S. (2011). The case against climate regulation via oceanic phytoplankton sulphur emissions. *Nature*, 480(7375), 51-56. doi:10.1038/nature10580
- Quirk, J., et al. (2014). Ectomycorrhizal fungi and past high CO₂ atmospheres enhance mineral weathering through increased below-ground carbon-energy fluxes. *Biology Letters*, 10(7), 20140375. doi:doi:10.1098/rsbl.2014.0375
- Quirk, J., Beerling, D. J., Banwart, S. A., Kakonyi, G., Romero-Gonzalez, M. E., & Leake, J. R. (2012). Evolution of trees and mycorrhizal fungi intensifies silicate mineral weathering. *Biology Letters*, 8(6), 1006-1011. doi:10.1098/rsbl.2012.0503
- Quirk, R. G. e. a. (2012). Utilization of Biochar in Sugarcane and Sugar-Industry Management. *Sugar Tech*, 14(4), 321-326. doi:10.1007/s12355-012-0158-9
- Quiroz Arita, C. E., Peebles, C., & Bradley, T. H. (2015). Scalability of combining microalgae-based biofuels with wastewater facilities: A review. *Algal Research*, 9, 160-169. Retrieved from http://www.engr.colostate.edu/~thb/Publications/cqa_review.pdf
- Rabah, M. A. (2015). Quick Ignited and Smokeless Carbon Shapes From Household Garbage Agriculture Waste. *International Journal of Scientific Progress and Research*, 11(1), 1-7. Retrieved from http://www.ijspr.com/citations/v11n1/IJSPr_1101_352.pdf
- Rabinowitz, A., & Simson, A. (2017). The Dirty Secret of the World's Plan to Avert Climate Disaster. *Wired*. Retrieved from <https://www.wired.com/story/the-dirty-secret-of-the-worlds-plan-to-avert-climate-disaster/>

- Rabitz, F. (2016). Going rogue? Scenarios for unilateral geoengineering. *Futures, 84, Part A*, 98-107. doi:<http://dx.doi.org/10.1016/j.futures.2016.11.001>
- Rackley, S. (2020). *Ocean Alkalinity Enhancement: A preliminary research agenda and maturation roadmap*. Retrieved from <https://carbonactionnow.files.wordpress.com/2020/10/ocean-alkalinity-enhancement-a-preliminary-research-agenda-and-technology-maturation-roadmap.pdf>
- Rackley, S. A. (2010). Absorption Capture Systems. In *Carbon Capture and Storage* (pp. 103-131). Boston: Butterworth-Heinemann.
- Rackley, S. A. (2010). Mineral Carbonation. In *Carbon Capture and Storage* (pp. 207-225). Boston: Butterworth-Heinemann.
- Rackley, S. A. (2010). Ocean Storage. In *Carbon Capture and Storage* (pp. 267-286). Boston: Butterworth-Heinemann.
- Rackley, S. A. (2010). Overview of Carbon Capture and Storage. In *Carbon Capture and Storage* (pp. 19-28). Boston: Butterworth-Heinemann.
- Rackley, S. A. (2017). 2 - Overview of carbon capture and storage. In *Carbon Capture and Storage (Second Edition)* (pp. 23-36). Boston: Butterworth-Heinemann.
- Rackley, S. A. (2017). 4 - Carbon capture from power generation. In *Carbon Capture and Storage (Second Edition)* (pp. 75-101). Boston: Butterworth-Heinemann.
- Rackley, S. A. (2017). 5 - Carbon capture from industrial processes. In *Carbon Capture and Storage (Second Edition)* (pp. 103-114). Boston: Butterworth-Heinemann.
- Rackley, S. A. (2017). 6 - Absorption capture systems. In *Carbon Capture and Storage (Second Edition)* (pp. 115-149). Boston: Butterworth-Heinemann.
- Rackley, S. A. (2017). 7 - Adsorption capture systems. In *Carbon Capture and Storage (Second Edition)* (pp. 151-185). Boston: Butterworth-Heinemann.
- Rackley, S. A. (2017). 8 - Membrane separation systems. In *Carbon Capture and Storage (Second Edition)* (pp. 187-225). Boston: Butterworth-Heinemann.
- Rackley, S. A. (2017). 9 - Low temperature and distillation systems. In *Carbon Capture and Storage (Second Edition)* (pp. 227-252). Boston: Butterworth-Heinemann.
- Rackley, S. A. (2017). 10 - Mineral carbonation. In *Carbon Capture and Storage (Second Edition)* (pp. 253-282). Boston: Butterworth-Heinemann.
- Rackley, S. A. (2017). 11 - Introduction to geological storage. In *Carbon Capture and Storage (Second Edition)* (pp. 285-304). Boston: Butterworth-Heinemann.
- Rackley, S. A. (2017). 12 - Geological and geomechanical features, events, and processes. In *Carbon Capture and Storage (Second Edition)* (pp. 305-336). Boston: Butterworth-Heinemann.
- Rackley, S. A. (2017). 13 - Fluid properties and rock–fluid interactions. In *Carbon Capture and Storage (Second Edition)* (pp. 337-364). Boston: Butterworth-Heinemann.
- Rackley, S. A. (2017). 15 - Hydrological and environmental features, events, and processes. In *Carbon Capture and Storage (Second Edition)* (pp. 387-406). Boston: Butterworth-Heinemann.
- Rackley, S. A. (2017). 16 - Engineered system features, events, and processes. In *Carbon Capture and Storage (Second Edition)* (pp. 407-428). Boston: Butterworth-Heinemann.
- Rackley, S. A. (2017). 17 - Saline aquifer geological storage. In *Carbon Capture and Storage (Second Edition)* (pp. 429-470). Boston: Butterworth-Heinemann.
- Rackley, S. A. (2017). 18 - Other geological storage options. In *Carbon Capture and Storage (Second Edition)* (pp. 471-488). Boston: Butterworth-Heinemann.
- Rackley, S. A. (2017). 19 - Storage monitoring and verification technologies. In *Carbon Capture and Storage (Second Edition)* (pp. 489-516). Boston: Butterworth-Heinemann.
- Rackley, S. A. (2017). 20 - Ocean storage. In *Carbon Capture and Storage (Second Edition)* (pp. 517-541). Boston: Butterworth-Heinemann.

- Rackley, S. A. (2017). 21 - Storage in terrestrial ecosystems. In *Carbon Capture and Storage (Second Edition)* (pp. 543-576). Boston: Butterworth-Heinemann.
- Rackley, S. A. (2017). 22 - CO₂ utilization and other sequestration options. In *Carbon Capture and Storage (Second Edition)* (pp. 577-591). Boston: Butterworth-Heinemann.
- Rackley, S. A. (2017). 23 - Carbon dioxide transportation. In *Carbon Capture and Storage (Second Edition)* (pp. 595-611). Boston: Butterworth-Heinemann.
- Raclavská, H., Corsaro, A., Juchelková, D., Sassmanová, V., & Frantík, J. (2015). Effect of temperature on the enrichment and volatility of 18 elements during pyrolysis of biomass, coal, and tires. *Fuel Processing Technology*, 131, 330 - 337. doi:10.1016/j.fuproc.2014.12.001
- Raclavsky, K., Raclavska, H., Kovalova, L., Skrobankova, H., & Frydrych, J. (2015). *Utilization of carbon produced by torrefaction of grass for energy purposes and related risks*. Paper presented at the 2015 IEEE 15th International Conference on Environment and Electrical Engineering (EEEIC)2015 IEEE 15th International Conference on Environment and Electrical Engineering (EEEIC), Rome, Italy. http://ieeexplore.ieee.org/xpl/articleDetails.jsp?tp=&arnumber=7165476&url=http%3A%2F%2Fieeexplore.ieee.org%2FxpIs%2Fabs_all.jsp%3Farnumber%3D7165476
- Radawiec, W., et al. (2015). Biowęgiel z masy pofermentacyjnej biogazowni rolniczej jako produkt energetyczny i polepszacz gleb (Biocarbon digestate from agricultural biogas as an energy product and soil improver). *Inżynieria Rolnicza (Agricultural Engineering)*, 3(151), 149-156. Retrieved from http://ir.ptir.org/index.php?mood=article&article_id=3595
- Radawiec, W., Dubicki, M., Karwowska, A., Żelazna, K., & Gołaszewski, J. (2015). BIOCHAR FROM A DIGESTATE AS AN ENERGY PRODUCT AND SOIL IMPROVER. In.
- Radcliffe, S. (2014). *Geoengineering: Ocean Iron Fertilisation and the Law of the Sea*. (LLM). Victoria, University of Wellington, Retrieved from <http://researcharchive.vuw.ac.nz/xmlui/bitstream/handle/10063/4554/thesis.pdf?sequence=2>
- Radford, T. (2021). Overheated Earth can slow plants' carbon storage. Retrieved from <https://climatenewsnetwork.net/overheated-earth-can-slow-plants-carbon-storage/>
- Radics, R. I., Dasmohapatra, S., & Kelley, S. (2015). Systematic Review of Bioenergy Perception Studies. *Bio Resources*, 10(4), 8770-8778. Retrieved from http://ojs.cnr.ncsu.edu/index.php/BioRes/article/view/BioRes_10_4_Review_Radics_Bioenergy_Perception_Studies
- Radunsky, K., & Cadman, T. (2019). Governing the Sun. *International Journal of Social Quality*, 9(2), 19-34.
- Raeessossadati, M. J., Ahmadzadeh, H., McHenry, M. P., & Moheimani, N. R. (2014). CO₂ bioremediation by microalgae in photobioreactors: Impacts of biomass and CO₂ concentrations, light, and temperature. *Algal Research*, 6, 78-85. doi:<https://doi.org/10.1016/j.algal.2014.09.007>
- Rafiee, A., Panahi, M., & Khalilpour, K. R. (2017). CO₂ utilization through integration of post-combustion carbon capture process with Fischer-Tropsch gas-to-liquid (GTL) processes. *Journal of CO₂ Utilization*, 18(Supplement C), 98-106. doi:<https://doi.org/10.1016/j.jcou.2017.01.016>
- Raghav, S. (2020). *The Business Case for Natural Climate Solutions: Insights and Opportunities for Southeast Asia*. Retrieved from <https://bit.ly/2Wq31xj>
- Raheem, A., Prinsen, P., Vuppalaadadiyam, A. K., Zhao, M., & Luque, R. (2018). A review on sustainable microalgae based biofuel and bioenergy production: Recent developments. *Journal of Cleaner Production*, 181, 42-59. doi:<https://doi.org/10.1016/j.jclepro.2018.01.125>
- Rahman, A. A., Abdullah, N., & Sulaiman, F. (2014). Temperature Effect on the Characterization

- of Pyrolysis Products from Oil Palm Fronds. *Advances in Energy Engineering*, 2(1), 14-21. Retrieved from <http://www.studentsoutlook.com/upload/technicalpaper/engineering/Temperature-Effect-on-the-Characterizat-on-of-Pyrolysis-Products-from-Oil-Palm-Fronds.pdf>
- Rahman, A. A., Sulaiman, F., & Abdullah, N. (2015). *AIP Conference Proceedings Effect of temperature on pyrolysis product of empty fruit bunches*. Paper presented at the NATIONAL PHYSICS CONFERENCE 2014 (PERFIK 2014), Kuala Lumpur, Malaysia. <http://scitation.aip.org/content/aip/proceeding/aipcp/10.1063/1.4915172>
- Rahman, F. A., Aziz, M. M. A., Saidur, R., Bakar, W. A. W. A., Hainin, M. R., Putrajaya, R., & Hassan, N. A. (2017). Pollution to solution: Capture and sequestration of carbon dioxide (CO₂) and its utilization as a renewable energy source for a sustainable future. *Renewable and Sustainable Energy Reviews*, 71, 112-126. doi:<https://doi.org/10.1016/j.rser.2017.01.011>
- Rahman, L., Whitelaw-Weckert, M., & Orchard, B. (2014). Impact of organic soil amendments, including poultry litter biochar, on nematodes in a Riverina, NSW vineyard. *Soil Research*, 52(6), 604-619.
- Rahman, M. (2021). Drax seeks to build resilient supply chain for negative emissions technology. *The Business Desk*. Retrieved from <https://www.thebusinessdesk.com/yorkshire/news/2081287-drax-seeks-to-build-resilient-supply-chain-for-negative-emissions-technology>
- Rahman, M. F. (2015). *Removal of Perfluorinated Compounds from Ultrapure and Surface Waters by Adsorption and Ion Exchange*. University of Waterloo, Retrieved from <https://uwspace.uwaterloo.ca/handle/10012/9161>
- Rahman, M. M., & Kabir, K. B. (2015). *Production of biochar from biomass residue for household cooking*. Paper presented at the Asia Pacific Confederation of Chemical Engineering Congress. <http://search.informit.com.au/documentSummary;dn=727509859755231;res=IELENG>
- Rahmani, O. (2018). CO₂ sequestration by indirect mineral carbonation of industrial waste red gypsum. *Journal of CO₂ Utilization*, 27, 374-380. doi:<https://doi.org/10.1016/j.jcou.2018.08.017>
- Rahmstorf, S. (2019). Can planting trees save our climate? *RealClimate*. Retrieved from Can planting trees save our climate?
- Raimi, K. T. (2021). Public Perceptions of Geoengineering. *Current Opinion in Psychology*. doi:<https://doi.org/10.1016/j.copsyc.2021.03.012>
- Räisänen, R. (2021). How third-party verification of carbon removal works - VIDEO. Retrieved from https://puro.earth/articles/how-third-party-verification-of-carbon-removals-work-video-646?type=webinars-and-videos&utm_source=newsletter&utm_medium=email&utm_campaign=newsletter-43&utm_content=20210722
- Raiswell, R., & Canfield, D. E. (2011). The Iron Biogeochemical Cycle Past and Present. *Geochemical Perspectives*, 1(1), 1-2. Retrieved from <https://pubs.geoscienceworld.org/perspectives/article-abstract/1/1/1/251624/the-iron-biogeochemical-cycle-past-and-present?redirectedFrom=fulltext>
- Rajagopal, D. (2008). Implications of India's biofuel policies for food, water and the poor. *Water Policy*, 10 (supp.), 95-106. Retrieved from <http://wp.iwaponline.com/content/ppiwawaterpol/10/S1/95.full.pdf>
- Rajagopal, D. (2013). The fuel market effects of biofuel policies and implications for regulations based on lifecycle emissions. *Environmental Research Letters*, 8, 1-8. Retrieved from <http://iopscience.iop.org/article/10.1088/1748-9326/8/2/024013/pdf>
- Rajagopal, D., Hochman, G., & Zilberman, D. (2011). Indirect fuel use change (IFUC) and the

- lifecycle environmental impact of biofuel policies. *Energy Policy*, 31, 228-233. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0301421510007214>
- Rajapaksha, A. U., et al. . (2014). Invasive plant-derived biochar inhibits sulfamethazine uptake by lettuce in soil. *Chemosphere*, 111, 500-504. doi:10.1016/j.chemosphere.2014.04.040
- Rajapaksha, A. U., et al. . (2014). Pyrolysis condition affected sulfamethazine sorption by tea waste biochars. *Bioresource Technology*, 166, 303-308. doi:10.1016/j.biortech.2014.05.029
- Rajapaksha, A. U., et al. . (2014). *Removal of Hexavalent Chromium Aqueous Solutions Using Different Biochars and Characterization of the Products of the Cr (VI) Adsorption and Reduction*. Paper presented at the 2014 GSA Annual Meeting in Vancouver, British Columbia. https://gsa.confex.com/gsa/2014AM/finalprogram/abstract_247706.htm
- Rajapaksha, A. U., et al. . (2015). Enhanced sulfamethazine removal by steam-activated invasive plant-derived biochar. *Journal of Hazardous Materials*, 290, 43 - 50. doi:10.1016/j.jhazmat.2015.02.046
- Rajapaksha, A. U., et al. . (2015). The role of biochar, natural iron oxides, and nanomaterials as soil amendments for immobilizing metals in shooting range soil. *Environmental Geochemistry and Health*, 37(6), 931-942. doi:10.1007/s10653-015-9694-z
- Rajapaksha, A. U., et al. (2015). Steam activation of biochars facilitates kinetics and pH-resilience of sulfamethazine sorption. *Journal of Soils and Sediments*, 16(3), 889-895. doi:10.1007/s11368-015-1325-x
- Rajapaksha, A. U., et al. (2016). Engineered/designer biochar for contaminant removal/immobilization from soil and water: Potential and implication of biochar modification. *Chemosphere*, 148, 276 - 291. doi:10.1016/j.chemosphere.2016.01.043
- Rajapaksha, A. U., & Mohan, D. (2015). Definitions and Fundamentals of Biochar. In *Biochar: Production, Characterization, and Applications*.
- Rajkovich, S. (2010). *Biochar as an Amendment to Improve Soil Fertility*. Retrieved from <http://ecommons.cornell.edu/bitstream/1813/17306/2/Rajkovich%2c%20Shelby%20.pdf>
- Ralston, S. J. (2009). Engineering an Artful and Ethical Solution to the Problem of Global Warming. *Review of Policy Research*, 26(6), 821-837. doi:<https://doi.org/10.1111/j.1541-1338.2009.00419.x>
- Rama Chandraiah, M. (2016). Facile synthesis of zero valent iron magnetic biochar composites for Pb(II) removal from the aqueous medium. *Alexandria Engineering Journal*, 55(1), 619 - 625. doi:10.1016/j.aej.2015.12.015
- Ramachandra, T. V., & Bharath, S. J. R. S. i. E. S. S. (2019). Global Warming Mitigation Through Carbon Sequestrations in the Central Western Ghats. *Remote Sensing in Earth Systems Sciences*, 2(1), 39-63. doi:10.1007/s41976-019-0010-z
- Ramachandran Nair, P. K., Mohan Kumar, B., & Nair, V. D. (2009). Agroforestry as a strategy for carbon sequestration. 172(1), 10-23. doi:10.1002/jpln.200800030
- Ramachandran Nair, P. K., Nair, V. D., Mohan Kumar, B., & Showalter, J. M. (2010). Chapter Five - Carbon Sequestration in Agroforestry Systems. In D. L. Sparks (Ed.), *Advances in Agronomy* (Vol. 108, pp. 237-307): Academic Press.
- Ramaiah, N., Jain, A., Meena, R. M., Naik, R. K., Verma, R., Bhat, M., . . . Gomes, J. (2015). Response of bacteria and phytoplankton from a subtropical front location Southern Ocean to micronutrient amendments ex-situ. *Deep Sea Research Part II: Topical Studies in Oceanography*, 118(Part B), 209-220. doi:<http://dx.doi.org/10.1016/j.dsrr.2015.03.013>
- Ramanan, R., Kannan, K., Deshkar, A., Yadav, R., & Chakrabarti, T. (2010). Enhanced algal CO₂ sequestration through calcite deposition by Chlorella sp. and Spirulina platensis in a mini-raceway pond. *Bioresource Technology*, 101(8), 2616-2622. doi:<https://doi.org/10.1016/j.biortech.2009.10.061>
- Ramaraj, R. (2015). Carbon sequestration by alga ecosystems. *Ecological Engineering*, 84,

- 386-389. Retrieved from https://www.researchgate.net/publication/281491325_Carbon_sequestration_by_alga_ecosystems
- Rambo, M. K. D., et al. (2014). *Production of biochar and chemical products from banana and coffee residues after acid hydrolysis*. Paper presented at the Embrapa Solos - Article in conference proceedings (ALICE).
- Ramdin, M., et al. (2012). State-of-the-Art of CO₂ Capture with Ionic Liquids. *Ind. Eng. Chem. Res.*, 51, 8149-8177. Retrieved from <https://pubs.acs.org/doi/abs/10.1021/ie3003705>
- Ramírez Ramírez, A. (2020). Chapter 13 Carbon Capture and Utilisation. In *Carbon Capture and Storage* (pp. 426-446): The Royal Society of Chemistry.
- Ramola, S., Mishra, T., Rana, G., & Srivastava, R. K. (2014). Characterization and pollutant removal efficiency of biochar derived from bagasse, bamboo and tyre. *Environmental Monitoring and Assessment*, 186(12), 9023 - 9039. doi:10.1007/s10661-014-4062-5
- Ramos, C. G., Hower, J. C., Blanco, E., Oliveira, M. L. S., & Theodoro, S. H. (2021). Possibility of uses of silicate rocks powder: A review. *Geoscience Frontiers*, 101185. doi:<https://doi.org/10.1016/j.gsf.2021.101185>
- Ramos Tercero, E. A., Domenicali, G., & Bertucco, A. (2014). Autotrophic production of biodiesel from microalgae: An updated process and economic analysis. *Energy*, 76, 807-815. doi:<https://doi.org/10.1016/j.energy.2014.08.077>
- Ramsurn, H., Kumar, S., & Gupta, R. B. (2011). Enhancement of Biochar Gasification in Alkali Hydrothermal Medium by Passivation of Inorganic Components Using Ca(OH)2. *Energy Fuels*, 25(5), 2389-2398. doi:10.1021/ef200438b
- Randers, J., & Goluke, U. (2020). An earth system model shows self-sustained melting of permafrost even if all man-made GHG emissions stop in 2020. *Scientific Reports*, 10(1), 18456. doi:10.1038/s41598-020-75481-z
- Randolph, J. B., & Saar, M. O. (2011). Coupling carbon dioxide sequestration with geothermal energy capture in naturally permeable, porous geologic formations: Implications for CO₂ sequestration. *Energy Procedia*, 4, 2206-2213. doi:<https://doi.org/10.1016/j.egypro.2011.02.108>
- Randow, J. (2019). One Whale Is Worth Thousands of Trees in Climate Fight. *Bloomberg*. Retrieved from <https://www.bloomberg.com/news/articles/2019-11-20/one-whale-is-worth-thousands-of-trees-in-helping-save-the-planet>
- Ranganathan, J., et al. (2020). Regenerative Agriculture: Good for Soil Health, but Limited Potential to Mitigate Climate Change. Retrieved from <https://www.wri.org/blog/2020/05/regenerative-agriculture-climate-change>
- Rani, D., et al. (2015). Management opportunities to mitigate greenhouse gas emissions from Chinese agriculture. *Pure Collection*, 209, 108-124. Retrieved from <http://cadair.aber.ac.uk/dspace/handle/2160/29729>
- Rani, P., Singh, A. P., & Rai, S. (2015). Effect of rice husk biochar and lime treated sludge on NPK concentration and uptake by rice crop. *Environment and Ecology*, 22(4), 503-511. Retrieved from <http://www.cabdirect.org/abstracts/20153308822.html?jsessionid=1F34BE24F66214E191655B02B567B3FB>
- Ranjan, M. (2010). *Feasibility of Air Capture*. (Master of Science). MIT, Retrieved from http://sequestration.mit.edu/pdf/ManyaRanjan_Thesis_June2010.pdf
- Ranjan, M. (2018). Attractiveness of Air Capture: Time for a reality check. *Energy World*. Retrieved from <https://energy.economictimes.indiatimes.com/energy-speak/seductiveness-of-air-capture-time-for-a-reality-check/3344>
- Ranjan, M., & Herzog, H. J. (2011). Feasibility of air capture. *Energy Procedia*, 4, 2869-2876. doi:<http://dx.doi.org/10.1016/j.egypro.2011.02.193>
- Rao, A. B., & Rubin, E. S. (2002). A Technical, Economic, and Environmental Assessment of Amine-Based CO₂ Capture Technology for Power Plant Greenhouse Gas Control.

- Environmental Science and Technology*, 36(20), 4467-4475. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/es0158861>
- Rao, A. B., Rubin, E. S., Keith, D. W., & Granger Morgan, M. (2006). Evaluation of potential cost reductions from improved amine-based CO₂ capture systems. *Energy Policy*, 34(18), 3765-3772. doi:<http://dx.doi.org/10.1016/j.enpol.2005.08.004>
- Rao, M. A. (2015). Biochar: properties and use for environmental management. In.
- Rashidi, N. A., Yusup, S., & Hameed, B. H. (2013). Kinetic studies on carbon dioxide capture using lignocellulosic based activated carbon. *Energy*, 61, 440-446. doi:<https://doi.org/10.1016/j.energy.2013.08.050>
- Raslavičius, L., Strūgas, N., & Felneris, M. (2018). New insights into algae factories of the future. *Renewable and Sustainable Energy Reviews*, 81, 643-654. doi:<https://doi.org/10.1016/j.rser.2017.08.024>
- Rasmussen, S. (2018). Carbon Dioxide Removal Costs Decline 84 Percent. *NewsMax*. Retrieved from <https://www.newsmax.com/scottrasmussen/gallon-fuel-gasoline-technology/2018/06/14/id/866141/>
- Rassool, D., & Havercroft, I. (2021). *Financing CCS in Developing Countries*. Retrieved from <https://www.globalccsinstitute.com/resources/publications-reports-research/>
- Rathi, A. (2017). The compelling case for capturing carbon emissions and burying them underground. *Quartz*. Retrieved from <https://qz.com/1137197/the-compelling-case-for-capturing-carbon-emissions-and-burying-them-underground/>
- Rathi, A. (2017). The world's first "negative emissions" plant has begun operation—turning carbon dioxide into stone. *Quartz*. Retrieved from <https://qz.com/1100221/the-worlds-first-negative-emissions-plant-has-opened-in-iceland-turning-carbon-dioxide-into-stone/>
- Rathi, A. (2019). Stripe has a science-based blueprint for companies to address the climate crisis. *Quartz*. Retrieved from <https://qz.com/1691241/stripe-has-a-science-based-way-to-offset-its-emissions/>
- Rathi, A. (2019). A tiny tweak in California law is creating a strange thing: carbon-negative oil. *Quartz*. Retrieved from <https://qz.com/1638096/the-story-behind-the-worlds-first-large-direct-air-capture-plant/>
- Rathi, A. (2021). Musk's \$100 Million Prize Is for Tech the World Desperately Needs. *Bloomberg Green*. Retrieved from <https://www.bloomberg.com/news/articles/2021-01-22/musk-s-100-million-prize-is-for-tech-the-world-desperately-needs>
- Rathi, A. (2021). We Pay to Treat Waste Water, Why Not Waste Carbon? Retrieved from <https://www.bloomberg.com/authors/AUdOobfNzkQ/akshat-rathi>
- Rathi, A., & Gillespie, T. (2020). With Big Oil Declining, Carbon Removal Could Take Its Place. *Bloomberg Green*. Retrieved from <https://www.bloomberg.com/news/articles/2020-10-27/carbon-dioxide-removal-industry-could-rival-oil-and-gas-in-climate-fight#:~:text=3%3A54-,With%20Big%20Oil%20Declining%2C%20Carbon%20Removal%20Could%20Take%20Its%20Place,today%27s%20oil%20and%20gas%20giants.&text=Carbon%20Engineering%27s%20plant%20captures%20carbon%20dioxide%20directly%20from%20the%20air.>
- Ratnam, J., et al. (2020). Trees as Nature-Based Solutions: A Global South Perspective. *One Earth*, 3(2), 140-144. doi:<10.1016/j.oneear.2020.07.008>
- Rattan, C. (2021). CO₂ and EfW. Retrieved from https://energycentral.com/c/og/turning-carbon-waste-resource-ecos?utm_source=feedburner&utm_medium=email&utm_campaign=Energy+26+Sustainability+Network+28all+posts%29
- Rau, G. H. (2008). Electrochemical Splitting of Calcium Carbonate to Increase Solution Alkalinity: Implications for Mitigation of Carbon Dioxide and Ocean Acidity. *Environmental Science & Technology*, 42(23), 8935-8940. doi:<10.1021/es800366q>

- Rau, G. H. (2009). Electrochemical CO₂ capture and storage with hydrogen generation. *Energy Procedia*, 1(1), 823-828. doi:<http://dx.doi.org/10.1016/j.egypro.2009.01.109>
- Rau, G. H. (2011). CO₂ Mitigation via Capture and Chemical Conversion in Seawater. *Environmental Science & Technology*, 45(3), 1088-1092. doi:[10.1021/es102671x](https://doi.org/10.1021/es102671x)
- Rau, G. H. (2014). Enhancing the Ocean's Role in CO₂ Mitigation. In B. Freedman (Ed.), *Global Environmental Change* (pp. 817-824).
- Rau, G. H. (2019). The race to remove CO₂ needs more contestants. *Nature Climate Change*. doi:[10.1038/s41558-019-0445-5](https://doi.org/10.1038/s41558-019-0445-5)
- Rau, G. H., & Baird, J. R. (2018). Negative-CO₂-emissions ocean thermal energy conversion. *Renewable and Sustainable Energy Reviews*, 95, 265-272. doi:<https://doi.org/10.1016/j.rser.2018.07.027>
- Rau, G. H., & Caldeira, K. (1999). Enhanced carbonate dissolution: a means of sequestering waste CO₂ as ocean bicarbonate. *Energy Conversion and Management*, 40(17), 1803-1813. doi:[http://dx.doi.org/10.1016/S0196-8904\(99\)00071-0](http://dx.doi.org/10.1016/S0196-8904(99)00071-0)
- Rau, G. H., Carroll, S. A., Bourcier, W. L., Singleton, M. J., Smith, M. M., & Aines, R. D. (2013). Direct electrolytic dissolution of silicate minerals for air CO₂ mitigation and carbon-negative H₂ production. *Proceedings of the National Academy of Sciences*, 110(25), 10095-10100. doi:[10.1073/pnas.1222358110](https://doi.org/10.1073/pnas.1222358110)
- Rau, G. H., & Greene, C. H. (2015). Emissions reduction is not enough. *Science*, 349(6255), 1459. Retrieved from <http://science.sciencemag.org/content/349/6255/1459.2>
- Rau, G. H., Knauss, K. G., Langer, W. H., & Caldeira, K. (2007). Reducing energy-related CO₂ emissions using accelerated weathering of limestone. *Energy*, 32(8), 1471-1477. doi:<https://doi.org/10.1016/j.energy.2006.10.011>
- Rau, G. H., McLeod, E. L., & Hoegh-Guldberg, O. (2012). The need for new ocean conservation strategies in a high-carbon dioxide world. *Nature Climate Change*, 2(10), 720-724. doi:<http://www.nature.com/nclimate/journal/v2/n10/abs/nclimate1555.html#supplementary-information>
- Rau, G. H., Willauer, H. D., & Ren, Z. J. (2018). The global potential for converting renewable electricity to negative-CO₂-emissions hydrogen. *Nature Climate Change*. doi:[10.1038/s41558-018-0203-0](https://doi.org/10.1038/s41558-018-0203-0)
- Rauh, S. (2007). Interactive comment on "N₂O release from agro-biofuel production negates global warming reduction by replacing fossil fuels" by P. J. Crutzen et al. *Atmospheric Chemistry and Physics Discussions*, 7, S4616-4619. Retrieved from <http://www.atmos-chem-phys-discuss.net/7/S4616/2007/acpd-7-S4616-2007.pdf>
- Rausis, K., Ćwik, A., & Casanova, I. (2020). Phase evolution during accelerated CO₂ mineralization of brucite under concentrated CO₂ and simulated flue gas conditions. *Journal of CO₂ Utilization*, 37, 122-133. doi:<https://doi.org/10.1016/j.jcou.2019.12.007>
- Raven, J. A., & Falkowski, P. G. (1999). Oceanic sinks for atmospheric CO₂. *Plant, Cell & Environment*, 22(6), 741-755. doi:[10.1046/j.1365-3040.1999.00419.x](https://doi.org/10.1046/j.1365-3040.1999.00419.x)
- Ravi Ganesh, P., Mishra, S., Haagsma, A., & Gupta, N. (2021). Dynamic modeling to understand pressure response from oil production and CO₂ injection in a depleted pinnacle reef reservoir: Manual calibration using simplified resolution of reservoir heterogeneity. *International Journal of Greenhouse Gas Control*, 108, 103308. doi:<https://doi.org/10.1016/j.ijggc.2021.103308>
- Ravi, S., et al. (2016). Particulate matter emissions from biochar-amended soils as a potential tradeoff to the negative emission potential. *Scientific Reports*, 6(35984), 1-7. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5080604/pdf/srep35984.pdf>
- Ravikumar, D., Keoleian, G., & Miller, S. (2020). The environmental opportunity cost of using renewable energy for carbon capture and utilization for methanol production. *Applied Energy*, 279, 115770. doi:<https://doi.org/10.1016/j.apenergy.2020.115770>

- Ravikumar, D., Keoleian, G. A., Miller, S. A., & Sick, V. (2021). Assessing the Relative Climate Impact of Carbon Utilization for Concrete, Chemical, and Mineral Production. *Environmental Science & Technology*. doi:10.1021/acs.est.1c01109
- Ravikumar, D., Zhang, D., Keoleian, G., Miller, S., Sick, V., & Li, V. (2021). Carbon dioxide utilization in concrete curing or mixing might not produce a net climate benefit. *Nature Communications*, 12(1), 855. doi:10.1038/s41467-021-21148-w
- Ravindranath, J., et al. (2009). *GHG Implications of Land Use and Land Conversion to Biofuel Crops*. Paper presented at the Proceedings of the Science Committee on Problems of the Environment (SCOPE). International Biofuels Project Rapid Assessment, Gummersbach, Germany. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.519.6089&rep=rep1&type=pdf>
- Ravindranath, N. H., Balachandra, P., Dasappa, S., & Rao, K. U. (2006). Bioenergy technologies for carbon abatement. *Biomass & Bioenergy*, 30(10), 826-837. doi:10.1016/j.biombioe.2006.02.003
- Raviv, M. (2015). *Can the Use of Composts and Other Organic Amendments in Horticulture Help to Mitigate Climate Change?* Paper presented at the International Society for Horticultural Science, Proceedings of the IIInd IS on Organic Matter Mgt. and Compost Use in Hort.
- Ray, R., & Jana, T. K. (2017). Carbon sequestration by mangrove forest: One approach for managing carbon dioxide emission from coal-based power plant. *Atmospheric Environment*, 171, 149-154. doi:<https://doi.org/10.1016/j.atmosenv.2017.10.019>
- Rayfuse, R., Lawrence, M., & Gjerde, K. M. (2008). Ocean Fertilisation and Climate Change: The Need to Regulate Emerging High Seas Uses. *International Journal of Marine and Coastal Law*, 23(2), 297-326. Retrieved from <http://booksandjournals.brillonline.com/content/journals/10.1163/092735208x295846>
- Razzak, S. A., Ali, S. A. M., Hossain, M. M., & deLasa, H. (2017). Biological CO₂ fixation with production of microalgae in wastewater – A review. *Renewable and Sustainable Energy Reviews*, 76, 379-390. doi:<https://doi.org/10.1016/j.rser.2017.02.038>
- Razzak, S. A., Hossain, M. M., Lucky, R. A., Bassi, A. S., & de Lasa, H. (2013). Integrated CO₂ capture, wastewater treatment and biofuel production by microalgae culturing—A review. *Renewable and Sustainable Energy Reviews*, 27, 622-653. doi:<https://doi.org/10.1016/j.rser.2013.05.063>
- Read, P. (2008). Biosphere carbon stock management: addressing the threat of abrupt climate change in the next few decades: an editorial essay. *Climatic Change*, 87(3), 305-320. doi:10.1007/s10584-007-9356-y
- Read, P. (2009). Policy to Address the Threat of Dangerous Climate Change: A Leading Role for Biochar. In L. Johannes & J. Stephen (Eds.), *Biochar for Environmental Management: Science and Technology* (pp. 393-404). London, UK: Earthscan.
- Read, P., & Lermit, J. (2005). Bio-energy with carbon storage (BECS): A sequential decision approach to the threat of abrupt climate change. *Energy*, 30(14), 2654-2671. doi:<http://dx.doi.org/10.1016/j.energy.2004.07.003>
- Read, P., Lermit, J., & Kathirgamanathan, P. (2003). *Modelling bio-energy with carbon storage (BECS) in a multi-region version of flames*. Amsterdam: Elsevier Science Bv.
- Realff, M. J., & Eisenberger, P. (2012). Flawed analysis of the possibility of air capture. *Proceedings of the National Academy of Sciences*, 109(25), E1589-E1589. doi:10.1073/pnas.1203618109
- Realmonte, G., Drouet, L., Gambhir, A., Glynn, J., Hawkes, A., Köberle, A. C., & Tavoni, M. (2019). An inter-model assessment of the role of direct air capture in deep mitigation pathways. *Nature Communications*, 10(1), 3277. doi:10.1038/s41467-019-10842-5
- Realmonte, G., Drouet, L., Gambhir, A., Glynn, J., Hawkes, A., Köberle, A. C., & Tavoni, M.

- (2020). Reply to "High energy and materials requirement for direct air capture calls for further analysis and R&D". *Nature Communications*, 11(1), 3286. doi:10.1038/s41467-020-17204-6
- Reals, K. (2021). CO₂ sucked from the air and turned into jet fuel shows promise. Retrieved from <https://runwaygirlnetwork.com/2021/02/16/co2-sucked-from-the-air-and-turned-into-jet-fuel-shows-promise/>
- Reardon, J. P., Paskach, T. J., & Evans, P. (2015).
- Rebitanirn, N. Z., et al. . (2013). Potential applications of wastes from energy generation particularly biochar in Malaysia. *Renewable and Sustainable Energy Reviews*, 21, 694–702. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1364032113000075>
- Recapture. (2021). Why We Created Recapture. Retrieved from <https://www.recapturecarbon.com/why-we-created-recapture>
- Reckamp, J. M., Garrido, R. A., & Satrio, J. A. (2014). Selective pyrolysis of paper mill sludge by using pretreatment processes to enhance the quality of bio-oil and biochar products. *Biomass and Bioenergy*, 71, 235 - 244. doi:10.1016/j.biombioe.2014.10.003
- Reddy, A. (2012). *Phosphorus Transport and Distribution in Kentucky Soils Prepared Using Various Biochar Types*. Retrieved from <http://digitalcommons.wku.edu/theses/1210>
- Reddy, G. K., Nagender, T., & Yerasi, P. K. R. (2013). Biochar and its potential benefits - a review. *Environment and Ecology*, 31(4A), 2000-2005. Retrieved from <https://www.cabdrect.org/cabdrect/abstract/20143078339>
- Reddy, K. R., Xie, T., & Dastgheibi, S. (2014). Evaluation of Biochar as a Potential Filter Media for the Removal of Mixed Contaminants from Urban Storm Water Runoff. *Journal of Environmental Engineering*, 140(12), 04014043. doi:10.1061/(asce)ee.1943-7870.0000872
- Reddy, K. R., Yargicoglu, E. N., Yue, D., & Yaghoubi, P. (2014). Enhanced Microbial Methane Oxidation in Landfill Cover Soil Amended with Biochar. *Journal of Geotechnical and Geoenvironmental Engineering*. Retrieved from [http://ascelibrary.org/doi/abs/10.1061/\(ASCE\)GT.1943-5606.0001148](http://ascelibrary.org/doi/abs/10.1061/(ASCE)GT.1943-5606.0001148)
- Reed, D. G., Dowson, G. R. M., & Styring, P. (2017). Cellulose-Supported Ionic Liquids for Low-Cost Pressure Swing CO₂ Capture. 5(13). doi:10.3389/fenrg.2017.00013
- Rees, F. (2015). *Mobilité des métaux dans les systèmes sol-plante-biochar (Mobility of metals in soil-plant-biochar systems)*. Université de Lorraine, Retrieved from <http://www.theses.fr/2014LORR0293>
- Rees, F., Germain, C., Sterckeman, T., & Morel, J.-L. (2015). Plant growth and metal uptake by a non-hyperaccumulating species (*Lolium perenne*) and a Cd-Zn hyperaccumulator (*Nothaea caerulescens*) in contaminated soils amended with biochar. *Plant and Soil*. doi:10.1007/s11104-015-2384-x
- Rees, F., Simonnot, M. O., & Morel, J. L. (2013). Short-term effects of biochar on soil heavy metal mobility are controlled by intra-particle diffusion and soil pH increase. *European Journal of Soil Science*, 65(1), 149-161. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/ejss.12107/abstract>
- Rees, F., Sterckeman, T., & Morel, J.-L. (2015). LE BIOCHAR, UN OUTIL POUR LA PHYTOREMÉDIATION DES SOLS CONTAMINÉS (THE BIOCHAR, A TOOL FOR CONTAMINATED SOIL PHYTOREMEDIATION). In.
- Rees, F., TERCKEMAN, T., & Morel, J.-L. (2015). ROOT DEVELOPMENT IN METAL CONTAMINATED SOILS AMENDED WITH BIOCHAR. In.
- Registry, A. C. (2015). *Scientific Peer Review Comments and Responses: A Methodology for Biochar Projects*. Retrieved from <http://americancarbonregistry.org/carbon-accounting/standards-methodologies/methodology-for-emissions-reductions-from-biochar-projects/>

- biochar-methodology-scientific-peer-review-comments-and-response-final.pdf
- Rehdanz, K., Tol, R. S. J., & Wetzel, P. (2006). Ocean carbon sinks and international climate policy. *Energy Policy*, 34(18), 3516-3526. doi:<http://dx.doi.org/10.1016/j.enpol.2005.07.015>
- Rehman, U., et al. . (2015). Adsorption of Brilliant Green dye on biochar prepared from lignocellulosic bioethanol plant waste. *CLEAN - Soil, Air, Water*, 44(1), 55-62. doi:[10.1002/clen.201300954](https://doi.org/10.1002/clen.201300954)
- Rehra, D., Bansode, R. R., Hassan, O., & Ahmedna, M. (2016). Physico-chemical characterization of biochars from solid municipal waste for use in soil amendment. *Journal of Analytical and Applied Pyrolysis*. doi:[10.1016/j.jaat.2015.12.022](https://doi.org/10.1016/j.jaat.2015.12.022)
- Reibe, K. (2015). *Wirkungen von Biokohlen im System Boden-Pflanze – Untersuchungen auf sandigen Standorten (Effects of biochars in the system soil-plant - studies on sandy sites)*. Humboldt-Universität zu Berlin (Humboldt University of Berlin), Retrieved from <http://edoc.hu-berlin.de/docviews/abstract.php?id=41929>
- Reibe, K., Götz, K.-P., Döring, T. F., Roß, C.-L., & Ellmer, F. (2014). Impact of hydro-biochars on root morphology of spring wheat. *Archives of Agronomy and Soil Science*, 1 - 14. doi:[10.1080/03650340.2014.983090](https://doi.org/10.1080/03650340.2014.983090)
- Reibe, K., Götz, K.-P., Roß, C.-L., Döring, T. F., Ellmer, F., & Ruess, L. (2015). Impact of quality and quantity of biochar and hydrochar on soil Collembola and growth of spring wheat. *Soil Biology and Biochemistry*, 83, 84 - 87. doi:[10.1016/j.soilbio.2015.01.014](https://doi.org/10.1016/j.soilbio.2015.01.014)
- Reibe, K., Roß, C.-L., & Ellmer, F. (2014). Hydro-/Biochar application to sandy soils: impact on yield components and nutrients of spring wheat in pots. *Archives of Agronomy and Soil Science*, 1 - 6. doi:[10.1080/03650340.2014.977786](https://doi.org/10.1080/03650340.2014.977786)
- Reichel, T., Demus, T., Echterhof, T., & Pfeifer, H. (2014). *Increasing the sustainability of the steel production in the electric arc furnace by substituting fossil coal with biochar*. Paper presented at the 4th Central European Biomass Conference. http://www.researchgate.net/publication/260174609_Increasing_the_sustainability_of_the_steel_production_in_the_electric_arc_furnace_by_substituting_fossil_coal_with_biochar
- Reid, B. J., et al. (2013). Influence of biochar on isoproturon partitioning and bioaccessibility in soil. *Environmental Pollution*, 181, 44–50. Retrieved from <http://www.sciencedirect.com/science/article/pii/S026974911300300X>
- Reid, P. C., & Edwards, M. (2001). Plankton And Climate A2 - Steele, John H. In *Encyclopedia of Ocean Sciences* (pp. 2194-2200). Oxford: Academic Press.
- Reijnders, L. (2006). Conditions for the sustainability of biomass based fuel use. *Energy Policy*, 34(7), 863-876. Retrieved from [https://www.researchgate.net/publication/222051790_Conditions_for_the_sustainability_of_biomass_based_fuel_use](http://www.researchgate.net/publication/222051790_Conditions_for_the_sustainability_of_biomass_based_fuel_use)
- Reijnders, L. (2009). Are forestation, bio-char and landfilled biomass adequate offsets for the climate effects of burning fossil fuels? *Energy Policy*, 37(8), 2839-2841. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0301421509002146>
- Reiley, L. (2019). The new plan to remove a trillion tons of carbon dioxide from the atmosphere: Bury it. *Washington Post*. Retrieved from https://www.washingtonpost.com/business/2019/06/12/new-plan-remove-trillion-tons-carbon-dioxide-atmosphere-bury-it/?noredirect=on&utm_term=.77bfbb421ae0
- Reilly, J., Melillo, J., Cai, Y., Kicklighter, D., Gurgel, A., Paltsev, S., . . . Schlosser, A. (2012). Using Land To Mitigate Climate Change: Hitting the Target, Recognizing the Trade-offs. *Environmental Science & Technology*, 46(11), 5672-5679. doi:[10.1021/es2034729](https://doi.org/10.1021/es2034729)
- Reinecke, S., et al. (2018). *Accelerating Forest Landscape Restoration: Key Governance Factors*. Retrieved from
- Reiner, D., et al. (2011). *Opinion shaping factors towards CCS and local CCS projects: Public*

- and stakeholder survey and focus groups.* Retrieved from http://www.ccs.cam.ac.uk/files/opinion-shaping-factors-towards-ccs-and-local-ccs-projects-public-and-stakeholder-survey-and-focus-groups/at_download/file
- Reiner, D., & Liang, X. (2012). Stakeholder views on financing carbon capture and storage demonstration projects in China. *Environmental Science and Technology*, 46(2), 643-651. doi:10.1021/es203037j
- Reiner, D. M. (2016). Learning through a portfolio of carbon capture and storage demonstration projects. *Nature Energy*, 1, 15011. doi:10.1038/nenergy.2015.11
- Reiner, D. M. (2020). Chapter 16 The Political Economy of Carbon Capture and Storage. In *Carbon Capture and Storage* (pp. 536-558): The Royal Society of Chemistry.
- Reitze, A. W. J. (2016). Climate Change Law. In D. A. Farber & M. Peeters (Eds.), *Climate Change Law* (pp. 451-464).
- Rékási, M., & Uzinger, N. (2015). A bioszén felhasználásának lehetőségei a talaj tápanyagutánpótlásában – Szemle. *Agrokémia és Talajtan*, 64(1), 239 - 256. doi:10.1556/0088.2015.64.1.18
- Rembauville, M., Salter, I., Dehairs, F., Miquel, J. C., & Blain, S. (2018). Annual particulate matter and diatom export in a high nutrient, low chlorophyll area of the Southern Ocean. *Polar Biology*, 41(1), 25-40. doi:10.1007/s00300-017-2167-3
- Remenárová, L., et al. (2012). Adsorption of Copper and Zinc by Biochars Produced from Pyrolysis of Hardwood and Corn Straw in Aqueous Solution. *Biosorption and bioaccumulation of heavy metals*, 102(19), 8877-8884. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0960852411009059>
- Remer, L. A. (2006). Dust, fertilization and sources. *Environmental Research Letters*, 1(1), 1-2. Retrieved from <http://iopscience.iop.org/article/10.1088/1748-9326/1/1/011001/meta>
- Ren, J., Li, N., Li, L., An, J.-K., Zhao, L., & Ren, N.-Q. (2014). Granulation and ferric oxides loading enable biochar derived from cotton stalk to remove phosphate from water. *Bioresource Technology*, 178, 119-125. doi:10.1016/j.biortech.2014.09.071
- Ren, N., Tang, Y., & Li, M. (2018). Mineral additive enhanced carbon retention and stabilization in sewage sludge-derived biochar. *Process Safety and Environmental Protection*, 115, 70-78. doi:<https://doi.org/10.1016/j.psep.2017.11.006>
- Ren, S., et al. (2014). Hydrocarbons and hydrogen-rich syngas production by biomass catalytic pyrolysis and bio-oil upgrading over biochar catalysts. *RSC Adv*, 4, 10731-10737. Retrieved from <http://pubs.rsc.org/-/content/articlehtml/2014/ra/c4ra00122b>
- Ren, X., Sun, H., Wang, F., & Cao, F. (2016). The changes in biochar properties and sorption capacities after being cultured with wheat for 3 months. *Chemosphere*, 144, 2257 - 2263. doi:10.1016/j.chemosphere.2015.10.132
- Ren, X., Zhang, P., Zhao, L., & Sun, H. (2015). Sorption and degradation of carbaryl in soils amended with biochars: influence of biochar type and content. *Environmental Science and Pollution Research*, 23(3), 2724-2734. doi:10.1007/s11356-015-5518-z
- Renforth, P., et al. (2011). Designing a carbon capture function into urban soils. *Proceedings of the Institution of Civil Engineers - Urban Design and Planning*, 164(2), 121-128. Retrieved from <http://www.icevirtuallibrary.com/doi/full/10.1680/udap.2011.164.2.121>
- Renforth, P. (2012). The potential of enhanced weathering in the UK. *International Journal of Greenhouse Gas Control*, 10, 229-243. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1750583612001466>
- Renforth, P. (2017). Preventing Climate Change by Increasing Ocean Alkalinity. *EOS Editors' Vox*. Retrieved from <https://eos.org/editors-vox/preventing-climate-change-by-increasing-ocean-alkalinity>
- Renforth, P. (2019). The negative emission potential of alkaline materials. *Nature Communications*, 10(1), 1401. doi:10.1038/s41467-019-09475-5

- Renforth, P., & Campbell, J. S. (2021). The role of soils in the regulation of ocean acidification. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 376(1834), 20200174. doi:doi:10.1098/rstb.2020.0174
- Renforth, P., & Henderson, G. (2017). Assessing ocean alkalinity for carbon sequestration. *Reviews of Geophysics*, 55(3), 636-674. doi:10.1002/2016RG000533
- Renforth, P., Jenkins, B. G., & Kruger, T. (2013). Engineering challenges of ocean liming. *Energy*, 60, 442-452. doi:<http://dx.doi.org/10.1016/j.energy.2013.08.006>
- Renforth, P., & Kruger, T. (2013). Coupling Mineral Carbonation and Ocean Liming. *Energy & Fuels*, 27(8), 4199-4207. doi:10.1021/ef302030w
- Renforth, P., & Manning, D. A. C. (2011). Laboratory carbonation of artificial silicate gels enhanced by citrate: Implications for engineered pedogenic carbonate formation. *International Journal of Greenhouse Gas Control*, 5(6), 1578-1586. doi:<http://dx.doi.org/10.1016/j.ijggc.2011.09.001>
- Renforth, P., Manning, D. A. C., & Lopez-Capel, E. (2009). Carbonate precipitation in artificial soils as a sink for atmospheric carbon dioxide. *Applied Geochemistry*, 24(9), 1757-1764. doi:<http://dx.doi.org/10.1016/j.apgeochem.2009.05.005>
- Renforth, P., Pogge von Strandmann, P. A. E., & Henderson, G. M. (2015). The dissolution of olivine added to soil: Implications for enhanced weathering. *Applied Geochemistry*, 61, 109-118. doi:<http://dx.doi.org/10.1016/j.apgeochem.2015.05.016>
- Renforth, P., Washbourne, C. L., Taylder, J., & Manning, D. A. C. (2011). Silicate Production and Availability for Mineral Carbonation. *Environmental Science & Technology*, 45(6), 2035-2041. doi:10.1021/es103241w
- Renforth, P., & Wilcox, J. (2020). Editorial: The Role of Negative Emission Technologies in Addressing Our Climate Goals. *Frontiers in Climate*. Retrieved from https://www.frontiersin.org/articles/10.3389/fclim.2020.00001/full?utm_source=FRN&utm_medium=EMAIL_IRIS&utm_campaign=EMI_FRN_ARTICLEPUBLISHED_FOLLOWERS&utm_content=ARTICLE_TITLE
- Renfrew, S. E., Starr, D. E., & Strasser, P. (2020). Electrochemical Approaches toward CO₂ Capture and Concentration. *ACS Catalysis*, 10(21), 13058-13074. doi:10.1021/acscatal.0c03639
- Renner, R. (2007). Rethinking biochar. *Environmental Science & Technology*, 41(17), 5932-5933. doi:10.1021/es0726097
- Renwick, A. R., Lin, B. B., Schellhorn, N. A., Macfadyen, S., & Cunningham, S. A. (2013). Maximizing the Environmental Benefits of Carbon Farming through Ecosystem Service Delivery. *BioScience*, 63(10), 793-803. doi:10.1525/bio.2013.63.10.6 %J BioScience
- Reppin, S., Kuyah, S., de Neergaard, A., Oelofse, M., & Rosenstock, T. S. J. A. S. (2019). Contribution of agroforestry to climate change mitigation and livelihoods in Western Kenya. doi:10.1007/s10457-019-00383-7
- Reppman, M., et al. (2021). *The insurance rationale for carbon removal solutions*. Retrieved from <https://www.swissre.com/dam/jcr:31e39033-0ca6-418e-a540-d61b8e7d7b31/swiss-re-institute-expertise-publication-insurance-%20rationale-for-carbon-removal-solutions.pdf>
- Reppman, M., et al. (2021). The insurance rationale for carbon removal solutions. Retrieved from <https://www.swissre.com/institute/research/topics-and-risk-dialogues/climate-and-natural-catastrophe-risk/expertise-publication-carbon-removal-technologies.html>
- Resasco, J., Chen, L. D., Clark, E., Tsai, C., Hahn, C., Jaramillo, T. F., . . . Bell, A. T. (2017). Promoter Effects of Alkali Metal Cations on the Electrochemical Reduction of Carbon Dioxide. *Journal of the American Chemical Society*, 139(32), 11277-11287. doi:10.1021/jacs.7b06765
- Reside, A. E., VanDerWal, J., & Moran, C. (2017). Trade-offs in carbon storage and biodiversity

- conservation under climate change reveal risk to endemic species. *Biological Conservation*, 207, 9-16. doi:<https://doi.org/10.1016/j.biocon.2017.01.004>
- Resnick-Ault, J. (2019). Occidental CEO calls for new U.S. laws to boost carbon capture. *Financial Post*. Retrieved from <https://business.financialpost.com/pmn/business-pmn/occidental-ceo-calls-for-new-u-s-laws-to-boost-carbon-capture>
- Restoration, F. f. C. (2019). Rick Parnell, CEO of the Foundation for Climate Restoration, Issues the Following Statement on UK Parliamentary Debate on Climate Restoration [Press release]. Retrieved from <http://www.globenewswire.com/news-release/2019/10/29/1937293/0/en/Rick-Parnell-CEO-of-the-Foundation-for-Climate-Restoration-Issues-the-Following-Statement-on-UK-Parliamentary-Debate-on-Climate-Restoration.html>
- Retallack, G. J. (1997). Early Forest Soils and Their Role in Devonian Global Change. 276(5312), 583-585. doi:10.1126/science.276.5312.583 %J Science
- Rétháti, G., Vejzer, A., Simon, B., Benjared, R., & Füleky, G. (2014). Examination of zinc adsorption capacity of soils treated with different pyrolysis productsAbstract. *Acta Universitatis Sapientiae, Agriculture and Environment*, 6(1). doi:10.2478/ausae-2014-0010
- Reuters, T. (2020). Can carbon capture help to curb climate change? *The Dispatch*. Retrieved from <https://www.thedispatch.in/can-carbon-capture-help-to-curb-climate-change/>
- Revell, K. T., Maguire, R. O., & Agblevor, F. A. (2012). Field Trials With Poultry Litter Biochar and Its Effect on Forages, Green Peppers, and Soil Properties. *Soil Science*. doi:10.1097/SS.0b013e3182741050
- Revell, K. T., Maguire, R. O., & Agblevor, F. A. (2012). Influence of Poultry Litter Biochar on Soil Properties and Plant Growth. *Soil Science*. doi:10.1097/SS.0b013e3182564202
- Reverchon, F., et al. (2013). Changes in d15N in a soil–plant system under different biochar feedstocks and application rates. *Biology and Fertility of Soils*, 50(2), 275-283. Retrieved from <https://research-repository.uwa.edu.au/en/publications/changes-in-%CE%B415n-in-a-soilplant-system-under-different-biochar-fee>
- Reverchon, F., et al. . (2014). A preliminary assessment of the potential of using an acacia—biochar system for spent mine site rehabilitation. *Environmental Science and Pollution Research*, 22(3), 2138-2144. doi:10.1007/s11356-014-3451-1
- Rex, D., Schimmelpfennig, S., Jansen-Willems, A., Moser, G., Kammann, C., & Müller, C. (2015). Microbial community shifts 2.6 years after top dressing of Miscanthus biochar, hydrochar and feedstock on a temperate grassland site. *Plant and Soil*. doi:10.1007/s11104-015-2618-y
- Reyes, O., et al. . (2015). The Effects of Ash and Black Carbon (Biochar) on Germination of Diffrent Tree Species. *Fire Ecology*, 11(1), 119-133. doi:10.4996/fireecology.1101119
- Reyes-Escobar, J., Zagal, E., Sandoval, M., Navia, R., & Muñoz, C. (2015). Development of a Biochar-Plant-Extract-Based Nitrification Inhibitor and Its Application in Field Conditions. *Sustainability*, 7(10), 13585 - 13596. doi:10.3390/su71013585
- Reynolds, J. (2018). Governing Experimental Responses Negative Emissions Technologies and Solar Climate Engineering. In A. Jordan, et al. (Ed.), *Governing Climate Change: Polycentricity in Action?* (pp. 285-302).
- Reynolds, J. (2019). Can Planting Trees Solve Climate Change? *Legal Planet*. Retrieved from <https://legal-planet.org/2019/07/05/can-planting-trees-solve-climate-change/>
- Reynolds, J. (2019). Can Soils Solve Climate Change? *Legal Planet*. Retrieved from <https://legal-planet.org/2019/10/28/can-soils-solve-climate-change/>
- Reynolds, J. (2020). Carbon tax should fund CO₂ removal, says CEO of 'mechanical trees' firm. *Independent.ie*. Retrieved from <https://www.independent.ie/business/technology/carbon-tax-should-fund-co2-removal-says-ceo-of-mechanical-trees-firm-39300156.html>

- Rey-Salgueiro, L., Omil, B., Merino, A., Martínez-Carballo, E., & Simal-Gándara, J. (2016). Organic pollutants profiling of wood ashes from biomass power plants linked to the ash characteristics. *Science of The Total Environment*, 544, 535 - 543. doi:10.1016/j.scitotenv.2015.11.134
- Reza, M. T., et al. . (2012). Pelletization of biochar from hydrothermally carbonized wood. *Environmental Progress & Sustainable Energy*, 31(2), 225-234. doi:10.1002/ep.11615
- Reza, M. T., et al. (2014). Engineered pellets from dry torrefied and HTC biochar blends. *Biomass and Bioenergy*, 63, 229-238. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0961953414000488>
- Rezende, E. I. P., et al., & . (2011). Biochar & Carbon Sequestration [Biocarvão (Biochar) e Sequestro de Carbono]. *Revista Virtual de Química*, 3, 426-433.
- Rezvani, S., Moheimani, N. R., & Bahri, P. A. (2016). Techno-economic assessment of CO₂ bio-fixation using microalgae in connection with three different state-of-the-art power plants. *Computers & Chemical Engineering*, 84, 290-301. doi:<https://doi.org/10.1016/j.compchemeng.2015.09.001>
- Rheinhardt, J. H., Singh, P., Tarakeshwar, P., & Buttry, D. A. (2017). Electrochemical Capture and Release of Carbon Dioxide. *ACS Energy Letters*, 2(2), 454-461. doi:10.1021/acsenergylett.6b00608
- Rhode, E. (2021). What Is Direct Air Capture? Does It Work? *Treehugger*. Retrieved from <https://www.treehugger.com/what-is-direct-air-capture-5118138>
- Rhodes, A. H., Carlin, A., & Semple, K. T. (2008). Impact of black carbon in the extraction and mineralization of phenanthrene in soil. *Environmental Science & Technology*, 42(3), 740-745. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/es071451n>
- Rhodes, C. (2009). Thinking Positive - Carbon Capture. Retrieved from <http://scitizen.com/stories/Future-Energies/2009/02/Thinking-Positive---Carbon-Capture-/>
- Rhodes, C. J., & Martin, A. P. (2010). The influence of viral infection on a plankton ecosystem undergoing nutrient enrichment. *Journal of Theoretical Biology*, 265(3), 225-237. doi:<http://dx.doi.org/10.1016/j.jtbi.2010.04.022>
- Rhodes, J. S. (2007). *Carbon mitigation with biomass: An engineering, economic and policy assessment of opportunities and implications*. (Ph.D. Dissertation/Thesis). Carnegie Mellon University, Retrieved from <https://search.proquest.com/docview/304885642?accountid=14496>
- Rhodes, J. S., & Keith, D. W. (2003). *Biomass energy with geological sequestration of CO₂: Two for the price of one?* Amsterdam: Elsevier Science Bv.
- Rhodes, J. S., & Keith, D. W. (2005). Engineering economic analysis of biomass IGCC with carbon capture and storage. *Biomass and Bioenergy*, 29, 440-450. Retrieved from <https://keith.seas.harvard.edu/files/tkg/files/67.rhodes.2005.biomassccs.e.pdf>
- Rhodes, J. S., & Keith, D. W. (2008). Biomass with capture: negative emissions within social and environmental constraints: an editorial comment. *Climatic Change*, 87, 321-328.
- Riahi, K., Rubin, E. S., Taylor, M. R., Schratzenholzer, L., & Hounshell, D. (2004). Technological learning for carbon capture and sequestration technologies. *Energy Economics*, 26(4), 539-564. doi:<http://dx.doi.org/10.1016/j.eneco.2004.04.024>
- Ricci, O. (2012). Providing adequate economic incentives for bioenergies with CO₂ capture and geological storage. *Energy Policy*, 44, 362-373. doi:<http://dx.doi.org/10.1016/j.enpol.2012.01.066>
- Ricci, O., & Selosse, S. (2013). Global and regional potential for bioelectricity with carbon capture and storage. *Energy Policy*, 52(Supplement C), 689-698. doi:<https://doi.org/10.1016/j.enpol.2012.10.027>
- Rice, M. L. (2003). GreenSea's interest in fertilizing sea with iron. *Nature*, 421, 786. doi:10.1038/421786c

- Richards, B. K., Stoof, C. R., Cary, I. J., & Woodbury, P. B. (2014). Reporting on Marginal Lands for Bioenergy Feedstock Production: a Modest Proposal. *BioEnergy Research*, 7(3), 1060-1062. doi:10.1007/s12155-014-9408-x
- Richards, H. (2017). Carbon dioxide from coal plants has an interested buyer from oil and gas, if the costs come down. *Casper Star Tribune*. Retrieved from http://trib.com/business/energy/carbon-dioxide-from-coal-plants-has-an-interested-buyer-from/article_db13a06a-af61-52b5-858d-ff0330dc1e54.html
- Richards, K. R., & Stokes, C. (2004). A Review of Forest Carbon Sequestration Cost Studies: A Dozen Years of Research. *Climatic Change*, 63(1), 1-48. doi:10.1023/b:Clim.0000018503.10080.89
- Richards, T. (2016). Biochar production opportunities for South East Asia. *Agriculture Science Journal*, 2(1), 12-20. Retrieved from http://eprints.utar.edu.my/1994/1/Biochar_production_opportunities_for_South_East_Asia.pdf
- Richardson, J. (2015). It's Getting Hot in Here: A Look into Whether Ocean Iron Fertilization is Legally Viable in the United States. *SMU Science & Technology Law Review*, 18, 73-107. Retrieved from <http://www.lexisnexis.com/hottopics/lnacademic/>?
- Richardson, J. W., Johnson, M. D., Lacey, R., Oyler, J., & Capareda, S. (2014). Harvesting and extraction technology contributions to algae biofuels economic viability. *Algal Research*, 5, 70-78. doi:<https://doi.org/10.1016/j.algal.2014.05.007>
- Richardson, J. W., Johnson, M. D., & Outlaw, J. L. (2012). Economic comparison of open pond raceways to photo bio-reactors for profitable production of algae for transportation fuels in the Southwest. *Algal Research*, 1(1), 93-100. doi:<https://doi.org/10.1016/j.algal.2012.04.001>
- Richardson, J. W., Johnson, M. D., Zhang, X., Zemke, P., Chen, W., & Hu, Q. (2014). A financial assessment of two alternative cultivation systems and their contributions to algae biofuel economic viability. *Algal Research*, 4, 96-104. doi:<https://doi.org/10.1016/j.algal.2013.12.003>
- Richardson, T. L., & Jackson, G. A. (2007). Small Phytoplankton and Carbon Export from the Surface Ocean. *Science*, 315(5813), 838-840. doi:10.1126/science.1133471
- Richardson, W. (2020). Running Tide attracts big VC names with plan to bury gigatons of CO₂ on ocean floor. *Maine Startups Insider*. Retrieved from <https://mainestartupsinsider.com/running-tides-attracts-big-vc-names/>
- Richter, A. (2020). Significant expansion of carbon removal and storage planned at geothermal plant in Iceland. Retrieved from <https://www.thinkgeoenergy.com/significant-expansion-of-carbon-removal-and-storage-planned-at-geothermal-plant-in-iceland/>
- Ricke, K. L., Millar, R. J., & MacMartin, D. G. (2017). Constraints on global temperature target overshoot. *Scientific Reports*, 7(1), 14743. doi:10.1038/s41598-017-14503-9
- Rickels, W., et al. (2018). Integrated Assessment of Carbon Dioxide Removal. *Earth's Future*, 6(3), 565-582. doi:doi:10.1002/2017EF000724
- Rickels, W., et al. (2020). *The Future of (Negative) Emissions Trading in the European Union*. Retrieved from <https://www.ifw-kiel.de/experts/ifw/wilfried-rickels/the-future-of-negative-emissions-trading-in-the-european-union-15070/>
- Rickels, W., Rehdanz, K., & Oschlies, A. (2010). Methods for greenhouse gas offset accounting: A case study of ocean iron fertilization. *Ecological Economics*, 69(12), 2495-2509. doi:<http://dx.doi.org/10.1016/j.ecolecon.2010.07.026>
- Rickels, W., Rehdanz, K., & Oschlies, A. (2012). Economic prospects of ocean iron fertilization in an international carbon market. *Resource and Energy Economics*, 34(1), 129-150. doi:<http://dx.doi.org/10.1016/j.reseneeco.2011.04.003>
- Ricketts, E. R., et al. (2009). Effects of carbon dioxide sequestration on California margin deep-sea foraminiferal assemblages. *Marine Micropaleontology*, 72(3), 165-175.

- Ricklingen, F. (2014). Qualitätssicherung ung Umwelteffekte von Pflanzenkohle (Quality assurance and environmental effects of biochar). *BUND: Friends of the Earth Germany*. Retrieved from http://www.bund-bergstrasse.de/fileadmin/bundgruppen/bcmskgbergstr/Atomkraft/Tagungsreader_17_10_14_Pflanzenkohle-1.pdf
- Ridgwell, A. (2009). Implications of the glacial CO₂ “iron hypothesis” for Quaternary climate change. *Geochemistry, Geophysics, Geosystems*, 4(9), 1-10. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1029/2003GC000563/pdf>
- Ridgwell, A., & Hargreaves, J. C. (2007). Regulation of atmospheric CO₂ by deep-sea sediments in an Earth system model. *Global Biogeochemical Cycles*, 21(2), n/a-n/a. doi:10.1029/2006GB002764
- Ridgwell, A., Rodengen, T. J., & Kohfeld, K. E. (2013). Geographical variations in the effectiveness and side effects of deep ocean carbon sequestration. *Geophysical Research Letters*, 38(17), 1-6. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1029/2011GL048423/pdf>
- Ridha, F. N., Manovic, V., Macchi, A., & Anthony, E. J. (2015). CO₂ capture at ambient temperature in a fixed bed with CaO-based sorbents. *Applied Energy*, 140, 297-303. doi:<http://dx.doi.org/10.1016/j.apenergy.2014.11.030>
- Ridley, C. E., Clark, C. M., LeDuc, S. D., Bierwagen, B. G., Lin, B. B., Mehl, A., & Tobias, D. A. (2012). Biofuels: Network Analysis of the Literature Reveals Key Environmental and Economic Unknowns. *Environmental Science & Technology*, 46(3), 1309-1315. doi:10.1021/es2023253
- Riedel, T., et al. (2014). Changes in the molecular composition of organic matter leached from an agricultural topsoil following addition of biomass-derived black carbon (biochar). *Organic Geochemistry*, 69, 52-60. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0146638014000382>
- Riedel, T., Hennessy, P., Iden, S. C., & Koschinsky, A. (2015). Leaching of soil-derived major and trace elements in an arable topsoil after the addition of biochar. *European Journal of Soil Science*, 66(4), 823-834. doi:10.1111/ejss.12256
- Rigdon, W. A., Omasta, T. J., Lewis, C., Hickner, M. A., Varcoe, J. R., Renner, J. N., . . . Mustain, W. E. (2017). Carbonate Dynamics and Opportunities With Low Temperature, Anion Exchange Membrane-Based Electrochemical Carbon Dioxide Separators. *Journal of Electrochemical Energy Conversion and Storage*, 14(2), 020701-020701-020708. doi:10.1115/1.4033411
- Righelato, R., & Spracklen, D. V. (2007). Carbon Mitigation by Biofuels or by Saving and Restoring Forests? *Science*, 317(5840), 902-902. doi:10.1126/science.1141361
- Rigopoulos, I., Harrison, A. L., Delimitis, A., Ioannou, I., Efstathiou, A. M., Kyratsi, T., & Oelkers, E. H. (2018). Carbon sequestration via enhanced weathering of peridotites and basalts in seawater. *Applied Geochemistry*, 91, 197-207. doi:<https://doi.org/10.1016/j.apgeochem.2017.11.001>
- Rigopoulos, I., Petallidou, K. C., Vasiliades, M. A., Delimitis, A., Ioannou, I., Efstathiou, A. M., & Kyratsi, T. (2016). On the potential use of quarry waste material for CO₂ sequestration. *Journal of CO₂ Utilization*, 16, 361-370. doi:<https://doi.org/10.1016/j.jcou.2016.09.005>
- Rijs, M. (2021). *The production of synthetic kerosene by combined DAC with water electrolysis and biomass gasification for Rotterdam-The Hague Airport along with intermittent electricity supply.* (Masters). Delft University of Technology, Retrieved from <http://resolver.tudelft.nl/uuid:8f6f283f-7b04-4bf2-979b-6adeca8e42bf>
- Rillig, M. C., M., W., M., S., P.M., A., C., G., H.G., R., . . . M., A. (2010). Material derived from hydrothermal carbonization: Effects on plant growth and arbuscular mycorrhiza. *Applied Soil Ecology*, 45(3), 238-242. doi:10.1016/j.apsoil.2010.04.011.
- Rinberg, A., Bergman, A. M., Schrag, D. P., & Aziz, M. J. (2021). Alkalinity Concentration Swing

- for Direct Air Capture of Carbon Dioxide. *ChemSusChem*, n/a(n/a). doi:<https://doi.org/10.1002/cssc.202100786>
- Rinder, T., & von Hagke, C. (2021). The influence of particle size on the potential of enhanced basalt weathering for carbon dioxide removal - Insights from a regional assessment. *Journal of Cleaner Production*, 128178. doi:<https://doi.org/10.1016/j.jclepro.2021.128178>
- Ringius, L. (2002). Soil Carbon Sequestration and the CDM: Opportunities and Challenges for Africa. *Climatic Change*, 54(4), 471-495. doi:[10.1023/a:1016108215242](https://doi.org/10.1023/a:1016108215242)
- Ringrose, P. S. (2018). The CCS hub in Norway: some insights from 22 years of saline aquifer storage. *Energy Procedia*, 146, 166-172. doi:<https://doi.org/10.1016/j.egypro.2018.07.021>
- Rinklebe, J., & Shaheen, S. M. (2015). Miscellaneous additives can enhance plant uptake and affect geochemical fractions of copper in a heavily polluted riparian grassland soil. *Ecotoxicology and Environmental Safety*, 119, 58 - 65. doi:[10.1016/j.ecoenv.2015.04.046](https://doi.org/10.1016/j.ecoenv.2015.04.046)
- Rinklebe, J., Shaheen, S. M., & Frohne, T. (2015). Amendment of biochar reduces the release of toxic elements under dynamic redox conditions in a contaminated floodplain soil. *Chemosphere*, 142, 41-47. doi:[10.1016/j.chemosphere.2015.03.067](https://doi.org/10.1016/j.chemosphere.2015.03.067)
- Ríos, S. D., Torres, C. M., Torras, C., Salvadó, J., Mateo-Sanz, J. M., & Jiménez, L. (2013). Microalgae-based biodiesel: Economic analysis of downstream process realistic scenarios. *Bioresource Technology*, 136, 617-625. doi:<https://doi.org/10.1016/j.biortech.2013.03.046>
- Ripberger, G. D., Jones, J. R., Paterson, A., & Holt, R. (2015). *Is it possible to produce biochar at different highest treatment temperatures in the pyrolysis range? - The exothermic nature of pyrolysis.* Paper presented at the Asia Pacific Confederation of Chemical Engineering Congress. <http://search.informit.com.au/documentSummary;dn=728404242375624;res=IELENG>
- Ritschard, R. L. (1992). Marine algae as a CO₂ sink. *Water, Air, and Soil Pollution*, 64(1), 289-303. doi:[10.1007/bf00477107](https://doi.org/10.1007/bf00477107)
- Ritson, J. (2020). Wishful thinking about carbon removal is slowing down climate action. In: Green Alliance.
- Rittl, T. F., Novotny, E. H., Balieiro, F. C., Hoffland, E., Alves, B. J. R., & Kuyper, T. W. (2015). Negative priming of native soil organic carbon mineralization by oilseed biochars of contrasting quality. *European Journal of Soil Science*, 66(4), 714-721. doi:[10.1111/ejss.12257](https://doi.org/10.1111/ejss.12257)
- Ritzberge, J., et al. r. (2014). The BioCRACK Process -A Refinery Integrated Biomass-to-Liquid Concept to Produce Diesel from Biogenic Feedstock. In.
- Rivas, J., & Mc Carty, A. (2015). *Simultaneous Biochar and Syngas Production in a Top-Lit Updraft Biomass Gasifier.* NC State University, Retrieved from <http://repository.lib.ncsu.edu/ir/handle/1840.16/10715>
- Rizhiya, E. Y., Buchkina, N. P., Mukhina, I. M., Belinets, A. S., & Balashov, E. V. (2015). Effect of biochar on the properties of loamy sand Spodosol soil samples with different fertility levels: A laboratory experiment. *Eurasian Soil Science*, 48(2), 192 - 200. doi:[10.1134/s1064229314120084](https://doi.org/10.1134/s1064229314120084)
- Rizwan, M. S., Imtiaz, M., Chhajro, M. A., Huang, G., Fu, Q., Zhu, J., . . . Hu, H. (2016). Influence of pyrolytic and non-pyrolytic rice and castor straws on the immobilization of Pb and Cu in contaminated soil. *Environmental Technology*, 37, 1-8. doi:[10.1080/09593330.2016.1158870](https://doi.org/10.1080/09593330.2016.1158870)
- Ro, K., et al. . (2015). Removing Gaseous NH₃ Using Biochar as an Adsorbent. *Agriculture*, 5(4), 991 - 1002. doi:[10.3390/agriculture5040991](https://doi.org/10.3390/agriculture5040991)
- Ro, K. S., Cantrell, K. B., & Hunt, P. G. (2010). High-Temperature Pyrolysis of Blended Animal Manures for Producing Renewable Energy and Value-Added Biochar. *Industrial &*

- Engineering Chemistry Research*, 49(20), 10125-10131. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/ie101155m>
- Ro, K. S., Novak, J. M., Bae, S., Flora, J., & Berge, N. (2010). *Greenhouse gas emission from soil amended with biochar made from hydrothermally carbonizing swine solids [abstract]*. Paper presented at the American Chemical Society National Meeting, San Francisco, California.
- Robert, B. J., James, T. R., Josep, G. C., Ray, G. A., Roni, A., Dennis, D. B., . . . Diane, E. P. (2008). Protecting climate with forests. *Environmental Research Letters*, 3(4), 044006. Retrieved from <http://stacks.iop.org/1748-9326/3/i=4/a=044006>
- Roberts, D. (2017). It's time to start talking about "negative" carbon dioxide emissions. *Vox*. Retrieved from <https://www.vox.com/energy-and-environment/2017/8/18/16166014/negative-emissions>
- Roberts, D. (2018). Sucking carbon out of the air won't solve climate change. *Vox*. Retrieved from <https://www.vox.com/energy-and-environment/2018/6/14/17445622/direct-air-capture-air-to-fuels-carbon-dioxide-engineering>
- Roberts, D. (2019). 6 ways to use CO₂ to cut emissions and generate trillions of dollars. *Vox*. Retrieved from <https://www.vox.com/energy-and-environment/2019/11/13/20839531/climate-change-industry-co2-carbon-capture-utilization-storage-ccu>
- Roberts, D. (2019). Could squeezing more oil out of the ground help fight climate change. *Vox*. Retrieved from <https://www.vox.com/energy-and-environment/2019/10/2/20838646/climate-change-carbon-capture-enhanced-oil-recovery-eor>
- Roberts, D. (2019). Pulling CO₂ out of the air and using it could be a trillion-dollar business. *Vox*. Retrieved from <https://www.vox.com/energy-and-environment/2019/9/4/20829431/climate-change-carbon-capture-utilization-sequestration-ccu-ccs>
- Roberts, D. (2020). How to build a circular economy that recycles carbon. *Vox*. Retrieved from <https://www.vox.com/energy-and-environment/2020/1/8/20841897/climate-change-carbon-capture-circular-economy-recycle>
- Roberts, D. (2020). Microsoft's astonishing climate change goals, explained. *Vox*. Retrieved from <https://www.vox.com/energy-and-environment/2020/7/30/21336777/microsoft-climate-change-goals-negative-emissions-technologies>
- Roberts, D. A., et al. (2015). Algal biochar enhances the re-vegetation of stockpiled mine soils with native grass. *Journal of Environmental Management*, 161, 173 - 180. doi:10.1016/j.jenvman.2015.07.002
- Roberts, D. A., et al. (2015). Biochar from commercially cultivated seaweed for soil amelioration. *Scientific Reports*, 5, 1-6. doi:10.1038/srep09665
- Roberts, D. A., et al. (2015). Gracilaria waste biomass (sampah rumput laut) as a bioresource for selenium biosorption. *Journal of Applied Phycology*, 27(1), 611 - 620. doi:10.1007/s10811-014-0346-y
- Roberts, D. A., & de Nys, R. (2016). The effects of feedstock pre-treatment and pyrolysis temperature on the production of biochar from the green seaweed *Ulva*. *Journal of Environmental Management*, 169, 253 - 260. doi:10.1016/j.jenvman.2015.12.023
- Roberts, K. G., Gloy, B. A., Joseph, S., Scott, N. R., & Lehmann, J. (2010). Life Cycle Assessment of Biochar Systems: Estimating the Energetic, Economic, and Climate Change Potential. *Environmental Science & Technology*, 44(2), 827-833. doi:10.1021/es902266r
- Roberts, T., & Mander, S. (2011). Assessing public perceptions of CCS: Benefits, challenges and methods. *Energy Procedia*, 4, 6307-6314. doi:<http://dx.doi.org/10.1016/j.egypro.2011.02.646>
- RobertsDavid A., e. a. (2015). Bioremediation for coal-fired power stations using macroalgae. *Journal of Environmental Management*, 153, 25-32. doi:10.1016/j.jenvman.2015.01.036

- Robertson, C., & Mokaya, R. (2013). Microporous activated carbon aerogels via a simple subcritical drying route for CO₂ capture and hydrogen storage. *Microporous and Mesoporous Materials*, 179, 151-156. doi:<http://dx.doi.org/10.1016/j.micromeso.2013.05.025>
- Robertson, G. P. (2014). Soil Greenhouse Gas Emissions and Their Mitigation. In N. K. Van Alfen (Ed.), *Encyclopedia of Agriculture and Food Systems* (pp. 185-196). Oxford: Academic Press.
- Robertson, S. J., Rutherford, P. M., López-Gutiérrez, J. C., & Massicotte, H. B. (2012). Biochar enhances seedling growth and alters root symbioses and properties of sub-boreal forest soils. *Canadian Journal of Soil Science*, 92, 329–340. Retrieved from <http://www.bioone.org/doi/abs/10.1139/CJSS2011-066>
- Robinson, J., Popova, E. E., Yool, A., Srokosz, M., Lampitt, R. S., & Blundell, J. R. (2014). How deep is deep enough? Ocean iron fertilization and carbon sequestration in the Southern Ocean. *Geophysical Research Letters*, 41(7), 2489-2495. doi:10.1002/2013gl058799
- Robinson, J. M., et al. (2009). Energy Dispersive X-ray Fluorescence Analysis of Sulfur in Biomass. *Energy Fuels*, 23(4), 2235–2241. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/ef800920y>
- Robledo-Abad, C., et al. (2017). Bioenergy production and sustainable development: science base for policymaking remains limited. *GCB Bioenergy*, 9(3), 541-556. doi:doi:10.1111/gcbb.12338
- Rochedo, P. R. R., Costa, I. V. L., Império, M., Hoffmann, B. S., Merschmann, P. R. d. C., Oliveira, C. C. N., . . . Schaeffer, R. (2016). Carbon capture potential and costs in Brazil. *Journal of Cleaner Production*, 131, 280-295. doi:<http://dx.doi.org/10.1016/j.jclepro.2016.05.033>
- Rochelle, G. T. (2009). Amine scrubbing for CO₂ capture. *Science*, 325, 1652-1654. Retrieved from <http://shadow.eas.gatech.edu/~kcobb/energy/Readings/rochelle2009.pdf>
- Rochelle, G. T. (2009). Amine Scrubbing for CO₂ Capture. *Science*, 325, 1652-1654. Retrieved from <https://science.sciencemag.org/content/325/5948/1652>
- Rockström, J. (2017). A roadmap for rapid decarbonization. *Science*, 355(6331), 1269-1271. Retrieved from <http://science.sciencemag.org/content/sci/355/6331/1269.full.pdf>
- Rockström, J., Beringer, T., Hole, D., Griscom, B., Mascia, M. B., Folke, C., & Creutzig, F. (2021). Opinion: We need biosphere stewardship that protects carbon sinks and builds resilience. *Proceedings of the National Academy of Sciences*, 118(38), e2115218118. doi:10.1073/pnas.2115218118
- Rockström, J., Schellnhuber, H. J., Hoskins, B., Ramanathan, V., Schlosser, P., Brasseur, G. P., . . . Lucht, W. (2016). The world's biggest gamble. *Earth's Future*, 4(10), 465-470. doi:<https://doi.org/10.1002/2016EF000392>
- Röder, M., Thiffault, E., Martínez-Alonso, C., Senez-Gagnon, F., Paradis, L., & Thornley, P. (2019). Understanding the timing and variation of greenhouse gas emissions of forest bioenergy systems. *Biomass and Bioenergy*, 121, 99-114. doi:<https://doi.org/10.1016/j.biombioe.2018.12.019>
- Rödger, J.-M., et al. (2016). Life cycle assessment: Biochar as a greenhouse gas sink? In *Biochar in European Soils and Agriculture: Science and Practice*.
- Rodionov, A., Amelung, W., Haumaier, L., Urusevskaja, I., & Zech, W. (2006). Black carbon in the zonal steppe soils of Russia. *Journal of Plant Nutrition and Soil Science-Zeitschrift Fur Pflanzenernährung Und Bodenkunde*, 169(3), 363-369. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/jpln.200521813/abstract>
- Rodrigo, B. R., Drummond, P., & Elkins, P. (2017). Decarbonizing the EU energy system by 2050: an important role for BECCS. *Climate Policy*, 17(Supp. 1), S93-S110. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/14693062.2016.1242058>

- needAccess=true&journalCode=tcpo20
- Rodrigues, M. (2021). Trees That Live Fast, Die Young, and Mess with Climate Models *EOS*. Retrieved from <https://eos.org/articles/trees-that-live-fast-die-young-and-mess-with-climate-models>
- Rodrigues, R., Pietzcker, R., Fragkos, P., Price, J., McDowall, W., Siskos, P., . . . Capros, P. (2021). Narrative-driven alternative roads to achieve mid-century CO₂ net neutrality in Europe. *Energy*, 121908. doi:<https://doi.org/10.1016/j.energy.2021.121908>
- Rodríguez, L., Salazar, P., & Preston, T. R. (2009). Effect of biochar and biodigester effluent on growth of maize in acid soils. *Livestock Research for Rural Development*, 21. Retrieved from <http://www.lrrd.org/lrrd21/7/rodr21110.htm>
- Rodríguez, L., S. P., & R, P. T. (2011). Effect of a culture of “native” micro-organisms, biochar and biodigester effluent on the growth of maize in acid soils. *Livestock Research for Rural Development*, 23(10). Retrieved from <http://www.lrrd.org/lrrd23/10/rodr23223.htm>
- Rodríguez-Mosqueda, R., Bramer, E. A., Roestenberg, T., & Brem, G. (2018). Parametrical Study on CO₂ Capture from Ambient Air Using Hydrated K₂CO₃ Supported on an Activated Carbon Honeycomb. *Industrial & Engineering Chemistry Research*, 57(10), 3628-3638. doi:[10.1021/acs.iecr.8b00566](https://doi.org/10.1021/acs.iecr.8b00566)
- Rodríguez-Mosqueda, R., Rutgers, J., Bramer, E. A., & Brem, G. (2019). Low temperature water vapor pressure swing for the regeneration of adsorbents for CO₂ enrichment in greenhouses via direct air capture. *Journal of CO₂ Utilization*, 29, 65-73. doi:<https://doi.org/10.1016/j.jcou.2018.11.010>
- Rodríguez-Vila, A., et al. . (2014). Phytoremediating a copper mine soil with Brassica juncea L., compost and biochar. *Environmental Science and Pollution Research*, 21(19), 11293-11304. doi:[10.1007/s11356-014-2993-6](https://doi.org/10.1007/s11356-014-2993-6)
- Rodríguez-Vila, A., et al. (2015). Assessing the influence of technosol and biochar amendments combined with Brassica juncea L. on the fractionation of Cu, Ni, Pb and Zn in a polluted mine soil. *Journal of Soils and Sediments*, 16(2), 339-348. doi:[10.1007/s11368-015-1222-3](https://doi.org/10.1007/s11368-015-1222-3)
- Rodríguez-Vila, A., et al. (2015). Chemical fractionation of Cu, Ni, Pb and Zn in a mine soil amended with compost and biochar and vegetated with Brassica juncea L. *Journal of Geochemical Exploration*, 158, 74 - 81. doi:[10.1016/j.gexplo.2015.07.005](https://doi.org/10.1016/j.gexplo.2015.07.005)
- Rodríguez-Vila, A., et al. (2015). Recovering a copper mine soil using organic amendments and phytomanagement with Brassica juncea L. *Journal of Environmental Management*, 147, 73 - 80. doi:[10.1016/j.jenvman.2014.09.011](https://doi.org/10.1016/j.jenvman.2014.09.011)
- Rodríguez-Vila, A., et al. (2015). Recuperación de un suelo de mina de cobre con enmiendas orgánicas: compost y biochar versus tecnosol y biochar (Recovering from a copper mine soil with organic amendments: compost and biochar versus TECNOSOL). In.
- Rodríguez-Vila, A., et al. . (2016). Build-up of carbon fractions in technosol-biochar amended partially reclaimed mine soil grown with Brassica juncea. *Journal of Soils and Sediments*, 16(5), 1529-1537. doi:[10.1007/s11368-016-1358-9](https://doi.org/10.1007/s11368-016-1358-9)
- Roe, S., et al. (2017). *How Improved Land Use Can Contribute to the 1.5°C Goal of the Paris Agreement*. Retrieved from <http://www.climatefocus.com/sites/default/files/CIFF%20Report.pdf>
- Roesijadi, G., et al. (2010). *Macroalgae as a Biomass Feedstock: A Preliminary Analysis* (PNNL-19944). Retrieved from https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-19944.pdf
- Rogelj, J., Huppmann, D., Krey, V., Riahi, K., Clarke, L., Gidden, M., . . . Meinshausen, M. (2019). A new scenario logic for the Paris Agreement long-term temperature goal. *Nature*, 573(7774), 357-363. doi:[10.1038/s41586-019-1541-4](https://doi.org/10.1038/s41586-019-1541-4)

- Rogers, J. G., & Brammer, J. G. (2012). Estimation of the production cost of fast pyrolysis bio-oil. *Biomass Bioenergy*, 36, 208-217. doi:10.1016/j.biombioe.2011.10.028
- Rogovska, N., et al. (2011). Impact of Biochar on Manure Carbon Stabilization and Greenhouse Gas Emissions. *Soil Science Society of America Journal*, 75(3), 871-879. Retrieved from https://www.researchgate.net/publication/273223662_Impact_of_Biochar_on_Manure_Carbon_Stabilization_and_Greenhouse_Gas_Emissions
- Rogovska, N., et al. (2012). Germination Tests for Assessing Biochar Quality. *Journal of Environmental Quality*, 41(4), 1014-1022. doi:10.2134/jeq2011.0103
- Rogovska, N., et al. (2014). Biochar impact on Midwestern Mollisols and maize nutrient availability. *Geoderma*, 230-231, 340-347. doi:10.1016/j.geoderma.2014.04.009
- Rogovska, N., Laird, D., Cruse, R., Fleming, P., Parkin, T., & Meek, D. (2011). Impact of Biochar on Manure Carbon Stabilization and Greenhouse Gas Emissions. 75(3), 871-879. doi:10.2136/sssaj2010.0270
- Rogovska, N., Laird, D. A., & Karlen, D. L. (2016). Corn and soil response to biochar application and stover harvest. *Field Crops Research*, 187, 96 - 106. doi:10.1016/j.fcr.2015.12.013
- Roh, H., Yu, M.-R., Yakkala, K., Koduru, J. R., Yang, J.-K., & Chang, Y.-Y. (2014). Removal studies of Cd(II) and explosive compounds using buffalo weed biochar-alginate beads. *Journal of Industrial and Engineering Chemistry*, 26, 226-233. doi:10.1016/j.jiec.2014.11.034
- Roh, K., Frauzem, R., Gani, R., & Lee, J. H. (2016). Process systems engineering issues and applications towards reducing carbon dioxide emissions through conversion technologies. *Chemical Engineering Research and Design*, 116, 27-47. doi:<http://dx.doi.org/10.1016/j.cherd.2016.10.007>
- Rohling, E. (2021). The future is now: how the ocean can help us solve the climate crisis. *The Mandarin*. Retrieved from <https://www.themandarin.com.au/164419-the-future-is-now-how-the-ocean-can-help-us-solve-the-climate-crisis/>
- Röhr, M. E., Boström, C., Canal-Vergés, P., & Holmer, M. (2016). Blue carbon stocks in Baltic Sea eelgrass (*Zostera marina*) meadows. *Biogeosciences*, 13(22), 6139-6153. doi:10.5194/bg-13-6139-2016
- Rohr, T. (2019). Southern Ocean Iron Fertilization: An Argument Against Commercialization but for Continued Research Amidst Lingering Uncertainty". *Journal of Science Policy & Governance*, 15, 1-20. Retrieved from https://www.sciencepolicyjournal.org/uploads/5/4/3/4/5434385/rohr_jspg_v15.pdf
- Rohr, T., Long, M. C., Kavanaugh, M. T., Lindsay, K., & Doney, S. C. (2017). Variability in the mechanisms controlling Southern Ocean phytoplankton bloom phenology in an ocean model and satellite observations. *Global Biogeochemical Cycles*, 31(5), 922-940. doi:10.1002/2016GB005615
- Roker, S. (2019). BHP and Mitsubishi sign up to reduce greenhouse gas emissions. *World Coal*. Retrieved from <https://www.worldcoal.com/power/20062019/bhp-and-mitsubishi-sign-up-to-reduce-greenhouse-gas-emissions/>
- Rokityanskiy, D., Benítez, P. C., Kraxner, F., McCallum, I., Obersteiner, M., Rametsteiner, E., & Yamagata, Y. (2007). Geographically explicit global modeling of land-use change, carbon sequestration, and biomass supply. *Technological Forecasting and Social Change*, 74(7), 1057-1082. doi:<http://dx.doi.org/10.1016/j.techfore.2006.05.022>
- Rokke, N. (2020). How Europe Can Lead The Technical ‘Moonshot’ Of Carbon Capture And Sequestration. *Forbes*. Retrieved from <https://www.forbes.com/sites/nilsrokke/2020/08/20/business-case-for-ccs-a-climate-change-mitigation-technology-that-works/?sh=10bea14465d4>
- Roman, J., Estes, J., Morissette, L., Smith, C., Costa, D., McCarthy, J., . . . Smetacek, V. (2014).

- Whales as marine ecosystem engineers. *Frontiers in Ecology and the Environment*, 12. doi:10.1890/130220
- Roman, L. A., Conway, T. M., Eisenman, T. S., Koeser, A. K., Ordóñez Barona, C., Locke, D. H., . . . Vogt, J. (2021). Beyond 'trees are good': Disservices, management costs, and tradeoffs in urban forestry. *Ambio*, 50(3), 615-630. doi:10.1007/s13280-020-01396-8
- Román, M. (2011). Carbon capture and storage in developing countries: A comparison of Brazil, South Africa and India. *Global Environmental Change*, 21(2), 391-401. doi:<http://doi.org/10.1016/j.gloenvcha.2011.01.018>
- Romanov, V., Soong, Y., Carney, C., Rush, G. E., Nielsen, B., & O'Connor, W. (2015). Mineralization of Carbon Dioxide: A Literature Review. *ChemBioEng Reviews*, 2(4), 231-256. doi:doi:10.1002/cben.201500002
- Rombolà, A. G., et al. (2015). Fate of Soil Organic Carbon and Polycyclic Aromatic Hydrocarbons in a Vineyard Soil Treated with Biochar. *Environmental Science & Technology*, 49(18), 11037–11044. doi:10.1021/acs.est.5b02562
- Rombolà, A. G., et al. . (2015). Relationships between Chemical Characteristics and Phytotoxicity of Biochar from Poultry Litter Pyrolysis. *Journal of Agricultural and Food Chemistry*, 63(30), 6660 - 6667. doi:10.1021/acs.jafc.5b01540
- Romeo, L. M., Abanades, J. C., Escosa, J. M., Paño, J., Giménez, A., Sánchez-Biezma, A., & Ballesteros, J. C. (2008). Oxyfuel carbonation/calcination cycle for low cost CO₂ capture in existing power plants. *Energy Conversion and Management*, 49(10), 2809-2814. doi:<https://doi.org/10.1016/j.enconman.2008.03.022>
- Romero, M., & Steinfeld, A. (2012). Concentrating solar thermal power and thermochemical fuels. *Energy Environ. Sci.*, 5, 9234.
- Romig, K. D. (2021). Workers have a stake in CCUS. *The Electricity Journal*, 34(7), 107001. doi:<https://doi.org/10.1016/j.tej.2021.107001>
- Rondon, M., et al. (2006). *Enhancing the Productivity of Crops and Grasses while Reducing Greenhouse Gas Emissions through Bio-Char Amendments to Unfertile Tropical Soils*. Paper presented at the 18th World Congress of Soil Science, Philadelphia, PA, USA. http://soilcarboncenter.k-state.edu/conference/Technical_Sessions_Oral_Presentations.htm
- Rondon, M., et al. (2007). Biological Nitrogen Fixation by Common Beans (*Phaseolus Vulgaris* L.) Increases with Biochar Additions. *Biology and Fertility in Soils*, 43(6), 699-708. Retrieved from <https://link.springer.com/article/10.1007/s00374-006-0152-z>
- Rondon, M., Ramirez, J. A., & Lehmann, J. (2005). *Greenhouse Gas Emissions Decrease with Charcoal Additions to Tropical Soils*. Paper presented at the 3rd USDA Symposium on Greenhouse Gases and Carbon Sequestration in Agriculture and Forestry, Baltimore, MD, USA.
- Ronson, J. (2017). Super Basic Power Plants Build Mussels. Accelerated limestone weathering will save coral reefs and undo carbon dioxide emissions. *Inverse Science*. Retrieved from <https://www.inverse.com/article/27594-rau-ocean-acidification-limestone-chemical-weathering-power-plant-carbon-geoengineering>
- Ronsse, F., et al. . (2012). Production and characterization of slow pyrolysis biochar: influence of feedstock type and pyrolysis conditions. *Global Change Biology*, 5(2), 104-115. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/gcbb.12018/full>
- Ronsse, F., Hecke, S., Dickinson, D., & Prins, W. (2013). Production and characterization of slow pyrolysis biochar: influence of feedstock type and pyrolysis conditions. *GCB Bioenergy*, 5(2), 104-115. doi:10.1111/gcbb.12018
- Roobroeck, D., Hood-Nowotny, R., Nakubulwa, D., Tumuhairwe, J.-B., Mwanjalolo, M. J. G., Ndawula, I., & Vanlauwe, B. (2019). Biophysical potential of crop residues for biochar carbon sequestration, and co-benefits, in Uganda. *Ecological Applications*, 29(8),

e01984. doi:10.1002/eap.1984

- Rootzén, J., & Johnsson, F. (2015). CO₂ emissions abatement in the Nordic carbon-intensive industry – An end-game in sight? *Energy*, 80, 715-730. doi:<https://doi.org/10.1016/j.energy.2014.12.029>
- Ros, J. P. M., et al. . (2010). *Identifying the indirect effects of bio-energy production*. Retrieved from <https://www.pbl.nl/sites/default/files/cms/publicaties/500143003.pdf>
- Rosa Arranz, J. M. d. I., Paneque Carmona, M., Velasco Molina, M., González-Vila, F. J., Miller, A. Z., & Knicker, H. (2015). *Biochar induced alterations of soil properties and its organic matter; discerning how it improves crop production*. Paper presented at the 17th Meeting of the International Humic Substances Society Ioannina, Greece 1-5 September 2014. http://digital.csic.es/handle/10261/116563?mode=full&submit_simple>Show+full+item+record
- Rosa, L., Sanchez, D. L., & Mazzotti, M. (2021). Assessment of carbon dioxide removal potential via BECCS in a carbon-neutral Europe. *Energy & Environmental Science*. doi:10.1039/D1EE00642H
- Rosa, L., Sanchez, D. L., Realmonte, G., Baldocchi, D., & D'Odorico, P. (2020). The water footprint of carbon capture and storage technologies. *Renewable and Sustainable Energy Reviews*, 110511. doi:<https://doi.org/10.1016/j.rser.2020.110511>
- Rosas, J. G., Gómez, N., Cara, J., Ubalde, J., Sort, X., & Sánchez, M. E. (2015). Assessment of sustainable biochar production for carbon abatement from vineyard residues. *Journal of Analytical and Applied Pyrolysis*, 113, 239-247. doi:<https://doi.org/10.1016/j.jaatp.2015.01.011>
- Rose, S. K., Kriegler, E., Bibas, R., Calvin, K., Popp, A., van Vuuren, D. P., & Weyant, J. (2014). Bioenergy in energy transformation and climate management. *Climatic Change*, 123(3), 477-493. doi:10.1007/s10584-013-0965-3
- Rosegrant, M. W., & Msangi, S. (2014). Consensus and Contention in the Food-Versus-Fuel Debate. *Annual Review of Environment and Resources*, 39(1), 271-294. doi:10.1146/annurev-environ-031813-132233
- Rosen, J. (2018). The carbon harvest. *Science*, 359(6377), 733-737. doi:10.1126/science.359.6377.733
- Rosen, J. (2018). Vast bioenergy plantations could stave off climate change—and radically reshape the planet. *Science*. Retrieved from <http://www.sciencemag.org/news/2018/02/vast-bioenergy-plantations-could-stave-climate-change-and-radically-reshape-planet>
- Rosen, L. (2018). Ever Heard of the Mineral Peridotite? Some Scientists See It as a Way to Solve the Carbon Problem and Fight Climate Change. *21st Century Tech*. Retrieved from <http://www.21stcentech.com/heard-mineral-peridotite-scientists-fight-climate-change/>
- Rosenani, A. B., Deniel, S., Ahmad, S. H., & Khairuddin, A. R. (2014). Effect of Rice Husk Biochar Soil Amendment on Rice Crop growth PERFORMANCE AND Soil Properties. *Agricongress 2014*. Retrieved from www.iac2014.upm.edu.my/iac/reg/file/doc724104401.docx
- Rosenbauer, R. J., Thomas, B., Bischoff, J. L., & Palandri, J. (2012). Carbon sequestration via reaction with basaltic rocks: Geochemical modeling and experimental results. *Geochimica Et Cosmochimica Acta*, 89, 116-133. doi:<https://doi.org/10.1016/j.gca.2012.04.042>
- Rosende, M., et al.l. (2015). Automatic flow-through dynamic extraction: A fast tool to evaluate char-based remediation of multi-element contaminated mine soils. *Talanta*, 148, 686-693. doi:10.1016/j.talanta.2015.04.077
- Rosenthal, M., Fröhlich, T., & Liebich, A. (2020). Life Cycle Assessment of Carbon Capture and Utilization for the Production of Large Volume Organic Chemicals. *Frontiers in Climate*,

- 2(9). doi:10.3389/fclim.2020.586199
- Roshetko, J. M., Delaney, M., Hairiah, K., & Purnomosidhi, P. (2002). Carbon stocks in Indonesian homegarden systems: Can smallholder systems be targeted for increased carbon storage? *American Journal of Alternative Agriculture*, 17(3), 138-148. doi:10.1079/AJAA200116
- Rosner, F., Chen, Q., Rao, A., & Samuelsen, S. (2019). Thermo-economic analyses of concepts for increasing carbon capture in high-methane syngas integrated gasification combined cycle power plants. *Energy Conversion and Management*, 199, 112020. doi:<https://doi.org/10.1016/j.enconman.2019.112020>
- Rosner, H. (2018). Plants are Great at Storing CO₂. These Scientists Aim to Make Them Even Better. *Ensia*. Retrieved from <https://ensia.com/articles/plants-co2/>
- Ross, A. B., Singh, S., & Fryda, L. (2015). Biochar production and its beneficial properties for agricultural use. In.
- Ross, D. (2019). One solution to climate change no one is talking about. *Nation of Change*. Retrieved from <https://www.nationofchange.org/2019/05/25/one-solution-to-climate-change-no-one-is-talking-about/>
- Ross, J. (2015). *Fate of Micropollutants During Pyrolysis of Biosolids*. Marquette University, Retrieved from http://epublications.marquette.edu/theses_open/286/
- Ross, J. J., Zitomer, D. H., Miller, T. R., Weirich, C. A., & McNamara, P. J. (2016). Emerging investigators series: pyrolysis removes common microconstituents triclocarban, triclosan, and nonylphenol from biosolids. *Environmental Science: Water Research & Technology*, 2, 282-289. doi:10.1039/c5ew00229j
- Rossana, M., et al. (2018). Impact of Biochar Amendment on Soil Quality and Crop Yield in a Greenhouse Environment. *Journal of Environmental Accounting and Management*, 6(4), 313-324. Retrieved from https://www.researchgate.net/publication/329772777_Impact_of_Biochar_Amendment_on_Soil_Quality_and_Crop_Yield_in_a_Greenhouse_Environment
- Rosso, J. J., & Rimstidt, J. D. (2000). A high resolution study of forsterite dissolution rates. *Geochimica Et Cosmochimica Acta*, 64(5), 797-811. doi:[http://dx.doi.org/10.1016/S0016-7037\(99\)00354-3](http://dx.doi.org/10.1016/S0016-7037(99)00354-3)
- Rostad, C. E., & Rutherford, D. W. (2011). *Biochar for Soil Fertility and Natural Carbon Sequestration*. Retrieved from Reston, VA, USA: <http://pubs.usgs.gov/fs/2010/3117/>
- Rostamian, R., et al. (2015). Application of Rice Husk Biochar to Desalinate Irrigation Water. *Journal of Science and Technology of Agriculture and Natural Resources, Water and Soil Science*, 19(71), 21-30. Retrieved from http://jstnar.iut.ac.ir/browse.php?a_id=2994&sid=1&slc_lang=en
- Rostamian, R., et al. (2015). Characterization and Sodium Sorption Capacity of Biochar and Activated Carbon Prepared from Rice Husk. *Journal of Agricultural Science & Technology*, 17, 1057-1069. Retrieved from http://jast.modares.ac.ir/article_12957_0.html
- Roth, C. (2011). *Micro-gasification:Cooking with gas from biomass An introduction to the concept and the applications of wood-gas burning technologies for cooking*. Retrieved from www.biochar-international.org/sites/default/files/HERA-GIZ%20micro-gasification%20manual%20V1.0%20January%202011.pdf
- Rouchon, V., Magnier, C., Miller, D., Bandeira, C., Gonçalves, R., & Dino, R. (2011). The relationship between CO₂ flux and gas composition in soils above an EOR- CO₂ oil field (Brazil): A guideline for the surveillance of CO₂ storage sites. *Energy Procedia*, 4, 3354-3362. doi:<https://doi.org/10.1016/j.egypro.2011.02.257>
- Rouse, P., et al. (2020). *International Governance Issues on Climate Engineering - information for policymakers*. Retrieved from

- Rousk, J., Dempster, D. N., & Jones, D. L. (2013). Transient biochar effects on decomposer microbial growth rates: evidence from two agricultural case-studies. *European Journal of Soil Science*, 64(6), 770-776. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/ejss.12103/abstract>
- Roussanaly, S., Berghout, N., Fout, T., Garcia, M., Gardarsdottir, S., Nazir, S. M., . . . Rubin, E. S. (2021). Towards improved cost evaluation of Carbon Capture and Storage from industry. *International Journal of Greenhouse Gas Control*, 106, 103263. doi:<https://doi.org/10.1016/j.ijggc.2021.103263>
- Roussanaly, S., & Grimstad, A.-A. (2014). The Economic Value of CO₂ for EOR Applications. *Energy Procedia*, 63, 7836-7843. doi:<https://doi.org/10.1016/j.egypro.2014.11.818>
- Roussanaly, S., Jakobsen, J. P., Hognes, E. H., & Brunsvoold, A. L. (2013). Benchmarking of CO₂ transport technologies: Part I—Onshore pipeline and shipping between two onshore areas. *International Journal of Greenhouse Gas Control*, 19, 584-594. doi:<https://doi.org/10.1016/j.ijggc.2013.05.031>
- Rovira, P., Duguy, B., & Vallejo, V. R. (2009). Black carbon in wildfire-affected shrubland mediterranean soils. *Journal of Plant Nutrition and Soil Science-Zeitschrift Fur Pflanzenernährung Und Bodenkunde*, 172(1), 43-52. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/jpln.200700216/abstract>
- Roxburgh, S. H., et al. (2006). Assessing the carbon sequestration potential of managed forests: a case study from temperate Australia. *Journal of Applied Ecology*, 43(6), 1149-1159. doi:<https://doi.org/10.1111/j.1365-2664.2006.01221.x>
- Roy, S. C., Varghese, O. K., Paulose, M., & Grimes, C. A. (2010). Toward solar fuels: Photocatalytic conversion of carbon dioxide to hydrocarbons. *ACSNano*, 4, 1259.
- Róz, A. L. d., Ricardo, J. F. C., Nakashima, G. T., Santos, L. R. O., & Yamaji, F. M. (2015). Maximização do teor de carbono fixo em biocarvão aplicado ao sequestro de carbono (Maximization of fixed carbon content in biochar applied to carbon sequestration). *Revista Brasileira de Engenharia Agrícola e Ambiental (Journal of Agricultural and Environmental Engineering)*, 19(8), 810 - 814. doi:[10.1590/1807-1929/agriambi.v19n8p810-814](https://doi.org/10.1590/1807-1929/agriambi.v19n8p810-814)
- Ruan, Z.-H., Wu, J.-H., Huang, J.-F., Lin, Z.-T., Li, Y.-F., Liu, Y.-L., . . . Jiang, G.-B. (2015). Facile preparation of rosin-based biochar coated bentonite for supporting α-Fe₂O₃ nanoparticles and its application for Cr(VI) adsorption. *J. Mater. Chem. A*. doi:[10.1039/c4ta06491g](https://doi.org/10.1039/c4ta06491g)
- Rubin, E. S., et al. (2007). Cost and performance of fossil fuel power plants with CO₂ capture and storage. *Energy Policy*, 35, 4444-4454. Retrieved from <https://www.cmu.edu/epp/iecm/rubin/PDF%20files/2007/2007b%20Rubin%20et%20al,%20Energy%20Policy%20%28Mar%29.pdf>
- Rubin, E. S., Davison, J. E., & Herzog, H. J. (2015). The cost of CO₂ capture and storage. *International Journal of Greenhouse Gas Control*, 40(Supplement C), 378-400. doi:<https://doi.org/10.1016/j.ijggc.2015.05.018>
- Rubin, E. S., Short, C., Booras, G., Davison, J., Ekstrom, C., Matuszewski, M., & McCoy, S. (2013). A proposed methodology for CO₂ capture and storage cost estimates. *International Journal of Greenhouse Gas Control*, 17, 488-503. doi:<https://doi.org/10.1016/j.ijggc.2013.06.004>
- Rubio, R. C. (1999). Prediction of dissolved oxygen and carbon dioxide concentration profiles in tubular photobioreactors for microalgal culture. *Biotechnology and Bioengineering*, 62(1), 71-86. Retrieved from [http://onlinelibrary.wiley.com/doi/10.1002/\(SICI\)1097-0290\(19990105\)62:1%3C71::AID-BIT9%3E3.0.CO;2-T/full](http://onlinelibrary.wiley.com/doi/10.1002/(SICI)1097-0290(19990105)62:1%3C71::AID-BIT9%3E3.0.CO;2-T/full)
- Rudee, A. (2020). How and Where to Plant 60 Billion Trees in the US. Retrieved from <https://www.wri.org/blog/2020/02/how-where-plant-trees-us>

- Rudee, A. (2020). Want to help the US economy? Rethink the Trillion Trees Act. *Red Green and Blue*. Retrieved from <http://redgreenandblue.org/2020/04/08/want-help-us-economy-rethink-trillion-trees-act/>
- Rudolf, J. C. (2011). Economical carbon dioxide capture may elude scientists, report says. *International Herald Tribune*. Retrieved from <https://search.proquest.com/docview/865651963?accountid=14496>
- Rue, E. L., & Bruland, K. W. (2003). The role of organic complexation on ambient iron chemistry in the equatorial Pacific Ocean and the response of a mesoscale iron addition experiment. *Limnology and Oceanography*, 42(5), 901-910. doi:10.4319/lo.1997.42.5.0901
- Rueda, O., Mogollón, J. M., Tukker, A., & Scherer, L. (2021). Negative-emissions technology portfolios to meet the 1.5 °C target. *Global Environmental Change*, 67(102238), 1-13. doi:<https://doi.org/10.1016/j.gloenvcha.2021.102238>
- Rueter, G. (2020). How Can We Remove CO₂ From the Atmosphere? Retrieved from <https://www.ecowatch.com/carbon-dioxide-removal-2647855981.html?rebelitem=1#rebelitem1>
- Ruiz Esquius, J., Bahruji, H., Bowker, M., & Hutchings, G. J. (2021). Identification of C₂-C₅ products from CO₂ hydrogenation over PdZn/TiO₂-ZSM-5 hybrid catalysts. *Faraday Discussions*, 230(0), 52-67. doi:10.1039/D0FD00135J
- Ruiz-Agudo, C., Ibañez-Velasco, A., Navarro, J., Ruiz-Agudo, E., & Rodriguez-Navarro, C. (2018). The Carbonation of Wollastonite: A Model Reaction to Test Natural and Biomimetic Catalysts for Enhanced CO₂ Sequestration. *Minerals*, 8(5), 209. doi:10.3390/min8050209
- Rulli, M. C., Bellomi, D., Cazzoli, A., De Carolis, G., & D'Odorico, P. (2016). The water-land-food nexus of first-generation biofuels. *Scientific Reports*, 6, 22521. doi:10.1038/srep22521 <https://www.nature.com/articles/srep22521#supplementary-information>
- Rumpel, C., et al. . (2015). Movement of Biochar in the Environment. In *Biochar For Environmental Engineering*.
- Rumpel, C., et al. (2018). Put more carbon in soils to meet Paris climate pledges. *Nature*. Retrieved from <https://www.nature.com/articles/d41586-018-07587-4>
- Rumpel, C., Alexis, M., Chabbi, A., Chaplot, V., Rasse, D. P., & Valentin, C. (2006). Black carbon contribution to soil organic matter composition in tropical sloping land under slash and burn agriculture. *Geoderma*, 130(1-2), 35-46. Retrieved from <http://www.sciencedirect.com/science/article/pii/S001670610500011X>
- Rumpel, C., Amiraslani, F., Chenu, C., Garcia Cardenas, M., Kaonga, M., Koutika, L.-S., . . . Wollenberg, E. (2020). The 4p1000 initiative: Opportunities, limitations and challenges for implementing soil organic carbon sequestration as a sustainable development strategy. *Ambio*, 49(1), 350-360. doi:10.1007/s13280-019-01165-2
- Rumpel, C., Chaplot, V., Planchon, O., Bernadou, J., Valentin, C., & Mariotti, A. (2006). Preferential erosion of black carbon on steep slopes with slash and burn agriculture. *CATENA*, 65(1), 30-40. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0341816205001438>
- Rumpel, C., & Kögel-Knabner, I. (2011). Deep soil organic matter—a key but poorly understood component of terrestrial C cycle. *Plant and Soil*, 338(1), 143-158. Retrieved from <https://link.springer.com/article/10.1007/s11104-010-0391-5>
- Runge, C. F., & Senauer, B. (2007). How Biofuels Could Starve the Poor. *Foreign Affairs*(May/June), 41-53. Retrieved from <https://www.foreignaffairs.com/articles/2007-05-01/how-biofuels-could-starve-poor>
- Rutherford, D. W., Wershaw, A. L., & Cox, L. G. (2004). *Changes in composition and porosity occurring during the thermal degradation of wood and wood components*. Retrieved from

Reston, VA:

- Rutherford, D. W., Wershaw, A. L., & Reeves, J. B. I. (2007). Development of acid functional groups and lactones during the thermal degradation of wood and wood components. *United States Geological Survey Scientific Investigations report, 2007-5013*.
- Ruthiraan, M., Mubarak, N. M., Thines, R. K., Abdullah, E. C., Sahu, J. N., Jayakumar, N. S., & Ganesan, P. (2015). Comparative kinetic study of functionalized carbon nanotubes and magnetic biochar for removal of Cd²⁺ ions from wastewater. *Korean Journal of Chemical Engineering*, 32(3), 446-457. doi:10.1007/s11814-014-0260-7
- Ruthven, D. M. (2014). CO₂ capture: Value functions, separative work and process economics. *Chemical Engineering Science*, 114, 128-133. doi:<http://dx.doi.org/10.1016/j.ces.2014.04.020>
- Ruthven, D. M., Farooq, S., & Brandani, S. (2015). Work of separation in CO₂ capture: Applicability of the value function. *Chemical Engineering Science*, 126, 604-607. doi:<http://dx.doi.org/10.1016/j.ces.2015.01.001>
- Rutigliano, F. A., et al. . (2014). Effect of biochar addition on soil microbial community in a wheat crop. *European Journal of Soil Biology*, 60, 9-15. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1164556313000903>
- Ruuskanen, V., Givirovskiy, G., Elfving, J., Kokkonen, P., Karvinen, A., Järvinen, L., . . . Ahola, J. (2021). Neo-Carbon Food concept: A pilot-scale hybrid biological–inorganic system with direct air capture of carbon dioxide. *Journal of Cleaner Production*, 278, 123423. doi:<https://doi.org/10.1016/j.jclepro.2020.123423>
- Ruysschaert, G., et al. (2016). Field applications of pure biochar in the North Sea region and across Europe. In *Biochar in European Soils and Agriculture: Science and Practice*.
- Ruysschaert, G., Vandecasteele, B., Willekens, K., Waes, J. v., & Laecke, K. v. (2014). Soil, nutrients, compost: research for sustainable agriculture. *Mededeling ILVO*, 171, 252. Retrieved from <http://www.cabdilrect.org/abstracts/20143372515.html;jsessionid=7B3E65E27EBA9D8AD98F5A6943F67599>
- Ryaboshapko, A. G., & Revokatova, A. P. (2015). A potential role of the negative emission of carbon dioxide in solving the climate problem. *Russian Meteorology and Hydrology*, 40(7), 443-455. doi:10.3103/s106837391507002x
- Ryabov, G. A., Folomeev, O. M., & Dolgushin, I. A. (2018). Study of Conditions of Binary Particle Mixture Motion Applied to Chemical Looping Combustion of Fuel with Carbon Dioxide Capture. *Thermal Engineering*, 65(7), 429-434. doi:10.1134/s004060151807008x
- Ryals, R., et al. (2015). Long-term climate change mitigation potential with organic matter management on grasslands. *Ecological Applications*, 25(2), 531-545. Retrieved from <https://esajournals.onlinelibrary.wiley.com/doi/abs/10.1890/13-2126.1>
- Ryan, D. (2017). Assuming easy carbon removal from the atmosphere is a high-stakes gamble. Retrieved from https://woods.stanford.edu/news-events/news/assuming-easy-carbon-removal-atmosphere-high-stakes-gamble?utm_source=Woods+Newsletter&utm_campaign=b0bbb3defa-WOODS_NEWSLETTER_JUNE_2017&utm_medium=email&utm_term=0_ec34d34b19-b0bbb3defa-238699265
- Ryan, L. B., Convery, F. J., & Ferreira, S. (2004). *Stimulating the use of biofuels in the European Union : implications for climate change policy*. Retrieved from http://researchrepository.ucd.ie/bitstream/handle/10197/870/ferreiras_workpap_004.pdf?sequence=1
- Rydén, M., Lyngfelt, A., Langørgen, Ø., Larring, Y., Brink, A., Teir, S., . . . Karmhagen, P. (2017). Negative CO₂ Emissions with Chemical-Looping Combustion of Biomass – A Nordic Energy Research Flagship Project. *Energy Procedia*, 114, 6074-6082. doi:<https://doi.org/10.1016/j.egypro.2017.03.1744>

- Ryi, S.-K., Park, J.-S., Hwang, K.-R., Lee, C.-B., & Lee, S.-W. (2013). The property of hydrogen separation from CO₂ mixture using Pd-based membranes for carbon capture and storage (CCS). *International Journal of Hydrogen Energy*, 38(18), 7605-7611. doi:<https://doi.org/10.1016/j.ijhydene.2012.08.114>
- Ryu, D.-J., Oh, R.-G., Seo, Y.-D., Oh, S.-Y., & Ryu, K.-S. (2015). Recovery and electrochemical performance in lithium secondary batteries of biochar derived from rice straw. *Environmental Science and Pollution Research*, 22(14), 10405-10412. doi:10.1007/s11356-015-4348-3
- Saarnio, S. (2015). *SSSA Special Publication Agricultural and Environmental Applications of Biochar: Advances and Barriers/Impacts of Biochar Amendment on Greenhouse Gas Emissions from Agricultural Soils*: Soil Science Society of America, Inc.
- Saarnio, S., Heimonen, K., & Kettunen, R. (2012). Biochar addition indirectly affects N₂O emissions via soil moisture and plant N uptake. *Soil Biology and Biochemistry*, 58, 99-106.
- Saba, B., et al. . (2014). *Treatment Comparison Efficiency of Microbial Amended Agro-waste Biochar Constructed Wetlands for Reactive Black Textile Dye*. Paper presented at the 2014 5th International Conference on Food Engineering and Bio technology. <http://www.ipcbee.com/vol65/003-ICFEB2014-C3010.pdf>
- Sabatino, F., Grimm, A., Gallucci, F., van Sint Annaland, M., Kramer, G. J., & Gazzani, M. (2021). A comparative energy and costs assessment and optimization for direct air capture technologies. *Joule*, 5(8), 2047-2076. doi:<https://doi.org/10.1016/j.joule.2021.05.023>
- Sabatino, F., Mehta, M., Grimm, A., Gazzani, M., Gallucci, F., Kramer, G. J., & van Sint Annaland, M. (2020). Evaluation of a Direct Air Capture Process Combining Wet Scrubbing and Bipolar Membrane Electrodialysis. *Industrial & Engineering Chemistry Research*, 59(15), 7007-7020. doi:10.1021/acs.iecr.9b05641
- Sabine, C. L., Feely, R. A., Gruber, N., Key, R. M., Lee, K., Bullister, J. L., . . . Rios, A. F. (2004). The Oceanic Sink for Anthropogenic CO₂. *Science*, 305(5682), 367-371. doi:10.1126/science.1097403
- Sackett, T. E., Basiliko, N., Noyce, G. L., Winsborough, C., Schurman, J., Ikeda, C., & Thomas, S. C. (2014). Soil and greenhouse gas responses to biochar additions in a temperate hardwood forest. *Global Change Biology Bioenergy*, 7(5), 1062-1074. doi:10.1111/gcbb.12211
- Sacks, A. D. (2015). Reestablishing the Evolutionary Grassland–Grazer Relationship to Restore Atmospheric Carbon Dioxide to Preindustrial Levels. In T. Goreau, R. Larson, & J. Campe (Eds.), *Geotherapy: Innovative Methods of Soil Fertility Restoration, Carbon Sequestration, and Reversing CO₂ Increase* (pp. 156-193).
- Sacuta, N., Gauvreau, L., & Greenberg, S. E. (2013). *Emergency response planning: An example of international collaboration in CCS community outreach and project development*.
- Sadaka, S., et al. (2014). Characterization of Biochar from Switchgrass Carbonization. *Energies*, 7(2), 548-567. Retrieved from <http://www.mdpi.com/1996-1073/7/2/548/htm>
- Sadasivam, B. Y., & Reddy, K. R. (2015). Adsorption and transport of methane in biochars derived from waste wood. *Waste Management*, 43, 218-229. doi:10.1016/j.wasman.2015.04.025
- Sadasivam, B. Y., & Reddy, K. R. (2015). Adsorption and transport of methane in landfill cover soil amended with waste-wood biochars. *Journal of Environmental Management*, 158, 11 - 23. doi:10.1016/j.jenvman.2015.04.032
- Sadasivam, B. Y., & Reddy, K. R. (2015). Engineering properties of waste wood-derived biochars and biochar-amended soils. *International Journal of Geotechnical Engineering*,

- 9(5), 521-535. doi:10.1179/1939787915y.0000000004
- Sadeghi, S. H., Hazbavi, Z., & Harchegani, M. K. (2016). Controllability of runoff and soil loss from small plots treated by vinasse-produced biochar. *Science of The Total Environment*, 541, 483 - 490. doi:10.1016/j.scitotenv.2015.09.068
- Saeidi, S., Najari, S., Fazlollahi, F., Nikoo, M. K., Sefidkon, F., Klemeš, J. J., & Baxter, L. L. (2017). Mechanisms and kinetics of CO₂ hydrogenation to value-added products: A detailed review on current status and future trends. *Renewable and Sustainable Energy Reviews*, 80, 1292-1311. doi:<https://doi.org/10.1016/j.rser.2017.05.204>
- Saffari, M., et al. (2015). Reduction of chromium toxicity by applying various soil amendments in artificially contaminated soil. *Journal Advances in Environmental Health Research*, 2(4), 251-262. Retrieved from http://www.researchgate.net/profile/Mahboub_Saffari/publication/277248121_Reduction_of_chromium_toxicity_by_applying_various_soil_amendments_in_artificially_contaminated_soil/links/5564bbef08ae94e9572050cd.pdf
- Safi, R., Agarwal, R. K., & Banerjee, S. (2016). Numerical simulation and optimization of CO₂ utilization for enhanced oil recovery from depleted reservoirs. *Chemical Engineering Science*, 144, 30-38. doi:<https://doi.org/10.1016/j.ces.2016.01.021>
- Sagar, A. D., & Kartha, S. (2007). Bioenergy and Sustainable Development? , 32(1), 131-167. doi:10.1146/annurev.energy.32.062706.132042
- Sagrilo, E. (2014). *Soil and plant responses to pyrogenic organic matter: carbon stability and symbiotic patterns*. Wageningen University, Retrieved from <http://library.wur.nl/WebQuery/clc/2075520>
- Sagrilo, E., Hoffland, E., & Kuyper, T. W. (2014). Does pyrogenic organic matter enhance biological nitrogen fixation in well-managed soybean cropping systems? In *Soil and plant responses to pyrogenic organic matter: carbon stability and symbiotic patterns*.
- Sagrilo, E., Jeffery, S., Hoffland, E., & Kuyper, T. W. (2014). Emission of CO₂ from biochar-amended soils and implications for soil organic carbon. *GCB Bioenergy*, n/a - n/a. doi:10.1111/gcbb.12234
- Sagrilo, E., Rittl, T. F., Hoffland, E., Alves, B. J. R., Mehl, H. U., & Kuyper, T. W. (2015). Rapid decomposition of traditionally produced biochar in an Oxisol under savannah in Northeastern Brazil. *Geoderma Regional*, 6, 1 - 6. doi:10.1016/j.geodrs.2015.08.006
- Sagrilo, E., Rittl, T. F., Hoffland, E., Alves, B. J. R. A. J. R., Mehl, H. U., & Kuyper, T. W. (2014). Biochar decomposition under field conditions depends on its application rate. In *Soil and plant responses to pyrogenic organic matter: carbon stability and symbiotic patterns*.
- Sagues, W. J., Park, S., Jameel, H., & Sanchez, D. L. (2019). Enhanced carbon dioxide removal from coupled direct air capture–bioenergy systems. *Sustainable Energy & Fuels*. doi:10.1039/C9SE00384C
- Sahiner, N., Karakoyun, N., Alpaslan, D., & Aktas, N. (2013). Biochar-Embedded Soft Hydrogel and Their Use in Ag Nanoparticle Preparation and Reduction of 4-Nitro Phenol. *International Journal of Polymeric Materials and Polymeric Biomaterials*, 62, 590-595.
- Saidi, M., & Inaloo, E. B. (2021). CO₂ removal using 1DMA2P solvent via membrane technology: Rate based modeling and sensitivity analysis. *Chemical Engineering and Processing - Process Intensification*, 166, 108464. doi:<https://doi.org/10.1016/j.cep.2021.108464>
- Saiful Islam, M., et al. (2015). Bio-Oil From Pyrolysis of Rice Husk. *Journals of Biofuels*, 80(1), 30-35. Retrieved from http://www.researchgate.net/profile/M_Jamal/publication/274001817_Bio-oil_from_pyrolysis_of_rice_husk/links/5520ed560cf29dcabb0b5b5e.pdf
- Saikia, P., Gupta, U. N., Barman, R. S., Kataki, R., Chutia, R. S., & Baruah, B. P. (2015). Production and Characterization of Bio-Oil Produced from Ipomoea carnea Bio-Weed. *BioEnergy Research*. doi:10.1007/s12155-014-9561-2

- Saikia, R., Chutia, R. S., Kataki, R., & Pant, K. K. (2015). Perennial grass (*Arundo donax* L.) as a feedstock for thermo-chemical conversion to energy and materials. *Bioresource Technology*. doi:10.1016/j.biortech.2015.01.089
- Saini, A., Aggarwal, N. K., Sharma, A., Kaur, M., & Yadav, A. (2014). Utility Potential of *Parthenium hysterophorus* for Its Strategic Management. *Advances in Agriculture*, 2014(83-441335111115112542511336521-23-451311111211323-423-411352213111-2591413233-4110118893172211823-42734364423112641112224421), 1 - 16. doi:10.1155/2014/381859
- Saini, D. (2015). CO₂-Prophet model based evaluation of CO₂-EOR and storage potential in mature oil reservoirs. *Journal of Petroleum Science and Engineering*, 134, 79-86. doi:<https://doi.org/10.1016/j.petrol.2015.07.024>
- Saintilan, N., Khan, N. S., Ashe, E., Kelleway, J. J., Rogers, K., Woodroffe, C. D., & Horton, B. P. (2020). Thresholds of mangrove survival under rapid sea level rise. *Science*, 368(6495), 1118-1121. doi:10.1126/science.aba2656
- Saito, A., Itaoka, K., & Akai, M. (2019). Those who care about CCS—Results from a Japanese survey on public understanding of CCS. *International Journal of Greenhouse Gas Control*, 84, 121-130. doi:<https://doi.org/10.1016/j.ijggc.2019.02.014>
- Saito, H., Suzuki, K., Hinuma, A., Ota, T., Fukami, K., Kiyosawa, H., . . . Tsuda, A. (2005). Responses of microzooplankton to in situ iron fertilization in the western subarctic Pacific (SEEDS). *Progress in Oceanography*, 64(2), 223-236. doi:<https://doi.org/10.1016/j.pocean.2005.02.010>
- Saito, H., Tsuda, A., Nojiri, Y., Nishioka, J., Takeda, S., Kiyosawa, H., . . . Boyd, P. W. (2006). Nutrient and phytoplankton dynamics during the stationary and declining phases of a phytoplankton bloom induced by iron-enrichment in the eastern subarctic Pacific. *Deep Sea Research Part II: Topical Studies in Oceanography*, 53(20-22), 2168-2181. doi:<http://dx.doi.org/10.1016/j.dsrr.2006.05.029>
- Saito, M. (1990). Charcoal as a microhabitat for va mycorrhizal fungi, and its practical implication. *Agriculture Ecosystems & Environment*, 29(1-4), 341-344.
- Saito, T., Otani, T., Seike, N., Murano, H., & Okazaki, M. (2011). Suppressive effect of soil application of carbonaceous adsorbents on dieldrin uptake by cucumber fruits. *Soil Science and Plant Nutrition*.
- Sajdak, M., Muzyka, R., Hrabak, J., & Rózycki, G. (2013). Biomass, biochar and hard coal: Data mining application to elemental composition and high heating values prediction. *Journal of Analytical and Applied Pyrolysis*, 104, 153-160. Retrieved from https://ac.els-cdn.com/S0165237013001903/1-s2.0-S0165237013001903-main.pdf?_tid=9fe85340-e981-44ea-8783-2c7d1ba60f72&acdnat=1552346676_eafc55cebe42bdf89996db6d8eeb6f83
- Sajdak, M., Muzyka, R., Hrabak, J., & Słowik, K. (2015). Use of plastic waste as a fuel in the co-pyrolysis of biomass. *Journal of Analytical and Applied Pyrolysis*. doi:10.1016/j.jaap.2015.01.008
- Sajdak, M., & Stelmach, S. (2014). Using chemometric analysis to classify and confirm the origin of bio-char. *Journal of Analytical and Applied Pyrolysis*. doi:10.1016/j.jaap.2014.11.018
- Sajdak, M., Stelmach, S., Kotyczka-Morańska, M., & Plis, A. (2014). Application of chemometric methods to evaluate the origin of solid fuels subjected to thermal conversion. *Journal of Analytical and Applied Pyrolysis*, 113, 65-72. doi:10.1016/j.jaap.2014.10.005
- Sakwa-Novak, M. A. (2016). Poly(ethylenimine)-Functionalized Monolithic Alumina Honeycomb Adsorbents for CO₂ Capture from Air. *ChemSusChem*, 9(14), 1859-1868. doi:doi:10.1002/cssc.201600404
- Sakwa-Novak, M. A., Tan, S., & Jones, C. W. (2015). Role of Additives in Composite PEI/Oxide

- CO₂ Adsorbents: Enhancement in the Amine Efficiency of Supported PEI by PEG in CO₂ Capture from Simulated Ambient Air. *Acs Applied Materials & Interfaces*, 7(44), 24748-24759. doi:10.1021/acsmami.5b07545
- Sala, O. E., Sax, D., & Leslie, H. (2009). *Biodiversity consequences of biofuel production*. Paper presented at the Biofuels: Environmental Consequences and Interactions with Changing Land Use. Proceedings of the Scientific Committee on Problems of the Environment (SCOPE) International Biofuels Project Rapid Assessmen. <http://sala.lab.asu.edu/wp-content/uploads/158-Biofuels-and-biodiversity-Sala-et-al.pdf>
- Salam, K. (2015). BAMBOO AND SUSTAINABLE DEVELOPMENT WITH CLIMATE CHANGE: OPPORTUNITIES AND CHALLENGES. In *Climate Dynamics in Horticultural Science*.
- Saleh, M. E., Mahmoud, A. H., & Rashad, M. (2013). Biochar Usage as a Cost-Effective Bio-Sorbent for Removing NH₄-N from Wastewater. *CLEAN - Soil, Air, Water*, 44(1), 55-62. Retrieved from <http://gccbs2013.aast.edu/newgcc/images/pdf/biochar%20usage%20as%20a%20cost-effective%20bio-sorbent%20for%20removing%20nh4-n%20from%20wastewater%20maher%20e.%20saleh%20amal%20h.%20mahmoud%20and%20mohamed%20rashad.pdf>
- Salek, S. S., Kleerebezem, R., Jonkers, H. M., Witkamp, G.-J., & van Loosdrecht, M. C. M. (2013). Mineral CO₂ sequestration by environmental biotechnological processes. *Trends in Biotechnology*, 31(3), 139-146. doi:<http://dx.doi.org/10.1016/j.tibtech.2013.01.005>
- Salema, A. A., et al. (2013). Dielectric properties and microwave heating of oil palm biomass and biochar. *Industrial Crops and Products*, Volume 50, 366–374.
- Sali, D. (2020). Ottawa startup sees ocean of opportunities in new carbon-capture technology. *Ottawa Business Journal*. Retrieved from <https://www.obj.ca/article/techopia/ottawa-startup-sees-ocean-opportunities-new-carbon-capture-technology>
- Salleh, M. A. M., et al. (2010). Gasification of Biochar from Empty Fruit Bunch in a Fluidized Bed Reactor. *Energies*, 3(7), 1344-1352. doi:10.3390/en3071344.
- Salman, M., Cizer, Ö., Pontikes, Y., Santos, R. M., Snellings, R., Vandewalle, L., . . . Van Balen, K. (2014). Effect of accelerated carbonation on AOD stainless steel slag for its valorisation as a CO₂-sequestering construction material. *Chemical Engineering Journal*, 246, 39-52. doi:<https://doi.org/10.1016/j.cej.2014.02.051>
- Salmani, M. S., et al. (2014). Biochar Effects on Copper Availability and Uptake by Sunflower in a Copper Contaminated Calcareous Soil. *International Journal of Plant, Animal and Environmental Sciences*, 4(3), 389-394. Retrieved from http://www.ijpaes.com/admin/php/uploads/643_pdf.pdf
- Salmon, S., & House, A. (2015). Chapter 2 - Enzyme-catalyzed Solvents for CO₂ Separation A2 - Shi, Fan. In B. Morreale (Ed.), *Novel Materials for Carbon Dioxide Mitigation Technology* (pp. 23-86). Amsterdam: Elsevier.
- Salter, I., Lampitt, R. S., Sanders, R., Poulton, A., Kemp, A. E. S., Boorman, B., . . . Pearce, R. (2007). Estimating carbon, silica and diatom export from a naturally fertilised phytoplankton bloom in the Southern Ocean using PELAGRA: A novel drifting sediment trap. *Deep Sea Research Part II: Topical Studies in Oceanography*, 54(18–20), 2233-2259. doi:<http://dx.doi.org/10.1016/j.dsrr.2007.06.008>
- Salter, I., Schiebel, R., Ziveri, P., Movellan, A., Lampitt, R., & Wolff, G. A. (2014). Carbonate counter pump stimulated by natural iron fertilization in the Polar Frontal Zone. *Nature Geoscience*, 7(12), 885-889. doi:10.1038/ngeo2285
<http://www.nature.com/ngeo/journal/v7/n12/abs/ngeo2285.html#supplementary-information>
- Samaniego, J., et al. (2021). *Current understanding of the potential impacts of Carbon Dioxide Removal approaches on the SDGs in selected countries in Latin America and the Caribbean*. Retrieved from https://www.c2g2.net/wp-content/uploads/20210711_Current-understanding-CDR-SDGs_LAC_Final-Report.pdf

- Samari, M., Ridha, F., Manovic, V., Macchi, A., Anthony, E. J. J. M., & Change, A. S. f. G. (2019). Direct capture of carbon dioxide from air via lime-based sorbents. doi:10.1007/s11027-019-9845-0
- Sambusiti, C., Bellucci, M., Zabaniotou, A., Beneduce, L., & Monlau, F. (2015). Algae as promising feedstocks for fermentative biohydrogen production according to a biorefinery approach: A comprehensive review. *Renewable and Sustainable Energy Reviews*, 44, 20-36. doi:<https://doi.org/10.1016/j.rser.2014.12.013>
- Sampson, J. (2019). Drax CEO sets record straight about company operations. *Gasworld*. Retrieved from <https://www.gasworld.com/drax-ceo-sets-record-straight-about-company-operations/2017596.article>
- Samson, R., et al. (2005). The Potential of C4 Perennial Grasses for Developing a Global BIOHEAT Industry. *Critical Reviews in Plant Sciences*, 24, 461-495. Retrieved from <http://www.tandfonline.com/doi/pdf/10.1080/07352680500316508>
- Samun, I., Saeed, R., Abbas, M., Rehan, M., Nizami, A.-S., & Asam, Z.-u.-Z. (2017). Assessment of Bioenergy Production from Solid Waste. *Energy Procedia*, 142, 655-660. doi:<https://doi.org/10.1016/j.egypro.2017.12.108>
- Sanchez, D., et al. . (2020). *Literature Review and Evaluation of Research Gaps to Support Wood Products Innovation*. Retrieved from https://bof.fire.ca.gov/media/9688/full-12-ajiwpi_formattedv12_3_05_2020.pdf
- Sanchez, D. L., et al. (2018). Federal research, development, and demonstration priorities for carbon dioxide removal in the United States. *Environmental Research Letters*, 13(015005), 1-12.
- Sanchez, D. L., & Callaway, D. S. (2016). Optimal scale of carbon-negative energy facilities. *Applied Energy*, 170, 437-444. doi:<http://dx.doi.org/10.1016/j.apenergy.2016.02.134>
- Sanchez, D. L., Houlton, B., & Silver, W. (2019). UC experts can lead on carbon dioxide removal. *California Agriculture*, 73(2), 69-72. doi:10.3733/ca.2019a0009
- Sanchez, D. L., Johnson, N., McCoy, S. T., Turner, P. A., & Mach, K. J. (2018). Near-term deployment of carbon capture and sequestration from biorefineries in the United States. *Proceedings of the National Academy of Sciences*. doi:10.1073/pnas.1719695115
- Sanchez, D. L., & Kammen, D. M. (2016). A commercialization strategy for carbon-negative energy. *Nature Energy*, 1, 15002. doi:10.1038/nenergy.2015.2
- Sanchez, D. L., Nelson, J. H., Johnston, J., Mileva, A., & Kammen, D. M. (2015). Biomass enables the transition to a carbon-negative power system across western North America. *Nature Climate Change*, 5(3), 230-234. doi:10.1038/nclimate2488
- Sanchez, D. L., Turner, P. A., Baik, E., Field, C. B., Benson, S. M., & Mach, K. J. (2019). Chapter 4 - Rightsizing expectations for bioenergy with carbon capture and storage toward ambitious climate goals. In J. C. Magalhães Pires & A. L. D. Cunha Gonçalves (Eds.), *Bioenergy with Carbon Capture and Storage* (pp. 63-84): Academic Press.
- Sanchez, J., et al. (2021). The Road to Ten Gigatons. Carbon Removal Scale Up Challenge Retrieved from <https://www.roadto10gigatons.com/>
- Sanchez, M. E., et al. . (2009). Bio-fuels and bio-char production from pyrolysis of sewage sludge. *Journal of Residuals Science & Technology*, 6(1), 35-41. Retrieved from <http://dpi-journals.com/index.php/JRST/article/view/1413>
- Sanchez, M. E., et al. (2009). Pyrolysis of Agricultural Residues from Rape and Sunflowers: Production and Characterization of Bio-Fuels and Biochar Soil Management. *Journal of Analytical and Applied Pyrolysis*, 85(1-2), 142-144. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0165237008001745>
- Sánchez-Biezma, A., Paniagua, J., Diaz, L., Lorenzo, M., Alvarez, J., Martínez, D., . . . Abanades, J. C. (2013). Testing postcombustion CO₂ capture with CaO in a 1.7 MWt pilot facility. *Energy Procedia*, 37(Supplement C), 1-8. doi:<https://doi.org/10.1016/>

j.egypro.2013.05.078

- Sánchez-García, M., Alburquerque, J. A., Sánchez-Monadero, M. A., Roig, A., & CAYUELA, M. L. (2015). Biochar accelerates organic matter degradation and enhances N mineralisation during composting of poultry manure without a relevant impact on gas emissions. *Bioresource Technology*, 192, 272 - 279. doi:10.1016/j.biortech.2015.05.003
- Sanchez-Garcia, M., Cayuela, M. L., Rasse, D., & Sanchez-Monadero, M. A. (2019). Biochars from Mediterranean agro-industry residues: physico-chemical properties relevant for C sequestration and soil water retention. *ACS Sustainable Chemistry & Engineering*. doi:10.1021/acssuschemeng.8b04589
- Sánchez-García, M., Sánchez-Monadero, M. A., Roig, A., López-Cano, I., Moreno, B., Benítez, E., & CAYUELA, M. L. (2016). Compost vs biochar amendment: a two-year field study evaluating soil C build-up and N dynamics in an organically managed olive crop. *Plant and Soil*. doi:10.1007/s11104-016-2794-4
- Sandalow, D., et al. (2018). *Direct Air Capture of Carbon Dioxide*. Retrieved from https://energypolicy.columbia.edu/sites/default/files/pictures/DAC_Roadmap_20181210.pdf
- Sandalow, D., et al. (2021). *Biomass Carbon Removal and Storage (BiCRS)*. Retrieved from <https://www.icef-forum.org/roadmap/#bicrs>
- Sanderman, J., & Baldock, J. A. (2010). Accounting for soil carbon sequestration in national inventories: a soil scientist's perspective. *Environmental Research Letters*, 5(3), 034003. Retrieved from <http://stacks.iop.org/1748-9326/5/i=3/a=034003>
- Sanders, J. (2021). The climate crisis requires every tool we've got, including carbon removal. *The Hill*. Retrieved from <https://thehill.com/opinion/energy-environment/569593-the-climate-crisis-requires-every-tool-weve-got-including-carbon>
- Sanderson, B. M., O'Neill, B. C., & Tebaldi, C. (2016). What would it take to achieve the Paris temperature targets? *Geophysical Research Letters*, 43(13), 7133-7142. doi:doi:10.1002/2016GL069563
- Sandra, J. A., Lutfi, M., & Nugroho, W. A. (2014). Pengaruh Konsentrasi Asam Sulfat Terhadap Sifat Fisik dan Kimia Biochar dari Sludge Biogas pada Proses Aktivasi (Effect of Sulfuric Acid Concentration Against Physical and Chemical Properties of Sludge Biogas Biochar on Activation Process). *Jurnal Keteknikan Pertanian Tropis dan Biosistem (Journal of Tropical Agricultural Engineering and Biosystems)*, 2(3), 205-210. Retrieved from <http://jkptb.ub.ac.id/index.php/jkptb/article/view/222/187>
- Sankaran, R., Show, P. L., Nagarajan, D., & Chang, J.-S. (2018). Chapter 19 - Exploitation and Biorefinery of Microalgae. In T. Bhaskar, A. Pandey, S. V. Mohan, D.-J. Lee, & S. K. Khanal (Eds.), *Waste Biorefinery* (pp. 571-601): Elsevier.
- Sanna, A., Dri, M., Hall, M. R., & Maroto-Valer, M. (2012). Waste materials for carbon capture and storage by mineralisation (CCSM) – A UK perspective. *Applied Energy*, 99, 545-554. doi:<https://doi.org/10.1016/j.apenergy.2012.06.049>
- Sanna, A., Gaubert, J., & Maroto-Valer, M. M. (2016). Alternative regeneration of chemicals employed in mineral carbonation towards technology cost reduction. *Chemical Engineering Journal*, 306, 1049-1057. doi:<https://doi.org/10.1016/j.cej.2016.08.039>
- Sanna, A., Hall, M. R., & Maroto-Valer, M. M. (2012). Post-processing pathways in carbon capture and storage by mineral carbonation (CCSM) towards the introduction of carbon neutral materials. *Energy & Environmental Science*, 5, 7781-7796.
- Sanna, A., Ramli, I., & Mercedes Maroto-Valer, M. (2015). Development of sodium/lithium/fly ash sorbents for high temperature post-combustion CO₂ capture. *Applied Energy*, 156, 197-206. doi:<https://doi.org/10.1016/j.apenergy.2015.07.008>
- Sanna, A., Thompson, S., Whitty, K. J., & Maroto-Valer, M. M. (2017). Fly Ash Derived Lithium Silicate for in-situ Pre-combustion CO₂ Capture. *Energy Procedia*, 114, 2401-2404. doi:<https://doi.org/10.1016/j.egypro.2017.03.1386>

- Sanna, A., Uibu, M., Caramanna, G., Kuusik, R., & Maroto-Valer, M. M. (2014). A review of mineral carbonation technologies to sequester CO₂. *Chemical Society Reviews*, 43(23), 8049-8080. doi:10.1039/C4CS00035H
- Sanpasertparnich, T., Idem, R., Bolea, I., deMontigny, D., & Tontiwachwuthikul, P. (2010). Integration of post-combustion capture and storage into a pulverized coal-fired power plant. *International Journal of Greenhouse Gas Control*, 4(3), 499-510. doi:<https://doi.org/10.1016/j.ijggc.2009.12.005>
- Santhi Prabha, V. (2015). *A study on carbon and green house gas dynamics of wetland rice soils with special reference to biochar application*. (Ph.D.). Mahatma Gandhi University, Retrieved from <http://ir.inflibnet.ac.in:8080/jspui/handle/10603/50719>
- Santín, C., Doerr, S. H., Kane, E. S., Masiello, C. A., Ohlson, M., de la Rosa, J. M., . . . Dittmar, T. (2015). Towards a global assessment of pyrogenic carbon from vegetation fires. *Global Change Biology*, n/a - n/a. doi:10.1111/gcb.12985
- Santín, C., Doerr, S. H., Preston, C. M., & González-Rodríguez, G. (2014). Pyrogenic organic matter production from wildfires: a missing sink in the global carbon cycle. *Global Change Biology*, n/a - n/a. doi:10.1111/gcb.12800
- Santori, G., Charalambous, C., Ferrari, M.-C., & Brandani, S. (2018). Adsorption artificial tree for atmospheric carbon dioxide capture, purification and compression. *Energy*. doi:<https://doi.org/10.1016/j.energy.2018.08.090>
- Santos, B. S., & Capareda, S. C. (2015). Energy sorghum pyrolysis using a pressurized batch reactor. *Biomass Conversion and Biorefinery*. doi:10.1007/s13399-015-0191-5
- Santos, F. M., Gonçalves, A. L., & Pires, J. C. M. (2019). Chapter 1 - Negative emission technologies. In J. C. Magalhães Pires & A. L. D. Cunha Gonçalves (Eds.), *Bioenergy with Carbon Capture and Storage* (pp. 1-13): Academic Press.
- Santos, L. B., Striebeck, M. V., Crespi, M. S., Ribeiro, C. A., & De Julio, M. (2015). Characterization of biochar of pine pellet. *Journal of Thermal Analysis and Calorimetry*, 122(1), 21-32. doi:10.1007/s10973-015-4740-8
- Santos, R. M., Van Bouwel, J., Vandeveldt, E., Mertens, G., Elsen, J., & Van Gerven, T. (2013). Accelerated mineral carbonation of stainless steel slags for CO₂ storage and waste valorization: Effect of process parameters on geochemical properties. *International Journal of Greenhouse Gas Control*, 17, 32-45. doi:<https://doi.org/10.1016/j.ijggc.2013.04.004>
- Santos, R. M., Verbeeck, W., Knops, P., Rijnsburger, K., Pontikes, Y., & Van Gerven, T. (2013). Integrated Mineral Carbonation Reactor Technology for Sustainable Carbon Dioxide Sequestration: 'CO₂ Energy Reactor'. *Energy Procedia*, 37(Supplement C), 5884-5891. doi:<https://doi.org/10.1016/j.egypro.2013.06.513>
- Sanvong, C., & Nathewet, P. (2014). A comparative study of pelleted broiler litter biochar derived from lab-scale pyrolysis reactor with that resulted from 200-liter-oil drum kiln to ameliorate the relations between physicochemical properties of soil with lower organic matter soil. *Environment Asia*, Vol. 7 No. 1, 95-103.
- Sanvong, C., & Suppadit, T. (2013). The Characteristic of Pelleted Broiler Litter Biochar Derived from Pilot Scale Pyrolysis Reactor and 200-Liter-Oil-Drum Kiln. *Journal of Energy Technologies and Policy*.
- Sanyang, L., Ghani, W. A. W. A. K., Idris, A., & Bin Ahmad, M. (2014). Zinc Removal from Wastewater Using Hydrogel Modified Biochar. *Applied Mechanics and Materials*, 625, 842 - 846. doi:10.4028/www.scientific.net/AMM.625.842
- Sanyang, M. L., Ghani, W. A. W. A. K., Idris, A., & Ahmad, M. B. (2016). Hydrogel biochar composite for arsenic removal from wastewater. *Desalination and Water Treatment*, 57(8), 3674-3688. doi:10.1080/19443994.2014.989412
- Sanyang, M. L., Ghani, W. A. W. A. K., Idris, A., & Bin Ahmad, M. (2014). Hydrogel biochar

- composite for arsenic removal from wastewater. *Desalination and Water Treatment*, 1 - 15. doi:10.1080/19443994.2014.989412
- Sanz-Pérez, E. S., Murdock, C. R., Didas, S. A., & Jones, C. W. (2016). Direct Capture of CO₂ from Ambient Air. *Chemical Reviews*, 116(19), 11840-11876. doi:10.1021/acs.chemrev.6b00173
- Saquing, J. M., Yu, Y.-H., & Chiu, P. C. (2016). Wood-Derived Black Carbon (Biochar) as a Microbial Electron Donor and Acceptor. *Environmental Science & Technology Letters*, 3(2), 62-66. doi:10.1021/acs.estlett.5b00354
- Saranya, K., Kumutha, K., & Krishnan, P. S. (2011). Influence of biochar and Azospirillum application on the growth of maize. *Madras Agricultural Journal*, 98, 158-164.
- Saranya, K., Santhana, K. P., Kumutha, K., & John, F. (2011). Potential for Biochar as an Alternate Carrier to Lignite for the Preparation of Biofertilizers in India. *International Journal of Agriculture, Environment and Biotechnology*, 4.
- Sarauer, J. L., Page-Dumroese, D. S., & Coleman, M. D. (2019). Soil greenhouse gas, carbon content, and tree growth response to biochar amendment in western United States forests. *GCB Bioenergy*, 11(5), 660-671. doi:<https://doi.org/10.1111/gcbb.12595>
- Sari, N. A., Ishak, C. F., & Bakar, R. A. (2014). Characterization of Oil Palm Empty Fruit Bunch and Risk Husk Biochars and Their Potential to Adsorb Arsenic and Calcium. *American Journal of Agricultural and Biological Sciences*, 9(3), 450 - 456. doi:10.3844/ajabssp.2014.450.456
- Sarkar, O., Agarwal, M., Naresh Kumar, A., & Venkata Mohan, S. (2014). Retrofitting heterotrophically cultivated algae biomass as pyrolytic feedstock for biogas, bio-char and bio-oil production encompassing biorefinery. *Bioresource Technology*, 78, 132-138. doi:10.1016/j.biortech.2014.09.070
- Sarkar, S., & Sarkar, S. (2017). Current and Future Trends Toward Reduction of CO₂ Emission from Steel Industries. In M. Goel & M. Sudhakar (Eds.), *Carbon Utilization: Applications for the Energy Industry* (pp. 245-256). Singapore: Springer Singapore.
- Sarkhot, D. V., Berhe, A. A., & Ghezzehei, T. A. (2012). Impact of Biochar Enriched with Dairy Manure Effluent on Carbon and Nitrogen Dynamics. *Journal of Environmental Quality*, 41(4), 1107-1114.
- Sarkhot, D. V., Berhe, A. A., & Ghezzehei, T. A. (2013). Effectiveness of biochar for sorption of ammonium and phosphate from dairy effluent. *Journal of Environmental Quality*, 42(5), 1545–1554. Retrieved from <https://dl.sciencesocieties.org/publications/jeq/abstracts/42/5/1545?access=0&view=pdf>
- Sarma, B., Gogoi, N., & Tejada Moral, M. (2015). Germination and seedling growth of Okra (*Abelmoschus esculentus* L.) as influenced by organic amendments. *Cogent Food & Agriculture*, 1(1), 1030906. doi:10.1080/23311932.2015.1030906
- Sarmah, A. K., Srinivasan, P., Smernik, R. J., Manley-Harris, M., Antal, M. J., Downie, A., & Van Zwieten, L. (2010). Retention capacity of biochar-amended New Zealand dairy farm soil for an estrogenic steroid hormone and its primary metabolite. *Australian Journal of Soil Research*, 48(6), 648-658. Retrieved from https://www.researchgate.net/publication/47379281_Retention_capacity_of_biochar-amended_New_Zealand_dairy_farm_soil_for_an_estrogenic_steroid_hormone_and_its_primary_metabolite
- Sarmiento, J. L., & Orr, J. C. (1991). Three-dimensional simulations of the impact of Southern Ocean nutrient depletion on atmospheric CO₂ and ocean chemistry. *Limnology and Oceanography*, 36(8), 1928-1950. doi:10.4319/lo.1991.36.8.1928
- Sarmiento, J. L., Slater, R. D., Dunne, J., Gnanadesikan, A., & Hiscock, M. R. (2010). Efficiency of small scale carbon mitigation by patch iron fertilization. *Biogeosciences*, 7(11), 3593-3624. doi:10.5194/bg-7-3593-2010

- Sarmiento, J. L., & Toggweiler, J. R. (1984). A new model for the role of the oceans in determining atmospheric PCO₂. *Nature*, 308, 621. doi:10.1038/308621a0
- Sarnoff, J. D. (2020). Negative-Emission Technologies and Patent Rights after COVID-19. *Climate Law*, 10(3-4), 225-265. Retrieved from https://brill.com/view/journals/clla/10/3-4/article-p225_225.xml
- Saroha, A. K., & Devi, P. (2016). *Risk Assessment and synthesis of magnetic biochar composites from paper mill sludge for removal of pentachlorophenol*. Indian Institute of Technology Delhi, Retrieved from http://eprint.iitd.ac.in/handle/2074/6956?mode=full&submit_simple>Show+full+item+record
- Sarong, M. M., & Orge, R. F. (2015). Effect of Rice Hull Biochar on the Fertility and Nutrient Holding Capacity of Sandy Soils. *OIDA International Journal of Sustainable Development*, 8(12), 33-44. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2730687
- Sarthou, G., Vincent, D., Christaki, U., Obernosterer, I., Timmermans, K. R., & Brussaard, C. P. D. (2008). The fate of biogenic iron during a phytoplankton bloom induced by natural fertilisation: Impact of copepod grazing. *Deep Sea Research Part II: Topical Studies in Oceanography*, 55(5), 734-751. doi:<https://doi.org/10.1016/j.dsr2.2007.12.033>
- Sarula, Chen, H., Hou, X., Ubugunov, L., Vishnyakova, O., Wu, X., . . . Ding, Y. (2014). Carbon storage under different grazing management in the typical steppe. *Eurasian Soil Science*, 47(11), 1152-1160. doi:10.1134/s1064229314110106
- Sarvaramini, A., Assima, G. P., Beaudoin, G., & Larachi, F. (2014). Biomass torrefaction and CO₂ capture using mining wastes – A new approach for reducing greenhouse gas emissions of co-firing plants. *Fuel*, 115, 749-757. doi:<http://dx.doi.org/10.1016/j.fuel.2013.07.087>
- Sasidharan, S., Torkzaban, S., Bradford, S. A., Kookana, R., Page, D., & Cook, P. G. (2016). Transport and retention of bacteria and viruses in biochar-amended sand. *Science of The Total Environment*, 548-549, 100 - 109. doi:10.1016/j.scitotenv.2015.12.126
- Sassaman, E. (2019). Turning carbon dioxide into fish food?! It can be done. *Stone Pier Press*, (April 19). Retrieved from <https://stonepierpress.org/goodfoodnews/carboncapture>
- Sastri, A. R., & Dower, J. F. (2006). Mesozooplankton community response during the SERIES iron enrichment experiment in the subarctic NE Pacific. *Deep Sea Research Part II: Topical Studies in Oceanography*, 53(20–22), 2268-2280. doi:<http://dx.doi.org/10.1016/j.dsr2.2006.05.034>
- Sati, H., Mitra, M., Mishra, S., & Baredar, P. (2019). Microalgal lipid extraction strategies for biodiesel production: A review. *Algal Research*, 38, 101413. doi:<https://doi.org/10.1016/j.algal.2019.101413>
- Sato, M., Takeda, S., & Furuya, K. (2009). Responses of pico- and nanophytoplankton to artificial iron infusions observed during the second iron enrichment experiment in the western subarctic Pacific (SEEDS II). *Deep Sea Research Part II: Topical Studies in Oceanography*, 56(26), 2745-2754. doi:<https://doi.org/10.1016/j.dsr2.2009.06.002>
- Satriawan, B. D., & Handayanto, E. (2015). Effects of biochar and crop residues application on chemical properties of a degraded soil of South Malang, and P uptake by maize. *Journal of Degraded and Mining Lands Management*, 2(2), 271-280. Retrieved from <http://jdmlm.ub.ac.id/index.php/jdmlm/article/view/105>
- Sattar, A. (2015). *Hydrogen production from biomass for use in solid oxide fuel cells*. University of Birmingham, Retrieved from <http://etheses.bham.ac.uk/6335/>
- Sattar, A., Leake, G. A., Hornung, A., & Wood, J. (2014). Steam gasification of rapeseed, wood, sewage sludge and miscanthus biochars for the production of a hydrogen-rich syngas. *Biomass and Bioenergy*, 69, 276 - 286. doi:10.1016/j.biombioe.2014.07.025
- Satyanarayana, T., & Bose, H. (2017). Prospects in Mitigating Global Warming by Biomimetic

- Carbon Sequestration Using Recombinant Microbial Carbonic Anhydrases. In M. Goel & M. Sudhakar (Eds.), *Carbon Utilization: Applications for the Energy Industry* (pp. 101-127). Singapore: Springer Singapore.
- Saucier, D. S. (2013). *Cyclone Performance for Reducing Biochar Concentrations in Syngas*. (Master's thesis). Texas A & M University,
- Sauerbeck, D. R. (2001). CO₂ emissions and C sequestration by agriculture – perspectives and limitations. *Nutrient Cycling in Agroecosystems*, 60(1), 253-266. doi:10.1023/a:1012617516477
- Savaresi, A., & Perugini, L. (2021). Sinks, reservoirs or GHGs and Forests. In G. Van Calter & L. Reins (Eds.), *The Paris Agreement on Climate Change: A Commetnary* (pp. 133-147).
- Savoye, N., Trull, T. W., Jacquet, S. H. M., Navez, J., & Dehairs, F. (2008). 234Th-based export fluxes during a natural iron fertilization experiment in the Southern Ocean (KEOPS). *Deep Sea Research Part II: Topical Studies in Oceanography*, 55(5–7), 841-855. doi:<http://dx.doi.org/10.1016/j.dsret.2007.12.036>
- Sawaraba, I., & Rao, B. K. R. (2015). Monitoring of river water for free cyanide pollution from mining activity in Papua New Guinea and attenuation of cyanide by biochar. *Environmental Monitoring and Assessment*, 187(1), 1-9. doi:10.1007/s10661-014-4181-z
- Sawayama, S., Inoue, S., Dote, Y., & Yokoyama, S.-Y. (1995). CO₂ fixation and oil production through microalga. *Energy Conversion and Management*, 36(6), 729-731. doi:[https://doi.org/10.1016/0196-8904\(95\)00108-P](https://doi.org/10.1016/0196-8904(95)00108-P)
- Sawayama, S., Minowa, T., & Yokoyama, S. Y. (1999). Possibility of renewable energy production and CO₂ mitigation by thermochemical liquefaction of microalgae. *Biomass and Bioenergy*, 17(1), 33-39. doi:[https://doi.org/10.1016/S0961-9534\(99\)00019-7](https://doi.org/10.1016/S0961-9534(99)00019-7)
- Sawyer, D. (2008). Climate change, biofuels and eco-social impacts in the Brazilian Amazon and Cerrado. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 363(1498), 1747-1752. doi:10.1098/rstb.2007.0030
- Saxe, J. P., Boman, J. H., Bondi, M., Norton, U., Righetti, T. K., Rony, A. H., & Sajjadi, B. (2019). Just or bust? Energy justice and the impacts of siting solar pyrolysis biochar production facilities. *Energy Research & Social Science*, 58, 101259. doi:<https://doi.org/10.1016/j.erss.2019.101259>
- Saxena, J., Rana, G., & Pandey, M. (2013). Impact of addition of biochar along with Bacillus sp. on growth and yield of French beans. *Scientia Horticulturae*, 162, 351–356. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0304423813004111>
- Saxena, M., Maity, S., & Sarkar, S. (2014). Carbon nanoparticles in 'biochar' boost wheat (*Triticum aestivum*) plant growth. *RSC Adv.*, 4(75), 39948. doi:10.1039/c4ra06535b
- Sayari, A., Liu, Q., & Mishra, P. (2016). Enhanced Adsorption Efficiency through Materials Design for Direct Air Capture over Supported Polyethylenimine. *ChemSusChem*, 9(19), 2796-2803. doi:10.1002/cssc.201600834
- Sayre, L. (2017). How carbon farming could halt climate change. *The New Food Economy*. Retrieved from <https://newfoodeconomy.org/how-carbon-farming-could-halt-climate-change/>
- Sayre, R. (2010). Microalgae: The Potential for Carbon Capture. *BioScience*, 60(9), 722-727. Retrieved from http://oup.silverchair-cdn.com/oup/backfile/Content_public/Journal/bioscience/60/9/10.1525/bio.2010.60.9.9/2/60-9-722.pdf?Expires=1485911225&Signature=W1Eu9Wq77Utb4J2Rx85Hdh5QcQ6-yUaMt5f0dMbuFWM2UdzUZKI6CZSUU~~~d0Izx--OX3E4VlkplXn45luxFdiznToYWvHH6hSAarxFYsWNsS731wVP~W~zLpPZWb7kxHoXlsdB3i2TZ3tRAc0oJ4flgnEfbx9njAF2-ttQaFQ5CNYAQJs92UQokTNf28smhxW3NUXzpVk1uCuCB2Sppsb3igEp6rYfr9M7sUI8leJkjDXjRtdbWZ0jcMvxq1CNdshBKM0kzymR0N2pRfjal1Av2bNqpJVMPt7kiatL6aXOW

- tnYD05YNxfP9cihEYOxlr-0PeNAp7cDmUVvJDlcg__&Key-Pair-
Id=APKAIUCZBIA4LVPAVW3Q
- Scarlat, N., Dallemand, J.-F., Monforti-Ferrario, F., & Nita, V. (2015). The role of biomass and bioenergy in a future bioeconomy: Policies and facts. *Environmental Development*, 15, 3-34. doi:<http://dx.doi.org/10.1016/j.envdev.2015.03.006>
- Scarpone, F., et al. (2013). Bioenergy & water: Brazilian sugar cane ethanol. In J. F. Dellemand & P. W. Gerbens-Leenes (Eds.), *Bioenergy and Water* (pp. 89-102): European Commission.
- Scarratt, M. G., Marchetti, A., Hale, M. S., Rivkin, R. B., Michaud, S., Matthews, P., . . . Kiyosawa, H. (2006). Assessing microbial responses to iron enrichment in the Subarctic Northeast Pacific: Do microcosms reproduce the in situ condition? *Deep Sea Research Part II: Topical Studies in Oceanography*, 53(20–22), 2182-2200. doi:<http://dx.doi.org/10.1016/j.dsrr.2006.05.035>
- Schabot, C. J. (2014). *Evaluation of suitability of water hyacinth as feedstock for bio-energy production / Cornelis JohannesJ. Schabot*. North-West University, Retrieved from <http://dspace.nwu.ac.za/handle/10394/11969>
- Schaef, H. T., McGrail, B. P., & Owen, A. T. (2010). Carbonate mineralization of volcanic province basalts. *International Journal of Greenhouse Gas Control*, 4(2), 249-261. doi:<https://doi.org/10.1016/j.ijggc.2009.10.009>
- Schaefer, C. E. G. R., et al. . (2004). Micromorphology and Electron Microprobe Analysis of Phosphorus and Potassium Forms of an Indian Black Earth (IBE) Anthrosol from Western Amazonia. *Australian Journal of Soil Research*, 42(4), 401-409. Retrieved from [http://research-repository.uwa.edu.au/en/publications/micromorphology-and-electron-microprobe-analysis-of-phosphorus-and-potassium-forms-of-an-indian-black-earth-ibe-anthrosol-from-western-amazonia\(74fdcbac-32c7-4c25-bf17-f075ea7e86af\)/export.html](http://research-repository.uwa.edu.au/en/publications/micromorphology-and-electron-microprobe-analysis-of-phosphorus-and-potassium-forms-of-an-indian-black-earth-ibe-anthrosol-from-western-amazonia(74fdcbac-32c7-4c25-bf17-f075ea7e86af)/export.html)
- Schaeffer, M., Eickhout, B., Hoogwijk, M., Strengers, B., Van Vuuren, D., Leemans, R., & Opsteegh, T. (2006). CO₂ and albedo climate impacts of extratropical carbon and biomass plantations. *Global Biogeochemical Cycles*, 20(2), 1-15. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1029/2005GB002581/epdf>
- Schahczenski, J. (2010). *Biochar and Sustainable Agriculture*. Retrieved from <http://attra.ncat.org/attra-pub/PDF/biochar.pdf>
- Schahczenski, J., & Hill, H. (2009). *Agriculture, Climate Change and Carbon Sequestration*. Retrieved from https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs141p2_002437.pdf
- Schakel, W., Meerman, H., Talaei, A., Ramírez, A., & Faaij, A. (2014). Comparative life cycle assessment of biomass co-firing plants with carbon capture and storage. *Applied Energy*, 131, 441-467. doi:<https://doi.org/10.1016/j.apenergy.2014.06.045>
- Scharenbroch, B. C., et al. . (2013). Biochar and Biosolids Increase Tree Growth and Improve Soil Quality for Urban Landscapes. *American Society of Agronomy*, 42(5), 1372-1385. Retrieved from <https://dl.sciencesocieties.org/publications/jeq/abstracts/42/5/1372>
- Scharlemann, J. P. W., & Laurance, W. F. (2008). How Green Are Biofuels? *Science*, 319(5859), 43-44. Retrieved from <http://science.sciencemag.org/content/319/5859/43>
- Schartau, M., Landry, M. R., & Armstrong, R. A. (2010). Density estimation of plankton size spectra: a reanalysis of IronEx II data. *Journal of Plankton Research*, 32(8), 1167-1184. doi:[10.1093/plankt/fbq072](https://doi.org/10.1093/plankt/fbq072)
- Scheer, C., et al. , & n. (2011). Effect of biochar amendment on the soil-atmosphere exchange of greenhouse gases from an intensive subtropical pasture in northern New South Wales, Australia. *Plant Soil*, 345(1-2), 47-58. doi:[DOI 10.1007/s11104-011-0759-1](https://doi.org/10.1007/s11104-011-0759-1)
- Scheidel, A., & Work, C. (2018). Forest plantations and climate change discourses: New powers of 'green' grabbing in Cambodia. *Land Use Policy*, 77, 9-18. doi:<https://doi.org/10.1016/>

j.landusepol.2018.04.057

- Schenuit, F., Colvin, R., Fridahl, M., McMullin, B., Reisinger, A., Sanchez, D. L., . . . Geden, O. (2021). Carbon Dioxide Removal Policy in the Making: Assessing Developments in 9 OECD Cases. *Frontiers in Climate*, 3(7). doi:10.3389/fclim.2021.638805
- Schieber, J. (2020). New stimulus bill includes \$35.2 billion for new energy initiatives. *Tech Crunch*. Retrieved from <https://techcrunch.com/2020/12/21/new-stimulus-bill-includes-35-2-billion-for-new-energy-initiatives/>
- Schiermeier, Q. (2004). Fertilising the sea could combat global warming. *Nature*. Retrieved from <http://www.nature.com/news/2004/040422/full/news040419-7.html>
- Schiermeier, Q. (2007). Mixing the oceans proposed to reduce global warming. *Nature*. Retrieved from <https://www.nature.com/news/2007/070924/full/070924-8.html>
- Schiffman, R. (2016). Why CO₂ ‘Air Capture’ Could Be Key to Slowing Global Warming. *Yale Environment 360*. Retrieved from http://e360.yale.edu/features/pulling_co2_from_atmosphere_climate_change_lackner
- Schile, L. M., Kauffman, J. B., Crooks, S., Fourqurean, J. W., Glavan, J., & Megonigal, J. P. (2017). Limits on carbon sequestration in arid blue carbon ecosystems. *Ecological Applications*, 27(3), 859-874. doi:doi:10.1002/eap.1489
- Schimmelpfennig, S. (2015). *Carbon sequestration in temperate grassland soil : risks and opportunities of biochar and hydrochar application*. Justus-Liebig-Universität Gießen (University of Giessen), Retrieved from <http://geb.uni-giessen.de/geb/volltexte/2015/11605/>
- Schimmelpfennig, S., & Glaser, B. (2012). One Step Forward toward Characterization: Some Important Material Properties to Distinguish Biochars. *Journal of Environmental Quality*, 41(4), 1–13. doi:10.2134/jeq2011.0146
- Schimmelpfennig, S., Müller, C., Grünhage, L., Koch, C., & Kammann, C. (2014). Biochar, hydrochar and uncarbonized feedstock application to permanent grassland—Effects on greenhouse gas emissions and plant growth. *Agriculture, Ecosystems & Environment*.
- Schipper, O. (2020). Binding carbon dioxide using broken concrete. *Phys.org*. Retrieved from <http://www.californiacountynews.org/news/2018/02/why-are-there-so-many-missing-people-humboldt-county>
- Schirmer, J., & Bull, L. (2014). Assessing the likelihood of widespread landholder adoption of afforestation and reforestation projects. *Global Environmental Change*, 24, 306-320. doi:<https://doi.org/10.1016/j.gloenvcha.2013.11.009>
- Schlundadinger, B., Apps, M., Bohlin, F., Gustavsson, L., Jungmeier, G., Marland, G., . . . Savolainen, I. (1997). Towards a standard methodology for greenhouse gas balances of bioenergy systems in comparison with fossil energy systems. *Biomass and Bioenergy*, 13(6), 359-375. doi:[http://dx.doi.org/10.1016/S0961-9534\(97\)10032-0](http://dx.doi.org/10.1016/S0961-9534(97)10032-0)
- Schlesinger, B. (2015). Biochar Reality Check. Retrieved from <https://blogs.nicholas.duke.edu/citizenscientist/biochar-reality-check/>
- Schlesinger, B. (2020). The Futility of Soil Carbon Sequestration. *The Millbrook Independent*. Retrieved from <https://themillbrookindependent.com/?p=679>
- Schlesinger, B. (2020). Grasping at Straws. *The Millbrook Independent*. Retrieved from <https://themillbrookindependent.com/?p=503>
- Schlesinger, W. H. (1999). Carbon Sequestration in Soils. *Science*, 284(5423), 2095-2095. doi:10.1126/science.284.5423.2095
- Schlesinger, W. H. (2000). Carbon sequestration in soils: some cautions amidst optimism. *Agriculture, Ecosystems & Environment*, 82(1–3), 121-127. doi:[http://dx.doi.org/10.1016/S0167-8809\(00\)00221-8](http://dx.doi.org/10.1016/S0167-8809(00)00221-8)
- Schlesinger, W. H., et al. (2018). Pruitt Is Wrong on Burning Forests for Energy. *New York Times*. Retrieved from <https://www.nytimes.com/2018/05/03/opinion/pruitt-forests->

- burning-energy.html
- Schlesinger, W. H., & Lichter, J. (2001). Limited carbon storage in soil and litter of experimental forest plots under increased atmospheric CO₂. *Nature*, 411(6836), 466-469. Retrieved from <http://dx.doi.org/10.1038/35078060>
- Schlossberg, J. (2016). Is Biomass Energy Renewable? Retrieved from <https://www.ecowatch.com/is-biomass-energy-renewable-1891131459.html>
- Schmalenberger, A., & Fox, A. (2015). Bacterial Mobilization of Nutrients From Biochar-Amended Soils. *Advances in Applied Microbiology*, 94, 109-159. doi:10.1016/bs.aambs.2015.10.001
- Schmauss, T. A., & Barnett, S. A. (2021). Viability of Vehicles Utilizing On-Board CO₂ Capture. *ACS Energy Letters*, 6(9), 3180-3184. doi:10.1021/acsenergylett.1c01426
- Schmelz, W. J., Hochman, G., & Miller, K. G. (2020). Total cost of carbon capture and storage implemented at a regional scale: northeastern and midwestern United States. *Interface Focus*, 10(5), 20190065. doi:doi:10.1098/rsfs.2019.0065
- Schmer, M. R., Vogel, K. P., Mitchell, R. B., & Perrin, R. K. (2008). Net energy of cellulosic ethanol from switchgrass. *Proceedings of the National Academy of Sciences*, 105(2), 464-469. doi:10.1073/pnas.0704767105
- Schmidt, H. (2012). Treating liquid manure in biochar. *Ithaka Journal*, 1/2012, 273–276.
Retrieved from <http://www.ithaka-journal.net/druckversionen/e062012-bc-manure.pdf>
- Schmidt, H., Pandit, B., Martinsen, V., Cornelissen, G., Conte, P., & Kammann, C. (2015). Fourfold Increase in Pumpkin Yield in Response to Low-Dosage Root Zone Application of Urine-Enhanced Biochar to a Fertile Tropical Soil. *Agriculture*, 5(3), 723 - 741. doi:10.3390/agriculture5030723
- Schmidt, H.-P. (2012). 55 Uses of Biochar. *ithakajournal viticulture ecology climate-farming*. Retrieved from <http://www.ithaka-journal.net/druckversionen/e082012-55-uses-of-bc.pdf>
- Schmidt, H. P., & Niggli, C. (2012). Biochar Gardening – Results 2011. *Ithaka Journal*, 265–269. Retrieved from <http://www.ithaka-journal.net/druckversionen/e042012-bc-gardening.pdf>
- Schmidt, H.-P., Anca-Couce, A., Hagemann, N., Werner, C., Gerten, D., Lucht, W., & Kammann, C. (2019). Pyrogenic carbon capture and storage. *GCB Bioenergy*, 11(4), 573-591. doi:10.1111/gcbb.12553
- Schmidt, H.-P., Kammann, C., Niggli, C., Evangelou, M. W. H., Mackie, K. A., & Abiven, S. (2014). Biochar and biochar-compost as soil amendments to a vineyard soil: Influences on plant growth, nutrient uptake, plant health and grape quality. *Agriculture, Ecosystems & Environment*, 191, 117-123. doi:<http://dx.doi.org/10.1016/j.agee.2014.04.001>
- Schmidt, H.-P., & Shackley, S. (2016). Biochar horizon 2025. In *Biochar in European Soils and Agriculture: Science and Practice*.
- Schmidt, H.-P., & Taylor, P. (2015). Kon-Tiki flame cap pyrolysis for the democratization of biochar production. *Ithaka Journal: biochar materials, ecosystems & agronomy*, 2014, 338-348. Retrieved from http://www.ithaka-journal.net/druckversionen/e012014_schmidt_kon-tiki_2014.pdf
- Schmidt, J., Leduc, S., Dotzauer, E., Kindermann, G., & Schmid, E. (2010). Cost-effective CO₂ emission reduction through heat, power and biofuel production from woody biomass: A spatially explicit comparison of conversion technologies. *Applied Energy*, 87(7), 2128-2141. doi:10.1016/j.apenergy.2009.11.007
- Schmidt, J., Leduc, S., Dotzauer, E., & Schmid, E. (2011). Cost-effective policy instruments for greenhouse gas emission reduction and fossil fuel substitution through bioenergy production in Austria. *Energy Policy*, 39(6), 3261-3280. doi:<http://dx.doi.org/10.1016/j.enpol.2011.03.018>
- Schmidt, M. (2013). Amazonian Dark Earths: pathways to sustainable development in tropical rainforests? *Boletim do Museu Paraense*

- Emílio Goeldi. *Ciências Humanas*, 8(1), 11-38. Retrieved from <http://www.scielo.br/pdf/bgoeldi/v8n1/v8n1a02.pdf>
- Schmidt, M. W. I. (2004). Biogeochemistry - carbon budget in the black. *Nature*, 427(6972), 305-+.
- Schmidt, M. W. I., & Noack, A. G. (2000). Black carbon in soils and sediments: Analysis, distribution, implications, and current challenges. *Global Biogeochemical Cycles*, 14(3), 777-793. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1029/1999GB001208/abstract>
- Schmidt, M. W. I., Skjemstad, J. O., Czimczik, C. I., Glaser, B., Prentice, K. M., & Gelinas, Y. (2001). Comparative analysis of black carbon in soils. *Global Biogeochemical Cycles*, 15(1), 163-167. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1029/2000GB001284/abstract>
- Schmidt, M. W. I., Skjemstad, J. O., Gehrt, E., & Kogel-Knabner, I. (1999). Charred organic carbon in german chernozemic soils. *European Journal of Soil Science*, 50(2), 351-365. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1046/j.1365-2389.1999.00236.x/abstract>
- Schmidt, M. W. I., Torn, M. S., Abiven, S., Dittmar, T., Guggenberger, G., Janssens, I. A., . . . Koegel-Knaber, I. (2011). Persistence of soil organic matter as an ecosystem property. *Nature*.
- Schmitz, M., & Linderholm, C. J. (2016). Performance of calcium manganate as oxygen carrier in chemical looping combustion of biochar in a 10kW pilot. *Applied Energy*, 169, 729 - 737. doi:10.1016/j.apenergy.2016.02.088
- Schneider, D., et al. (2011). Characterization of biochar from hydrothermal carbonization of bamboo. *International Journal of Energy and Environment*, 2(4), 647-652. Retrieved from http://www.ijee.ieefoundation.org/vol2/issue4/IJEE_06_v2n4.pdf
- Schneider, E. (2012). *The Effects of Biochar Age and Concentration on Soil Retention of Phosphorus and Infiltration Rate*. (Bachelor of Science). California Polytechnic State University, San Luis Obispo. Retrieved from <http://digitalcommons.calpoly.edu/cgi/viewcontent.cgi?article=1023&context=nrmsp>
- Schneider, J. (2020). Decarbonizing construction through carbonation. *Proceedings of the National Academy of Sciences*, 117(23), 12515-12517. doi:10.1073/pnas.1913867116
- Schneider, L. J. D. (2019). Fixing the Climate? How Geoengineering Threatens to Undermine the SDGs and Climate Justice. doi:10.1057/s41301-019-00211-6
- Schneider, M. P. W., Hilf, M., Vogt, U. F., & Schmidt, M. W. I. (2010). The benzene polycarboxylic acid (BPCA) pattern of wood pyrolyzed between 200 degrees C and 1000 degrees C. *Organic Geochemistry*, 41(10), 1082-1088. Retrieved from <http://www.zora.uzh.ch/39567/>
- Schnellmann, M. A., Görke, R. H., Scott, S. A., & Dennis, J. S. (2020). Chapter 7 Chemical Looping Technologies for CCS. In *Carbon Capture and Storage* (pp. 189-237): The Royal Society of Chemistry.
- Schoedel, A., Ji, Z., & Yaghi, O. M. (2016). The role of metal-organic frameworks in a carbon-neutral energy cycle. *Nature Energy*, 1, 1-13. Retrieved from <https://www.nature.com/articles/nenergy201634>
- Schoeneberger, M. M. (2009). Branching out: Agroforestry as a climate change mitigation and adaptation tool for agriculture. *Agroforestry Systems*, 75, 27-37.
- Schofield, H. K. (2015). *A biogeochemical study of nutrient dynamics in artificial soil*. Plymouth University, Retrieved from <https://pearl.plymouth.ac.uk/handle/10026.1/3766?show=full>
- Scholes, R. J., & Noble, I. R. (2001). Storing Carbon on Land. *Science*, 294(5544), 1012-1013. doi:10.1126/science.1065307
- Scholz, F., & Hasse, U. (2008). Permanent Wood Sequestration: The Solution to the Global

- Carbon Dioxide Problem. *ChemSusChem*, 1(5), 381-384. doi:10.1002/cssc.200800048
- Scholz, S. M. (2014). *Biochar Systems for Smallholders in Developing Countries : Leveraging Current Knowledge and Exploring Future Potential for Climate-Smart Agriculture*. Retrieved from <https://openknowledge.worldbank.org/handle/10986/18781>
- Schomberg, H. H. (2012). Influence of Biochar on Nitrogen Fractions in a Coastal Plain Soil. *Journal of Environmental Quality*, 41(4), 1087-1095. doi:10.2134/jeq2011.0133
- Schoneveld, G. C., German, L. A., & Nutakor, E. (2011). Land-based Investments for Rural Development? A Grounded Analysis of the Local Impacts of Biofuel Feedstock Plantations in Ghana. *Ecology and Society*, 16(4), Article 10. doi:10.5751/ES-04424-160410
- Schouten, S., et al. . (2012). 'Bioenergy from cattle manure? Implications of anaerobic digestion and subsequent pyrolysis for carbon and nitrogen dynamics in soil'. *GCB Bioenergy*, 4(6), 751-760. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/j.1757-1707.2012.01163.x/abstract>
- Schrag, D. P. (2009). Storage of carbon dioxide in offshore sediments. *Science*, 325, 1658-1659. Retrieved from http://www.precaution.org/lib/offshore_ccs.090925.pdf
- Schrammel, G., Paisler, C., Krug, H., Rauch, R., & Hofbauer, H. (2010). *Thermal Conversion of Biomass by Microwave Energy - First Results with Wood*. Paper presented at the 18th European Biomass Conference and Exhibition.
- Schreier, M., et al. (2017). Solar conversion of CO₂ to CO using Earth-abundant electrocatalysts prepared by atomic layer modification of CuO. *Nature Energy*, 2, 1-9. Retrieved from https://infoscience.epfl.ch/record/228911/files/schreier_solar_2017_natureenergy_2.pdf
- Schübel, H., & Wallmann-Helmer, I. (2021). Food security and the moral differences between climate mitigation and geoengineering: the case of biofuels and BECCS. In H. Schübel & I. Wallmann-Helmer (Eds.), *Justice and food security in a changing climate* (pp. 71-76).
- Schueler, V., Weddige, U., Beringer, T., Gamba, L., & Lamers, P. (2013). Global biomass potentials under sustainability restrictions defined by the European Renewable Energy Directive 2009/28/EC. *GCB Bioenergy*, 5(6), 652-663. doi:10.1111/gcbb.12036
- Schuiling, O. (2015). The Green Cookery Book: Recipe against Climate Change and Ocean Acidification. In T. Goreau, R. Larson, & J. Campe (Eds.), *Geotherapy: Innovative Methods of Soil Fertility Restoration, Carbon Sequestration, and Reversing CO₂ Increase* (pp. 136-151).
- Schuiling, R. D. (1998). Geochemical engineering; taking stock. *Journal of Geochemical Exploration*, 62(1), 1-28. doi:[http://dx.doi.org/10.1016/S0375-6742\(97\)00042-3](http://dx.doi.org/10.1016/S0375-6742(97)00042-3)
- Schuiling, R. D. (2006). Mineral Sequestration of CO₂ and Recovery of the Heat of Reaction. In V. Badescu, R. B. Cathcart, & R. D. Schuiling (Eds.), *Macro-Engineering: A Challenge for the Future* (pp. 21-29). Dordrecht: Springer Netherlands.
- Schuiling, R. D. (2013). Carbon Dioxide Sequestration, Weathering Approaches to. In T. Lenton & N. Vaughan (Eds.), *Geoengineering Responses to Climate Change: Selected Entries from the Encyclopedia of Sustainability Science and Technology* (pp. 141-168).
- Schuiling, R. D., & de Boer, P. L. (2010). Coastal spreading of olivine to control atmospheric CO₂ concentrations: A critical analysis of viability. Comment: Nature and laboratory models are different. *International Journal of Greenhouse Gas Control*, 4, 855-856. Retrieved from http://innovationconcepts.eu/res/literatuurSchuiling/2010schuiling_de_boercommenthangx.pdf
- Schuiling, R. D., & de Boer, P. L. (2011). Rolling stones; fast weathering of olivine in shallow seas for cost-effective CO₂ capture and mitigation of global warming and ocean acidification. *Earth Syst. Dynam. Discuss.*, 2011, 551-568. doi:10.5194/esdd-2-551-2011

- Schuiling, R. D., & Krijgsman, P. (2006). Enhanced Weathering: An Effective and Cheap Tool to Sequester CO₂. *Climatic Change*, 74(1), 349-354. doi:10.1007/s10584-005-3485-y
- Schuiling, R. D., & Praagman, E. (2011). Olivine Hills: Mineral Water Against Climate Change. In S. D. Brunn (Ed.), *Engineering Earth: The Impacts of Megaengineering Projects* (pp. 2201-2206). Dordrecht: Springer Netherlands.
- Schuiling, R. D., & Tickell, O. (2010). Enhanced weathering of olivine to capture CO₂. *Journal of Applied Chemistry*, 12, 510-519.
- Schuiling, R. D., Wilson, S. A., & Power, I. M. (2011). Enhanced silicate weathering is not limited by silicic acid saturation. *Proceedings of the National Academy of Sciences*, 108(12), E41-E41. doi:10.1073/pnas.1019024108
- Schulz, H., Dunst, G., & Glaser, B. (2013). Positive effects of composted biochar on plant growth and soil fertility. *Agronomy for Sustainable Development*, 33(4), 817-827. Retrieved from https://www.researchgate.net/publication/257805348_Positive_effects_of_composted_biochar_on_plant_growth_and_soil_fertility
- Schulz, H., Dunst, G., & Glaser, B. (2014). No Effect Level of Co-Composted Biochar on Plant Growth and Soil Properties in a Greenhouse Experiment. *Agronomy*, 4, 34-51. Retrieved from <http://www.mdpi.com/2073-4395/4/1/34>
- Schulz, H., & Glaser, B. (2012). Effects of biochar compared to organic and inorganic fertilizers on soil quality and plant growth in a greenhouse experiment. *Journal of Plant Nutrition and Soil Science*, 175(3), 410-422. doi:10.1002/jpln.201100143
- Schulz, I., et al. (2018). Remarkable structural resistance of a nanoflagellatedominated plankton community to iron fertilization during the Southern Ocean experiment LOHAFEX. *Marine Ecology Progress Series*, 601, 77-95. Retrieved from <https://www.int-res.com/articles/meps oa/m601p077.pdf>
- Schulze, E. D., Stupak, I., & Hessenmöller, D. (2019). Chapter 7 - The climate mitigation potential of managed versus unmanaged spruce and beech forests in Central Europe. In J. C. Magalhães Pires & A. L. D. Cunha Gonçalves (Eds.), *Bioenergy with Carbon Capture and Storage* (pp. 131-149): Academic Press.
- Schulze, E.-D., Körner, C., Law, B. E., Haberl, H., & Luyssaert, S. (2012). Large-scale bioenergy from additional harvest of forest biomass is neither sustainable nor greenhouse gas neutral. *GCB Bioenergy*, 4(6), 611-616. doi:10.1111/j.1757-1707.2012.01169.x
- Schumacher, B. (2002). *Methods for determination of Total Organic Carbon (TOC) in soils and sediments*. Retrieved from
- Schumann, D. (2014). Carbon Capture, Storage and Use. In W. Kuckshinrichs & J.-F. Hake (Eds.), (pp. 221-251).
- Schumann, D. (2017). Public Perception of CO₂ Pipelines. *Energy Procedia*, 114, 7356-7366. doi:<https://doi.org/10.1016/j.egypro.2017.03.1867>
- Schwaiger, N., et al. . (2015). Biomass Pyrolysis Refinery - Herstellung von nachhaltigen Treibstoffen. *Chemie Ingenieur Technik*, 87(6), 803-809. doi:10.1002/cite.201400099
- Schwartz, J. (2017). Can Carbon Capture Technology Prosper Under Trump? *New York Times*. Retrieved from <https://www.nytimes.com/2017/01/02/science/donald-trump-carbon-capture-clean-coal.html>
- Schweizer, V. J., Ebi, K. L., van Vuuren, D. P., Jacoby, H. D., Riahi, K., Strefler, J., . . . Weyant, J. P. (2020). Integrated Climate-Change Assessment Scenarios and Carbon Dioxide Removal. *One Earth*, 3(2), 166-172. doi:10.1016/j.oneear.2020.08.001
- Sciences, C., & Initiative, C. (2016). *Global Roadmap for Implementing CO₂ Utilization*. Retrieved from <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&cad=rja&uact=8&ved=2ahUKEwjnrsrv1o-jmAhV5ljQIHSBYDmcQFjACegQIBRAB&url=https%3A%2Fwww.globalco2initiative.org%2Fresearch%2Fglobal-roadmap-study-of-co2u->

- technologies%2F&usg=AOvVaw1jZXnggQXluKeUAXXyhzgt
- Scientists, T. N. (2021). Net zero: a dangerous delay tactic? Retrieved from <https://www.thenakedscientists.com/articles/interviews/net-zero-dangerous-delay-tactic>
- Ścisłowska, M., Włodarczyk, R., Kobyłecki, R., & Bis, Z. (2015). Biochar to Improve the Quality and Productivity of Soils. *Journal of Ecological Engineering*, 16, 31 - 35. doi:10.12911/22998993/2802
- Scott, A. C., & Damblon, F. (2010). Charcoal: Taphonomy and significance in geology, botany and archaeology. *Palaeogeography Palaeoclimatology Palaeoecology*, 291(1), 1-10. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0031018210001835>
- Scott, D. (2018). Ethics of Climate Engineering: Chemical Capture of Carbon Dioxide from Air. *HYLE – International Journal for Philosophy of Chemistry*, 24, 55-77. Retrieved from <http://hyle.org/journal/issues/24-1/scott.pdf>
- Scott, D., & Boyanton, M. U. (2021). Climate Bill Boosting Growers' Carbon Credits Hits House Hurdles. *Bloomberg Law*. Retrieved from <https://news.bloomberglaw.com/environment-and-energy/climate-bill-boosting-growers-carbon-credits-hits-house-hurdles>
- Scott, K. N. (2005-2006). The Day After Tomorrow: Ocean CO₂ Sequestration and the Future of Climate Change. *Georgetown International Environmental Law Review*, 18, 57-108. Retrieved from <https://heinonline.org/HOL/LandingPage?handle=hein.journals/gintenlr18&div=8&id=&page=>
- Scott, K. N. (2018). Mind the Gap: Marine Geoengineering and the Law of the Sea. In R. C. Beckman, et al. (Ed.), *High Seas Governance: Gaps and Challenges* (pp. 34-56).
- Scott, K. N. (2021). Not an Intractable Challenge: Geoengineering MSR in ABNJ. In M. H. Nordquist & R. Long (Eds.), *Marine Biodiversity of Areas beyond National Jurisdiction* (pp. 189-210).
- Scott, S. A., Davey, M. P., Dennis, J. S., Horst, I., Howe, C. J., Lea-Smith, D. J., & Smith, A. G. (2010). Biodiesel from algae: challenges and prospects. *Current Opinion in Biotechnology*, 21(3), 277-286. doi:<https://doi.org/10.1016/j.copbio.2010.03.005>
- Scott, V., & Geden, O. (2018). The challenge of carbon dioxide removal for EU policy-making. *Nature Energy*. doi:10.1038/s41560-018-0124-1
- Scott, V., Gilfillan, S., Markusson, N., Chalmers, H., & Haszeldine, R. S. (2013). Last chance for carbon capture and storage. *Nature Climate Change*, 3(2), 105-111. Retrieved from <http://dx.doi.org/10.1038/nclimate1695>
- Scott-Buechler, C. M., & Greene, C. H. (2019). Chapter 6 - Role of the ocean in climate stabilization. In J. C. Magalhães Pires & A. L. D. Cunha Gonçalves (Eds.), *Bioenergy with Carbon Capture and Storage* (pp. 109-130): Academic Press.
- Scott-Clarke, E., & Page, T. (2021). This underwater farmer wants us to eat more seaweed. Retrieved from <https://www.cnn.com/2020/11/20/uk/uk-kelp-farming-seaweed-rathlin-c2e-spc-intl/index.html>
- Scragg, A. H., Illman, A. M., Carden, A., & Shales, S. W. (2002). Growth of microalgae with increased calorific values in a tubular bioreactor. *Biomass and Bioenergy*, 23(1), 67-73. doi:[https://doi.org/10.1016/S0961-9534\(02\)00028-4](https://doi.org/10.1016/S0961-9534(02)00028-4)
- Sculley, J. P. (2013). *Synthesis and characterization of rationally designed porous materials for energy storage and carbon capture*. (Ph.D.). Texas A&M, Retrieved from <http://search.proquest.com/socialsciences/docview/1428847200/fulltextPDF/99D1E51DC856484BPQ/3?accountid=14496>
- Sculley, J. P., & Zhou, H. C. (2012). Enhancing Amine-Supported Materials for Ambient Air Capture. *Angewandte Chemie-International Edition*, 51(51), 12660-12661. doi:10.1002/anie.201207495
- Searchinger, T., et al. (2008). Use of U.S. Croplands for Biofuels Increases Greenhouse Gases Through Emissions from Land-Use Change. *Science*, 319(5867), 1238-1240. Retrieved

- from <http://science.sciencemag.org/content/319/5867/1238>
- Searchinger, T., et al. (2009). Fixing a critical climate accounting error. *Science*, 326(5922), 527-528. Retrieved from <http://science.sciencemag.org/content/326/5952/527>
- Searchinger, T., Edwards, R., Mulligan, D., Heimlich, R., & Plevin, R. (2015). Do biofuel policies seek to cut emissions by cutting food? *Science*, 347(6229), 1420-1422. doi:10.1126/science.1261221
- Searchinger, T., & Heimlich, R. (2015). *Avoiding Bioenergy Competition for Food Crops and Land*. Retrieved from https://www.wri.org/sites/default/files/avoiding_bioenergy_competition_food_crops_land.pdf
- Searchinger, T., & Ranganathan, J. (2020). INSIDER: Further Explanation on the Potential Contribution of Soil Carbon Sequestration on Working Agricultural Lands to Climate Change Mitigation. Retrieved from <https://www.wri.org/blog/2020/08/insider-further-explanation-potential-contribution-soil-carbon-sequestration-working>
- Searchinger, T. D., Beringer, T., Holtsmark, B., Kammen, D. M., Lambin, E. F., Lucht, W., . . . van Ypersele, J.-P. (2018). Europe's renewable energy directive poised to harm global forests. *Nature Communications*, 9(1), 3741. doi:10.1038/s41467-018-06175-4
- Searchinger, T. D., Beringer, T., & Strong, A. (2017). Does the world have low-carbon bioenergy potential from the dedicated use of land? *Energy Policy*, 110, 434-446. doi:<https://doi.org/10.1016/j.enpol.2017.08.016>
- Searchinger, T. D., Estes, L., Thornton, P. K., Beringer, T., Notenbaert, A., Rubenstein, D., . . . Herrero, M. (2015). High carbon and biodiversity costs from converting Africa's wet savannahs to cropland. *Nature Climate Change*, 5(5), 481-486. doi:10.1038/nclimate2584
- <http://www.nature.com/nclimate/journal/v5/n5/abs/nclimate2584.html#supplementary-information>
- Searchinger, T. D., Wirsénus, S., Beringer, T., & Dumas, P. (2018). Assessing the efficiency of changes in land use for mitigating climate change. *Nature*, 564(7735), 249-253. doi:10.1038/s41586-018-0757-z
- SearchingerT, i., D. . (2010). Biofuels and the need for additional carbon. *Environmental Research Letters*, 5(2), 1-10. Retrieved from <http://stacks.iop.org/1748-9326/5/i=2/a=024007>
- Searle, S. Y., & Malins, C. J. (2014). Will energy crop yields meet expectations? *Biomass and Bioenergy*, 65, 3-12. doi:<http://dx.doi.org/10.1016/j.biombioe.2014.01.001>
- Seddon, N., Chausson, A., Berry, P., Girardin, C. A. J., Smith, A., & Turner, B. (2020). Understanding the value and limits of nature-based solutions to climate change and other global challenges. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 375(1794), 20190120. doi:doi:10.1098/rstb.2019.0120
- Seddon, N., Smith, A., Smith, P., Key, I., Chausson, A., Girardin, C., . . . Turner, B. (2021). Getting the message right on nature-based solutions to climate change. *Global Change Biology*, n/a(n/a). doi:<https://doi.org/10.1111/gcb.15513>
- Seevam, P. N., Race, J. M., & Downie, M. J. (2010). Infrastructure and pipeline technology for carbon dioxide (CO₂) transport A2 - Maroto-Valer, M. Mercedes. In *Developments and Innovation in Carbon Dioxide (CO₂) Capture and Storage Technology* (Vol. 1, pp. 408-434): Woodhead Publishing.
- Séférian, R., et al. . (2018). Constraints on biomass energy deployment in mitigation pathways: the case of water scarcity. *Environmental Research Letters*, 13(5), 054011. Retrieved from <http://stacks.iop.org/1748-9326/13/i=5/a=054011>
- Seghetta, M., Tørring, D., Bruhn, A., & Thomsen, M. (2016). Bioextraction potential of seaweed in Denmark — An instrument for circular nutrient management. *Science of The Total Environment*, 563-564(Supplement C), 513-529. doi:<https://doi.org/10.1016/>

j.scitotenv.2016.04.010

- Sehaqui, H., Gálvez, M. E., Becatinni, V., cheng Ng, Y., Steinfeld, A., Zimmermann, T., & Tingaut, P. (2015). Fast and Reversible Direct CO₂ Capture from Air onto All-Polymer Nanofibrillated Cellulose—Polyethylenimine Foams. *Environmental Science & Technology*, 49(5), 3167-3174. doi:10.1021/es504396v
- Seifritz, W. (1990). CO₂ disposal by means of silicates. *Nature*, 345, 486. doi:10.1038/345486b0
- Seipp, C. A., Williams, N. J., Kidder, M. K., & Custelcean, R. (2016). CO₂ Capture from Ambient Air by Crystallization with a Guanidine Sorbent. *Angewandte Chemie International Edition*, 56(4), 1042-1045. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/anie.201610916/epdf>
- Sekar, S. (2012). *The Effects of Biochar and Anaerobic Digester Effluent on Soil Quality and Crop Growth in Karnataka, India*. (Master of Science). Ohio State University, Retrieved from http://rave.ohiolink.edu/etdc/view?acc_num=osu1343750717
- Sekera, J., & Lichtenberger, A. (2020). Assessing Carbon Capture: Public Policy, Science, and Societal Need. *Biophysical Economics and Sustainability*, 5(3), 14. doi:10.1007/s41247-020-00080-5
- Selfa, T., Bain, C., Moreno, R., Eastmond, A., Sweitz, S., Bailey, C., . . . Medeiros, R. J. E. M. (2015). Interrogating Social Sustainability in the Biofuels Sector in Latin America: Tensions Between Global Standards and Local Experiences in Mexico, Brazil, and Colombia. *Environmental Management*, 56(6), 1315-1329. doi:10.1007/s00267-015-0535-8
- Sellens, R. (2017). Creating value from waste CO₂. *Pan European Networks*. Retrieved from <http://www.paneuropeanetworks.com/science-technology/creating-value-from-waste-co2/>
- Selmi, H. (2016). *Effet de l'ajout de biochar sur la symbiose tripartite *Ensifer meliloti-Rhizobagus irregularis-luzerne (Medicago sativa L.)*, sur la production d'inocula bactériens et envers la lutte aux agents pathogènes [Effect of adding biochar on tripartite symbiosis*. Université Laval, Retrieved from <http://www.theses.ulaval.ca/2016/32315/32315.pdf>
- Selosse, S. (2019). Chapter 12 - Bioenergy with carbon capture and storage: how carbon storage and biomass resources potentials can impact the development of the BECCS. In J. C. Magalhães Pires & A. L. D. Cunha Gonçalves (Eds.), *Bioenergy with Carbon Capture and Storage* (pp. 237-256): Academic Press.
- Selosse, S., & Ricci, O. (2014). Achieving negative emissions with BECCS (bioenergy with carbon capture and storage) in the power sector: New insights from the TIAM-FR (TIMES Integrated Assessment Model France) model. *Energy*, 76, 967-975. doi:10.1016/j.energy.2014.09.014
- Selvarajoo, A., & Hanson, S. (2014). *Pyrolysis of Pineapple Peel*. Paper presented at the Proc. of the Second Intl. Conf. on Advances in Applied Science and Environmental Engineering. http://www.seekdl.org/upload/files/20141225_103156.pdf
- Semeniuk, I. (2016). Out Of Thin Air: Recapturing carbon from the atmosphere is one thing, but a Canadian company wants to go one step further by turning that carbon into fuel. In the process, it hopes to transform the fight against climate change. *The Globe & Mail (Toronto)*. Retrieved from <https://search.proquest.com/docview/1752820854?accountid=14496>
- Semere, T., & Slater, F. M. (2007). Ground flora, small mammal and bird species diversity in miscanthus (Miscanthusxgiganteus) and reed canary-grass (Phalaris arundinacea) fields. *Biomass and Bioenergy*, 31(1), 20-29. doi:<http://dx.doi.org/10.1016/j.biombioe.2006.07.001>

- Semida, W. M., Beheiry, H. R., Sétamou, M., Simpson, C. R., Abd El-Mageed, T. A., Rady, M. M., & Nelson, S. D. (2019). Biochar implications for sustainable agriculture and environment: A review. *South African Journal of Botany*, 127, 333-347. doi:<https://doi.org/10.1016/j.sajb.2019.11.015>
- Semroc, B. L., et al. (2012). Climate change mitigation in agroforestry systems: linking smallholders to forest carbon markets. In E. Wollenberg, et al. (Ed.), *Climate Change Mitigation and Agriculture* (pp. 360-369): ICRAF-CIAT.
- Sen, A. D., Nafkote. (2021). *Tightening the net: the implications of net zero climate targets for land and food equity*. Retrieved from [https://www.oxfam.org/en/research/tightening-net-implications-netzero-climate-targets-land-and-food-equity](https://www.oxfam.org/en/research/tightening-net-implications-net-zero-climate-targets-land-and-food-equity)
- Sen, G. (2017). Carbon Sequestration and Utilization—India's Energy Woes. In M. Goel & M. Sudhakar (Eds.), *Carbon Utilization: Applications for the Energy Industry* (pp. 169-181). Singapore: Springer Singapore.
- Sen, R., Goeppert, A., Kar, S., & Prakash, G. K. S. (2020). Hydroxide Based Integrated CO₂ Capture from Air and Conversion to Methanol. *Journal of the American Chemical Society*, 142(10), 4544-4549. doi:10.1021/jacs.9b12711
- Senftle, T. P., & Carter, E. A. (2017). The Holy Grail: Chemistry Enabling an Economically Viable CO₂ Capture, Utilization, and Storage Strategy. *Accounts of Chemical Research*, 50(3), 472-475. doi:10.1021/acs.accounts.6b00479
- Senoo, K., et al. (2012). Carbon Sink Evaluation for Biochar Production Process. In M. Matsumoto, et al. (Ed.), *Design for Innovative Value Towards a Sustainable Society* (pp. 724-729).
- Sensoez, S., & Angin, D. (2008). Pyrolysis of safflower (*charthamus tinctorius* L.) seed press cake: Part 1. the effects of pyrolysis parameters on the product yields. *Bioresource Technology*, 99(13), 5492-5497. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0960852407008899>
- Seo, K., Tsay, C., Hong, B., Edgar, T. F., Stadtherr, M. A., & Baldea, M. (2020). Rate-Based Process Optimization and Sensitivity Analysis for Ionic-Liquid-Based Post-Combustion Carbon Capture. *ACS Sustainable Chemistry & Engineering*, 8(27), 10242-10258. doi:10.1021/acssuschemeng.0c03061
- Seo, S., Lages, B., & Kim, M. (2020). Catalytic CO₂ absorption in an amine solvent using nickel nanoparticles for post-combustion carbon capture. *Journal of CO₂ Utilization*, 36, 244-252. doi:<https://doi.org/10.1016/j.jcou.2019.11.011>
- Šeremešić, S. I., Živanov, M. S., Milošev, D. S., Vasin, J. R., Círic, V. I., Vasiljević, M. B., & Vujić, N. J. (2015). Effects of biochar application on morphological traits in maize and soybean. *Matica Srpska Journal for Natural Sciences*, 129, 17-25. Retrieved from <http://www.cabdirect.org/abstracts/20163055618.html>
- Serrano, O., Almahasheer, H., Duarte, C. M., & Irigoien, X. (2018). Carbon stocks and accumulation rates in Red Sea seagrass meadows. *Scientific Reports*, 8(1), 15037. doi:10.1038/s41598-018-33182-8
- Service, R. F. (2011). Turning Over a New Leaf. *Science (News)*. Retrieved from <http://science.sciencemag.org/content/334/6058/925.full>
- Service, R. F. (2012). New CO₂ Sucker Could Help Clear the Air. *Science (News)*. Retrieved from <http://www.sciencemag.org/news/2012/01/new-co2-sucker-could-help-clear-air>
- Service, R. F. (2018). Cost plunges for capturing carbon dioxide from the air. *Science*. Retrieved from <http://www.sciencemag.org/news/2018/06/cost-plunges-capturing-carbon-dioxide-air>
- Service, R. F. (2019). New way to turn carbon dioxide into coal could 'rewind the emissions clock'. *Science*(February 19). Retrieved from <https://www.sciencemag.org/news/2019/02/liquid-metal-catalyst-turns-carbon-dioxide-coal>

- Service, R. F. (2020). Artificial chloroplasts turn sunlight and carbon dioxide into organic compounds. *Science*. Retrieved from <https://www.sciencemag.org/news/2020/05/artificial-chloroplasts-turn-sunlight-and-carbon-dioxide-organic-compounds#>
- Service, R. F. (2020). The carbon vault. *Science*, 369(6508), 1156-1159. doi:10.1126/science.369.6508.1156
- Service, R. F. (2020). Industrial waste can turn planet-warming carbon dioxide into stone. *Science*. Retrieved from <https://www.sciencemag.org/news/2020/09/industrial-waste-can-turn-planet-warming-carbon-dioxide-stone#>
- Service, R. F. (2021). Carbon capture marches toward practical use. *Science*, 371(6536), 1300-1300. doi:10.1126/science.371.6536.1300
- Sessions, J., Smith, D., Trippe, K. M., Fried, J. S., Bailey, J. D., Petitmermet, J. H., . . . Campbell, J. D. (2019). Can biochar link forest restoration with commercial agriculture? *Biomass and Bioenergy*, 123, 175-185. doi:<https://doi.org/10.1016/j.biombioe.2019.02.015>
- Sessums, R. F. (2015). *EFFECT OF BIOCHAR AND ACTIVATED CARBON AMENDMENTS ON GASEOUS MERCURY EMISSIONS OF SOIL AND MERCURY METHYLATION RATES IN SEDIMENT*. University of Mississippi, Retrieved from <http://thesis.honors.olemiss.edu/386/1/Chem%20463%20Senior%20Thesis%20Final%20Draft.pdf>
- Sethi, V. K. (2017). Low Carbon Technologies (LCT) and Carbon Capture & Sequestration (CCS)—Key to Green Power Mission for Energy Security and Environmental Sustainability. In M. Goel & M. Sudhakar (Eds.), *Carbon Utilization: Applications for the Energy Industry* (pp. 45-57). Singapore: Springer Singapore.
- Setiawan, A. D. (2020). The influence of national culture on responsible innovation: A case of CO₂ utilisation in Indonesia. *Technology in Society*, 101306. doi:<https://doi.org/10.1016/j.techsoc.2020.101306>
- Setiawan, A. D., & Cuppen, E. (2013). Stakeholder perspectives on carbon capture and storage in Indonesia. *Energy Policy*, 61, 1188-1199. doi:10.1016/j.enpol.2013.06.057
- Severinsen, G. (2014). Constructing a Legal Framework for Carbon Capture and Storage in New Zealand: Approaches to Legislative Design. *Energy Procedia*, 63, 6629-6661. doi:<http://dx.doi.org/10.1016/j.egypro.2014.11.699>
- Severinsen, G. (2017). Injecting Carbon Beneath the Seabed dumping, pollution, waste ... or something else? *Policy Quarterly*, 13(2), 29-35. Retrieved from https://www.victoria.ac.nz/_data/assets/pdf_file/0011/1224299/pq13-2-complete-issue.pdf
- Severo, I. A., Deprá, M. C., Zepka, L. Q., & Jacob-Lopes, E. (2019). Chapter 8 - Carbon dioxide capture and use by microalgae in photobioreactors. In J. C. Magalhães Pires & A. L. D. Cunha Gonçalves (Eds.), *Bioenergy with Carbon Capture and Storage* (pp. 151-171): Academic Press.
- Sexton, S. E., et al. (2009). Biofuel policy must evaluate environmental, food security and energy goals to maximize net benefits. *California Agriculture*, 63(4), 191-198. Retrieved from <https://are.berkeley.edu/~dwrh/Docs/CalAg09.pdf>
- Seyed Hosseini, N., Shang, H., & Scott, J. A. (2018). Biosequestration of industrial off-gas CO₂ for enhanced lipid productivity in open microalgae cultivation systems. *Renewable and Sustainable Energy Reviews*, 92, 458-469. doi:<https://doi.org/10.1016/j.rser.2018.04.086>
- Seymour, F. (2014). *Reducing emission from palm oil cultivation in Indonesia*. Retrieved from https://www.packard.org/wp-content/uploads/2014/09/Palm-Oil-Strategy_Final-8.27.14.pdf
- Seysses, D. (2021). Carbon Capture During Fermentation Could Make Wine a Negative-Emission Industry. *SevenFiftyDaily*. Retrieved from <https://daily.sevenfifty.com/carbon-capture-during-fermentation-could-make-wine-a-negative-emission-industry/>
- Sgouridis, S., Carbajales-Dale, M., Csala, D., Chiesa, M., & Bardi, U. (2019). Comparative net

- energy analysis of renewable electricity and carbon capture and storage. *Nature Energy*. doi:10.1038/s41560-019-0365-7
- Sha, Z., Bai, Y., Lan, H., Liu, X., Li, R., & Xie, Y. (2020). Can more carbon be captured by grasslands? A case study of Inner Mongolia, China. *Science of The Total Environment*, 723, 138085. doi:<https://doi.org/10.1016/j.scitotenv.2020.138085>
- Shabangu, S., et al. . (2013). Techno-economic assessment of biomass slow pyrolysis into different biochar and methanol concepts. *Fuel*, 117(Part A), 742-748. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0016236113007813>
- Shackley, S., et al. (2009). The acceptability of CO₂ capture and storage (CCS) in Europe: An assessment of the key determining factors. Part 2. The social acceptability of CCS and the wider impacts and repercussions of its implementation. *International Journal of Greenhouse Gas Control*, 3, 344-356.
- Shackley, S., et al. (2011). Expert Perceptions of the Role of Biochar as a Carbon Abatement Option with Ancillary Agronomic and Soil-Related Benefits. *Journal Energy & Environment*, Volume 22, 167-188. doi:10.1260/0958-305x.22.3.167
- Shackley, S., et al. . (2011). The feasibility and costs of biochar deployment in the UK. *Carbon Management*, Vol. 2, 335-356. doi:10.4155/cmt.11.22
- Shackley, S., et al. (2011). Sustainable gasification–biochar systems? A case-study of rice-husk gasification in Cambodia, Part II: Field trial results, carbon abatement, economic assessment and conclusions. *Energy Policy*, 41, 618-623. doi:10.1016/j.enpol.2011.11.023
- Shackley, S., et al. (2013). Biochar, Tool for Climate Change Mitigation and Soil Management. In T. Lenton & N. Vaughan (Eds.), *Geoengineering Responses to Climate Change: Selected Entries from the Encyclopedia of Sustainability Science and Technology* (pp. 73-140).
- Shackley, S. (2014). Shifting chars? Aligning climate change, carbon abatement, agriculture, land use and food safety and security policies. *Carbon Management*, 5(2), 119 - 121. doi:10.1080/17583004.2014.912827
- Shackley, S. (2016). The economic viability and prospects for biochar in Europe: Shifting paradigms in uncertain times. In *Biochar in European Soils and Agriculture: Science and Practice*.
- Shackley, S., Hammond, J., Gaunt, J., & Ibarrola, R. (2011). The feasibility and costs of biochar deployment in the UK. *Carbon Management*, 2(3), 335-356. doi:10.4155/cmt.11.22
- Shackley, S., McLachlan, C., & Gough, C. (2004). The public perception of carbon dioxide capture and storage in the UK: results from focus groups and a survey. *Climate Policy*, 4(4), 377-398. doi:10.1080/14693062.2004.9685532
- Shackley, S., Ruysschaert, G., Zwart, K., & Glaser, B. (2016). *BIOCHAR IN EUROPEAN SOILS AND AGRICULTURE: SCIENCE AND PRACTICE*.
- Shackley, S., & Sohi, S. (2010). *An Assessment of the Benefits and Issues Associated with the Application of Biochar to Soil*. Retrieved from https://www.academia.edu/11136737/AN_ASSESSMENT_OF_THE_BENEFITS_AND_ISSUES_ASSOCIATED_WITH_THE_APPLICATION_OF_BIOCHAR_TO_SOIL_A_report_commissioned_by_the_United_Kingdom_Department_for_Environment_Food_and_Rural_Affairs_and_Department_of_Energy_and_Climate_Change_Contributing_Authors?auto=download&email_work_card=download-paper
- Shackley, S., Sohi, S., Ibarrola, R., Hammond, J., Mašek, O., Brownsort, P., . . . Haszeldine, S. (2013). Biochar, Tool for Climate Change Mitigation and Soil Management. In T. Lenton & N. Vaughan (Eds.), *Geoengineering Responses to Climate Change: Selected Entries from the Encyclopedia of Sustainability Science and Technology* (pp. 73-140). New York, NY: Springer New York.

- Shafie, S. T., et al. . (2012). Effect of pyrolysis temperature on the biochar nutrient and water retention capacity. *Journal of Purity, Utility Reaction and Environment*, 1, 293-307. Retrieved from https://www.researchgate.net/profile/Md_Rahman103/publication/288128922_Effect_of_pyrolysis_temperature_on_the_biochar_nutrient_and_water_reten tion_capacity/links/5916eb114585152e19a0d75b/Effect-of-pyrolysis-temperature-on-the-biochar-nutrient-and-water-retention-capacity.pdf
- Shah, A., et al. . (2012). Physicochemical properties of bio-oil and biochar produced by fast pyrolysis of stored single-pass corn stover and cobs. *Bioresource Technology*, 125, 348-352. Retrieved from <http://www.sciencedirect.com/science/article/pii/S096085241201406X>
- Shahbaz, M., AlNouss, A., Ghiat, I., McKay, G., Mackey, H., Elkhalifa, S., & Al-Ansari, T. (2021). A comprehensive review of biomass based thermochemical conversion technologies integrated with CO₂ capture and utilisation within BECCS networks. *Resources, Conservation and Recycling*, 173, 105734. doi:<https://doi.org/10.1016/j.resconrec.2021.105734>
- Shaheen, S. M., & Rinklebe, J. (2015). Impact of emerging and low cost alternative amendments on the (im)mobilization and phytoavailability of Cd and Pb in a contaminated floodplain soil. *Ecological Engineering*, 74, 319 - 326. doi:[10.1016/j.ecoleng.2014.10.024](https://doi.org/10.1016/j.ecoleng.2014.10.024)
- Shaheen, S. M., Rinklebe, J., & Selim, M. H. (2014). Impact of various amendments on immobilization and phytoavailability of nickel and zinc in a contaminated floodplain soil. *International Journal of Environmental Science and Technology*, 12(9), 2765-2776. doi:[10.1007/s13762-014-0713-x](https://doi.org/10.1007/s13762-014-0713-x)
- Shahid, A., Malik, S., Zhu, H., Xu, J., Nawaz, M. Z., Nawaz, S., . . . Mehmood, M. A. (2019). Cultivating microalgae in wastewater for biomass production, pollutant removal, and atmospheric carbon mitigation; a review. *Science of The Total Environment*, 135303. doi:<https://doi.org/10.1016/j.scitotenv.2019.135303>
- Shahkarami, S., Azargohar, R., Dalai, A. K., & Soltan, J. (2015). Breakthrough CO₂ adsorption in bio-based activated carbons. *Journal of Environmental Sciences*, 34, 68-76. doi:[10.1016/j.jes.2015.03.008](https://doi.org/10.1016/j.jes.2015.03.008)
- Shakoor, A., Arif, M. S., Shahzad, S. M., Farooq, T. H., Ashraf, F., Altaf, M. M., . . . Ashraf, M. (2021). Does biochar accelerate the mitigation of greenhouse gaseous emissions from agricultural soil? - A global meta-analysis. *Environmental Research*, 111789. doi:<https://doi.org/10.1016/j.envres.2021.111789>
- Shamsabadi, A. (2018). A New Pentiptycene-Based Dianhydride and Its High-Free-Volume Polymer for Carbon Dioxide Removal. *ChemSusChem*, 11(2), 472-482.
- Shan, D., Deng, S., Zhao, T., Wang, B., Wang, Y., Huang, J., . . . Wiesner, M. R. (2016). Preparation of ultrafine magnetic biochar and activated carbon for pharmaceutical adsorption and subsequent degradation by ball milling. *Journal of Hazardous Materials*, 305, 156 - 163. doi:[10.1016/j.jhazmat.2015.11.047](https://doi.org/10.1016/j.jhazmat.2015.11.047)
- Shan, J., et al. (2014). Effects of biochar and the geophagous earthworm Metaphire guillelmi on fate of 14C-catechol in an agricultural soil. *Chemosphere*, 107, 109–114. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0045653514003798>
- Shang, G., et al. . (2012). Effectiveness and mechanisms of hydrogen sulfide adsorption by camphor-derived biochar. *Journal of the Air & Waste Management Association*, 62, 873-879. doi:[10.1080/10962247.2012.686441](https://doi.org/10.1080/10962247.2012.686441)
- Shang, G., et al. . (2015). Adsorption of hydrogen sulfide by biochars derived from pyrolysis of different agricultural/forestry wastes. *Journal of the Air & Waste Management Association*, 66(1), 8-16. doi:[10.1080/10962247.2015.1094429](https://doi.org/10.1080/10962247.2015.1094429)
- Shang, J., et al. (2015). Effects of biochar on water thermal properties and aggregate stability of

- Lou soil. *Yingyong Shengtai Xuebao*, 26(7), 1969-1976. Retrieved from <http://web.a.ebscohost.com/abstract?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=10019332&AN=108688703&h=O9i1Gz5YBFfqfUajwCeujNMIdHQI99T7F0vfQwZOY19pWV7AhXaBr0qLt8sj24l2VeRNdofr40c0mOHBCVgMQ%3d%3d&crl=c&resultNs=AdminWebAuth&resultLocal=Error>
- Shang, J., Geng, Z.-c., Zhao, J., Geng, R., & Zhao, Y.-c. (2015). Effects of biochar on water thermal properties and aggregate stability of Lou soil. *Ying yong sheng tai xue bao = The journal of applied ecology / Zhongguo sheng tai xue xue hui, Zhongguo ke xue yuan Shenyang ying yong sheng tai yan jiu suo zhu ban*, 26(7), 1969-1976. Retrieved from <http://europepmc.org/abstract/med/26710621>
- ShangQiang, L., et . (2015). Effect of biochar-based urea on yield and quality of celery and soil NO₃-N content. *Journal of Agricultural Resources and Environment*, 32(5), 443-448. Retrieved from <http://www.cabdirect.org/abstracts/20163033483.html>
- Shankleman, J. (2020). Companies Start Paying Off 'Carbon Debt' to Erase Past Sins. *Yahoo! Finance*. Retrieved from <https://ca.finance.yahoo.com/news/companies-start-paying-off-carbon-060007050.html>
- Shankleman, J., & Rathi, A. (2021). Wall Street's Favorite Climate Solution Is Mired in Disagreements. *Bloomberg Green*. Retrieved from <https://www.bloomberg.com/news/features/2021-06-02/carbon-offsets-new-100-billion-market-faces-disputes-over-trading-rules>
- Shankman, S. (2018). Capturing CO₂ From Air: To Keep Global Warming Under 1.5°C, Emissions Must Go Negative, IPCC Says. *Inside Climate News*. Retrieved from <https://insideclimatenews.org/news/12102018/global-warming-solutions-negative-emissions-carbon-capture-technology-ipcc-climate-change-report>
- Shanmugam, S., & Abbott, L. K. (2015). Potential for Recycling Nutrients from Biosolids Amended with Clay and Lime in Coarse-Textured Water Repellent, Acidic Soils of Western Australia. *Applied and Environmental Soil Science*, 1-11. Retrieved from <http://www.hindawi.com/journals/aess/aa/541818/>
- Shao, J., Yuan, X., Leng, L., Huang, H., Jiang, L., Wang, H., . . . Zeng, G. (2015). The comparison of the migration and transformation behavior of heavy metals during pyrolysis and liquefaction of municipal sewage sludge, paper mill sludge, and slaughterhouse sludge. *Bioresource Technology*, 198, 16 - 22. doi:10.1016/j.biortech.2015.08.147
- Shapouri, H., Duffield, J. A., & Wang, M. (2002). *The Energy Balance of Corn Ethanol: An Update*. Retrieved from http://industrializedcyclist.com/Corn_Ethanol_E_Balance.pdf
- Shariff, A., Aziz, N. S. M., & Abdullah, N. (2015). Slow Pyrolysis of Oil Palm Empty Fruit Bunches for Biochar Production and Characterisation. *Journal of Physical Science*, 25(2), 97-112. Retrieved from <http://web.usm.my/jps/25-2-14/25-2-8.pdf>
- Sharifian, R., Wagterveld, R. M., Digdaya, I. A., Xiang, C., & Vermaas, D. A. (2021). Electrochemical carbon dioxide capture to close the carbon cycle. *Energy & Environmental Science*, 14(2), 781-814. doi:10.1039/D0EE03382K
- Sharkawi, H. M. E., Ahmed, M. A., & Hassanein, M. K. (2014). Development of Treated Rice Husk as an Alternative Substrate Medium in Cucumber Soilless Culture. *Journal of Agriculture and Environmental Sciences*, 3(4). doi:10.15640/jaes.v3n4a10
- Sharma, A., et al. (2013). CFD modelling of mixing/segregation behaviour of biomass and biochar particles in a bubbling fluidized bed. *Chemical Engineering Science*, 106, 264-274. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0009250913007549>
- Sharma, A. (2014). *Multi-scale modelling of biomass pyrolysis process*. Curtin University, Retrieved from <http://espace.library.curtin.edu.au/R?func=dbin-jump->

- full&object_id=200511
- Sharma, A., et al. (2015). Multi-fluid reactive modeling of fluidized bed pyrolysis process. *Chemical Engineering Science*, 123, 311 - 321. doi:10.1016/j.ces.2014.11.019
- Sharma, A., Pareek, V., & Zhang, D. (2015). Biomass pyrolysis—A review of modelling, process parameters and catalytic studies. *Renewable and Sustainable Energy Reviews*, 50, 1081 - 1096. doi:10.1016/j.rser.2015.04.193
- Sharma, I., Friedrich, D., Golden, T., & Brandani, S. (2019). Exploring the opportunities for carbon capture in modular, small-scale steam methane reforming: An energetic perspective. *International Journal of Hydrogen Energy*, 44(29), 14732-14743. doi:<https://doi.org/10.1016/j.ijhydene.2019.04.080>
- Sharma, N. (2018). Silver bullet or bitter pill? Reassessing the scope of CO₂ capture and storage in India. *Carbon Management*, 9(4), 311-332. doi:10.1080/17583004.2018.1518108
- Sharma, N., Bohra, B., Pragya, N., Ciannella, R., Dobie, P., & Lehmann, S. (2016). Bioenergy from agroforestry can lead to improved food security, climate change, soil quality, and rural development. *Food and Energy Security*, 5(3), 165-183. doi:10.1002/fes3.87
- Sharma, N., Nainwal, S., Jain, S., & Jain, S. (2015). Emerging biorefinery technologies for Indian forest industry to reduce GHG emissions. *Ecotoxicology and Environmental Safety*, 121, 105-109. doi:<http://dx.doi.org/10.1016/j.ecoenv.2015.04.050>
- Sharma, S. (2020). Stripe launches world's first product that enables online businesses to help remove CO₂ from atmosphere. *Silicon Canals*. Retrieved from <https://siliconcanals.com/news/startups/fintech/stripe-climate-co2/>
- Sharma, T., et al. (2015). Analysis and Comparison of Biochar From Pilot Scale Downdraft Gasifier. *ASME 2015 International Mechanical Engineering Congress and Exposition*. doi:10.1115/imece2015-52444
- Sharma, T. (2015). *Gasification and combustion of corn kernels in a pilot scale system*. University of Iowa, Retrieved from <http://ir.uiowa.edu/etd/1750/>
- Sharp, C. E., Urschel, S., Dong, X. L., Brady, A. L., Slater, G. F., & Strous, M. (2017). Robust, high-productivity phototrophic carbon capture at high pH and alkalinity using natural microbial communities. *Biotechnology for Biofuels*, 10, 1-13. doi:10.1186/s13068-017-0769-1
- Sharrow, S. H., & Ismail, S. (2004). Carbon and nitrogen storage in agroforests, tree plantations, and pastures in western Oregon, USA. *Agroforestry Systems*, 60(2), 123-130. doi:10.1023/B:AGFO.0000013267.87896.41
- Shaw, S., Marien, N., & Cadena, L. (2021). *A Leap in the Dark: The Dangers of Bioenergy with Carbon Capture and Storage (BECCS)*. Retrieved from <https://www.foei.org/resources/publications/publications-by-subject/climate-justice-energy-publications/beccs-carbon-capture-dangers>
- Shayegh, S., Bosetti, V., & Tavoni, M. (2021). Future Prospects of Direct Air Capture Technologies: Insights From an Expert Elicitation Survey. *Frontiers in Climate*, 3(46). doi:10.3389/fclim.2021.630893
- She, Y. L., & Chen, L. (2014). Prospects of Biochar Technology in China Based on SWOT Analysis. *Advanced Materials Research*, 955-959, 1718 - 1721. doi:10.4028/www.scientific.net/AMR.955-959.1718
- Shea, S., Burgess, P., & Stanley, I. (2009). *Project Rainbow Bee Eater: Special Project Report*. Retrieved from http://www.carbonedge.com.au/docs/CarbonEdge-CE2_Special_Report-biochar.pdf
- Shearer, D., & Gaunt, J. (2015).
- Sheats, J. (2015). *Performance Quantification of Extensive Green Roof Substrate Blend: Expanded Shale and Biochar*. James Madison University, Retrieved from <http://>

commons.lib.jmu.edu/master201019/3/

- Sheehan, J., et al. (2003). Energy and Environmental Aspects of Using Corn Stover for Fuel Ethanol. *Journal of Industrial Ecology*, 7(3-4), 117-146. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1162/108819803323059433/full>
- Sheffield, U. o. (2020). Applying rock dust to croplands could absorb up to 2 billion tonnes of CO₂ from the atmosphere. *Phys.org*. Retrieved from <https://phys.org/news/2020-07-croplands-absorb-billion-tonnes-co2.html>
- Shehzad, A., Bashir, M. J. K., Sethupathi, S., & Lim, J.-W. (2016). An insight into the remediation of highly contaminated landfill leachate using sea mango based activated bio-char: optimization, isothermal and kinetic studies. *Desalination and Water Treatment*, 1 - 14. doi:10.1080/19443994.2015.1130660
- Sheil, D., et al. (2012). Do Anthropogenic Dark Earths Occur in the Interior of Borneo? Some Initial Observations from East Kalimantan. *Forests*, 3(2), 207-229. doi:10.3390/f3020207
- Sheil, D., Bargués-Tobella, A., Ilstedt, U., Ibisch, P. L., Makarieva, A., McAlpine, C., . . . van der Ent, R. J. (2019). Forest restoration: Transformative trees. *Science*, 366(6463), 316-317. doi:10.1126/science.aay7309
- Shekhah, O., et al. (2013). Made-to-order metal-organic frameworks for trace carbon dioxide removal and air capture. *Nature Communications*, 5, 1-8. Retrieved from https://vincentguillerm.files.wordpress.com/2014/10/25-shekhahehdaoudi_2014_natcommun_sifsix-3-cu.pdf
- Shekhar, C. (2012). Putting It Back: Restoring Lost Soil Carbon Could Benefit Agriculture, Ecosystems, and Climate. *Chemistry & Biology*, 19(5), 541-542. doi:<https://doi.org/10.1016/j.chembiol.2012.05.005>
- Shen, B., Chen, J., Yue, S., & Li, G. (2015). A comparative study of modified cotton biochar and activated carbon based catalysts in low temperature SCR. *Fuel*, 156, 47 - 53. doi:10.1016/j.fuel.2015.04.027
- Shen, B., Li, G., Wang, F., Wang, Y., He, C., ZHANG, M., & Singh, S. (2015). Elemental mercury removal by the modified bio-char from medicinal residues. *Chemical Engineering Journal*, 272, 28 - 37. doi:10.1016/j.cej.2015.03.006
- Shen, G., Ashworth, D. J., Gan, J., & Yates, S. R. (2016). Biochar Amendment to the Soil Surface Reduces Fumigant Emissions and Enhances Soil Microorganism Recovery. *Environmental Science & Technology*, 50(3), 1182-1189. doi:10.1021/acs.est.5b03958
- Shen, J., et al. . (2013). A Comparison of Greenhouse Gas Emissions from a Paddy Field Following Incorporation of Rice Straw and Straw-Based Biochar. In J. Xu, J. Wu, & Y. He (Eds.), *Functions of Natural Organic Matter in Changing Environment* (pp. 1027-1031).
- Shen, J., et al. . (2014). Contrasting effects of straw and straw-derived biochar amendments on greenhouse gas emissions within double rice cropping systems. *Agriculture, Ecosystems & Environment*, 188, 264–274. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0167880914001121>
- Shen, L., & Murakami, K. (2014). *Steam gasification of iron-loaded biochar and subbituminous coal mixture*. Paper presented at the 5th International Conference on Sustainable Energy and Environment. <http://www.see2014.com/UserFiles/File/Full%20paper%20for%20website/E-007.pdf>
- Shen, L., & Murakami, K. (2015). No.57 Effect of iron catalyst on steam gasification of sub-bituminous coal from Indonesia [in Japanese]. *The Japan Institute of Energy*, 114-115. Retrieved from https://www.jstage.jst.go.jp/article/jiesekitanronbun/51/0/51_114/_pdf
- Shen, X., Huang, D.-Y., Ren, X.-F., Zhu, H.-H., Wang, S., Xu, C., . . . Zhu, Q.-H. (2016). Phytoavailability of Cd and Pb in crop straw biochar-amended soil is related to the heavy metal content of both biochar and soil. *Journal of Environmental Management*, 168, 245 - 251. doi:10.1016/j.jenvman.2015.12.019

- Shen, Y. (2015). Chars as carbonaceous adsorbents/catalysts for tar elimination during biomass pyrolysis or gasification. *Renewable and Sustainable Energy Reviews*, 43, 281 - 295. doi:10.1016/j.rser.2014.11.061
- Shen, Y., Ding, M., Ge, X., & Chen, M. (2015). Catalytic CO₂ Gasification of Rice Husk Char for Syngas and Silica-Based Nickel Nanoparticles Production. *Industrial & Engineering Chemistry Research*, 54(36), 8919 - 8928. doi:10.1021/acs.iecr.5b02677
- Shen, Y., Linville, J. L., Ignacio-de Leon, P. A. A., Schoene, R. P., & Urgun-Demirtas, M. (2016). Towards a sustainable paradigm of waste-to-energy process: Enhanced anaerobic digestion of sludge with woody biochar. *Journal of Cleaner Production*, 135, 1054-1064. doi:<https://doi.org/10.1016/j.jclepro.2016.06.144>
- Shen, Y., Linville, J. L., Urgun-Demirtas, M., Schoene, R. P., & Snyder, S. W. (2015). Producing pipeline-quality biomethane via anaerobic digestion of sludge amended with corn stover biochar with in-situ CO₂ removal. *Applied Energy*, 158, 300 - 309. doi:10.1016/j.apenergy.2015.08.016
- Shen, Y., Shi, W., Zhang, D., Na, P., & Fu, B. (2018). The removal and capture of CO₂ from biogas by vacuum pressure swing process using silica gel. *Journal of CO₂ Utilization*, 27, 259-271. doi:<https://doi.org/10.1016/j.jcou.2018.08.001>
- Shen, Y., Wang, J., Ge, X., & Chen, M. (2016). By-products recycling for syngas cleanup in biomass pyrolysis – An overview. *Renewable and Sustainable Energy Reviews*, 59, 1246 - 1268. doi:10.1016/j.rser.2016.01.077
- Shen, Z., Jin, F., Wang, F., McMillan, O., & Al-Tabbaa, A. (2015). Sorption of lead by Salisbury biochar produced from British broadleaf hardwood. *Bioresource Technology*, 193, 553 - 556. doi:10.1016/j.biortech.2015.06.111
- Shen, Z., Som, A. M. D., Wang, F., Jin, F., McMillan, O., & Al-Tabbaa, A. (2015). Long-term impact of biochar on the immobilisation of nickel (II) and zinc (II) and the revegetation of a contaminated site. *Science of The Total Environment*, 542(A), 771-776. Retrieved from <https://www.repository.cam.ac.uk/handle/1810/251418?show=full>
- Shenbagavalli, S., & Mahimairaja, S. (2012). Characterization and Effect of Biochar on Nitrogen and Carbon Dynamics in Soil. *International Journal of Advanced Biological Research*, 2(2), 249-255. Retrieved from [http://www.scienceandnature.org/IJABR_Vol2\(2\)2012/IJABR_V2\(2\)13.pdf](http://www.scienceandnature.org/IJABR_Vol2(2)2012/IJABR_V2(2)13.pdf)
- Shenbagavalli, S., & Mahimairaja, S. (2012). Production and Characterization of Biochar from Different Biological Wastes. *International Journal of Plant, Animal, and Environmental Sciences*, 2(1), 197-201. Retrieved from https://www.researchgate.net/publication/264890070_Production_and_characterization_of_biochar_from_different_biological_wastes
- Sheng, G. Y., Yang, Y. N., Huang, M. S., & Yang, K. (2005). Influence of pH on pesticide sorption by soil containing wheat residue-derived char. *Environmental Pollution*, 134(3), 457-463. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0269749104003811>
- ShengNan, L., et al. (2015). Effect of Se-enriched organic fertilizers on selenium accumulation in corn and soil. *Journal of Agricultural Resources and Environment*, 32(6), 571-576. Retrieved from <http://www.cabdirect.org/abstracts/20163044524.html>
- Shenkman, E. G. (2021). United States: Helping Industry Adopt Carbon Capture And Storage Technologies Retrieved from https://www.mondaq.com/unitedstates/climate-change/1080456/helping-industry-adopt-carbon-capture-and-storage-technologies?email_access=on
- Shepherd, J. G., Sohi, S. P., & Heal, K. V. (2016). Optimising the recovery and re-use of phosphorus from wastewater effluent for sustainable fertiliser development. *Water Research*, 94, 155 - 165. doi:10.1016/j.watres.2016.02.038

- Sheppard, M. C., & Socolow, R. H. (2007). Sustaining Fossil Fuel Use in a Carbon-Constrained World by Rapid Commercialization of Carbon Capture and Sequestration. *AIChE Journal*, 53(12), 3022-3028. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/aic.11356/epdf>
- Sheps, K. M., Max, M. D., Osegovic, J. P., Tatro, S. R., & Brazel, L. A. (2009). A case for deep-ocean CO₂ sequestration. *Energy Procedia*, 1(1), 4961-4968. doi:<http://dx.doi.org/10.1016/j.egypro.2009.02.328>
- Sherwin, E. D. (2021). Electrofuel Synthesis from Variable Renewable Electricity: An Optimization-Based Techno-Economic Analysis. *Environmental Science & Technology*. doi:[10.1021/acs.est.0c07955](https://doi.org/10.1021/acs.est.0c07955)
- Shi, G., et al. (2014). *Molecular-Scale Hydrophilicity Induced by Solute: Molecular-thick Charged Pancakes of Aqueous Salt Solution on Hydrophobic Carbon-based Surfaces*. Cornell University, Retrieved from <http://arxiv.org/abs/1409.4493>
- Shi, K., Wu, T., Yan, J., Zhao, H., & Lester, E. (2013). *Microwave enhanced pyrolysis of gumwood*. Paper presented at the 2013 International Conference on Materials for Renewable Energy and Environment (ICMREE)2013 International Conference on Materials for Renewable Energy and Environment, Chengdu, China. http://ieeexplore.ieee.org/xpl/login.jsp?tp=&arnumber=6893653&url=http%3A%2F%2Fieeexplore.ieee.org%2Fxpls%2Fabs_all.jsp%3Farnumber%3D6893653
- Shi, K., Xie, Y., & Qiu, Y. (2015). Natural oxidation of a temperature series of biochars: Opposite effect on the sorption of aromatic cationic herbicides. *Ecotoxicology and Environmental Safety*, 114, 102 - 108. doi:[10.1016/j.ecoenv.2015.01.015](https://doi.org/10.1016/j.ecoenv.2015.01.015)
- Shi, L., Feng, W., Xu, J., & Kuzyakov, Y. (2018). Agroforestry systems: Meta-analysis of soil carbon stocks, sequestration processes, and future potentials. 29(11), 3886-3897. doi:[10.1002/lqr.3136](https://doi.org/10.1002/lqr.3136)
- Shi, L., Zhang, G., Wei, D., Yan, T., Xue, X., Shi, S., & Wei, Q. (2014). Preparation and utilization of anaerobic granular sludge-based biochar for the adsorption of methylene blue from aqueous solutions. *Journal of Molecular Liquids*, 198, 334 - 340. doi:[10.1016/j.molliq.2014.07.023](https://doi.org/10.1016/j.molliq.2014.07.023)
- Shi, X., Xiao, H., Azarabadi, H., Song, J., Wu, X., Chen, X., & Lackner, K. S. (2020). Sorbents for Direct Capture of CO₂ from Ambient Air. *Angewandte Chemie International Edition*, 59(18), 6984-7006. doi:[10.1002/anie.201906756](https://doi.org/10.1002/anie.201906756)
- Shi, X., Xiao, H., Kanamori, K., Yonezu, A., Lackner, K. S., & Chen, X. (2020). Moisture-Driven CO₂ Sorbents. *Joule*, 4(8), 1823-1837. doi:[10.1016/j.joule.2020.07.005](https://doi.org/10.1016/j.joule.2020.07.005)
- Shi, X., Xiao, H., Lackner, K. S., & Chen, X. (2016). Capture CO₂ from Ambient Air Using Nanoconfined Ion Hydration. *Angewandte Chemie International Edition*, 55(12), 4026-4029. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/anie.201507846/abstract>
- Shi, Y., Sharma, T., Zang, G., & Ratner, A. (2014). Biomass Gasification in a Pilot-Scale Gasifier. In.
- Shi, Y., Zhang, L., & Zhao, M. (2015). Effect of Biochar Application on the Efficacy of the Nitrification Inhibitor Dicyandiamide in Soils. *BioResources*. Retrieved from http://ojs.cnr.ncsu.edu/index.php/BioRes/article/view/BioRes_10_1_1330_Shi_Biochar_Application_Efficacy_Nitrification
- Shieber, J. (2021). The carbon offset API developer Patch confirms a \$4.5 million round led by Andreessen Horowitz. *TechCrunch*. Retrieved from <https://techcrunch.com/2021/02/24/the-carbon-offset-api-developer-patch-confirms-a-4-5-million-round-led-by-andreessen-horowitz/>
- Shieber, J. (2021). Two European companies are mapping a future service for direct air capture

- to sequestration of CO₂. *Tech Crunch*. Retrieved from <https://techcrunch.com/2021/03/09/two-european-companies-are-mapping-a-future-service-for-direct-air-capture-to-sequestration-of-co2/>
- Shim, T., Yoo, J., Ryu, C., Park, Y.-K., & Jung, J. (2015). Effect of steam activation of biochar produced from a giant Miscanthus on copper sorption and toxicity. *Bioresource Technology*, 197, 85 - 90. doi:10.1016/j.biortech.2015.08.055
- Shimabuku, K. K., et al. . (2016). Biochar sorbents for sulfamethoxazole removal from surface water, stormwater, and wastewater effluent. *Water Research*, 96, 236-245. doi:10.1016/j.watres.2016.03.049
- Shin, J. (2015). Carbon Sequestration and Nitrogen Transformation in Soil Cooperated with Organic Composts and Biochar during Corn (*Zea mays*) Cultivation. *Journal of Agricultural Chemistry and Environment*, 04(04), 96 - 101. doi:10.4236/jacen.2015.44010
- Shin, J., Choi, Y.-S., & Kim, H. (2015). Predicting Greenhouse Gas Reduction and Profit Analysis by Soil Carbon Sequestration in Corn Field with Different Application Rates of Biochar during Cultivation Periods. *Environment and Natural Resources Research*, 5(1). doi:10.5539/enrr.v5n1p22
- Shin, J., Jang, E., Park, S., Ravindran, B., & Chang, S. W. (2019). Agro-environmental impacts, carbon sequestration and profit analysis of blended biochar pellet application in the paddy soil-water system. *Journal of Environmental Management*, 244, 92-98. doi:<https://doi.org/10.1016/j.jenvman.2019.04.099>
- Shin, J., Lee, S.-I., Park, W.-K., Choi, Y.-S., Hong, S.-G., & Park, S.-W. (2014). Carbon Sequestration in Soil Cooperated with Organic Composts and Bio-Char during Corn (*Zea mays*) Cultivation. *Journal of Agricultural Chemistry and Environment*, 03(04), 151 - 155. doi:10.4236/jacen.2014.34018
- Shin, Y. S., Kim, J. Y. H., & Sim, S. J. (2018). Overview of Microalgae-Based Carbon Capture and Utilization. In H. N. Chang (Ed.), *Emerging Areas in Bioengineering* (pp. 288-294).
- Shindo, H. (1991). Elementary composition, humus composition, and decomposition in soil of charred grassland plants. *Soil Science and Plant Nutrition*, 37(4), 651-657.
- Shindo, H., & Nishimura, S. (2015). *SSSA Special Publication Agricultural and Environmental Applications of Biochar: Advances and Barriers Pyrogenic Organic Matter in Japanese Andosols: Occurrence, Transformation, and Function*: Soil Science Society of America, Inc.
- Shinogi, Y., & Kanri, Y. (2003). Pyrolysis of plant, animal and human waste: physical and chemical characterization of the pyrolytic products. *Bioresource Technology*.
- Shirato, Y. (2020). Use of models to evaluate carbon sequestration in agricultural soils. *Soil Science and Plant Nutrition*, 66(1), 21-27. doi:10.1080/00380768.2019.1702477
- Shirmohammadi, R., Aslani, A., & Ghasempour, R. (2020). Challenges of carbon capture technologies deployment in developing countries. *Sustainable Energy Technologies and Assessments*, 42, 100837. doi:<https://doi.org/10.1016/j.seta.2020.100837>
- Shivaram, P., et al. (2012). Flow and yield stress behaviour of ultrafine Mallee biochar slurry fuels: The effect of particle size distribution and additives. *Fuel*, 104, 326-332. Retrieved from <https://www.sciencedirect.com/science/article/pii/S0016236112007284>
- Shneour, E. A. (1966). Oxidation of graphitic carbon in certain soils. *Science*, 151(3713), 991.
- Shoaf, N. L. (2014). *Biochar and vermicompost amendments in vegetable cropping systems: Impacts on soil quality, soil-borne pathogens and crop productivity*. Purdue University, Retrieved from <http://gradworks.umi.com/15/65/1565253.html>
- Shoenfelt, E. M., Winckler, G., Lamy, F., Anderson, R. F., & Bostick, B. C. (2018). Highly bioavailable dust-borne iron delivered to the Southern Ocean during glacial periods. *Proceedings of the National Academy of Sciences*, 115(44), 11180-11185. doi:10.1073/

pnas.1809755115

- Shoji, K., & Jones, I. S. F. (2001). The costing of carbon credits from ocean nourishment plants. *Science of The Total Environment*, 277(1–3), 27-31. doi:[http://dx.doi.org/10.1016/S0048-9697\(01\)00832-4](http://dx.doi.org/10.1016/S0048-9697(01)00832-4)
- Shonnard, D. R., et al. (2015). A Review of Environmental Life Cycle Assessments of Liquid Transportation Biofuels in the Pan American Region. *Environmental Management*, 56(6), 1356-1376. Retrieved from <http://link.springer.com/article/10.1007%2Fs00267-015-0543-8>
- Shopify. (2021). *How to Kick-Start the Carbon Removal Market: Shopify's Playbook*. Retrieved from https://cdn.shopify.com/static/sustainability/How-to-Kick-Start-the-Carbon-Removal-Market_Shopifys-Playbook.pdf
- Showstack, R. (2019). Direct air capture offers some promise in reducing emissions. *EOS*. Retrieved from <https://eos.org/articles/direct-air-capture-offers-some-promise-in-reducing-emissions>
- Shrestha, G., Traina, S. J., & Swanston, C. W. (2010). Black Carbons Properties and Role in the Environment: A Comprehensive Review. *Sustainability*, 2, 294-320. Retrieved from https://www.nrs.fs.fed.us/pubs/jrnls/2010/nrs_2010_shrestha_001.pdf
- Shrum, T. R., et al. (2020). Behavioural frameworks to understand public perceptions of and risk response to carbon dioxide removal. *Interface Focus*, 10(5), 20200002. doi:[doi:10.1098/rsfs.2020.0002](https://doi.org/10.1098/rsfs.2020.0002)
- Shu, Q., Legrand, L., Kuntke, P., Tedesco, M., & Hamelers, H. V. M. (2020). Electrochemical Regeneration of Spent Alkaline Absorbent from Direct Air Capture. *Environmental Science & Technology*, 54(14), 8990-8998. doi:[10.1021/acs.est.0c01977](https://doi.org/10.1021/acs.est.0c01977)
- Shu, R., Dang, F., & Zhong, H. (2016). Effects of incorporating differently-treated rice straw on phytoavailability of methylmercury in soil. *Chemosphere*, 145, 457 - 463. doi:[10.1016/j.chemosphere.2015.11.037](https://doi.org/10.1016/j.chemosphere.2015.11.037)
- Shue, H. (2017). Climate dreaming: negative emissions, risk transfer, and irreversibility. *Journal of Human Rights and the Environment*, 8(2), 203-216.
- Shuji, Y., & Tanaka, S. (2014). Biochar and compostization: maximization of carbon sequestration with mitigating GHG emission in farmlands. In.
- Shukla, S. P., Gita, S., Bharti, V. S., Bhuvaneswari, G. R., & Wikramasinghe, W. A. A. D. L. (2017). Atmospheric Carbon Sequestration Through Microalgae: Status, Prospects, and Challenges. In J. S. Singh & G. Seneviratne (Eds.), *Agro-Environmental Sustainability: Volume 1: Managing Crop Health* (pp. 219-235). Cham: Springer International Publishing.
- Shvidenko, A., Nilsson, S., & Roshkov, V. (1997). Possibilities for increased carbon sequestration through the implementation of rational forest management in Russia. *Water, Air, and Soil Pollution*, 94(1), 137-162. doi:[10.1007/bf02407099](https://doi.org/10.1007/bf02407099)
- Si, M., Wang, Z. F., Ji, W., Yang, G., Liu, L. S., Wu, J. X., . . . Gou, X. (2014). Comparison of De-NOx Performance of Mn/AC and Mn/Bio-Char on Low-Temperature SCR. *Applied Mechanics and Materials*, 694, 484 - 488. doi:[10.4028/www.scientific.net/AMM.694.484](https://doi.org/10.4028/www.scientific.net/AMM.694.484)
- Sial, T. A., Khan, M. N., Lan, Z., Kumbhar, F., Ying, Z., Zhang, J., . . . Li, X. (2019). Contrasting effects of banana peels waste and its biochar on greenhouse gas emissions and soil biochemical properties. *Process Safety and Environmental Protection*, 122, 366-377. doi:<https://doi.org/10.1016/j.psep.2018.10.030>
- Sial, T. A., Lan, Z., Khan, M. N., Zhao, Y., Kumbhar, F., Liu, J., . . . Memon, M. (2019). Evaluation of orange peel waste and its biochar on greenhouse gas emissions and soil biochemical properties within a loess soil. *Waste Management*, 87, 125-134. doi:<https://doi.org/10.1016/j.wasman.2019.01.042>
- Sialve, B., Bernet, N., & Bernard, O. (2009). Anaerobic digestion of microalgae as a necessary

- step to make microalgal biodiesel sustainable. *Biotechnology Advances*, 27(4), 409-416. doi:<https://doi.org/10.1016/j.biotechadv.2009.03.001>
- Sick, V. (2021). Spiers Memorial Lecture: CO₂ utilization: why, why now, and how? *Faraday Discussions*, 230(0), 9-29. doi:10.1039/D1FD00029B
- Sick, V., Armstrong, K., Cooney, G., Cremonese, L., Eggleston, A., Faber, G., . . . Zimmermann, A. (2020). The Need for and Path to Harmonized Life Cycle Assessment and Techno-Economic Assessment for Carbon Dioxide Capture and Utilization. *Energy Technology*, 8(11), 1901034. doi:<https://doi.org/10.1002/ente.201901034>
- Sidibe, M. (2014). *Comparative study of bark, bio-char, activated charcoal filters for upgrading grey-water*. (MSc.). Institutionen för energi och teknik, Retrieved from <http://stud.epsilon.slu.se/6760/>
- Sieber, S., Jha, S., Tharayil Shereef, A.-B., Bringé, F., Crewett, W., Uckert, G., . . . Mueller, K. (2015). Integrated assessment of sustainable agricultural practices to enhance climate resilience in Morogoro, Tanzania. *Regional Environmental Change*, 15(7), 1281-1292. doi:10.1007/s10113-015-0810-5
- Siegel, D. A., DeVries, T., Doney, S., & Bell, T. (2021). Assessing the sequestration time scales of some ocean-based carbon dioxide reduction strategies. *Environmental Research Letters*. Retrieved from <http://iopscience.iop.org/article/10.1088/1748-9326/ac0be0>
- Siegel, D. A., DeVries, T., Doney, S., & Bell, T. (2021). Assessing the sequestration time scales of some ocean-based carbon dioxide reduction strategies. *Environmental Research Letters*. Retrieved from <http://iopscience.iop.org/article/10.1088/1748-9326/ac0be0>
- Siegel, J., & Smith, A. (2020). Daily on Energy: Crunching the numbers on carbon capture. *Washington Examiner*. Retrieved from <https://www.washingtonexaminer.com/policy/energy/daily-on-energy-crunching-the-numbers-on-carbon-capture>
- Siegel, J., & Smith, A. (2021). Daily on Energy: White House commits to carbon capture in climate agenda. *Yahoo News!* Retrieved from <https://news.yahoo.com/daily-energy-white-house-commits-162700910.html>
- Siegel, N. P., Miller, J. E., Ermanoski, I., Diver, R. B., & Stechel, E. B. (2013). Factors Affecting the Efficiency of Solar Driven Metal Oxide Thermochemical Cycles. *Ind. Eng. Chem. Res.*, 52, 3276-3286.
- Siegel, R. P. (2018). The Artificial Tree. *Mechanical Engineering*, 140(11), 34-39. Retrieved from <http://memagazineselect.asmedigitalcollection.asme.org/article.aspx?articleid=2714566#Article>
- Siegel, R. P. (2018). Manufacturing Goes Carbon Negative. *strategy + business*. Retrieved from <https://www.strategy-business.com/article/Manufacturing-Goes-Carbon-Negative?gko=4f10c>
- Siegel, R. P. (2020). Regenerative products just might save the planet – and the economy. *strategy + business*. Retrieved from <https://www.strategy-business.com/article/Regenerative-products-just-might-save-the-planet-and-the-economy?gko=cb366>
- Siegelman, R. L., Milner, P. J., Kim, E. J., Weston, S. C., & Long, J. R. (2019). Challenges and opportunities for adsorption-based CO₂ capture from natural gas combined cycle emissions. *Energy & Environmental Science*, 12(7), 2161-2173. doi:10.1039/C9EE00505F
- Sigfússon, B., Arnarson, M. P., Snæbjörnsdóttir, S. Ó., Karlsdóttir, M. R., Aradóttir, E. S., & Gunnarsson, I. (2018). Reducing emissions of carbon dioxide and hydrogen sulphide at Hellisheiði power plant in 2014-2017 and the role of CarbFix in achieving the 2040 Iceland climate goals. *Energy Procedia*, 146, 135-145. doi:<https://doi.org/10.1016/j.egypro.2018.07.018>
- Sigfusson, B., Gislason, S. R., Matter, J. M., Stute, M., Gunnlaugsson, E., Gunnarsson, I., . . . Oelkers, E. H. (2015). Solving the carbon-dioxide buoyancy challenge: The design and

- field testing of a dissolved CO₂ injection system. *International Journal of Greenhouse Gas Control*, 37, 213-219. doi:<https://doi.org/10.1016/j.ijggc.2015.02.022>
- Sigua, G. C., Novak, J. M., & Watts, D. W. (2015). Ameliorating soil chemical properties of a hard setting subsoil layer in Coastal Plain USA with different designer biochars. *Chemosphere*, 142, 168-175. doi:[10.1016/j.chemosphere.2015.06.016](https://doi.org/10.1016/j.chemosphere.2015.06.016)
- Sigua, G. C., Novak, J. M., Watts, D. W., Cantrell, K. B., Shumaker, P. D., Szögi, A. A., & Johnson, M. G. (2014). Carbon mineralization in two ultisols amended with different sources and particle sizes of pyrolyzed biochar. *Chemosphere*, 103, 313-321. doi:<https://doi.org/10.1016/j.chemosphere.2013.12.024>
- Sigua, G. C., Novak, J. M., Watts, D. W., Johnson, M. G., & Spokas, K. (2015). Efficacies of designer biochars in improving biomass and nutrient uptake of winter wheat grown in a hard setting subsoil layer. *Chemosphere*, 142, 176-183. doi:[10.1016/j.chemosphere.2015.06.015](https://doi.org/10.1016/j.chemosphere.2015.06.015)
- Sigua, G. C., Novak, J. M., Watts, D. W., Szögi, A. A., & Shumaker, P. D. (2016). Impact of switchgrass biochars with supplemental nitrogen on carbon-nitrogen mineralization in highly weathered Coastal Plain Ultisols. *Chemosphere*, 145, 135 - 141. doi:[10.1016/j.chemosphere.2015.11.063](https://doi.org/10.1016/j.chemosphere.2015.11.063)
- Sigurdardottir, R., & Rathi, A. (2021). The Icelandic Startup Bill Gates Uses to Turn Carbon Dioxide Into Stone. Retrieved from <https://finance.yahoo.com/news/icelandic-startup-transforming-carbon-dioxide-050005873.html>
- Sigurjonsson, H. Æ., Elmgaard, B., & Clausen, L. R. (2015). *Climate Effect of Bioenergy and Agriculture Integration Based on Lowtar Gasification of Wood Chips*. Paper presented at the Proceedings of ECOS. http://orbit.dtu.dk/ws/files/119761363/CLIMATE_EFFECT_OF_BIOENERGY_AND_AGRICULTURE_INTEGRATION_BASED_ON_LOWTAR_GASIFICATION_OF_WOOD_CHIPS.pdf
- Sigurjonsson, H. Æ., Elmgaard, B., Clausen, L. R., & Ahrenfeldt, J. (2015). Climate effect of an integrated wheat production and bioenergy system with Low Temperature Circulating Fluidized Bed gasifier. *Applied Energy*, 160, 511 - 520. doi:[10.1016/j.apenergy.2015.08.114](https://doi.org/10.1016/j.apenergy.2015.08.114)
- Siiikämäki, J., Sanchirico, J. N., & Jardine, S. L. (2012). Global economic potential for reducing carbon dioxide emissions from mangrove loss. *Proceedings of the National Academy of Sciences*, 109(36), 14369-14374. doi:[10.1073/pnas.1200519109](https://doi.org/10.1073/pnas.1200519109)
- sitiindriani. (2020). What is Biochar? *su.re.co*. Retrieved from <https://www.su-re.co/post/what-is-biochar>
- Sika, M. P., & Hardie, A. G. (2013). Effect of pine wood biochar on ammonium nitrate leaching and availability in a South African sandy soil. *European Journal of Soil Science*, 65(1), 113-119. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/ejss.12082/abstract>
- Silber, A., Levkovich, I., & Graber, E. R. (2010). pH-dependant mineral release and surface properties of cornstraw biochar: agronomic implications. *Environmental Science & Technology*, 44(24), 9318-9323. Retrieved from <http://pubs.acs.org/doi/pdf/10.1021/es101283d>
- Silivong, P., & Preston, T. (2015). Effect of water spinach and biochar on methane production in an in vitro system with substrate of Bauhinia acuminata or Bitter Neem (*Azadirachta indica*) leaves. *Livestock Research for Rural Development*, 27(3). Retrieved from <http://lrrd.cipav.org.co/lrrd27/3/sili27057.html>
- Sillman, J., Nygren, L., Kahiluoto, H., Ruuskanen, V., Tamminen, A., Bajamundi, C., . . . Ahola, J. (2019). Bacterial protein for food and feed generated via renewable energy and direct air capture of CO₂: Can it reduce land and water use? *Global Food Security*, 22, 25-32. doi:<https://doi.org/10.1016/j.gfs.2019.09.007>
- Sills, D. L., Paramita, V., Franke, M. J., Johnson, M. C., Akabas, T. M., Greene, C. H., & Tester,

- J. W. (2013). Quantitative Uncertainty Analysis of Life Cycle Assessment for Algal Biofuel Production. *Environmental Science & Technology*, 47(2), 687-694. doi:10.1021/es3029236
- Silva, F. C., Borrego, C., Keizer, J. J., Amorim, J. H., & Verheijen, F. G. A. (2015). Effects of moisture content on wind erosion thresholds of biochar. *Atmospheric Environment*, 123, 121 - 128. doi:10.1016/j.atmosenv.2015.10.070
- Silva, J. H. d. (2014). *Impact of the use of biochar on soil quality and Production cacao (Theobroma cacao L.), Bribri Indian Reservation, agroforestry Talamanca, Costa Rica (translated from Spanish Language)*. Repositorio Universidad Tecnológica de León (Repository Technological University of León), Retrieved from <http://bibliotecadigital.catie.ac.cr:8080/repositorio/handle/123456789/2349>
- Silva Mendes, J. d., Chaves, L. H. G., Brito Chaves, I. d., Santos e Silva, F. d. A., & Fernandes, J. D. (2015). Using Poultry Litter Biochar and Rock Dust MB-4 on Release Available Phosphorus to Soils. *Agricultural Sciences*, 06(11), 1367 - 1374. doi:10.4236/as.2015.611131
- Silva, S., Soares, I., & Pinho, C. (2018). Renewable energy subsidies versus carbon capture and sequestration support. *Environment, Development and Sustainability*, 20(3), 1213-1227. doi:10.1007/s10668-017-9935-7
- Silva, S., Soares, I., & Pinho, C. (2018). Support to renewable energy sources and carbon capture and sequestration: comparison of alternative green tax reforms. *Applied Economics Letters*, 25(6), 425-428. doi:10.1080/13504851.2017.1329926
- Silva, S., Soares, I., & Pinho, C. (2019). Green tax reforms with promotion of renewable energy sources and carbon capture and sequestration: Comparison of different alternatives. *Energy Reports*. doi:<https://doi.org/10.1016/j.egyr.2019.09.036>
- Silvennoinen, E. (2015). *Water retention performance of newly constructed green roofs in cold climates*. University of Helsinki, Retrieved from <https://helda.helsinki.fi/handle/10138/156612>
- Silver, M. W., Bargu, S., Coale, S. L., Benitez-Nelson, C. R., Garcia, A. C., Roberts, K. J., . . . Coale, K. H. (2010). Toxic diatoms and domoic acid in natural and iron enriched waters of the oceanic Pacific. *Proceedings of the National Academy of Sciences*, 107(48), 20762-20767. doi:10.1073/pnas.1006968107
- Silver, W. (2019). Enhancing Carbon Sinks in Natural and Working Lands. In V. Ramanathan (Ed.), *Bending the Curve* (pp. 641-678).
- Silver, W. L., Kueppers, L. M., Lugo, A. E., Ostertag, R., & Matzek, V. (2004). Carbon Sequestration and Plant Community Dynamics Following Reforestation of Tropical Pasture. *Ecological Applications*, 14(4), 1115-1127. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1890/03-5123/full>
- Silver, W. L., Ostertag, R., & Lugo, A. E. (2000). The Potential for Carbon Sequestration Through Reforestation of Abandoned Tropical Agricultural and Pasture Lands. *Restoration Ecology*, 8(4), 394-407. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1046/j.1526-100x.2000.80054.x/abstract;jsessionid=7F812EB450B689F387D6AEF2D3445060.d04t02?userIsAuthenticated=false&deniedAccessCustomisedMessage=>
- Silverman-Roati, K., et al. (2021). *Removing Carbon Dioxide Through Seaweed Cultivation: Legal Challenges and Opportunities* Retrieved from <https://climate.law.columbia.edu/sites/default/files/content/Silverman-Roati%20et%20al.,%20--%20Removing%20CO2%20Through%20Seaweed%20Cultivation%20--%2009.2021.pdf>
- Simmons, A. (2021). US scheme used by Australian farmers reveals the dangers of trading soil carbon to tackle climate change. *The Conversation*.
- Simon, A. J., Kaahaaina, N. B., Friedmann, S. J., & Aines, R. D. (2011). Systems Analysis and

- Cost Estimates for Large Scale Capture of Carbon Dioxide from Air. In J. Gale, C. Hendriks, & W. Turkenberg (Eds.), *10th International Conference on Greenhouse Gas Control Technologies* (Vol. 4, pp. 2893-2900). Amsterdam: Elsevier Science Bv.
- Simon, A. J., Kaahaaina, N. B., Julio Friedmann, S., & Aines, R. D. (2011). Systems analysis and cost estimates for large scale capture of carbon dioxide from air. *Energy Procedia*, 4, 2893-2900. doi:<https://doi.org/10.1016/j.egypro.2011.02.196>
- Simon, D., Tyner, W. E., & Jacquet, F. (2010). Economic analysis of the potential of cellulosic biomass available in France from agricultural residue and energy crops. *Bioenergy Res*, 3. doi:[10.1007/s12155-009-9061-y](https://doi.org/10.1007/s12155-009-9061-y)
- Simon, F. (2020). Official: EU taking first steps to bring forestry into carbon market. *Euractiv*. Retrieved from <https://www.euractiv.com/section/energy-environment/interview/official-eu-taking-first-steps-to-bring-forestry-into-carbon-market/>
- Simon, F. (2021). EU plans certification scheme for carbon dioxide removals. Retrieved from <https://www.euractiv.com/section/climate-environment/news/eu-plans-certification-scheme-for-carbon-dioxide-removals/>
- Simon, M. (2021). Is It Time for an Emergency Rollout of Carbon-Eating Machines? *Wired*. Retrieved from <https://www.wired.com/story/is-it-time-for-an-emergency-rollout-of-carbon-eating-machines/>
- Simpson, M. J., & Hatcher, P. G. (2004). Determination of black carbon in natural organic matter by chemical oxidation and solid-state C-13 nuclear magnetic resonance spectroscopy. *Organic Geochemistry*, 35(8), 923-935.
- Simpson, M. J., & Hatcher, P. G. (2004). Overestimates of black carbon in soils and sediments. *Naturwissenschaften*, 91(9), 436-440.
- Simpson, T. W., et al. (2009). *Chapter 9: Impact of Ethanol Production on Nutrient Cycles and Water Quality: The United State and Brazil as Case Studies*. Paper presented at the Proceedings of the Scientific Committee on Problems of the Environment (SCOPE) International Biofuels Project Rapid Assessment. https://cip.cornell.edu/DPubS/Repository/1.0/Disseminate?view=body&id=pdf_1&handle=scope/1245782009
- Sims, R. E. H. (2003). Bioenergy to Mitigate for Climate Change and Meet the Needs of Society, the Economy, and the Environment. *Mitigation Adapt. Strat. Global Change*, 8, 349-370. Retrieved from https://www.academia.edu/attachments/53694774/download_file?
s=work_strip&ct=MTUwMjY3OTUwMSwxNTAyNjgwNDUwLDI1NDM4NQ==
- Sims, R. E. H., et al. (2006). Energy crops: current status and future prospects. *Global Change Biology*, 12(11), 2054-2076. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2486.2006.01163.x/abstract>
- Singapore, N. U. o. (2018). NUS study: Mangroves can help countries mitigate their carbon emissions. *EurekaAlert!* Retrieved from https://www.eurekalert.org/pub_releases/2018-11/nuos-nsm110918.php
- Singh, A., et al. (2013). Production Of Biochar From Mustard For Agriculture Use And Carbon Sequestration. *International Journal of ChemTech Research*, 5, 844-848. Retrieved from [http://sphinxsai.com/2013/conf/PDFS%20ICGSEE%202013/CT=46\(844-848\)ICGSEE.pdf](http://sphinxsai.com/2013/conf/PDFS%20ICGSEE%202013/CT=46(844-848)ICGSEE.pdf)
- Singh, A., & Misha, R. (2013). Carbon dioxide capturing, storing & recycling: A alleviation approach for climate change. *Journal of Sustainable Environmental Research*, 2(1), 121-124. Retrieved from https://www.academia.edu/attachments/54011023/download_file?
s=work_strip&ct=MTUwMjY3OTUwMSwxNTAyNjgxNTY1LDI1NDM4NQ==
- Singh, A., Nigam, P. S., & Murphy, J. D. (2011). Mechanism and challenges in commercialisation of algal biofuels. *Bioresource Technology*, 102(1), 26-34. doi:<https://doi.org/10.1016/j.biortech.2010.11.030>

j.biotech.2010.06.057

- Singh, A., Nigam, P. S., & Murphy, J. D. (2011). Renewable fuels from algae: An answer to debatable land based fuels. *Bioresource Technology*, 102(1), 10-16. doi:<https://doi.org/10.1016/j.biortech.2010.06.032>
- Singh, B., et al. (2014). NEXAFS and XPS characterisation of carbon functional groups of fresh and aged biochars. *Organic Geochemistry*, 77, 1 - 10. doi:[10.1016/j.orggeochem.2014.09.006](https://doi.org/10.1016/j.orggeochem.2014.09.006)
- Singh, B., Singh, B. P., & Cowie, A. L. (2010). Characterisation and evaluation of biochars for their application as a soil amendment. *Australian Journal of Soil Research*, 48(7), 516-525. Retrieved from <http://www.publish.csiro.au/SR/SR10058>
- Singh, B. P., et al. (2015). In Situ Persistence and Migration of Biochar Carbon and Its Impact on Native Carbon Emission in Contrasting Soils under Managed Temperate Pastures. *Plos One*, 10(10), e0141560. doi:[10.1371/journal.pone.0141560.s001](https://doi.org/10.1371/journal.pone.0141560.s001)
- Singh, B. P., & Cowie, A. L. (2014). Long-term influence of biochar on native organic carbon mineralisation in a low-carbon clayey soil. *Scientific Reports*, 4(3687), 1-9. Retrieved from <http://www.nature.com/srep/2014/140121/srep03687/full/srep03687.html>
- Singh, B. P., Cowie, A. L., & Smernik, R. J. (2012). Biochar carbon stability in a clayey soil as a function of feedstock and pyrolysis temperature. *Environmental Science & Technology*, 46(21), 11770-11778. doi:[10.1021/es302545b](https://doi.org/10.1021/es302545b)
- Singh, B. P., Hatton, B. J., Singh, B., Cowie, A., & Kathuria, A. (2010). Influence of biochars on nitrous oxide emission and nitrogen leaching from two contrasting soils. *Journal of Environmental Quality*, 39(4), 1224-1235. Retrieved from <https://search.proquest.com/docview/747975900?accountid=14496>
- Singh, B. P., Setia, R., Wiesmeier, M., & Kunhikrishnan, A. (2018). Chapter 7 - Agricultural Management Practices and Soil Organic Carbon Storage. In B. K. Singh (Ed.), *Soil Carbon Storage* (pp. 207-244): Academic Press.
- Singh, D., Croiset, E., Douglas, P. L., & Douglas, M. A. (2003). Techno-economic study of CO₂ capture from an existing coal-fired power plant: MEA scrubbing vs. O₂/CO₂ recycle combustion. *Energy Conversion and Management*, 44(19), 3073-3091. doi:[https://doi.org/10.1016/S0196-8904\(03\)00040-2](https://doi.org/10.1016/S0196-8904(03)00040-2)
- Singh, J., & Dhar, D. W. (2019). Overview of Carbon Capture Technology: Microalgal Biorefinery Concept and State-of-the-Art. 6(29). doi:[10.3389/fmars.2019.00029](https://doi.org/10.3389/fmars.2019.00029)
- Singh, J., & Gu, S. (2010). Commercialization potential of microalgae for biofuels production. *Renewable and Sustainable Energy Reviews*, 14(9), 2596-2610. doi:<https://doi.org/10.1016/j.rser.2010.06.014>
- Singh, N., & Kookana, R. S. (2009). Organo-mineral interactions mask the true sorption potential of biochars in soils. *Journal Of Environmental Science And Health Part B-Pesticides Food Contaminants And Agricultural Wastes*, 44, 214--219.
- Singh, R., Babu, J. N., Kumar, R., Srivastava, P., Singh, P., & Raghubanshi, A. S. (2015). Multifaceted application of crop residue biochar as a tool for sustainable agriculture: An ecological perspective. *Ecological Engineering*, 77, 324 - 347. doi:[10.1016/j.ecoleng.2015.01.011](https://doi.org/10.1016/j.ecoleng.2015.01.011)
- Singh, R., Srivastava, P., Upadhyay, S., Singh, P., & Raghubanshi, A. S. (2015). INTEGRATING BIOCHAR AS CONSERVATION AGRICULTURE TOOL UNDER CLIMATE CHANGE MITIGATION SCENARIO. Retrieved from http://www.researchgate.net/profile/Rishikesh_Singh4/publication/280245125_Integrating_biochar_as_conservation_agriculture_tool_under_climate_change_mitigation_scenario/links/55af56d008aee0799220f8a3.pdf
- Singh, S. K., et al. (2015). Carbon Sequestration in Terrestrial Ecosystems. In E. Lichtfouse, J. Schwarzbauer, & R. Didier (Eds.), *Hydrogen Production and Remediation of Carbon and*

Pollutants (pp. 99-131).

- Singh, S. K., Kotakonda, A., Kapardar, R. K., Kankipati, H. K., Rao, P. S., Sankaranarayanan, P. M., . . . Shivaji, S. (2015). Response of bacterioplankton to iron fertilization of the Southern Ocean, Antarctica. *Frontiers in Microbiology*, 6, 1-16. doi:10.3389/fmicb.2015.00863
- Singh, U., Rao, A. B., & Chandel, M. K. (2017). Economic Implications of CO₂ Capture from the Existing as Well as Proposed Coal-fired Power Plants in India under Various Policy Scenarios. *Energy Procedia*, 114, 7638-7650. doi:<https://doi.org/10.1016/j.egypro.2017.03.1896>
- Singh, U. B., & Ahluwalia, A. S. (2013). Microalgae: a promising tool for carbon sequestration. *Mitigation and Adaptation Strategies for Global Change*, 18(1), 73-95. doi:10.1007/s11027-012-9393-3
- Singh, Y., & Sidhu, H. S. (2014). Management of Cereal Crop Residues for Sustainable Rice-Wheat Production System in the Indo-Gangetic Plains of India. *Proc Indian Natn Sci Acad*, 80(1), 95-114. Retrieved from http://www.insa.nic.in/writereaddata/UpLoadedFiles/PINSA/Vol80_2014_1_Art11_95_114.pdf
- Singh, Y., Thind, H. S., & Sidhu, H. S. (2014). Management options for rice residues for sustainable productivity of rice-wheat cropping system. *J. Res. Punjab Agric. Univ.*, 51(3 & 4), 209-220. Retrieved from https://www.researchgate.net/publication/306503565_Management_options_for_rice_residues_for_sustainable_productivity_of_rice-wheat_cropping_system
- Singla, A., Dubey, S. K., Singh, A., & Inubushi, K. (2014). Effect of biogas digested slurry-based biochar on methane flux and methanogenic archaeal diversity in paddy soil. *Agriculture, Ecosystems & Environment*, 197, 278 - 287. doi:10.1016/j.agee.2014.08.010
- Singla, A., & Inubushi, K. (2014). Effect of biochar on CH₄ and N₂O emission from soils vegetated with paddy. *Paddy and Water Environment*, 12(1), 239 - 243. doi:10.1007/s10333-013-0357-3
- Singla, A., Iwasa, H., & Inubushi, K. (2014). Effect of biogas digested slurry based-biochar and digested liquid on N₂O, CO₂ flux and crop yield for three continuous cropping cycles of komatsuna (*Brassica rapa* var. *perviridis*). *Biology and Fertility of Soils*, 50(8), 1201-1209. doi:10.1007/s00374-014-0950-7
- Singlaa, A., & Inubushi, K. (2014). Biogas byproducts affecting N₂O, CO₂ and CH₄ production potential of Regosol soil under aerobic incubation. *HortResearch*, 68, 7-13. Retrieved from www.researchgate.net/profile/Ankit_Singla4/publication/265335560_Biogas_byproducts_affecting_N2O_CO2_and_CH4_production_potential_of_Regosol_soil_under_aerobic_incubation/links/548a62250cf2d1800d7aab09.pdf
- Singleton, G. R. (2007). *Geological Storage of Carbon Dioxide: Risk Analyses and Implications for Public Acceptance*. (MSc. Masters). University of Virginia, Retrieved from https://sequestration.mit.edu/pdf/GregSingleton_Thesis.pdf
- Sinha, A., Darunte, L. A., Jones, C. W., Realff, M. J., & Kawajiri, Y. (2017). Systems Design and Economic Analysis of Direct Air Capture of CO₂ through Temperature Vacuum Swing Adsorption Using MIL-101(Cr)-PEI-800 and mmn-Mg₂(dobpdc) MOF Adsorbents. *Industrial & Engineering Chemistry Research*, 56(3), 750-764. doi:10.1021/acs.iecr.6b03887
- Sinha, R., Kumar, S., & Singh, R. K. (2013). Production of biofuel and biochar by thermal pyrolysis of linseed seed. *Biomass Conversion and Biorefinery*, 3(4), 327-335. Retrieved from <http://link.springer.com/article/10.1007/s13399-013-0076-4>
- Sinha, V. R. P., Fraley, L., & Chowdhry, B. S. (2001). *Carbon dioxide utilization and seaweed production*. Paper presented at the Proceedings of NETL: First National Conference on Carbon Sequestration. <https://pdfs.semanticscholar.org/>

- 2270/8367d963973af4f81fabee9ee8ca23895e49.pdf
- SIPA, C. L. S. C. (2020). Carbon Dioxide Removal Law. Retrieved from <https://cdrlaw.org/>.
- Sipila, J., Teir, S., & Zevenhoven, R. (2008). *Carbon dioxide sequestration by mineral carbonation: Literature review update 2005–2007*. Retrieved from <http://users.abo.fi/rzevenho/MineralCarbonationLiteratureReview05-07.pdf>
- Sisbudi Harsono, S., Grundmann, P., & Siahaan, D. (2015). *Role of Biogas and Biochar Palm Oil Residues for Reduction of Greenhouse Gas Emissions in the Biodiesel Production*. Paper presented at the Conference and Exhibition Indonesia - New, Renewable Energy and Energy Conservation. www.indoebtke-conex.com/files/Rev_45.egypro_ebtke-conex2014_Soni.doc
- sitiindriani. (2021). What are the disadvantages of biochar? Retrieved from <https://www.su-re.co/post/what-are-the-disadvantages-of-biochar>
- Sivaniah, E. (2017). Carbon capture's new material. Retrieved from <http://www.power-technology.com/features/featurecarbon-captures-new-material-5898533/>
- Six, J., Ogle, S. M., Jay breidt, F., Conant, R. T., Mosier, A. R., & Paustian, K. (2004). The potential to mitigate global warming with no-tillage management is only realized when practised in the long term. *Global Change Biology*, 10(2), 155-160. doi:10.1111/j.1529-8817.2003.00730.x
- Six, J., Ogle, S. M., Jay breidt, F., Conant, R. T., Mosier, A. R., & Paustian, K. (2004). The potential to mitigate global warming with no-tillage management is only realized when practised in the long term. *Global Change Biology*, 10(2), 155-160. doi:doi:10.1111/j.1529-8817.2003.00730.x
- Sizmur, T., Quilliam, R., Puga, A. P., Moreno-Jiménez, E., Beesley, L., & Gomez-Eyles, J. L. (2015). *SSSA Special Publication Agricultural and Environmental Applications of Biochar: Advances and Barriers Application of Biochar for Soil Remediation*: Soil Science Society of America, Inc.
- Sizmur, T., Wingate, J., Hutchings, T., & Hodson, M. E. (2011). Lumbricus terrestris L. does not impact on the remediation efficiency of compost and Biochar amendments. *Pedobiologia*, 54(Supplement), S211-S216. doi:10.1016/j.pedobi.2011.08.008
- Skidmore, A. K., Wang, T., de Bie, K., & Pilesjö, P. (2019). Comment on “The global tree restoration potential”. *Science*, 366(6469), eaaz0111. doi:10.1126/science.aaz0111 %J Science
- Skjånes, K., Lindblad, P., & Muller, J. (2007). BioCO₂ - a multidisciplinary, biological approach using solar energy to capture CO₂ while producing H₂ and high value products. *Biomolecular Engineering*, 24(4), 405-413. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/17662653>
- Skjemstad, J. O., Dalal, R. C., Janik, L. J., & McGowan, J. A. (2001). Changes in chemical nature of soil organic carbon in Vertisols under wheat in south-eastern Queensland. *Australian Journal of Soil Research*, 39(2), 343-359. Retrieved from <http://www.publish.csiro.au/SR/SR99138>
- Skjemstad, J. O., Reicosky, D. C., Wilts, A. R., & McGowan, J. A. (2002). Charcoal carbon in US agricultural soils. *Soil Science Society of America Journal*, 66(4), 1249-1255. Retrieved from https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0ahUKEwjVp_CJkNL SAhXJxIQKHWABB-8QFggkMAE&url=https%3A%2F%2Fpubag.nal.usda.gov%2Fpubag%2FdownloadPDF.xhtml%3Fid%3D13040%26content%3DPDF&usg=AFQjCNGBqDXYpu6E39rebaTznTMkp7wfXg&sig2=yxGTt72l3aqjMxVdEIYbAg
- Skjemstad, J. O., & Taylor, J. A. (1999). Does the walkley-black method determine soil charcoal? *Communications in Soil Science and Plant Analysis*, 30(15-16), 2299-2310. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/00103629909370373>

- Skjemstad, J. O., Taylor, J. A., & Smernik, R. J. (1999). Estimation of charcoal (char) in soils. *Communications in Soil Science and Plant Analysis*, 30(15-16), 2283-2298. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/00103629909370372>
- Skuce, A. (2015). The Road to Two Degrees, Part One: Feasible Emissions Pathways, Burying our Carbon, and Bioenergy. Retrieved from <https://skepticalscience.com/TRTTDRCP26.html>
- Skuce, A. (2016). 'We'd have to finish one new facility every working day for the next 70 years'—Why carbon capture is no panacea. *Bulletin of Atomic Scientists*. Retrieved from <https://thebulletin.org/%E2%80%98we%E2%80%99d-have-finish-one-new-facility-every-working-day-next-70-years%E2%80%99%E2%80%94why-carbon-capture-no-panacea9949>
- Skutsch, M., de los Rios, E., Solis, S., Riegelhaupt, E., Hinojosa, D., Gerfert, S., . . . Masera, O. (2011). Jatropha in Mexico: Environmental and Social Impacts of an Incipient Biofuel Program. *Ecology and Society*, 16(4), Article 11. doi:10.5751/ES-04448-160411
- Slade, R., & Bauen, A. (2013). Micro-algae cultivation for biofuels: Cost, energy balance, environmental impacts and future prospects. *Biomass and Bioenergy*, 53, 29-38. doi:<https://doi.org/10.1016/j.biombioe.2012.12.019>
- Slade, R., Bauen, A., & Gross, R. (2014). Global bioenergy resources. *Nature Climate Change*, 4(2), 99-105. doi:10.1038/nclimate2097
<http://www.nature.com/nclimate/journal/v4/n2/abs/nclimate2097.html#supplementary-information>
- Slav, I. (2017). Did This Startup Solve The Carbon Capture Challenge? Retrieved from <http://oilprice.com/The-Environment/Global-Warming/Did-This-Startup-Solve-The-Carbon-Capture-Challenge.html>
- Slavin, T. (2021). Can corporates' net-zero drive help put tropical countries on rapid road to ending deforestation? Retrieved from https://www.reutersevents.com/sustainability/can-corporates-net-zero-drive-help-put-tropical-countries-rapid-road-ending-deforestation?utm_campaign=ETH%2030JUL21%20Newsletter%20Database&utm_medium=email&utm_source=Eloqua
- Slaymaker, M. (2021). Gordon supports SCALE Act. *Wyoming Livestock Roundup*. Retrieved from <https://www.wylr.net/2021/03/26/gordon-supports-scale-act/>
- Slingenberg, Y. (2021). What does the EU have in store for Carbon removals: Negative Emissions Platform.
- Smal, I. M., Yu, Q., Veneman, R., Fränzel-Luiten, B., & Brilman, D. W. F. (2014). TG-FTIR Measurement of CO₂-H₂O co-adsorption for CO₂ air capture sorbent screening. *Energy Procedia*, 63, 6834-6841. doi:<http://dx.doi.org/10.1016/j.egypro.2014.11.717>
- Smebye, A., Alling, V., Vogt, R. D., Gadmar, T. C., Mulder, J., Cornelissen, G., & Hale, S. E. (2015). Biochar amendment to soil changes dissolved organic matter content and composition. *Chemosphere*, 142, 100-105. doi:10.1016/j.chemosphere.2015.04.087
- Smeets, E. (2007). Interactive comment on "N₂O release from agro-biofuel production negates global warming reduction by replacing fossil fuels" by P. J. Crutzen et al. *Atmospheric Chemistry and Physics Discussions*, 7, S4937-4941. Retrieved from <http://www.atmos-chem-phys-discuss.net/7/S4937/2007/acpd-7-S4937-2007.pdf>
- Smeets, E. M. W., & Faaij, A. P. C. (2007). Bioenergy potentials from forestry in 2050. *Climatic Change*, 81(3), 353-390. doi:10.1007/s10584-006-9163-x
- Smeets, E. M. W., & Faaij, A. P. C. (2010). The impact of sustainability criteria on the costs and potentials of bioenergy production – Applied for case studies in Brazil and Ukraine. *Biomass and Bioenergy*, 34(3), 319-333. doi:<https://doi.org/10.1016/j.biombioe.2009.11.003>
- Smeets, E. M. W., Faaij, A. P. C., Lewandowski, I. M., & Turkenburg, W. C. (2007). A bottom-up

- assessment and review of global bio-energy potentials to 2050. *Progress in Energy and Combustion Science*, 33(1), 56-106. doi:<http://dx.doi.org/10.1016/j.pecs.2006.08.001>
- Smernik, R. J. (2005). A new way to use solid-state carbon-13 nuclear magnetic resonance spectroscopy to study the sorption of organic compounds to soil organic matter. *Journal of Environmental Quality*, 34(4), 1194-1204. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/15942038>
- Smernik, R. J. (2009). Biochar and Sorption of Organic Compounds. In L. Johannes & J. Stephen (Eds.), *Biochar for Environmental Management: Science and Technology* (pp. 289-300). London, UK: Earthscan.
- Smetacek, V. (2008). Are Declining Antarctic Krill Stocks A Result of Global Warming or of the Decimation of the Whales. In C. Duarte, M. (Ed.), *Impacts of Global Warming on Global Ecosystems* (pp. 47-83).
- Smetacek, V., et al. (2012). Deep carbon export from a Southern Ocean iron-fertilized diatom bloom. *Nature*, 487, 313-319. Retrieved from http://www.nature.com/nature/journal/v487/n7407/full/nature11229.html?WT.ec_id=NATURE-20120719
- Smetacek, V., & Naqvi, S. W. A. (2008). The next generation of iron fertilization experiments in the Southern Ocean. *Philosophical Transactions of the Royal Society A*, 366, 3947-3967. Retrieved from <http://rsta.royalsocietypublishing.org/content/roypta/366/1882/3947.full.pdf>
- Smider, B., & Singh, B. (2014). Agronomic performance of a high ash biochar in two contrasting soils. *Agriculture, Ecosystems & Environment*, 191, 99-107. doi:<http://dx.doi.org/10.1016/j.agee.2014.01.024>
- Smit, B., Park, A.-H. A., & Gadikota, G. (2014). The Grand Challenges in Carbon Capture, Utilization, and Storage. *Frontiers in Energy Research*, 2(55), 1-3. doi:[10.3389/fenrg.2014.00055](https://doi.org/10.3389/fenrg.2014.00055)
- Smith, A., & Blaustein-Rejto, D. (2020). The Limits of Soil Carbon Sequestration. Retrieved from <https://thebreakthrough.org/issues/food/carbon-farming>
- Smith, A., & Rejto, D. (2020). Viewpoint: Regenerative agriculture—An oversold sustainability solution to climate change? *Genetic Literacy Project*. Retrieved from <https://geneticliteracyproject.org/2020/03/30/viewpoint-regenerative-agriculture-an-oversold-solution-to-climate-change/>
- Smith, B. (2020). Microsoft will be carbon negative by 2030 [Press release]. Retrieved from <https://blogs.microsoft.com/blog/2020/01/16/microsoft-will-be-carbon-negative-by-2030/>
- Smith, B. (2021). One year later: The path to carbon negative – a progress report on our climate ‘moonshot’. Retrieved from <https://blogs.microsoft.com/blog/2021/01/28/one-year-later-the-path-to-carbon-negative-a-progress-report-on-our-climate-moonshot/>
- Smith, C. R., et al. (2013). Molecular Characterization of Inhibiting Biochar Water-Extractable Substances using Electrospray Ionization Fourier Transform Ion Cyclotron Resonance Mass Spectrometry. *Environmental Science and Technology*, 47(23), 13294-13302. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/es4034777>
- Smith, J. L., Collins, H. P., & Bailey, V. L. (2010). The effect of young biochar on soil respiration. *Soil Biology and Biochemistry*, 42, 2345-2347. doi:[10.1016/j.soilbio.2010.09.013](https://doi.org/10.1016/j.soilbio.2010.09.013)
- Smith, J. U., Fischer, A., Hallett, P. D., Homans, H. Y., Smith, P., Abdul-Salam, Y., . . . Phimister, E. (2015). Sustainable use of organic resources for bioenergy, food and water provision in rural Sub-Saharan Africa. *Renewable and Sustainable Energy Reviews*, 50, 903 - 917. doi:[10.1016/j.rser.2015.04.071](https://doi.org/10.1016/j.rser.2015.04.071)
- Smith, J. W., Dorning, M., Shoemaker, D. A., Méley, A., Dupey, L., & Meentemeyer, R. K. (2017). Payments for carbon sequestration to alleviate development pressure in a rapidly urbanizing region. *Forest Science*, 63(3), 270-282. doi:[10.5849/FS-2016-084R1](https://doi.org/10.5849/FS-2016-084R1)
- Smith, K. L., Milnes, A. R., & Eggleton, R. A. (1987). Weathering of Basalt: Formation of

- Iddingsite. *Clays and Clay Mineral*, 35(6), 418-428. Retrieved from <http://www.clays.org/journal/archive/volume%2035/35-6-418.pdf>
- Smith, L., & Roberts, R. (2018). *Our Carbon Future: Reversing global warming while delivering shared prosperity*. Retrieved from <http://carbonproductivity.com/wp-content/uploads/Our-Carbon-Future-White-Paper.pdf>
- Smith, L. G., & Lampkin, N. H. (2019). 19 - Greener farming: managing carbon and nitrogen cycles to reduce greenhouse gas emissions from agriculture. In T. M. Letcher (Ed.), *Managing Global Warming* (pp. 553-577): Academic Press.
- Smith, M. (2017). Big oil invests in technologies to sequester CO₂, increase engine efficiency. *JWN*.
- Smith, M. (2017). Oil majors aim to commercialize carbon storage, starting offshore Norway. *JWN*. Retrieved from <http://www.jwnenergy.com/article/2017/10/oil-majors-aim-commercialize-carbon-storage-starting-offshore-norway/>
- Smith, P., et al. (2012). Towards an integrated global framework to assess the impacts of land use and management change on soil carbon: current capability and future vision. *Global Change Biology*, 18(7), 2089-2101. doi:doi:10.1111/j.1365-2486.2012.02689.x
- Smith, P. (2016). Soil carbon sequestration and biochar as negative emission technologies. *Global Change Biology*, 22(3), 1315-1324. doi:10.1111/gcb.13178
- Smith, P., et al. (2019). Impacts of Land-Based Greenhouse Gas Removal Options on Ecosystem Services and the United Nations Sustainable Development Goals. *Annual Review of Environment and Resources*, 44(1), 255-286. doi:10.1146/annurev-environ-101718-033129
- Smith, P., et al. (2019). Land-Management Options for Greenhouse Gas Removal and Their Impacts on Ecosystem Services and the Sustainable Development Goals. *Annual Review of Environment and Resources*, 44(1), 255-286. doi:10.1146/annurev-environ-101718-033129
- Smith, P., Andrén, O., Karlsson, T., Perälä, P., Regina, K., Rounsevell, M., & Van Wesemael, B. (2005). Carbon sequestration potential in European croplands has been overestimated. 11(12), 2153-2163. doi:doi:10.1111/j.1365-2486.2005.01052.x
- Smith, P., & Canadell, P. (2015). Removing CO₂ from the atmosphere won't save us: we have to cut emissions now. *The Conversation*. Retrieved from <https://theconversation.com/removing-co2-from-the-atmosphere-wont-save-us-we-have-to-cut-emissions-now-51684>
- Smith, P., Davis, S. J., Creutzig, F., Fuss, S., Minx, J., Gabrielle, B., . . . Cho, Y. (2016). Biophysical and economic limits to negative CO₂ emissions. *Nature Climate Change*, 6, 42-50. doi:10.1038/nclimate2870
- Smith, P., Goulding, K. W., Smith, K. A., Powson, D. S., Smith, J. U., Falloon, P., & Coleman, K. (2001). Enhancing the carbon sink in European agricultural soils: including trace gas fluxes in estimates of carbon mitigation potential. *Nutrient Cycling in Agroecosystems*, 60(1), 237-252. doi:10.1023/a:1012617517839
- Smith, P., Haberl, H., Popp, A., Erb, K.-h., Lauk, C., Harper, R., . . . Rose, S. (2013). How much land-based greenhouse gas mitigation can be achieved without compromising food security and environmental goals? *Global Change Biology*, 19(8), 2285-2302. doi:10.1111/gcb.12160
- Smith, P., Haszeldine, R. S., & Smith, S. M. (2016). Preliminary assessment of the potential for, and limitations to, terrestrial negative emission technologies in the UK. *Environmental Science-Processes & Impacts*, 18(11), 1400-1405. doi:10.1039/c6em00386a
- Smith, P., Martino, D., Cai, Z., Gwary, D., Janzen, H., Kumar, P., . . . Smith, J. (2008). Greenhouse gas mitigation in agriculture. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 363(1492), 789-813. doi:10.1098/rstb.2007.2184
- Smith, P., & Olesen, J. E. (2010). Synergies between the mitigation of, and adaptation to,

- climate change in agriculture. *The Journal of Agricultural Science*, 148(5), 543-552. doi:10.1017/S0021859610000341
- Smith, P., Soussana, J.-F., Angers, D., Schipper, L., Chenu, C., Rasse, D. P., . . . Klumpp, K. (2020). How to measure, report and verify soil carbon change to realize the potential of soil carbon sequestration for atmospheric greenhouse gas removal. *Global Change Biology*, 26(1), 219-241. doi:10.1111/gcb.14815
- Smith, R. G., Smith, I. J., & Smith, B. D. (2018). A novel strategy for sequestering atmospheric CO₂: The use of sealed microalgal cultures located in the open-oceans. *Renewable and Sustainable Energy Reviews*, 83, 85-89. doi:<https://doi.org/10.1016/j.rser.2017.10.001>
- Smith, S., & Kruger, T. (2020). Net zero emissions targets are everywhere – we need to sort the genuine from the greenwash. *The Conversation*. Retrieved from <https://theconversation.com/amp/net-zero-emissions-targets-are-everywhere-we-need-to-sort-the-genuine-from-the-greenwash-150127>
- Smith, S. L., Thelen, K. D., & MacDonald, S. J. (2013). Yield and quality analyses of bioenergy crops grown on a regulatory brownfield. *Biomass and Bioenergy*, 49, 123-130. doi:<https://doi.org/10.1016/j.biombioe.2012.12.017>
- Smith, S. M. (2021). A case for transparent net-zero carbon targets. *Communications Earth & Environment*, 2(1), 24. doi:10.1038/s43247-021-00095-w
- Smith, S. V. (1981). Marine macrophytes as a global carbon sink. *Science*, 211, 838-840. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/17740399>
- Smith, W. K., Zhao, M., & Running, S. W. (2012). Global Bioenergy Capacity as Constrained by Observed Biospheric Productivity Rates. *BioScience*, 62(10), 911-922. doi:10.1525/bio.2012.62.10.11
- Smolker, R., & Ernsting, A. (2012). *BECCS (Bioenergy with Carbon Capture and Storage): Climate saviour or dangerous hype?* Retrieved from <http://www.biofuelwatch.org.uk/files/BECCS-report.pdf>
- Smyth, C., Kurz, W. A., Rampley, G., Lemière, T. C., & Schwab, O. (2017). Climate change mitigation potential of local use of harvest residues for bioenergy in Canada. *GCB Bioenergy*, 9(4), 817-832. doi:10.1111/gcbb.12387
- Smytheman, T., Peter, A., Nishimura, A., & Kwong, C. W. (2015). *Carbon dioxide reforming of biomass tar using recycled material as catalyst supports*. Paper presented at the Asia Pacific Confederation of Chemical Engineering Congress. <http://search.informit.com.au/documentSummary;dn=732149469598522;res=IELENG>
- Snæbjörnsdóttir, S. Ó., & Gislason, S. R. (2016). CO₂ Storage Potential of Basaltic Rocks Offshore Iceland. *Energy Procedia*, 86, 371-380. doi:<https://doi.org/10.1016/j.egypro.2016.01.038>
- Snæbjörnsdóttir, S. Ó., Gislason, S. R., Galeczka, I. M., & Oelkers, E. H. (2018). Reaction path modelling of in-situ mineralisation of CO₂ at the CarbFix site at Hellisheiði, SW-Iceland. *Geochimica Et Cosmochimica Acta*, 220, 348-366. doi:<https://doi.org/10.1016/j.gca.2017.09.053>
- Snæbjörnsdóttir, S. Ó., Oelkers, E. H., Mesfin, K., Aradóttir, E. S., Dideriksen, K., Gunnarsson, I., . . . Gislason, S. R. (2017). The chemistry and saturation states of subsurface fluids during the in situ mineralisation of CO₂ and H₂S at the CarbFix site in SW-Iceland. *International Journal of Greenhouse Gas Control*, 58, 87-102. doi:<https://doi.org/10.1016/j.ijggc.2017.01.007>
- Snæbjörnsdóttir, S. Ó., Sigfusson, B., Marieni, C., Goldberg, D., Gislason, S. R., & Oelkers, E. H. (2020). Carbon dioxide storage through mineral carbonation. *Nature Reviews Earth & Environment*. doi:10.1038/s43017-019-0011-8
- Snæbjörnsdóttir, S. Ó., Wiese, F., Fridriksson, T., Ármannsson, H., Einarsson, G. M., & Gislason, S. R. (2014). CO₂ storage potential of basaltic rocks in Iceland and the oceanic ridges.

- Energy Procedia*, 63, 4585-4600. doi:<https://doi.org/10.1016/j.egypro.2014.11.491>
- Sneath, H., Wingate, J., Hutchings, T., & De Leij, F. (2009). Remediation of metal, arsenic and phenanthrene contaminated soil using charcoal and iron filings. *Geochimica Et Cosmochimica Acta*, 73, A1243-A1243.
- Sneath, H. E., Hutchings, T. R., & de Leij, F. A. A. M. (2013). Assessment of biochar and iron filing amendments for the remediation of a metal, arsenic and phenanthrene co-contaminated spoil. *Environmental Pollution*, 178, 361–366. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0269749113001267>
- Sneath, S. (2017). Here's how engineers are trying to hack climate change. *New Orleans Times-Picayune*. Retrieved from http://www.nola.com/environment/index.ssf/2017/03/can_geo-engineering_save_the_p.html
- Sneed, A. (2020). Could Our Energy Come from Giant Seaweed Farms in the Ocean? *Scientific American*. Retrieved from https://www.scientificamerican.com/article/could-our-energy-come-from-giant-seaweed-farms-in-the-ocean/?utm_source=newsletter&utm_medium=email&utm_campaign=earth&utm_content=link&utm_term=2020-03-18_top-stories&spMailingID=64329550&spUserID=NTY1OTMzMTQ5OAS2&spJobID=1842236072&spReportId=MTg0MjIzMjA3MgS2
- Snippe, J., & Tucker, O. (2014). CO₂ Fate Comparison for Depleted Gas Field and Dipping Saline Aquifer. *Energy Procedia*, 63, 5586-5601. doi:<https://doi.org/10.1016/j.egypro.2014.11.592>
- Snowdon, R. (2021). Drax to double biomass production with £436m deal to slash carbon emissions. *Yorkshire Post*. Retrieved from <https://www.yorkshirepost.co.uk/business/drax-double-biomass-production-ps436m-deal-slash-carbon-emissions-3127244>
- Snyder, B. (2019). NETs Offering New Opportunities for Negative Emissions. *Sustainable Brands*. Retrieved from <https://sustainablebrands.com/read/cleantech/nets-offering-new-opportunities-for-negative-emissions>
- Snyder, B. F. (2019). Beyond the social cost of carbon: Negative emission technologies as a means for biophysically setting the price of carbon. *Ambio*. doi:[10.1007/s13280-019-01301-y](https://doi.org/10.1007/s13280-019-01301-y)
- Snyder, B. F. (2020). Beyond the social cost of carbon: Negative emission technologies as a means for biophysically setting the price of carbon. *Ambio*, 49(9), 1567-1580. doi:[10.1007/s13280-019-01301-y](https://doi.org/10.1007/s13280-019-01301-y)
- Snyder, C. S., Bruulsema, T. W., Jensen, T. L., & Fixen, P. E. (2009). Review of greenhouse gas emissions from crop production systems and fertilizer management effects. *Agriculture, Ecosystems & Environment*, 133(3–4), 247-266. doi:<http://dx.doi.org/10.1016/j.agee.2009.04.021>
- Sobek, A., Stamm, N., & Bucheli, T. D. (2014). Sorption of Phenyl Urea Herbicides to Black Carbon. *Environmental Science & Technology*, 43(21), 8147-8152. Retrieved from <http://pubs.acs.org/doi/pdf/10.1021/es901737f>
- Society, A. P. (2011). *Direct Air Capture of CO₂ with Chemicals*. Retrieved from <https://www.aps.org/policy/reports/assessments/upload/dac2011.pdf>
- Society, M. C., & Britain, R. (2021). *Blue carbon Ocean-based solutions to fight the climate crisis*. Retrieved from
- Society, T. R. (2018). *Greenhouse Gas Removal*. Retrieved from <https://royalsociety.org/~media/project/greenhouse-gas-removal/royal-society-greenhouse-gas-removal-report-2018.pdf>
- Söderberg, C. (2013). *Effects of biochar amendment in soils from Kisumu, Kenya*. (Biology). Swedish University of Agricultural Sciences, Uppsala. Retrieved from http://stud.epsilon.slu.se/5218/1/soderberg_c_130124.pdf

- Söderberg, C., & Eckerberg, K. (2013). Rising policy conflicts in Europe over bioenergy and forestry. *Forest Policy and Economics*, 33, 112-119. doi:<http://dx.doi.org/10.1016/j.fopol.2012.09.015>
- Sohaimi, K. S. A., & Ngadi, N. (2016). Removal of Oil Using Activated Carbon from Textile Sludge Biochars. *Applied Mechanics and Materials*, 818, 237 - 241. doi:[10.4028/www.scientific.net/AMM.818.237](https://www.scientific.net/AMM.818.237)
- Sohaimi, K. S. A., Ngadi, N., & Yacob, N. A. N. (2014). SYNTHESIS AND CHARACTERIZATION OF BIOCHARS FROM TEXTILE SLUDGE PRECURSORS. In Sohi, S., et al. (2009). *Biochar, climate change and soil: a review to guide future research*. Retrieved from <https://publications.csiro.au/publications/publication/PIprocite:2ae8f78c-4b7e-4dfa-adbb-22d4b8385adb>
- Sohi, S. (2013). Pyrolysis bioenergy with biochar production – greater carbon abatement and benefits to soil. *GCB Bioenergy*, 5(2), i-iii. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/gcbb.12057/full>
- Sohi, S., Gaunt, J., & Atwood, J. (2013). *Biochar in growing media: A sustainability and feasibility assessment*. Defra.
- Sohi, S., Lopez-Capel, E., Krull, E., & Bol, R. (2009). *Biochar, climate change and soil: A review to guide future research* (CSIRO Land and Water Science Report series ISSN: 1834-6618). Retrieved from http://s3.amazonaws.com/academia.edu.documents/46053906/Biochar_Climate_Change_and_Soil_A_Review20160529-723-l3ub64.pdf?AWSAccessKeyId=AKIAIWOWYYGZ2Y53UL3A&Expires=1485140883&Signature=RZ6csTq09QSkWq%2F8Nbc2QyvJn4U%3D&response-content-disposition=inline%3B%20filename%3DBiochar_climate_change_and_soil_A_review.pdf
- Sohi, S. P. (2012). Carbon Storage with Benefits. *Science*, 338(6110), 1034-1035. doi:[10.1126/science.1225987](https://doi.org/10.1126/science.1225987)
- Sohi, S. P. (2013). Pyrolysis bioenergy with biochar production-greater carbon abatement and benefits to soil. *GCB Bioenergy*, 5(2), i-iii. doi:[10.1111/gcbb.12057](https://doi.org/10.1111/gcbb.12057)
- Sohi, S. P., Krull, E., Lopez-Capel, E., & Bol, R. (2010). Chapter 2 - A Review of Biochar and Its Use and Function in Soil. In *Advances in Agronomy* (Vol. 105, pp. 47-82): Academic Press.
- Sohi, S. P., Krull, E., Lopez-Capel, E., & Bol, R. (2010). A review of biochar and its use and function in soil. *Advances in Agronomy*, 105, 47-82. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0065211310050029>
- Sohnen, B., & Mendelsohn, R. (2003). An Optimal Control Model of Forest Carbon Sequestration. *American Journal of Agricultural Economics*, 85(2), 448. Retrieved from <https://academic.oup.com/ajae/article/85/2/448/122256/An-Optimal-Control-Model-of-Forest-Carbon>
- Sohnen, B., & Sedjo, R. (2006). Carbon Sequestration in Global Forests Under Different Carbon Price Regimes. *The Energy Journal*, 27, 109-126. Retrieved from http://www.jstor.org/stable/23297078?seq=1#page_scan_tab_contents
- Soimakallio, S. (2014). Toward a More Comprehensive Greenhouse Gas Emissions Assessment of Biofuels: The Case of Forest-Based Fischer-Tropsch Diesel Production in Finland. *Environmental Science & Technology*, 48(5), 3031-3038. doi:[10.1021/es405792j](https://doi.org/10.1021/es405792j)
- Soimakallio, S., Kalliokoski, T., Lehtonen, A., & Salminen, O. (2021). On the trade-offs and synergies between forest carbon sequestration and substitution. *Mitigation and Adaptation Strategies for Global Change*, 26(1), 4. doi:[10.1007/s11027-021-09942-9](https://doi.org/10.1007/s11027-021-09942-9)
- Soimakallio, S., Saikku, L., Valsta, L., & Pingoud, K. (2016). Climate Change Mitigation Challenge for Wood Utilization—The Case of Finland. *Environmental Science & Technology*, 50(10), 5127-5134. doi:[10.1021/acs.est.6b00122](https://doi.org/10.1021/acs.est.6b00122)

- Soinne, H., et al. . (2014). Effect of biochar on phosphorus sorption and clay soil aggregate stability. *Geoderma*, 219–220, 162-167. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0016706113004503>
- Sokchea, H., Borin, K., & Preston, T. (2016). Carry-over effects of biochar on yield of Mustard Green vegetable (*Brassica juncea*) and on soil fertility. *Livestock Research for Rural Development*, 27(9). Retrieved from <http://www.lrrd.org/lrrd27/9/sock27184.html>
- Sokchea, H., & Preston, T. (2011). Growth of maize in acid soil amended with biochar, derived from gasifier reactor and gasifier stove, with or without organic fertilizer (biodigester effluent). *Livestock Research for Rural Development*, 23(4), Article 69. Retrieved from <http://www.lrrd.org/lrrd23/4/sokc23069.htm>
- Sokolov, S., & Rintoul, S. R. (2007). On the relationship between fronts of the Antarctic Circumpolar Current and surface chlorophyll concentrations in the Southern Ocean. *Journal of Geophysical Research: Oceans*, 112(C7), n/a-n/a. doi:10.1029/2006JC004072
- Solaiman, Z. M., & Anawar, H. M. (2015). Application of Biochars for Soil Constraints: Challenges and Solutions. *Pedosphere*, 25(5), 631 - 638. doi:10.1016/s1002-0160(15)30044-8
- Solaiman, Z. M., Blackwell, P., Abbott, L. K., & Storer, P. (2010). Direct and residual effect of biochar application on mycorrhizal root colonisation, growth and nutrition of wheat. *Australian Journal of Soil Research*, 48(6), 546-554. Retrieved from https://www.researchgate.net/publication/201910205_Direct_and_residual_effect_of_biochar_application_on_mycorrhizal_root_colonisation_growth_and_nutrition_of_wheat
- Solano Rodriguez, B., Drummond, P., & Ekins, P. (2017). Decarbonizing the EU energy system by 2050: an important role for BECCS. *Climate Policy*, 17(sup1), S93-S110. doi:10.1080/14693062.2016.1242058
- Solomon, D., et al. (2005). Carbon K-Edge NEXAFS and FTIR-ATR Spectroscopic Investigation of Organic Carbon Speciation in Soils. *Soil Science Society of America Journal*, 69(1), 107-119. Retrieved from <https://dl.sciencesocieties.org/publications/ssaj/abstracts/69/1/0107>
- Solomon, D., et al. . (2007). Long-term Impacts of Anthropogenic Perturbations on the Dynamics and Molecular Speciation of Organic Carbon in Tropical Forest and Subtropical Grassland Ecosystems. *Global Change Biology*, 13(2), 511-530. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2486.2006.01304.x/abstract>
- Solomon, D., et al. . (2007). Molecular Signature and Sources of Biochemical Recalcitrance of Organic C in Amazonian Dark Earths. *Geochimica Et Cosmochimica Acta*, 71(9), 2285-2298. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0016703707001007>
- Solomon, D., Lehmann, J., Fraser, J. A., Leach, M., Amanor, K., Frausin, V., . . . Fairhead, J. (2016). Indigenous African soil enrichment as a climate-smart sustainable agriculture alternative. *Frontiers in Ecology and the Environment*, 14(2), 71-76. doi:10.1002/fee.1226
- Solomon, D., Lehmann, J., & Zech, W. (2000). Land Use Effects on Soil Organic Matter Properties of Chromic Luvisols in the Semiarid Tropics: Carbon, Nitrogen, Lignin and Carbohydrates. *Agriculture, Ecosystems and Environment*, 78, 203-213. Retrieved from <https://pdfs.semanticscholar.org/abad/5da24db8c999333c4e65ed1d654bb6a812e9.pdf>
- Solomon, S., & Flach, T. (2010). Carbon dioxide (CO₂) injection processes and technology A2 - Maroto-Valer, M. Mercedes. In *Developments and Innovation in Carbon Dioxide (CO₂) Capture and Storage Technology* (Vol. 1, pp. 435-466): Woodhead Publishing.
- Soltanian, M. R., & Dai, Z. (2017). Geologic CO₂ sequestration: progress and challenges.

- Geomechanics and Geophysics for Geo-Energy and Geo-Resources*, 3(3), 221-223.
doi:10.1007/s40948-017-0066-2
- Soltoff, B. (2021). Want to get serious on net zero? Look to the startups. *GreenBiz*. Retrieved from [https://www.greenbiz.com/article/want-get-serious-netzero-look-startups?utm_source=newsletter&utm_medium=email&utm_campaign=greenbuzz&utm_content=2021-08-09&mkt_tok=MjExLU5KWS0xNjUAAAF-yftloqTiOmcoQBsM5PJlqo9scLLoUuV675bVsLZDyW5BD9Z3DeelX82RHOTOZvSk-FChnLdzbrDNOKOhBxF9ZEIuD0s8et6_Y1NnF6Dk_Dy_mhs](https://www.greenbiz.com/article/want-get-serious-net-zero-look-startups?utm_source=newsletter&utm_medium=email&utm_campaign=greenbuzz&utm_content=2021-08-09&mkt_tok=MjExLU5KWS0xNjUAAAF-yftloqTiOmcoQBsM5PJlqo9scLLoUuV675bVsLZDyW5BD9Z3DeelX82RHOTOZvSk-FChnLdzbrDNOKOhBxF9ZEIuD0s8et6_Y1NnF6Dk_Dy_mhs)
- Somarriba, E., Cerdá, R., Orozco, L., Cifuentes, M., Dávila, H., Espin, T., . . . Deheuvels, O. (2013). Carbon stocks and cocoa yields in agroforestry systems of Central America. *Agriculture, Ecosystems & Environment*, 173, 46-57. doi:<https://doi.org/10.1016/j.agee.2013.04.013>
- Sombroek, W., et al. (2003). Amazonian Dark Earths as Carbon Stores and Sinks. In J. Lehmann, et al. (Ed.), *Amazonian Dark Earths: Origin, Properties, Management* (pp. 125-139).
- Sombroek, W., Nachtergael, F. O., & Hegel, A. (1993). Amounts, dynamics and sequestering of carbon in tropical and subtropical soil. *Ambio*, 22, 417-426.
- Someus, E. (2015). REFERTIL: reducing mineral fertilizers and chemicals use in agriculture by recycling treated organic waste as compost and bio-char products. In.
- Sommer, R., & Bossio, D. (2014). Dynamics and climate change mitigation potential of soil organic carbon sequestration. *Journal of Environmental Management*, 144, 83-87. doi:<https://doi.org/10.1016/j.jenvman.2014.05.017>
- Sondak, C. F. A., Ang, P. O., Beardall, J., Bellgrove, A., Boo, S. M., Gerung, G. S., . . . Chung, I. K. (2017). Carbon dioxide mitigation potential of seaweed aquaculture beds (SABs). *Journal of Applied Phycology*, 29(5), 2363-2373. doi:10.1007/s10811-016-1022-1
- Sondak, C. F. A., & Chung, I. K. (2015). Potential blue carbon from coastal ecosystems in the Republic of Korea. *Ocean Science Journal*, 50(1), 1-8. doi:10.1007/s12601-015-0001-9
- Song, J., Liu, J., Zhao, W., Chen, Y., Xiao, H., Shi, X., . . . Chen, X. (2018). Quaternized Chitosan/PVA Aerogels for Reversible CO₂ Capture from Ambient Air. *Industrial & Engineering Chemistry Research*. doi:10.1021/acs.iecr.8b00064
- Song, J. Z., Peng, P. A., & Huang, W. L. (2002). Black carbon and kerogen in soils and sediments. 1. quantification and characterization. *Environmental Science & Technology*, 36(18), 3960-3967. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/es025502m>
- Song, L. (2019). An Even More Inconvenient Truth: Why Carbon Credits For Forest Preservation May Be Worse Than Nothing. Retrieved from <https://features.propublica.org/brazil-carbon-offsets/inconvenient-truth-carbon-credits-dont-work-deforestation-redd-acre-cambodia/>
- Song, L., & Temple, J. (2021). The Climate Solution Actually Adding Millions of Tons of CO₂ Into the Atmosphere. Retrieved from <https://www.propublica.org/article/the-climate-solution-actually-adding-millions-of-tons-of-co2-into-the-atmosphere>
- Song, M., Pham, H. D., Seon, J., & Woo, H. C. (2015). Overview of anaerobic digestion process for biofuels production from marine macroalgae: A developmental perspective on brown algae. *Korean Journal of Chemical Engineering*, 32(4), 567-575. doi:10.1007/s11814-015-0039-5
- Song, W., & Guo, M. (2011). Quality variations of poultry litter biochar generated at different pyrolysis temperatures. *Journal of Analytical and Applied Pyrolysis*, 94, 138-145. Retrieved from <http://dx.doi.org/10.1016/j.jaat.2011.11.018>
- Song, W., Ogunbanwo, F., Steinsbø, M., Fernø, M. A., & Kovscek, A. R. (2018). Mechanisms of multiphase reactive flow using biogenically calcite-functionalized micromodels. *Lab on a Chip*, 18(24), 3881-3891. doi:10.1039/C8LC00793D

- Song, X., Pan, G., zhang, C., Zhang, L., & Wang, H. (2016). Effects of biochar application on fluxes of three biogenic greenhouse gases: a meta-analysis. *Ecosystem Health and Sustainability*, 2(2), n/a - n/a. doi:10.1002/ehs2.1202
- Song, X. D. e. a. (2014). Application of biochar from sewage sludge to plant cultivation: Influence of pyrolysis temperature and biochar-to-soil ratio on yield and heavy metal accumulation. *Chemosphere*, 109, 213-220. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/24582602>
- Song, Y., et al. . (2012). Bioavailability assessment of hexachlorobenzene in soil as affected by wheat straw biochar. *Journal of Hazardous Materials*, 217-218, 391-397. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/22483599>
- Song, Y., et al. (2013). Biochar addition affected the dynamics of ammonia oxidizers and nitrification in microcosms of a coastal alkaline soil. *Biology and Fertility of Soils*, 50(2), 321-332. Retrieved from <https://link.springer.com/article/10.1007/s00374-013-0857-8>
- Song, Y., et al. . (2013). Immobilization of Chlorobenzenes in Soil Using Wheat Straw Biochar. *Journal of Agricultural and Food Chemistry*, 61(18), 4210-4217. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/jf400412p>
- Song, Z., et al. (2014). Synthesis and characterization of a novel MnOx-loaded biochar and its adsorption properties for Cu²⁺ in aqueous solution. *Chemical Engineering Journal*, 242, 36-42. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1385894713016422>
- Soni, N., Leon, R. G., Erickson, J. E., Ferrell, J. A., & Silveira, M. L. (2015). Biochar Decreases Atrazine and Pendimethalin Preemergence Herbicidal Activity. *Weed Technology*, 29(3), 359-366. doi:10.1614/wt-d-14-00142.1
- Soni, N., Leon, R. G., Erickson, J. E., Ferrell, J. A., Silveira, M. L., & Giurcanu, M. C. (2014). Vinasse and Biochar Effects on Germination and Growth of Palmer Amaranth (*Amaranthus palmeri*), Sicklepod (*Senna obtusifolia*), and Southern Crabgrass (*Digitaria ciliaris*). *Weed Technology*, 28(4), 694 - 702. doi:10.1614/wt-d-14-00044.1
- Sonntag, S., Pongratz, J., Reick, C. H., & Schmidt, H. (2016). Reforestation in a high-CO₂ world—Higher mitigation potential than expected, lower adaptation potential than hoped for. *Geophysical Research Letters*, 43(12), 6546-6553. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/2016GL068824/epdf>
- Sonoki, T., et al. (2012). Influence of biochar addition on methane metabolism during thermophilic phase of composting. *Journal of Basic Microbiology*, 53(7), 617-621. doi:10.1002/jobm.201200096
- Sopeña, F., et al. (2012). Assessing the chemical and biological accessibility of the herbicide isoproturon in soil amended with biochar. *Chemosphere*, 88(1), 77-83. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/22464863>
- Sopeña, F., & Bending, G. D. (2013). Impacts of biochar on bioavailability of the fungicide azoxystrobin: A comparison of the effect on biodegradation rate and toxicity to the fungal community. *Chemosphere*, 91(11), 1525-1533. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0045653512015329>
- Sorda, G., Banse, M., & Kemfert, C. (2010). An overview of biofuel policies across the world. *Energy Policy*, 38(11), 6977-6988. doi:<https://doi.org/10.1016/j.enpol.2010.06.066>
- Soria, A. J., McDonald, A. G., & Shook, S. R. (2008). Wood solubilization and depolymerization using supercritical methanol. part 1: Process optimization and analysis of methanol insoluble components (bio-char). *Holzforschung*, 62(4), 402-408. Retrieved from <https://www.degruyter.com/downloadpdf/j/hfsg.2008.62.issue-4/hf.2008.067/hf.2008.067.pdf>
- Soto-Navarro, C., et al. (2020). Mapping co-benefits for carbon storage and biodiversity to inform conservation policy and action. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 375(1794), 20190128. doi:doi:10.1098/rstb.2019.0128

- Soudek, P., Petrová, Š., & Vaněk, T. (2014). Increase of Metal Accumulation in Plants Grown on Biochar–Biochar Ecotoxicity for Germinating Seeds. *International Journal of Environmental Science and Development*, 6(7), 508-511. doi:10.7763/ijesd.2015.v6.646
- Soudek, P., Rodriguez Valseca, I. M., Petrova, S., & Vanek, T. (2014). The accumulation of heavy metals by Sorghum plants cultivated in biochar present. In Z. Hu (Ed.), *Legislation, Technology and Practice of Mine Land Reclamation* (pp. 183-187).
- Sousa, A. A. T. C., & Figueiredo, C. C. (2015). Sewage sludge biochar: effects on soil fertility and growth of radish. *Biological Agriculture & Horticulture*, 32(2), 1 - 12. doi:10.1080/01448765.2015.1093545
- Soussana, J.-F., et al. (2017). Matching policy and science: Rationale for the '4 per 1000 - soils for food security and climate' initiative. *Soil Tillage Research*, 188, 3-15. Retrieved from <https://cgspace.cgiar.org/handle/10568/93146>
- Southavong, S., & Preston, T. R. (2011). Growth of rice in acid soils amended with biochar from gasifier or TLUD stove, derived from rice husks, with or without biodigester effluent. *Livestock Research for Rural Development*, 23(2). Retrieved from <http://www.lrrd.org/lrrd23/2/siso23032.htm>
- Southavong, S., Preston, T. R., & Man, N. V. (2012). Effect of biochar and charcoal with staggered application of biodigester effluent on growth of water spinach (*Ipomoea aquatica*). *Livestock Research for Rural Development*, 24(2). Retrieved from <http://www.lrrd.org/lrrd24/2/siso24039.htm>
- Souza, G. M., et al. (2015). *Bioenergy & Sustainability: Bridging the Gaps*. Retrieved from http://bioenfapesp.org/scopebioenergy/images/chapters/bioen-scope_introducao.pdf
- Souza, G. M., Ballester, M. V. R., de Brito Cruz, C. H., Chum, H., Dale, B., Dale, V. H., . . . Van der Wielen, L. (2017). The role of bioenergy in a climate-changing world. *Environmental Development*, 23, 57-64. doi:<https://doi.org/10.1016/j.envdev.2017.02.008>
- Sovacool, B. K. (2021). Reckless or righteous? Reviewing the sociotechnical benefits and risks of climate change geoengineering. *Energy Strategy Reviews*, 35, 100656. doi:<https://doi.org/10.1016/j.esr.2021.100656>
- Sovu, T., M., Savadago, P., & Odén, P. C. (2012). Facilitation of forest landscape restoration on abandoned swidden fallows in Laos using mixed-species planting and biochar application. *Silva Fennica*, 46, 39–51. Retrieved from <http://www.metla.fi/silvafennica/full/sf46/sf461039.pdf>
- Spaeth, A. (2013). Biochar Policy Analysis. *OPAL- OSU Policy Analysis Laboratory*. Retrieved from http://oregonstate.edu/opal/sites/default/files/biochar_brief.pdf
- Sparkes, J., & Stoutjesdijk, P. (2011). *Biochar: implications for agricultural productivity*. Retrieved from https://www.researchgate.net/profile/Jessica_Sparkes2/publication/237079673_B_iocchar_implications_for_agricultural_productivity/links/5441e04e0cf2e6f0c0f667bf/B-iocchar-implications-for-agricultural-productivity.pdf
- Sparks, D. (2021). Carbon sequestration. Retrieved from <https://www.aginfo.net/report/48491/Line-on-Agriculture/Carbon-sequestration>
- Sparrevik, M., et al. (2012). Life cycle assessment to evaluate the environmental impact of biochar implementation in conservation agriculture in Zambia. *Environmental Science & Technology*, 47(3), 1206-1215. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/es302720k>
- Sparrevik, M., et al. . (2014). Emissions of gases and particles from charcoal/biochar production in rural areas using medium-sized traditional and improved “retort” kilns. *Biomass and Bioenergy*, 72, 65-73. doi:10.1016/j.biombioe.2014.11.016
- Sparrevik, M., et al. . (2014). Environmental and socio-economic impacts of utilizing waste for biochar in rural areas in Indonesia – a systems perspective. *Environmental Science & Technology*, 48(9), 4664-4671. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/>

es405190q

- Spatari, S., Zhang, Y., & MacLean, H. L. (2005). Life Cycle Assessment of Switchgrass- and Corn Stover-Derived Ethanol-Fueled Automobiles. *Environmental Science & Technology*, 39(24), 9750-9758. doi:10.1021/es048293+
- Specter, M. (2012). The First Geo-Vigilante. *The New Yorker*, (October 18). Retrieved from <http://www.newyorker.com/news/news-desk/the-first-geo-vigilante>
- Spector, N. A., & Dodge, B. F. (1946). Removal of carbon dioxide from atmospheric air. *Trans. Am. Inst. Chem. Eng.*, 42(56), 827-848.
- Spence, E., Cox, E., & Pidgeon, N. (2021). Exploring cross-national public support for the use of enhanced weathering as a land-based carbon dioxide removal strategy. *Climatic Change*, 165(1), 23. doi:10.1007/s10584-021-03050-y
- Spohn, M. (2020). Increasing the organic carbon stocks in mineral soils sequesters large amounts of phosphorus. *Global Change Biology*, 26(8), 4169-4177. doi:10.1111/gcb.15154
- Spokas, K. (2011). *Impacts of biochar additions on soil microbial processes and nitrogen cycling*. Paper presented at the HUMICSCIENCE & TECHNOLOGY FOURTEEN March 9-11, 2011, Boston, MA. http://afrsweb.usda.gov/SP2UserFiles/person/41695/Presentations/Spokas_March2011.pdf
- Spokas, K. A. (2010). Review of the stability of biochar in soils: predictability of O:C molar ratios. *Carbon Management*, 1, 289–303. Retrieved from <http://www.future-science.com/doi/pdfplus/10.4155/cmt.10.32>
- Spokas, K. A. (2013). Impact of biochar field aging on laboratory greenhouse gas production potentials. *GCB Bioenergy*, 5(2), 165-176. doi:10.1111/gcbb.12005
- Spokas, K. A., et al. , & . (2014). Manure and fertilizer effects on carbon balance and organic and inorganic carbon losses for an irrigated corn field. *NWISRL Publications*, 987-1002. Retrieved from <http://eprints.nwisrl.ars.usda.gov/1547/>
- Spokas, K. A., Baker, J. M., & Reicosky, D. C. (2010). Ethylene: potential key for biochar amendment impacts. *Plant and Soil*, 333, 443-452. doi:10.1007/s11104-010-0359-5.
- Spokas, K. A., Cantrell, K. B., Novak, J. M., Archer, D. W., Ippolito, J. A., Collins, H. P., . . . Nichols, K. A. (2012). Biochar: A synthesis of its agronomic impact beyond carbon sequestration. *Journal of Environmental Quality*, 41(4), 973-989. doi:10.2134/jeq2011.0069
- Spokas, K. A., Koskinen, W. C., Baker, J. M., & Reicosky, D. C. (2009). Impacts of woodchip biochar additions on greenhouse gas production and sorption/degradation of two herbicides in a Minnesota soil. *Chemosphere*, 77(4), 574–581. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0045653509007619>
- Spokas, K. A., & Reicosky, D. C. (2009). Impacts of Sixteen Different Biochars on Soil Greenhouse Gas Production. *Annals of Environmental Science*, 3, 179-193. Retrieved from <https://pubag.nal.usda.gov/pubag/downloadPDF.xhtml?id=47667&content=PDF>
- Spreng, D., Marland, G., & Weinberg, A. M. (2007). CO₂ capture and storage: anotehr Faustian Bargain? *Energy Policy*, 35, 850-854. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.508.375&rep=rep1&type=pdf>
- Sreedhar, I., Nahar, T., Venugopal, A., & Srinivas, B. (2017). Carbon capture by absorption – Path covered and ahead. *Renewable and Sustainable Energy Reviews*, 76, 1080-1107. doi:<https://doi.org/10.1016/j.rser.2017.03.109>
- Srinivasan, P., & Sarmah, A. K. (2014). Characterisation of agricultural waste-derived biochars and their sorption potential for sulfamethoxazole in pasture soil: A spectroscopic investigation. *Science of The Total Environment*, 502, 471 - 480. doi:10.1016/j.scitotenv.2014.09.048
- Srinivasan, P., Sarmah, A. K., Smernik, R., Das, O., Farid, M., & Gao, W. (2015). A feasibility

- study of agricultural and sewage biomass as biochar, bioenergy and biocomposite feedstock: Production, characterization and potential applications. *Science of The Total Environment*, 512-513, 495 - 505. doi:10.1016/j.scitotenv.2015.01.068
- Srinivasarao, C., et al. (2013). *Use of Biochar for Soil Health Enhancement and Greenhouse Gas Mitigation in India:Potential and Constraints*. Retrieved from Hyderabad: <http://www.nicra-icar.in/nicrarevised/images/publications/Biochor%20Bulletin.pdf>
- Srinivasagam, K., Selvan, R. K., Natarajan, M., & Karuppasamy, K. S. (2013). Biochar-boon to soil health and crop production. *African Journal of Agricultural Research*, 8, 4726-4739. Retrieved from <http://www.academicjournals.org/aJaR/E-books/2013/3Oct/AJAR-%203October%202013%20Issue.pdf#page=45>
- Stabinsky, D. (2021). "Nature-Based Solutions" and the Biodiversity and Climate Crises. Retrieved from <https://twn.my/title/end/pdf/end21.pdf>
- Staff, C. (2016). Explainer: 10 ways 'negative emissions' could slow climate change. *CarbonBrief*. Retrieved from <https://www.carbonbrief.org/explainer-10-ways-negative-emissions-could-slow-climate-change>
- Staff, D. O. (2020). Amazon invests in green startups to support development of sustainable technologies. Retrieved from https://blog.aboutamazon.com/sustainability/amazon-invests-in-green-startups-to-support-development-of-sustainable-technologies?utm_source=social&utm_medium=tw&utm_term=amznnews&utm_content=climate_pledge_fund&linkId=99838384
- Staff, E. (2020). Pulling carbon from the sky is necessary, but not sufficient. *Nature*, 583(July 9). Retrieved from <https://www.nature.com/articles/d41586-020-02001-4>
- Staff, S. F. (2020). Shopify is First High-Volume Corporate Buyer of Carbon Credits. *Successful Farming*. Retrieved from <https://www.agriculture.com/news/crops/shopify-is-first-high-volume-corporate-buyer-of-carbon-credits>
- Stainforth, D. (2021). 'Polluter pays' policy could speed up emission reductions and removal of atmospheric CO₂. *Nature* Retrieved from <https://www.nature.com/articles/d41586-021-02192-4>
- Stallard, R. F., & Edmond, J. M. (1983). Geochemistry of the Amazon: 2. The influence of geology and weathering environment on the dissolved load. *Journal of Geophysical Research: Oceans*, 88(C14), 9671-9688. doi:10.1029/JC088iC14p09671
- Stampi-Bombelli, V., van der Spek, M., & Mazzotti, M. (2020). Analysis of direct capture of CO₂ from ambient air via steam-assisted temperature–vacuum swing adsorption. *Adsorption*, 26(7), 1183-1197. doi:10.1007/s10450-020-00249-w
- Standish, R. J., & Hulvey, K. B. (2014). Co-benefits of planting species mixes in carbon projects. *Ecological Management & Restoration*, 15(1), 26-29. Retrieved from <https://www.cabdirect.org/cabdirect/abstract/20143087975>
- Stangeland, A. (2007). A model for the CO₂ capture potential. *International Journal of Greenhouse Gas Control*, 1(4), 418-429. doi:[http://dx.doi.org/10.1016/S1750-5836\(07\)00087-4](http://dx.doi.org/10.1016/S1750-5836(07)00087-4)
- Stanger, R., et al. (2013). Dynamic Elemental Thermal Analysis (DETA) – A characterisation technique for the production of biochar and bio-oil from biomass resources. *Fuel*, 108, 656-667. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0016236113001671>
- Stanger, R., Wall, T., Spörl, R., Paneru, M., Grathwohl, S., Weidmann, M., . . . Santos, S. (2015). Oxyfuel combustion for CO₂ capture in power plants. *International Journal of Greenhouse Gas Control*, 40, 55-125. doi:<https://doi.org/10.1016/j.ijggc.2015.06.010>
- Stankiewicz, K. (2021). Planting trees is not enough, says Logitech CEO, pledging major carbon reduction effort. Retrieved from <https://www.cnbc.com/2021/09/09/planting-trees-not-enough-to-reduce-carbon-emissions-logitech-ceo.html>

- Stanley, P. L., Rowntree, J. E., Beede, D. K., DeLonge, M. S., & Hamm, M. W. (2018). Impacts of soil carbon sequestration on life cycle greenhouse gas emissions in Midwestern USA beef finishing systems. *Agricultural Systems*, 162, 249-258. doi:<https://doi.org/10.1016/j.agrsy.2018.02.003>
- Stanmore, B. R., & Gilot, P. (2005). Review—calcination and carbonation of limestone during thermal cycling for CO₂ sequestration. *Fuel Processing Technology*, 86(16), 1707-1743. doi:<https://doi.org/10.1016/j.fuproc.2005.01.023>
- Stanton, C. Y., Mach, K. J., Turner, P. A., Lalonde, S. J., Sanchez, D. L., & Field, C. B. (2018). Managing cropland and rangeland for climate mitigation: an expert elicitation on soil carbon in California. *Climatic Change*, 147(3), 633-646. doi:[10.1007/s10584-018-2142-1](https://doi.org/10.1007/s10584-018-2142-1)
- Stanton, T. P., Law, C. S., & Watson, A. J. (1998). Physical evolution of the IronEx-I open ocean tracer patch. *Deep Sea Research Part II: Topical Studies in Oceanography*, 45(6), 947-975. doi:[https://doi.org/10.1016/S0967-0645\(98\)00018-6](https://doi.org/10.1016/S0967-0645(98)00018-6)
- Stars, I. (2021). *Catalytic Capital for Ocean & Climate Impact*. Retrieved from https://www.impactstars.com/ocean-climate-catalytic-capital-august-2021-pdf?ss_source=sscampaigns&ss_campaign_id=6127348aa895eb29f46b6c27&ss_email_id=612ab7492a6849258c94bd97&ss_campaign_name=As+Requested%3A+Catalytic+Capital+for+Ocean+%2B+Climate+Impact+Report&ss_campaign_sent_date=2021-08-28T22%3A23%3A11Z
- Stars, I. (2021). *Foundations Catalyzing Regenerative Ag + Food Systems*. Retrieved from <https://www.impactstars.com/funders-for-regenerative-agriculture>
- Stattman, S. L., & Mol, A. P. J. (2014). Social sustainability of Brazilian biodiesel: The role of agricultural cooperatives. *Geoforum*, 54, 282-294. doi:<https://doi.org/10.1016/j.geoforum.2014.04.001>
- Stavi, I. (2013). Biochar use in forestry and tree-based agro-ecosystems for increasing climate change mitigation and adaptation. *International Journal of Sustainable Development & World Ecology*, 20(2), 166-181. Retrieved from <http://www.tandfonline.com/doi/pdf/10.1080/13504509.2013.773466?needAccess=true>
- Stavi, I., & Lal, R. (2012). Agroforestry and biochar to offset climate change: a review. *Biomedical and Life Sciences Agronomy for Sustainable Development*, 33(1), 81-96. doi:[10.1007/s13593-012-0081-1](https://doi.org/10.1007/s13593-012-0081-1)
- Stavia, I. (2012). The potential use of biochar in reclaiming degraded rangelands. *Journal of Environmental Planning and Management*, 55(5), 657-665. doi:[10.1080/09640568.2011.620333](https://doi.org/10.1080/09640568.2011.620333)
- Stavrakas, V., Spyridaki, N.-A., & Flamos, A. (2018). Striving towards the Deployment of Bio-Energy with Carbon Capture and Storage (BECCS): A Review of Research Priorities and Assessment Needs. 10(7), 2206. Retrieved from <http://www.mdpi.com/2071-1050/10/7/2206>
- Stechel, E. B., & Miller, J. E. (2013). Re-energizing CO₂ to fuels with the sun: Issues of efficiency, scale, and economics. *Journal of CO₂ Utilization*, 1, 28-36. doi:<http://dx.doi.org/10.1016/j.jcou.2013.03.008>
- Stechow, C. v. (2016). 2 °C and SDGs: united they stand, divided they fall? *Environmental Research Letters*, 11(3), 034022. Retrieved from <http://stacks.iop.org/1748-9326/11/i=3/a=034022>
- Stein, R. S., & Wysocki, T. S. (2015). Curing Sick Soil through Chemistry. In T. Goreau, R. Larson, & J. Campe (Eds.), *Geotherapy: Innovative Methods of Soil Fertility Restoration, Carbon Sequestration, and Reversing CO₂ Increase* (pp. 111-120).
- Steinbeiss, S., Gleixner, G., & Antonietti, M. (2009). Effect of biochar amendment on soil carbon balance and soil microbial activity. *Soil Biology and Biochemistry*, 41(6), 1301-1310. doi:<http://dx.doi.org/10.1016/j.soilbio.2009.03.016>

- Steinberg, P. A., Millero, F. J., & Zhu, X. (1998). Carbonate system response to iron enrichment. *Marine Chemistry*, 62(1), 31-43. doi:[https://doi.org/10.1016/S0304-4203\(98\)00031-0](https://doi.org/10.1016/S0304-4203(98)00031-0)
- Steiner, C., et al. (2004). Microbial response to charcoal amendments of highly weathered soils and Amazonian Dark Earths in central Amazonia. In B. Glaser & W. I. Woods (Eds.), *Amazonian Dark Earths: Explorations in Space and Time*. (pp. 195). Berlin: Springer-Verlag.
- Steiner, C., et al. (2007). Long term effects of manure, charcoal and mineral fertilization on crop production and fertility on a highly weathered Central Amazonian upland soil. *Plant and Soil*, 291(1), 275-290.
- Steiner, C., et al. (2008). Charcoal and smoke extract stimulate the soil microbial community in a highly weathered xanthic ferralsol. *Pedobiologia*, 51(5-6), 359-366. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0031405607000790>
- Steiner, C., et al. (2008). Nitrogen Retention and Plant Uptake on a Highly Weathered Central Amazonian Ferralsol Amended with Compost and Charcoal. *Journal of Plant Nutrition and Soil Science*, 171, 893-899.
- Steiner, C. (2010). Biochar prospects and challenges: summary of the recent US Biochar Initiative Conference. *Carbon Management*, 1(1), 23 - 25. Retrieved from <http://www.future-science.com/doi/pdf/10.4155/cmt.10.3>
- Steiner, C., et al. (2010). Reducing Nitrogen Loss during Poultry Litter Composting Using Biochar. *Journal of Environmental Quality*, 39(4), 1236-1242. doi:[10.2134/jeq2009.0337](https://doi.org/10.2134/jeq2009.0337)
- Steiner, C., et al. (2010). *U.S. Focused Biochar Report: Assessment of Biochar's Benefits for the United States of America*. Retrieved from http://www.biochar-us.org/pdf%20files/biochar_report_lowres.pdf
- Steiner, C., et al. (2011). Biochar as bulking agent for poultry litter composting. *Carbon Management*, Vol. 2, 227-230. doi:[10.4155/cmt.11.15](https://doi.org/10.4155/cmt.11.15)
- Steiner, C. (2015). Considerations in Biochar Characterization. In M. Guo, Z. He, & M. Uchimiya (Eds.), *Agricultural and Environmental Applications of Biochar: Advances and Barriers* (pp. 87-102): Soil Science Society of America, Inc.
- Steiner, C., Bayode, A. O., & Ralebitso-Senior, T. K. (2016). Chapter 2 - Feedstock and Production Parameters: Effects on Biochar Properties and Microbial Communities. In *Biochar Application* (pp. 41-54): Elsevier.
- Steiner, C., & Hartung, T. (2014). Biochar as growing media additive and peat substitute. *Solid Earth Discussions*, 5(2), 995-999. Retrieved from <http://search.proquest.com/openview/189c150bb08c9c278304537748161c44/1?pq-origsite=gscholar&cbl=2037675>
- Steiner, C., Rodrigues de Arruda, M., Teixeira, W. G., & Zech, W. (2007). Soil respiration curves as soil fertility indicators in perennial central Amazonian plantations treated with charcoal, and mineral or organic fertilisers. *Tropical Science*, 47, 218 - 230. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/ts.216/abstract>
- Steiner, C., Teixeira, W. G., Lehmann, J., Nehls, T., Macedo, J. L. V., Blum, W. E. H., & Zech, W. (2007). Long-Term Effects of Manure, Charcoal and Mineral Fertilization on Crop Production and Fertility on a Highly Weathered Central Amazonian Upland Soil. *Plant and Soil*, 291(1), 275-290. Retrieved from <http://link.springer.com/article/10.1007/s11104-007-9193-9>
- Steiner, N., Denman, K., McFarlane, N., & Solheim, L. (2006). Simulating the coupling between atmosphere-ocean processes and the planktonic ecosystem during SERIES. *Deep Sea Research Part II: Topical Studies in Oceanography*, 53(20–22), 2434-2454. doi:[http://dx.doi.org/10.1016/j.dsr2.2006.05.030](https://doi.org/10.1016/j.dsr2.2006.05.030)
- Stella, M., G., Sugumaran, P., Niveditha, S., Ramalakshmi, B., Ravichandran, P., & Seshadri, S. (2016). Production, characterization and evaluation of biochar from pod (*Pisum sativum*), leaf (*Brassica oleracea*) and peel (*Citrus sinensis*) wastes. *International Journal of*

- Recycling of Organic Waste in Agriculture*, 5(1), 43-53. doi:10.1007/s40093-016-0116-8
- Stengl, S., Koch, C., Stadlbauer, E. A., Scheer, J., Weber, B., Strohal, U., & Fey, J. (2012). *BIOMASS-DERIVED CARBONACEOUS MATERIALS AS COMPONENTS IN WOOD BRIQUETTES*. Paper presented at the WORLD BIOENERGY 2012. http://www.researchgate.net/profile/Sabrina_Eichenauer/publication/273762193_Biomass-derived_carbonaceous_materials_as_components_in_wood-briquettes/links/550af1490cf290bdc11153ac.pdf
- Stenzel, F., Gerten, D., Werner, C., & Jägermeyr, J. (2019). Freshwater requirements of large-scale bioenergy plantations for limiting global warming to 1.5 °C. *Environmental Research Letters*, 14(8), 084001. doi:10.1088/1748-9326/ab2b4b
- Stenzel, F., Greve, P., Lucht, W., Tramberend, S., Wada, Y., & Gerten, D. (2021). Irrigation of biomass plantations may globally increase water stress more than climate change. *Nature Communications*, 12(1), 1512. doi:10.1038/s41467-021-21640-3
- Stepan, D. J., et al. . (2001). *Carbon dioxide sequestering using microalgal systems*. Retrieved from <https://www.osti.gov/servlets/purl/882000>
- Stephens, J. C. (2015). Carbon capture and storage: A controversial climate mitigation approach. *International Spectator*, 50, 74-84. Retrieved from <http://blog.uvm.edu/jstephe1/files/2012/03/Stephens-2015-CCS-A-Controversial-Climate-Mitigation-Approach.pdf>
- Stephens, J. C., Bielicki, J., & Rand, G. M. (2009). Learning about carbon capture and storage: Changing stakeholder perceptions with expert information. *Energy Procedia*, 1(1), 4655-4663. doi:<http://dx.doi.org/10.1016/j.egypro.2009.02.288>
- Stephens, J. C., & Keith, D. W. (2008). Assessing geochemical carbon management. *Climatic Change*, 90(3), 217. doi:10.1007/s10584-008-9440-y
- Stephenson, A. L., & MacKay, D. J. C. (2014). *Life Cycle Impacts of Biomass Electricity in 2020*. Retrieved from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/349024/BEAC_Report_290814.pdf
- Sterman, J. D., Lori, S., & Juliette, N. R.-V. (2018). Does replacing coal with wood lower CO 2 emissions? Dynamic lifecycle analysis of wood bioenergy. *Environmental Research Letters*, 13(1), 015007. Retrieved from <http://stacks.iop.org/1748-9326/13/i=1/a=015007>
- Stern, M. C., Simeon, F., Hammer, T., Landes, H., Herzog, H. J., & Alan Hatton, T. (2011). Electrochemically mediated separation for carbon capture. *Energy Procedia*, 4, 860-867. doi:<https://doi.org/10.1016/j.egypro.2011.01.130>
- Stern, T., et al. (2015). Biorefineries' impacts on the Austrian forest sector: A system dynamics approach. *Technological Forecasting and Social Change*, 91(C), 311-326. Retrieved from <http://www.sciencedirect.com/science/article/pii/S004016251400122X>
- Stevanović, M., Popp, A., Bodirsky, B. L., Humpenöder, F., Müller, C., Weindl, I., . . . Wang, X. (2017). Mitigation Strategies for Greenhouse Gas Emissions from Agriculture and Land-Use Change: Consequences for Food Prices. *Environmental Science & Technology*, 51(1), 365-374. doi:10.1021/acs.est.6b04291
- Stevens, C., Ward, B., Law, C., & Walkington, M. (2011). Surface layer mixing during the SAGE ocean fertilization experiment. *Deep Sea Research Part II: Topical Studies in Oceanography*, 58(6), 776-785. doi:<https://doi.org/10.1016/j.dsrr.2010.10.017>
- Stevens, J. G., Gómez, P., Bourne, R. A., Drage, T. C., George, M. W., & Poliakoff, M. (2011). Could the energy cost of using supercritical fluids be mitigated by using CO₂ from carbon capture and storage (CCS)? *Green Chemistry*, 13(10), 2727-2733. doi:10.1039/C1GC15503B
- Stewart, C., & Hessami, M.-A. (2005). A study of methods of carbon dioxide capture and sequestration—the sustainability of a photosynthetic bioreactor approach. *Energy Conversion and Management*, 46(3), 403-420. doi:<https://doi.org/10.1016/>

j.enconman.2004.03.009

- Stewart, C. E., et al. (2012). Co-generated fast pyrolysis biochar mitigates green-house gas emissions and increases carbon sequestration in temperate soils. *GCB Bioenergy*, 5(2), 153-164. doi:10.1111/gcbb.12001
- Stewart, C. E., Paustian, K., Conant, R. T., Plante, A. F., & Six, J. (2007). Soil carbon saturation: concept, evidence and evaluation. *Biogeochemistry*, 86(1), 19-31. doi:10.1007/s10533-007-9140-0
- Stewart, J. (2020). Advancing Carbon Dioxide Catalysis. *UDaily*. Retrieved from <https://www.udel.edu/udaily/2020/september/feng-jiao-department-energy-funding-carbon-dioxide-removal/>
- Stewart, K. J., & Janin, A. (2014). *Leonardite and biochar for mine impacted water and soils*. Paper presented at the British Columbia Mine Reclamation Symposium. <https://circle.ubc.ca/handle/2429/51130?show=full>
- Stewart, K. J., & Siciliano, S. D. (2015). Potential Contribution of Native Herbs and Biological Soil Crusts to Restoration of the Biogeochemical Nitrogen Cycle in Mining Impacted Sites in Northern Canada. *Ecological Restoration*, 33(1), 30 - 42. doi:10.3368/er.33.1.30
- Stewart, M. (2014). *Removal of Organic and Inorganic Contaminants from Oil Sands Tailings using Carbon Based Adsorbents and Native Sediment*. University of Alberta, Retrieved from https://era.library.ualberta.ca/public/view/item/uuid:11771ad2-e7a0-45d2-8f71-6f2991cbc949/DS1/Stewart_Matthew_Fall%20202013.pdf
- Stewart, R. J., & Haszeldine, R. S. (2015). Can Producing Oil Store Carbon? Greenhouse Gas Footprint of CO2EOR, Offshore North Sea. *Environmental Science & Technology*, 49(9), 5788-5795. doi:10.1021/es504600q
- Stiffler, L. (2020). Climate change reversal startup Nori raises \$4M for its CO2 offsets marketplace. *Geek Wire*. Retrieved from <https://www.geekwire.com/2020/climate-change-reversal-startup-nori-raises-4m-co2-offsets-marketplace/>
- Stiffler, L. (2021). As worries spark over the carbon impacts of NFTs, some unexpected boosters come to their defense. *Geek Wire*. Retrieved from https://www.geekwire.com/2021/worries-spark-carbon-impacts-nfts-unexpected-boosters-come-defense/?utm_medium=email&_hsmi=118979859&_hsenc=p2ANqtz-9my6XPl6aeTl8pGFTaEIL1AcOwLW6R0mOhyW2HfniJ3xaMX7EJsi-lw6manc0YvnrQYbZA4DhfV5jnp1XtmFFrY11OUg&utm_content=118980047&utm_source=hs_email
- Stigson, P., Haikola, S., Hansson, A., & Buhr, K. (2016). Prospects for Swedish acceptance of carbon dioxide storage in the Baltic Sea: Learning from other energy projects. *Greenhouse Gases: Science and Technology*, 6(2), 188-196. doi:<https://doi.org/10.1002/ghg.1585>
- Stigson, P., Hansson, A., & Lind, M. (2012). Obstacles for CCS deployment: an analysis of discrepancies of perceptions. *Mitigation and Adaptation Strategies for Global Change*, 17(6), 601-619. doi:10.1007/s11027-011-9353-3
- Stigson, P., Hansson, A., & Lind, M. (2012). Obstacles for CCS deployment: an analysis of discrepancies of perceptions. *Mitigation and Adaptation Strategies for Global Change*, 17(6), 601-619. doi:10.1007/s11027-011-9353-3
- Stine, L. (2020). Carbon harvest: Indigo Ag, Nori announce first corporate carbon credit buyers. Retrieved from <https://agfundernews.com/carbon-harvest-indigo-ag-nori-announce-first-corporate-carbon-credit-buyers.html>
- Stöckle, C., et al. (2012). Carbon storage and nitrous oxide emissions of cropping systems in eastern Washington: A simulation study. *Journal of Soil and Water Conservation*, 67(5), 365-377. Retrieved from <http://www.jswconline.org/content/67/5/365.full.pdf+html>
- Stockmann, G. (2012). *Experimental Study of Basalt Carbonatization*. (Ph.D.). University of

- Toulouse, Retrieved from https://www.researchgate.net/publication/270884047_Experimental_Study_of_Basalt_Carbonatization
- Stockmann, U., Adams, M. A., Crawford, J. W., Field, D. J., Henakaarchchi, N., Jenkins, M., . . . Zimmermann, M. (2013). The knowns, known unknowns and unknowns of sequestration of soil organic carbon. *Agriculture, Ecosystems & Environment*, 164, 80-99. doi:<https://doi.org/10.1016/j.agee.2012.10.001>
- Stockmann, U., Padarian, J., McBratney, A., Minasny, B., de Brogniez, D., Montanarella, L., . . . Field, D. J. (2015). Global soil organic carbon assessment. *Global Food Security*, 6, 9-16. doi:<https://doi.org/10.1016/j.gfs.2015.07.001>
- Stolaroff, J., Keith, D., & Lowry, G. (2008). Carbon dioxide capture from atmospheric air using sodium hydroxide spray. *Environmental Science & Technology*, 42, 2728-2735. Retrieved from /files/tkg/files/97.stolaroff.aircapturecontactor.e.pdf
- Stolaroff, J. K., Bhattacharyya, S., Smith, C. A., Bourcier, W. L., Cameron-Smith, P. J., & Aines, R. D. (2012). Review of Methane Mitigation Technologies with Application to Rapid Release of Methane from the Arctic. *Environmental Science & Technology*, 46(12), 6455-6469. doi:[10.1021/es204686w](https://doi.org/10.1021/es204686w)
- Stolaroff, J. K., Keith, D. W., & Lowry, G. V. (2008). Carbon Dioxide Capture from Atmospheric Air Using Sodium Hydroxide Spray. *Environmental Science & Technology*, 42(8), 2728-2735. doi:[10.1021/es702607w](https://doi.org/10.1021/es702607w)
- Stolaroff, J. K., Lowry, G. V., & Keith, D. W. (2005). Using CaO- and MgO-rich industrial waste streams for carbon sequestration. *Energy Conversion and Management*, 46(5), 687-699. doi:<https://doi.org/10.1016/j.enconman.2004.05.009>
- Stolaroff, J. K., Pang, S. H., Li, W., Kirkendall, W. G., Goldstein, H. M., Aines, R. D., & Baker, S. E. (2021). Transport Cost for Carbon Removal Projects With Biomass and CO₂ Storage. *Frontiers in Energy Research*, 9(165). doi:[10.3389/fenrg.2021.639943](https://doi.org/10.3389/fenrg.2021.639943)
- Stone, A. (2019). IEA Challenged to Address Limits to Negative Emissions. *Forbes*, (April 16). Retrieved from <https://www.forbes.com/sites/andystone/2019/04/15/iea-challenged-to-address-limits-of-negative-emissions/#508e70342364>
- Stone, E. J., Lowe, J. A., & Shine, K. P. (2009). The impact of carbon capture and storage on climate. *Energy & Environmental Science*, 2(1), 81-91. doi:[10.1039/B807747A](https://doi.org/10.1039/B807747A)
- Stone, K. C., et al. (2013). Biomass Feedstock Production Impact on Water Resource Availability. In B. P. Singh (Ed.), *Biofuel Crop Sustainability* (pp. 239-260).
- Stone, M. (2019). How much is a whale worth? Retrieved from <https://relay.nationalgeographic.com/proxy/distribution/public/amp/environment/2019/09/how-much-is-a-whale-worth>
- Stonor, M. R., Chen, J. G., & Park, A.-H. A. (2017). Bio-Energy with Carbon Capture and Storage (BECCS) potential: Production of high purity H₂ from cellulose via Alkaline Thermal Treatment with gas phase reforming of hydrocarbons over various metal catalysts. *International Journal of Hydrogen Energy*, 42(41), 25903-25913. doi:<https://doi.org/10.1016/j.ijhydene.2017.08.059>
- Stoof, C. R., Richards, B. K., Woodbury, P. B., Fabio, E. S., Brumbach, A. R., Cherney, J., . . . Steenhuis, T. S. (2015). Untapped Potential: Opportunities and Challenges for Sustainable Bioenergy Production from Marginal Lands in the Northeast USA. *BioEnergy Research*, 8(2), 482-501. doi:[10.1007/s12155-014-9515-8](https://doi.org/10.1007/s12155-014-9515-8)
- Storey, J. (2021). Can an Australian start-up create a US\$100 billion ocean carbon credit industry? *LinkedIn: Creating Ocean Credits*. Retrieved from <https://www.linkedin.com/pulse/can-australian-start-up-create-us100-billion-ocean-carbon-jill-storey/>
- Storrow, B. (2021). X-Prize Winners Use CO₂ Emissions to Make Concrete. *Scientific American*. Retrieved from <https://www.scientificamerican.com/article/x-prize-winners-use-co2-emissions-to-make-concrete/>

- Stower, H. (2021). Unlocking Blue Carbon Offsets – The problems and solutions for ocean-based carbon removal. Retrieved from <https://www.cleantech.com/unlocking-blue-carbon-offsets-the-problems-and-solutions-for-ocean-based-carbon-removal/>
- Stoy, P. C., Ahmed, S., Jarchow, M., Rashford, B., Swanson, D., Albeke, S., . . . Poulter, B. (2018). Opportunities and Trade-offs among BECCS and the Food, Water, Energy, Biodiversity, and Social Systems Nexus at Regional Scales. *BioScience*, bix145-bix145. doi:10.1093/biosci/bix145
- Stoyle, A. (2011). *BIOCHAR PRODUCTION FOR CARBON SEQUESTRATION*. (Bachelor of Science). Worcester Polytechnic Institute, Worcester. Retrieved from https://www.wpi.edu/Pubs/E-project/Available/E-project-031111-153641/unrestricted/BIOCHAR_CO2SEQ.pdf
- Strand, S. E., & Benford, G. (2009). Ocean Sequestration of Crop Residue Carbon: Recycling Fossil Fuel Carbon Back to Deep Sediments. *Environmental Science & Technology*, 43(4), 1000-1007. doi:10.1021/es8015556
- Strassburg, B. B. N., et al. (2010). Global congruence of carbon storage and biodiversity in terrestrial ecosystems. *Conservation Letters*, 3(2), 98-105. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/j.1755-263X.2009.00092.x/abstract>
- Strawn, D. G., Rigby, A. C., Baker, L. L., Coleman, M. D., & Koch, I. (2015). Biochar Soil Amendment Effects on Arsenic Availability to Mountain Brome (*Bromus marginatus*). *Journal of Environment Quality*, 44, 1315-1320. doi:10.2134/jeq2014.11.0477
- Street, T. A., Doyle, R. B., & Close, D. C. (2014). Biochar Media Addition Impacts Apple Rootstock Growth and Nutrition. *HortScience*, 49(9), 1188-1193. Retrieved from <http://hortsci.ashpublications.org/content/49/9/1188.short>
- Strefler, J., et al. (2015). *Integrated assessment of enhanced weathering*. Paper presented at the International Energy Workshop, Abu Dhabi. https://irena.org/EventDocs/Session%204_Jessica%20Strefler_WEB.pdf
- Strefler, J., et al. (2018). Between Scylla and Charybdis: Delayed mitigation narrows the passage between large-scale CDR and high costs. *Environmental Research Letters*, 13(4), 044015. Retrieved from <http://stacks.iop.org/1748-9326/13/i=4/a=044015>
- Strefler, J., et al. (2018). Potential and costs of carbon dioxide removal by enhanced weathering of rocks. *Environmental Research Letters*, 13(3), 034010. Retrieved from <http://stacks.iop.org/1748-9326/13/i=3/a=034010>
- Strengers, B., et. (2018). *Negative emissions - Technical potential, realistic potential and costs for the Netherlands*. Retrieved from <http://www.clingendaelenergy.com/files.cfm?event=files.download&ui=DE7BA681-5254-00CF-FD03A619D7811078>
- Strengers, B. J., Van Minnen, J. G., & Eickhout, B. (2008). The role of carbon plantations in mitigating climate change: potentials and costs. *Climatic Change*, 88(3), 343-366. doi:10.1007/s10584-007-9334-4
- Streubel, J. D., Ph.D. (2011). *Biochar: Its characterization and utility for recovering phosphorus from anaerobic digested dairy effluent*. WASHINGTON STATE UNIVERSITY, Retrieved from <http://gradworks.umi.com/34/60/3460438.html>
- Streubel, J. D., et al. (2012). Biochar Produced from Anaerobically Digested Fiber Reduces Phosphorus in Dairy Lagoons. *Journal of Environmental Quality*, 41, 1166 - 1174. doi:10.2134/jeq2011.0131
- Stringer, L. C., Dougill, A. J., Thomas, A. D., Spracklen, D. V., Chesterman, S., Speranza, C. I., . . . Kopolo, G. (2012). Challenges and opportunities in linking carbon sequestration, livelihoods and ecosystem service provision in drylands. *Environmental Science & Policy*, 19-20, 121-135. doi:<https://doi.org/10.1016/j.envsci.2012.02.004>
- Stripe. (2021). Stripe commits \$8M to six new carbon removal companies. Retrieved from <https://stripe.com/newsroom/news/spring-21-carbon-removal-purchases>

- Ströhle, J., Lasheras, A., Galloy, A., & Epple, B. (2009). Simulation of the Carbonate Looping Process for Post-Combustion CO₂ Capture from a Coal-Fired Power Plant. *Chemical Engineering & Technology*, 32(3), 435-442. doi:10.1002/ceat.200800569
- Strong, A., Chisholm, S., Miller, C., & Cullen, J. (2009). Ocean fertilization: time to move on. *Nature*, 461, 347. doi:10.1038/461347a
- Strong, A. L., Cullen, J. J., & Chisholm, S. W. (2009). Ocean fertilization: Science, policy, and commerce. *Oceanography*, 22(3), 236-261. Retrieved from http://tos.org/oceanography/assets/docs/22-3_strong.pdf
- Struck, D. (2010). Carbon offsets: How a Vatican forest failed to reduce global warming. *Christian Science Monitor*. Retrieved from <https://www.csmonitor.com/Environment/2010/0420/Carbon-offsets-How-a-Vatican-forest-failed-to-reduce-global-warming>
- Strzalka, R., Schneider, D., & Eicker, U. (2015). *Bioenergy in Germany: Technology Overview, Practical Experience, Economical Feasibility and Future Perspectives*. Paper presented at the Bioenergy 2013 - Book of Proceedings.
- Stuart, D., Gunderson, R., & Petersen, B. (2020). Carbon Geoengineering and the Metabolic Rift: Solution or Social Reproduction? *Critical Sociology*, 46(7-8), 1233-1249. doi:10.1177/0896920520905074
- Stuckert, N. R., & Yang, R. T. (2011). CO₂ Capture from the Atmosphere and Simultaneous Concentration Using Zeolites and Amine-Grafted SBA-15. *Environmental Science & Technology*, 45(23), 10257-10264. doi:10.1021/es202647a
- Stucley, C., et al. (2012). *BioEnergy in Australia: Status and Opportunities*. Retrieved from http://www.fwpa.com.au/images/webinars/FWPA_Bioenergy_Webinar_Stucley_5Jun13.pdf
- Stutter, M. I. (2015). The composition, leaching, and sorption behavior of some alternative sources of phosphorus for soils. *Ambio*, 44(S2), 207 - 216. doi:10.1007/s13280-014-0615-7
- Styring, P., & Armstrong, K. (2018). Editorial: Carbon Dioxide Utilization. 6(78). doi:10.3389/fenrg.2018.00078
- Su, P., Lou, J., Brookes, P. C., Luo, Y., He, Y., & Xu, J. (2015). Taxon-specific responses of soil microbial communities to different soil priming effects induced by addition of plant residues and their biochars. *Journal of Soils and Sediments*, 1-11. doi:10.1007/s11368-015-1238-8
- Su, T.-H., Yang, H.-J., Shau, Y.-H., Takazawa, E., & Lee, Y.-C. (2016). CO₂ sequestration utilizing basic-oxygen furnace slag: Controlling factors, reaction mechanisms and V-Cr concerns. *Journal of Environmental Sciences*, 41, 99-111. doi:<https://doi.org/10.1016/j.jes.2015.06.012>
- Su, Y., Cestellos-Blanco, S., Kim, J. M., Shen, Y.-x., Kong, Q., Lu, D., . . . Yang, P. (2020). Close-Packed Nanowire-Bacteria Hybrids for Efficient Solar-Driven CO₂ Fixation. *Joule*. doi:<https://doi.org/10.1016/j.joule.2020.03.001>
- Su, Y., Song, K., Zhang, P., Su, Y., Cheng, J., & Chen, X. (2017). Progress of microalgae biofuel's commercialization. *Renewable and Sustainable Energy Reviews*, 74, 402-411. doi:<https://doi.org/10.1016/j.rser.2016.12.078>
- Su, Z., Qiu, G., Fan, H., & Fang, C. (2020). Seagrass beds store less carbon but support more macrobenthos than mangrove forests. *Marine Environmental Research*, 162, 105162. doi:<https://doi.org/10.1016/j.marenvres.2020.105162>
- Suárez, A., M., Kaal, J., Knicker, H., Camps Arbestain, M., & Macias, F. (2014). *Biochar determination in soils by applying pyrolysis GC-MS analysis and Black Carbon (BC) concentration trough dichromate and permanganate oxidation*. Paper presented at the Open Science. <http://digital.csic.es/handle/10261/98482>
- Suarez, V. (2021). A nature-based negative emissions technology able to remove atmospheric methane and other greenhouse gases *The Hill*. Retrieved from <https://thehill.com/>

- opinion/energy-environment/555267-carbon-removal-can-and-must-be-part-of-the-climate-justice-agenda
- Subedi, R. (2012). *Effects of Biochar on Soil Phosphorus and Interaction with Phosphate Solubilizing Bacteria*. Ghent University, Retrieved from http://lib.ugent.be/fulltxt/RUG01/001/894/528/RUG01-001894528_2012_0001_AC.pdf
- Subedi, R., Kammann, C., Pelissetti, S., Sacco, D., Grignani, C., & Monaco, S. (2013). Use of biochar and hydrochar to reduce ammonia emissions from soils fertilized with pig slurry. Retrieved from http://www.ramiran.net/doc13/Proceeding_2013/documents/S9.16..pdf
- Subedi, R., Kammann, C., Pelissetti, S., Taupe, N., Bertora, C., Monaco, S., & Grignani, C. (2015). Does soil amended with biochar and hydrochar reduce ammonia emissions following the application of pig slurry? *European Journal of Soil Science*, 66(6), 1044 - 1053. doi:10.1111/ejss.12302
- Subedi, R., Taupe, N., Ikoyi, I., Bertora, C., Zavattaro, L., Schmalenberger, A., . . . Grignani, C. (2015). *Manure-derived biochars behave also as fertilizer*. Paper presented at the RAMIRAN 2015 – 16th International Conference. http://www.researchgate.net/profile/Chiara_Bertora/publication/282003596_Manure-derived_biochars_behave_also_as_fertilizer/links/5603cd8808ae460e2704fab4.pdf
- Subedi, R., Taupe, N., Ikoyi, I., Bertora, C., Zavattaro, L., Schmalenberger, A., . . . Grignani, C. (2016). Chemically and biologically-mediated fertilizing value of manure-derived biochar. *Science of The Total Environment*, 550, 924 - 933. doi:10.1016/j.scitotenv.2016.01.160
- Subedi, R., Taupe, N., Pelissetti, S., Petruzzelli, L., Bertora, C., Leahy, J. J., & Grignani, C. (2016). Greenhouse gas emissions and soil properties following amendment with manure-derived biochars: Influence of pyrolysis temperature and feedstock type. *Journal of Environmental Management*, 166, 73 - 83. doi:10.1016/j.jenvman.2015.10.007
- Subhas, A. V., et al. (2018).
- Subramanian, N. S. (2020). Powering the Future: An Inclusive National Clean Energy Standard with Negative Emissions Technologies. *Columbia Journal of Environmental Law*, 45(2). doi:10.7916/cjel.v45i2.6158
- Suddapuli Hewage, R. P. (2016). *Effect of charred digestate (biochar) and digestate on soil organic carbon and nutrients in temperate bioenergy crop production systems*. (PhD). Hamburg : Staats- und Universitätsbibliothek Hamburg, Hamburg, Germany. Retrieved from <http://ediss.sub.uni-hamburg.de/volltexte/2016/7828/>
- Suddick, E. C., & Six, J. (2013). An estimation of annual nitrous oxide emissions and soil quality following the amendment of high temperature walnut shell biochar and compost to a small scale vegetable crop rotation. *Science of The Total Environment*, 465, 298-307. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0048969713001563>
- Sudhakar, K., et al. (2011). An Overview of CO₂ Mitigation Using Algae Cultivation Technology. *International Journal of Chemical Research*, 3(3), 110-117. Retrieved from https://s3.amazonaws.com/academia.edu.documents/23606270/An_overview_of_CO2_mitigation_using_Algal_Cultivation_Technology.pdf?AWSAccessKeyId=AKIAIWOWYYGZ2Y53UL3A&Expires=1538871028&Signature=4aPaW1C9TATFC8Ln%2FViLjZtijAM%3D&response-content-disposition=inline%3B%20filename%3DAn_overview_of_CO2_mitigation_using_Alga.pdf
- Sudhakar, K., & Soni, R. A. (2017). Carbon Sequestration Through Solar Bioreactors: Industrial Strategies. In M. Goel & M. Sudhakar (Eds.), *Carbon Utilization: Applications for the Energy Industry* (pp. 143-155). Singapore: Springer Singapore.
- Suer, U., Naehring, F., & Balachandra, G. (2012). *A Smart Technology of Carbon Sequestration by the Use of Biochar*. Paper presented at the CLIMATE 2012 Conference. klima2012.de/en/start

- Suganthi, K., Rajiv Das, K., Selvaraj, M., Kurinji, S., Goel, M., & Govindaraju, M. (2017). Assessment of Altitudinal Mediated Changes of CO₂ Sequestration by Trees at Pachamalai Reserve Forest, Tamil Nadu, India. In M. Goel & M. Sudhakar (Eds.), *Carbon Utilization: Applications for the Energy Industry* (pp. 89-99). Singapore: Springer Singapore.
- Suganya, T., Varman, M., Masjuki, H. H., & Renganathan, S. (2016). Macroalgae and microalgae as a potential source for commercial applications along with biofuels production: A biorefinery approach. *Renewable and Sustainable Energy Reviews*, 55, 909-941. doi:<https://doi.org/10.1016/j.rser.2015.11.026>
- Sugiura, G. (1984). About charcoal: To a sphere of Japanese charcoal and microorganisms. *Jozo Kyokaishi (Japanese Brewing Society)*, 7, 479-484.
- Sugiyama, M. (2020). The fine print of Japan's commitment to carbon neutrality. *East Asia Forum*. Retrieved from <https://www.eastasiaforum.org/2020/11/18/the-fine-print-of-japans-commitment-to-carbon-neutrality/>
- Suguihiro, T. M., et al. (2013). An Electroanalytical approach for evaluation of biochar adsorption characteristics and its application for Lead and Cadmium determination. *Bioresource Technology*, 143, 40-45. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0960852413008754>
- Suh, D. J., Choi, J. H., & Woo, H. C. (2014). Pyrolysis of Seaweeds for Bio-oil and Bio-char Production. *Chemical Engineering Transactions*, 37(121-126). doi:10.3303/cet1437021
- Sui, H., Wang, X., & Chen, H. (2015). Rheological Behavior and Steam Gasification of Bio-slurry. *Energy Procedia*, 75, 220 - 225. doi:10.1016/j.egypro.2015.07.310
- Sui, Y., Gao, J. P., Liu, C., Zhang, W., Lan, Y., Li, S., . . . Tang, L. (2016). Interactive effects of straw-derived biochar and N fertilization on soil C storage and rice productivity in rice paddies of Northeast China. *Science of The Total Environment*, 544, 203 - 210. doi:10.1016/j.scitotenv.2015.11.079
- Sujan, A., Pang, S. H., Zhu, G., Jones, C. W., & Lively, R. P. (2019). Direct CO₂ capture from air using poly(ethyleneimine)-loaded polymer/silica fiber sorbents. *ACS Sustainable Chemistry & Engineering*. doi:10.1021/acssuschemeng.8b06203
- Sujan, A. R., Pang, S. H., Zhu, G., Jones, C. W., & Lively, R. P. (2019). Direct CO₂ Capture from Air using Poly(ethyleneimine)-Loaded Polymer/Silica Fiber Sorbents. *ACS Sustainable Chemistry & Engineering*, 7(5), 5264-5273. doi:10.1021/acssuschemeng.8b06203
- Sujana, I. P. (2015). The Effect Combination of Dose Biochar with Dose Organic Matters on Soil Characteristics and Maize Plants Growth on Land Degraded by Garments Liquid Waste. *International Journal of Research in Agriculture and Forestry*, 2(8), 49-54. Retrieved from <http://www.ijraf.org/pdf/v2-i8/7.pdf>
- Sujana, I. P. (2015). PENGELOLAAN TANAH ULTISOL DENGAN PEMERIAN PEMBENAH ORGANIK BIOCHAR MENUJU PERTANIAN BERKELANJUTAN (ULTISOL MANAGEMENT WITH THE PROVISION OF ORGANIC PEMBENAH BIOCHAR TOWARDS SUSTAINABLE AGRICULTURE). *Jurnal Agrimeta UNMAS*. Retrieved from <http://jurnal.unmas.ac.id/index.php/agrimeta/article/view/90>
- Sujana, I. P., et al. , & I. (2014). The Effect of Dose Biochar and Organic Matters on Soil Characteristic and Corn Plants Growth on the Land Degraded by Garment Liquid Waste. *Journal of Biology, Agriculture and Healthcare*, 4(5), 77-88. Retrieved from <http://www.iiste.org/Journals/index.php/JBAH/article/download/11243/11531>
- Sukartono, Utomo, W. H., Kusuma, Z., & Nugroho, W. H. (2011). Soil fertility status, nutrient uptake, and maize (*Zea mays* L.) yield following biochar and cattle manure application on sandy soils of Lombok, Indonesia. *Journal of Tropical Agriculture*, 49, 47-52. Retrieved from <http://jtropag.in/index.php/ojs/article/viewFile/1036/263>
- Sukartono, Utomo, W. H., Nugroho, W. H., & Kusuma, Z. (2011). Simple Biochar Production

- Generated From Cattle Dung and Coconut Shell. *Journal of Basic and Applied Scientific Research*, 1, 1680-1685. Retrieved from [http://www.textroad.com/pdf/JBASR/J.%20Basic.%20Appl.%20Sci.%20Res.,%201\(10\)1680-1685,%202011.pdf](http://www.textroad.com/pdf/JBASR/J.%20Basic.%20Appl.%20Sci.%20Res.,%201(10)1680-1685,%202011.pdf)
- Suksabye, P., Pimthong, A., Dhurakit, P., Mekvichitsaeng, P., & Thiravetyan, P. (2015). Effect of biochars and microorganisms on cadmium accumulation in rice grains grown in Cd-contaminated soil. *Environmental Science and Pollution Research*. doi:10.1007/s11356-015-4590-8
- Suliman, W., Harsh, J. B., Abu-Lail, N. I., Fortuna, A.-M., Dallmeyer, I., & Garcia-Perez, M. (2016). Modification of biochar surface by air oxidation: Role of pyrolysis temperature. *Biomass and Bioenergy*, 85, 1 - 11. doi:10.1016/j.biombioe.2015.11.030
- Suliman, W. S. O. (2016). *Toward an understanding of the role of biochar as an agro-environmental tool: Potential for control water release, bacterial retention, and greenhouse gas emissions*. Washington State University, Retrieved from <http://gradworks.umi.com/37/32/3732840.html>
- Sulistyorini, L. D. (2015). Pemanfaatan Kulit Siwalan (*Borassus Flabellifer*) Sebagai Biochar Dengan Pengaruh Konsentrasi Dan Lama Perendaman HCL Pada Proses Aktivasi. *Journal Bioproses Komoditas Tropis (Bioprocess Journal of Tropical Commodities)*, 3(2), 74-80. Retrieved from <http://www.jbkt.ub.ac.id/index.php/jbkt/article/view/189>
- Sullivan, P. (2019). Climate change is an engineering challenge. *Anchorage Daily News*. Retrieved from <https://www.adn.com/opinions/2019/12/31/climate-change-is-an-engineering-challenge/>
- Sulpis, O., Boudreau, B. P., Mucci, A., Jenkins, C., Trossman, D. S., Arbic, B. K., & Key, R. M. (2018). Current CaCO₃ dissolution at the seafloor caused by anthropogenic CO₂. *Proceedings of the National Academy of Sciences*. doi:10.1073/pnas.1804250115
- Sumida, K., Rogow, D. L., Mason, J. A., McDonald, T. M., Bloch, E. D., Herm, Z. R., . . . Long, J. R. (2012). Carbon Dioxide Capture in Metal–Organic Frameworks. *Chemical Reviews*, 112(2), 724-781. doi:10.1021/cr2003272
- Summer, R. (2017). Sink it or lose it: the carbon trade-off. *Thomson Reuters Foundation News*, (March 20). Retrieved from <http://news.trust.org/item/20170320092650-mah1r>
- Sun, A., Davis, R., Starbuck, M., Ben-Amotz, A., Pate, R., & Pienkos, P. T. (2011). Comparative cost analysis of algal oil production for biofuels. *Energy*, 36(8), 5169-5179. doi:<https://doi.org/10.1016/j.energy.2011.06.020>
- Sun, D. Q., et al. (2012). Implication of Temporal Dynamics of Microbial Abundance and Nutrients to Soil Fertility under Biochar Application – Field Experiments Conducted in a Brown Soil Cultivated with Soybean, North China. *Journal Advanced Materials Research*, 518 - 523, 384-394. doi:10.4028/www.scientific.net/AMR.518-523.384
- Sun, D. Q., et al. (2014). Effect of volatile organic compounds absorbed to fresh biochar on survival of *Bacillus mucilaginosus* and structure of soil microbial communities. *Journal of Soils and Sediments*, 15(2), 271-281. doi:10.1007/s11368-014-0996-z
- Sun, D. Q., et al. (2016). Microbial community structure and predicted bacterial metabolic functions in biochar pellets aged in soil after 34 months. *Applied Soil Ecology*, 100, 135 - 143. doi:10.1016/j.apsoil.2015.12.012
- Sun, D. Q., Hale, L., & Crowley, D. (2016). Nutrient supplementation of pinewood biochar for use as a bacterial inoculum carrier. *Biology and Fertility of Soils*, 52(4), 515-522. doi:10.1007/s00374-016-1093-9
- Sun, D. Q., Meng, J., & Chen, W. F. (2013). Effects of abiotic components induced by biochar on microbial communities. *Acta Agriculturae Scandinavica, Section B - Soil & Plant Science*, 63(7), 633-641. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/09064710.2013.838991>

- Sun, H., Brewer, C. E., Masiello, C. A., & Zygourakis, K. (2015). Nutrient Transport in Soils Amended with Biochar: A transient model with two stationary phases and intraparticle diffusion. *Industrial & Engineering Chemistry Research*, 150121153921001. doi:10.1021/ie503893t
- Sun, H., Zhang, H., Min, J., Feng, Y., & Shi, W. (2015). Controlled-release fertilizer, floating duckweed, and biochar affect ammonia volatilization and nitrous oxide emission from rice paddy fields irrigated with nitrogen-rich wastewater. *Paddy and Water Environment*. doi:10.1007/s10333-015-0482-2
- Sun, J., He, F., Zhang, Z., Shao, H., & Xu, G. (2016). Temperature and moisture responses to carbon mineralization in the biochar-amended saline soil. *Science of The Total Environment*, 569-570, 390-394. doi:<https://doi.org/10.1016/j.scitotenv.2016.06.082>
- Sun, K., et al. (2013). Impact of De-Ashing Treatment on Biochar Structural Properties and Potential Sorption Mechanisms of Phenanthrene. *Environmental Science and Technology*, 47, 11473–11481. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/es4026744>
- Sun, K., et al. (2015). Variation in sorption of propiconazole with biochars: The effect of temperature, mineral, molecular structure, and nano-porosity. *Chemosphere*, 142, 56-63. doi:10.1016/j.chemosphere.2015.07.018
- Sun, L., Chen, D., Wan, S., & Yu, Z. (2015). Performance, kinetics, and equilibrium of methylene blue adsorption on biochar derived from eucalyptus saw dust modified with citric, tartaric, and acetic acids. *Bioresource Technology*, 198, 300 - 308. doi:10.1016/j.biortech.2015.09.026
- Sun, L., Li, L., Chen, Z., Wang, J., & Xiong, Z. (2014). Combined effects of nitrogen deposition and biochar application on emissions of N₂O, CO₂ and NH₃ from agricultural and forest soils. *Soil Science and Plant Nutrition*. Retrieved from [#.U6ALF5SSzkl](http://www.tandfonline.com/doi/abs/10.1080/00380768.2014.885386)
- Sun, P., Hui, C., Azim Khan, R., Du, J., Zhang, Q., & Zhao, Y.-H. (2015). Efficient removal of crystal violet using Fe₃O₄-coated biochar: the role of the Fe₃O₄ nanoparticles and modeling study their adsorption behavior. *Scientific Reports*, 5, 12638. doi:10.1038/srep12638
- Sun, R., Li, Y., Liu, C., Xie, X., & Lu, C. (2013). Utilization of lime mud from paper mill as CO₂ sorbent in calcium looping process. *Chemical Engineering Journal*, 221, 124-132. doi:<https://doi.org/10.1016/j.cej.2013.01.068>
- Sun, W., Canadell, J. G., Yu, L., Yu, L., Zhang, W., Smith, P., . . . Huang, Y. (2020). Climate drives global soil carbon sequestration and crop yield changes under conservation agriculture. *Global Change Biology*, 26(6), 3325-3335. doi:10.1111/gcb.15001
- Sun, W., Lipka, S. M., Swartz, C., Williams, D., & Yang, F. (2016). Hemp-derived activated carbons for supercapacitors. *Carbon*, 103, 181 - 192. doi:10.1016/j.carbon.2016.02.090
- Sun, Y., et al. (2013). Effects of feedstock type, production method, and pyrolysis temperature on biochar and hydrochar properties. *Chemical Engineering Journal*, 240, 574-578. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1385894713014101>
- Sun, Y., Li, Y., Cai, B.-f., & Li, Q. (2020). Comparing the explicit and implicit attitudes of energy stakeholders and the public towards carbon capture and storage. *Journal of Cleaner Production*, 120051. doi:<https://doi.org/10.1016/j.jclepro.2020.120051>
- Sun, Y., Zhang, J. P., Wen, C., & Zhang, L. (2016). An enhanced approach for biochar preparation using fluidized bed and its application for H₂S removal. *Chemical Engineering and Processing: Process Intensification*, 104, 1 - 12. doi:10.1016/j.cep.2016.02.006
- Sun, Z., et al. (2014). Effect of biochar on aerobic processes, enzyme activity, and crop yields in two sandy loam soils. *Biology and Fertility of Soils*, 50(7), 1087-1097. doi:10.1007/

s00374-014-0928-5

- Sun, Z., et al. . (2014). Pore structure characteristics after two years biochar application to a sandy loam field. *Journal of Soil Science*, 180(2), 41-46. Retrieved from <http://forskningsbasen.deff.dk/Share.external?sp=Sfe2180d2-45f4-4fd3-add7-fa220367cb01&sp=Sau>
- Sun, Z., et al. (2015). *Effect of biochar on soil structural characteristics: water retention and gas transport*. Paper presented at the Danish National Research Database. <http://forskningsbasen.deff.dk/Share.external?sp=Sfb0d3792-27e7-4846-924f-a364153b2258&sp=Sau>
- Sun, Z., Sänger, A., Rebensburg, P., Lentzsch, P., Wirth, S., Kaupenjohann, M., & Meyer-Aurich, A. (2017). Contrasting effects of biochar on N₂O emission and N uptake at different N fertilizer levels on a temperate sandy loam. *Science of The Total Environment*, 578, 557-565. doi:<https://doi.org/10.1016/j.scitotenv.2016.10.230>
- Sundberg, C., Karlton, E., Gitau, J. K., Kätterer, T., Kimutai, G. M., Mahmoud, Y., . . . Sieber, P. (2020). Biochar from cookstoves reduces greenhouse gas emissions from smallholder farms in Africa. *Mitigation and Adaptation Strategies for Global Change*, 25(6), 953-967. doi:[10.1007/s11027-020-09920-7](https://doi.org/10.1007/s11027-020-09920-7)
- Supekar, S. D., Lim, T.-H., & Skerlos, S. J. (2019). Costs to achieve target net emissions reductions in the US electric sector using direct air capture. *Environmental Research Letters*, 14(8), 084013. doi:[10.1088/1748-9326/ab30aa](https://doi.org/10.1088/1748-9326/ab30aa)
- Supriyadi, S., et al. (2012). Effect of biochar on P uptake from two acid soils. *16 Australian Agronomy Conference*, 2012. Retrieved from http://www.region.org.au/au/asa/2012/nutrition/8497_slamet.htm
- Suroshe, P., & Pramanik, H. (2015). Recovery of valuable bio-oil and char via pyrolysis of Sugarcane Bagasse. *International Journal of Chemical and Environmental Engineering*, 6(3), 137-141. Retrieved from <http://www.cabdirect.org/abstracts/20153347243.html>
- (2021, May 25). *Paying for Carbon: Measuring Climate Solutions in Agriculture* [Retrieved from <https://www.youtube.com/watch?v=ll7otG5sRRA>
- Sut, D., Chutia, R. S., Bordoloi, N., Narzari, R., & Kataki, R. (2016). Complete utilization of non-edible oil seeds of Cascabela thevetia through a cascade of approaches for biofuel and by-products. *Bioresource Technology*. doi:[10.1016/j.biortech.2016.02.066](https://doi.org/10.1016/j.biortech.2016.02.066)
- Sutcu, H. (2008). Pyrolysis of phragmites australis and characterization of liquid and solid products. *Journal of Industrial and Engineering Chemistry*, 14(5), 573-577.
- Sutherland, B. R. (2019). Pricing CO₂ Direct Air Capture. *Joule*, 3(7), 1571-1573. doi:<https://doi.org/10.1016/j.joule.2019.06.025>
- Suzuki, K., Hinuma, A., Saito, H., Kiyosawa, H., Liu, H., Saino, T., & Tsuda, A. (2005). Responses of phytoplankton and heterotrophic bacteria in the northwest subarctic Pacific to in situ iron fertilization as estimated by HPLC pigment analysis and flow cytometry. *Progress in Oceanography*, 64(2–4), 167-187. doi:<http://dx.doi.org/10.1016/j.pocean.2005.02.007>
- Swain, F. (2021). The device that reverses CO₂ emissions. *BBC Future Planet*. Retrieved from <https://www.bbc.com/future/article/20210310-the-trillion-dollar-plan-to-capture-co2>
- Swaine, M., et al. . (2013). Biochar Alteration of the Sorption of Substrates and Products in Soil Enzyme Assays. *Applied and Environmental Soil Science*, 1-5.
- Swaminathan, R., & Amupolo, H. (2014). Design and Testing of Biochar Stoves. *Open Journal of Applied Sciences*, 04(14), 567 - 572. doi:[10.4236/ojapps.2014.414056](https://doi.org/10.4236/ojapps.2014.414056)
- Swanson, J. (2013). *Climate-Change Mitigation Potential of Biochar: A Review and Framework for Carbon Accounting*. (Masters). Duke, Retrieved from <http://dukespace.lib.duke.edu/dspace/bitstream/handle/10161/6842/Swanson%20MP%20Biochar%20final.pdf?sequence=1>

- Swanson, J. (2018). Capturing Carbon. In *Geoengineering Earth's Climate: Resetting the Thermostat* (pp. 32-46).
- Sweet, A. (2015). *Buffers and Biochar: Influences on Surface Water Quality in Agricultural Systems*. Southern Illinois University Carbondale, Retrieved from <http://opensiuc.lib.siu.edu/theses/1633/>
- Sweet, S. K., Schuldt, J. P., Lehmann, J., Bossio, D. A., & Woolf, D. (2021). Perceptions of naturalness predict US public support for Soil Carbon Storage as a climate solution. *Climatic Change*, 166(1), 22. doi:10.1007/s10584-021-03121-0
- Swennenhuis, F., Mabon, L., Flach, T. A., & de Coninck, H. (2020). What role for CCS in delivering just transitions? An evaluation in the North Sea region. *International Journal of Greenhouse Gas Control*, 94, 102903. doi:<https://doi.org/10.1016/j.ijggc.2019.102903>
- Swisher, J. N. (1997). Incremental costs of carbon storage in forestry, bioenergy and land-use. *Critical Reviews in Environmental Science and Technology*, 27(sup001), 335-350. doi:10.1080/10643389709388530
- Syahri, M. (2015). *Pembuatan Biobriket dari Limbah Organik (Biobriket manufacture of Organic Waste)*. Paper presented at the Seminar Nasional Teknik Kimia Kejuangan (Chemical Engineering National Seminar Kejuangan). <http://jurnal.upnyk.ac.id/index.php/kejuangan/article/view/500>
- Syairah, N., & Aziz, M. (2015). *Biochar From Oil Palm Empty Fruit Bunches And Oil Palm Shells Via Slow Pyrolysis*. Universiti Sains Malaysia, Retrieved from <http://eprints.usm.my/28968/>
- Syed, R., et al. (2015). Assessment of Potential Biofilter Materials to Mitigate Methane Emissions. In.
- Sykes, A. J., Macleod, M., Eory, V., Rees, R. M., Payen, F., Myrgiotis, V., . . . Smith, P. (2020). Characterising the biophysical, economic and social impacts of soil carbon sequestration as a greenhouse gas removal technology. *Global Change Biology*, 26(3), 1085-1108. doi:10.1111/gcb.14844
- Symonds, R. T., et al. (2011). Pilot-Scale Study of CO₂ Capture by CaO-Based Sorbents in the Presence of Steam and SO₂. *I&EC Research*, 51, 7177-7187. Retrieved from https://www.academia.edu/attachments/53802133/download_file?s=work_strip&ct=MTUwMjY3OTUwMSwxNTAyNjgwNjY1LDI1NDM4NQ==
- Tabari, M., & Salehi, A. (2008). Soil Carbon Sequestration Potential of Eldar Pine and Black Locust Afforestation in a Semi-Arid Zone of Iran. *Research Journal of Environmental Sciences*, 2(6), 483-490. Retrieved from <http://www.scialert.net/abstract/?doi=rjes.2008.483.490>
- Tabatabaei, M., Loomis, J. B., & Mccollum, D. W. (2015). Non-Market Benefits of Reducing Environmental Effects of Potential Wildfires in Beetle-Killed Trees: A Contingent Valuation Study. *Journal of Sustainable Forestry*, 150422105932004. doi:10.1080/10549811.2015.1034282
- Taccardi, N., Grabau, M., Debuschewitz, J., Distaso, M., Brandl, M., Hock, R., . . . Wasserscheid, P. (2017). Gallium-rich Pd–Ga phases as supported liquid metal catalysts. *Nature Chemistry*, 9, 862. doi:10.1038/nchem.2822 <https://www.nature.com/articles/nchem.2822#supplementary-information>
- Taft, M. (2021). The Only Carbon Capture Plant in the U.S. Just Closed. *Gizmodo*. Retrieved from <https://earther.gizmodo.com/the-only-carbon-capture-plant-in-the-u-s-just-closed-1846177778>
- Taghizadeh-Toos, A., et al. . (2011). Biochar Incorporation into Pasture Soil Suppresses in situ Nitrous Oxide Emissions from Ruminant Urine Patches. *Journal of Environmental Quality*, 40(2), 468-476. doi:doi:10.2134/jeq2010.0419
- Taghizadeh-Toosi, A., et al. . (2011). Biochar adsorbed ammonia is bioavailable. *Plant and Soil*,

- 350(1), 57-69. doi:10.1007/s11104-011-0870-3
- Taghizadeh-Toosi, A., et al. . (2011). A wood based low-temperature biochar captures NH₃-N generated from ruminant urine-N, retaining its bioavailability. *Plant and Soil*, 353(1), 73-84. doi:10.1007/s11104-011-1010-9
- Taghizadeh-Toosik, A. (2011). *Ammonia and nitrous oxide emissions from soils under ruminant urine patches and the effects of biochar amendment on these emissions and plant nitrogen uptake*. (Doctor of Philosophy). Lincoln University, Retrieved from <http://hdl.handle.net/10182/4020>
- Tagliabue, A., Bowie, A. R., Boyd, P. W., Buck, K. N., Johnson, K. S., & Saito, M. A. (2017). The integral role of iron in ocean biogeochemistry. *Nature*, 543(7643), 51-59. doi:10.1038/nature21058
- Tagoe, S. O., Horiuchi, T., & Matsui, T. (2008). Preliminary evaluation of the effects of carbonized chicken manure, refuse derived fuel and K fertilizer application on the growth, nodulation, yield, N and P contents of soybean and cowpea in the greenhouse. *African Journal of Agricultural Research*, 3, 759-774.
- Taha, S. M., Amer, M. E., Elmarsafy, A. E., & Elkady, M. Y. (2014). Adsorption of 15 different pesticides on untreated and phosphoric acid treated biochar and charcoal from water. *Journal of Environmental Chemical Engineering*, 2(4), 2013 - 2025. doi:10.1016/j.jece.2014.09.001
- Taillardat, P., et al. (2020). Climate change mitigation potential of wetlands and the cost-effectiveness of their restoration. *Interface Focus*, 10(5), 20190129. doi:doi:10.1098/rsfs.2019.0129
- Taillardat, P., et al., Thompson, B. S., Garneau, M., Trottier, K., & Friess, D. A. (2020). Climate change mitigation potential of wetlands and the cost-effectiveness of their restoration. *Interface Focus*, 10(5), 20190129. doi:doi:10.1098/rsfs.2019.0129
- Tait, C. D., Van Thorre, D. M., Catto, M. L., & Scalzo, P. J. (2015).
- Tait, D. R., Shepherd, B. O., Befus, K. M., & Erler, D. V. (2015). Nutrient and greenhouse gas dynamics through a range of wastewater-loaded carbonate sand treatments. *Ecological Engineering*, 82, 126 - 137. doi:10.1016/j.ecoleng.2015.04.082
- Táíwò, O. m. O., & Buck, H. J. (2019). Capturing carbon to fight climate change is dividing environmentalists. *The Conversation*. Retrieved from <https://theconversation.com/capturing-carbon-to-fight-climate-change-is-dividing-environmentalists-110142>
- Takaya, C. A., Fletcher, L. A., Singh, S., Anyikude, K. U., & Ross, A. B. (2016). Phosphate and ammonium sorption capacity of biochar and hydrochar from different wastes. *Chemosphere*, 145, 518 - 527. doi:10.1016/j.chemosphere.2015.11.052
- Takaya, C. A., Fletcher, L. A., Singh, S., Okwuosa, U. C., & Ross, A. B. (2016). Recovery of phosphate with chemically modified biochars. *Journal of Environmental Chemical Engineering*, 4(1), 1156 - 1165. doi:10.1016/j.jece.2016.01.011
- Takeda, S., & Obata, H. (1995). Response of equatorial Pacific phytoplankton to subnanomolar Fe enrichment. *Marine Chemistry*, 50(1), 219-227. doi:[https://doi.org/10.1016/0304-4203\(95\)00037-R](https://doi.org/10.1016/0304-4203(95)00037-R)
- Takeda, S., & Tsuda, A. (2005). An in situ iron-enrichment experiment in the western subarctic Pacific (SEEDS): Introduction and summary. *Progress in Oceanography*, 64(2), 95-109. doi:<https://doi.org/10.1016/j.pocean.2005.02.004>
- Takeda, S., Yoshie, N., Boyd, P. W., & Yamanaka, Y. (2006). Modeling studies investigating the causes of preferential depletion of silicic acid relative to nitrate during SERIES, a mesoscale iron enrichment in the NE subarctic Pacific. *Deep Sea Research Part II: Topical Studies in Oceanography*, 53(20–22), 2297-2326. doi:<http://dx.doi.org/10.1016/j.dsrr.2006.05.027>
- Taki, J. (2021). Making Japan carbon neutral by 2050 is huge challenge. *Nikkei Asia*. Retrieved

- from <https://asia.nikkei.com/Spotlight/Comment/Making-Japan-carbon-neutral-by-2050-is-huge-challenge>
- Takimoto, A., Nair, P. K. R., & Nair, V. D. (2008). Carbon stock and sequestration potential of traditional and improved agroforestry systems in the West African Sahel. *Agriculture, Ecosystems & Environment*, 125(1), 159-166. doi:<https://doi.org/10.1016/j.agee.2007.12.010>
- Takolpuckdee, P. (2014). Transformation of Agricultural Market Waste Disposal to Biochar Soil Amendments. *Procedia Environmental Sciences*, 20, 64-70. doi:<http://dx.doi.org/10.1016/j.proenv.2014.03.010>
- Tamersit, S., & Bouhidel, K.-E. (2020). Treatment of tannery unhairing wastewater using carbon dioxide and zinc cations for greenhouse gas capture, pollution removal and water recycling. *Journal of Water Process Engineering*, 34, 101120. doi:<https://doi.org/10.1016/j.jwpe.2019.101120>
- Tamilselvi Dananjayan, R. R., Kandasamy, P., & Andimuthu, R. (2016). Direct mineral carbonation of coal fly ash for CO₂ sequestration. *Journal of Cleaner Production*, 112, 4173-4182. doi:<https://doi.org/10.1016/j.jclepro.2015.05.145>
- Tamme, E. (2021). *Carbon Removal with CCS Technologies*. Retrieved from Tammeorg, P., et al. . (2012). Nitrogen mineralization dynamics of meat bone meal and cattle manure as affected by the application of softwood chips biochar in soil. *Earth and Environmental Science Transactions of the Royal Society of Edinburgh*, 103, 19-30. Retrieved from <http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=8906512&fulltextType=RA&fileId=S1755691012000047>
- Tammeorg, P., et al. (2013). Biochar application to a fertile sandy clay loam in boreal conditions: effects on soil properties and yield formation of wheat, turnip rape and faba bean. *Plant and Soil*, 374(1), 89-107. Retrieved from <https://link.springer.com/article/10.1007/s11104-013-1851-5>
- Tammeorg, P., Parviaainen, T., Nuutinen, V., Simojoki, A., Vaara, E., & Helenius, J. (2014). Effects of biochar on earthworms in arable soil: avoidance test and field trial in boreal loamy sand. *Agriculture, Ecosystems & Environment*, 191, 150-157. doi:<http://dx.doi.org/10.1016/j.agee.2014.02.023>
- Tammeorg, P., Simojoki, A., Mäkelä, P., Stoddard, F. L., Alakukku, L., & Helenius, J. (2014). Short-term effects of biochar on soil properties and wheat yield formation with meat bone meal and inorganic fertiliser on a boreal loamy sand. *Agriculture, Ecosystems & Environment*, 191, 108-116. doi:<http://dx.doi.org/10.1016/j.agee.2014.01.007>
- Tan, G., Wang, H., Xu, N., Junaid, M., Liu, H., & Zhai, L. (2019). Effects of biochar application with fertilizer on soil microbial biomass and greenhouse gas emissions in a peanut cropping system. *Environmental Technology*, 1-11. doi:[10.1080/09593330.2019.1620344](https://doi.org/10.1080/09593330.2019.1620344)
- Tan, R. R. (2016). A multi-period source–sink mixed integer linear programming model for biochar-based carbon sequestration systems. *Sustainable Production and Consumption*, 8, 57-63. doi:<http://dx.doi.org/10.1016/j.spc.2016.08.001>
- Tan, R. R. (2019). Data challenges in optimizing biochar-based carbon sequestration. *Renewable and Sustainable Energy Reviews*, 104, 174-177. doi:<https://doi.org/10.1016/j.rser.2019.01.032>
- Tan, R. R., & Aviso, K. B. (2019). A linear program for optimizing enhanced weathering networks. *Results in Engineering*, 3, 100028. doi:<https://doi.org/10.1016/j.rineng.2019.100028>
- Tan, R. R., & Aviso, K. B. (2021). On life-cycle sustainability optimization of enhanced weathering systems. *Journal of Cleaner Production*, 289, 125836. doi:<https://doi.org/10.1016/j.jclepro.2021.125836>
- Tan, R. R., Aviso, K. B., Foo, D. C. Y., Lee, J.-Y., & Ubando, A. T. (2019). Optimal synthesis of

- negative emissions polygeneration systems with desalination. *Energy*, 187, 115953. doi:<https://doi.org/10.1016/j.energy.2019.115953>
- Tan, R. R., Bandyopadhyay, S., & Foo, D. C. Y. (2018). Graphical Pinch Analysis for Planning Biochar-Based Carbon Management Networks. *Process Integration and Optimization for Sustainability*. doi:10.1007/s41660-018-0033-6
- Tan, X., Liu, Y., Gu, Y., Zeng, G., Hu, X., Wang, X., . . . Sun, Z. (2015). Biochar amendment to lead contaminated soil: Effects on the fluorescein diacetate hydrolytic activity and phytotoxicity to rice. *Environmental Toxicology and Chemistry*, 34(9), 1962-1968. doi:10.1002/etc.3023
- Tan, X., Liu, Y., Gu, Y., Zeng, G., Wang, X., Hu, X., . . . Yang, Z. (2015). Immobilization of Cd(II) in acid soil amended with different biochars with a long term of incubation. *Environmental Science and Pollution Research*, 22(16), 12597-12604. doi:10.1007/s11356-015-4523-6
- Tan, X., Liu, Y., Zeng, G., Wang, X., Hu, X., Gu, Y., & Yang, Z. (2015). Application of biochar for the removal of pollutants from aqueous solutions. *Chemosphere*, 125, 70-85. doi:10.1016/j.chemosphere.2014.12.058
- Tan, Z., Lin, C. S. K., Ji, X., & Rainey, T. J. (2017). Returning biochar to fields: A review. *Applied Soil Ecology*, 116, 1-11. doi:<https://doi.org/10.1016/j.apsoil.2017.03.017>
- Tanaka, H., Kyaw, K. M., Toyota, K., & Motobayashi, T. (2006). Influence of application of rice straw, farmyard manure, and municipal biowastes on nitrogen fixation, soil microbial biomass N, and mineral N in a model paddy microcosm. *Biology and Fertility of Soils*, 42, 501-505.
- Tanaka, K., Okawa, H., Hashimoto, K., Takahashi, R., Imai, A., & Sugawara, K. (2016). Effect of NO₂ in exhaust gas from an oxyfuel combustion system on the cap rock of a proposed CO₂ injection site. *Applied Geochemistry*, 70(Supplement C), 17-26. doi:<https://doi.org/10.1016/j.apgeochem.2016.04.007>
- Tanaka, S., Fujioka, K., Kokubun, T., Ohata, M., Yoshizawa, S., & Mineki, S. (2005, 07/2005). *Proliferation of microorganisms in compost by addition of various charcoals*. Paper presented at the Carbon 2005, Gyeongju, Korea.
- Tanaka, Y., Sawada, Y., Tanase, D., Tanaka, J., Shiomi, S., & Kasukawa, T. (2017). Tomakomai CCS Demonstration Project of Japan, CO₂ Injection in Process. *Energy Procedia*, 114, 5836-5846. doi:<https://doi.org/10.1016/j.egypro.2017.03.1721>
- Tang, J., et al. . (2013). Characteristics of biochar and its application in remediation of contaminated soil. *Journal of Bioscience and Bioengineering*, 116(6), 653-659. Retrieved from <http://www.sciencedirect.com/science/article/pii/S138917231300217X>
- Tang, J., Lv, H., Gong, Y., & Huang, Y. (2015). Preparation and characterization of a novel graphene/biochar composite for aqueous phenanthrene and mercury removal. *Bioresource Technology*, 196, 355 - 363. doi:10.1016/j.biortech.2015.07.047
- Tang, Q., Zhang, J., & Fang, J. (2011). Shellfish and seaweed mariculture increase atmospheric CO₂ absorption by coastal ecosystems. *Marine Ecology Progress Series*, 427, 97-105. Retrieved from https://www.researchgate.net/publication/272863933_Shellfish_and_seaweed_mariculture_increase_atmospheric_CO2_absorption_by_coastal_ecosystems
- Tang, W., Guo, Y., Wu, J.-G., Huang, Z.-Q., & Dai, J.-Y. (2014). Structural changes of aged biochar and the influence on phenanthrene adsorption. *Huan Jing Ke Xue*, 35(7), 2604-2611. Retrieved from <http://europepmc.org/abstract/med/25244844>
- Tank, E. P. T. (2021). Carbon dioxide removal: Nature-based and technological solutions Retrieved from [https://www.europarl.europa.eu/thinktank/en/document.html?reference=EPRS_BRI\(2021\)689336](https://www.europarl.europa.eu/thinktank/en/document.html?reference=EPRS_BRI(2021)689336)
- Tanzer, S. E., Blok, K., & Ramírez, A. (2021). Curing time: a temporally explicit life cycle CO₂

- accounting of mineralization, bioenergy, and CCS in the concrete sector. *Faraday Discussions*, 230(0), 271-291. doi:10.1039/D0FD00139B
- Tanzer, S. E., & Ramírez, A. (2019). When are negative emissions negative emissions? *Energy & Environmental Science*, 12, 1210-1219. doi:10.1039/C8EE03338B
- Tapia, J. F. D. (2021). Evaluating negative emissions technologies using neutrosophic data envelopment analysis. *Journal of Cleaner Production*, 286, 125494. doi:<https://doi.org/10.1016/j.jclepro.2020.125494>
- Tapia, J. F. D., Lee, J.-Y., Ooi, R. E. H., Foo, D. C. Y., & Tan, R. R. (2016). Planning and scheduling of CO₂ capture, utilization and storage (CCUS) operations as a strip packing problem. *Process Safety and Environmental Protection*, 104(Part A), 358-372. doi:<http://dx.doi.org/10.1016/j.psep.2016.09.013>
- Tarantola, A. (2018). These robotic 'trees' can turn CO₂ into concrete. *engadget*. Retrieved from <https://www.engadget.com/2018/09/11/robot-trees-co2-into-concrete-climate-change/>
- Tarasawatpipat, C., Kreetachat, T., Mekhum, W., & Suwannahong, K. (2014). Biochar Production from Agricultural Waste in Amphawa District, Samutsongkram Province Thailand. *Advanced Materials Research*, 1051, 388 - 391. doi:10.4028/www.scientific.net/AMR.1051.388
- Targets, S. B. (2021). Ambitious Corporate Climate Action. Retrieved from <https://sciencebasedtargets.org/>
- Tarves, P. C., Mullen, C. A., & Boateng, A. A. (2016). Effects of Various Reactive Gas Atmospheres on the Properties of Bio-Oils Produced Using Microwave Pyrolysis. *ACS Sustainable Chemistry & Engineering*, 4(3), 930-936. doi:10.1021/acssuschemeng.5b01016
- Tatarková, V., Hiller, E., & Vaculík, M. (2013). Impact of wheat straw biochar addition to soil on the sorption, leaching, dissipation of the herbicide (4-chloro-2-methylphenoxy)acetic acid and the growth of sunflower (*Helianthus annuus* L.). *Ecotoxicology and Environmental Safety*, 92, 215-221. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0147651313000511>
- Taulbee, D., Hodgen, R., & Aden, N. (2012). *Co-Briquetting of Coal and Biomass*. Paper presented at the 2012 International Pittsburgh Coal conference. www.researchgate.net/profile/Darrell_Taulbee/publication/264551732_Co-Briquetting_of_Coal_and_Biomass/links/546e09600cf2b5fc1760324f.pdf
- Taupe, N. C., Lynch, D., Wnetrzak, R., Kwapinska, M., Kwapinski, W., & Leahy, J. J. (2016). Updraft gasification of poultry litter at farm-scale – A case study. *Waste Management*, 50, 324 - 333. doi:10.1016/j.wasman.2016.02.036
- Tausz, M., & MacKenzie, R. (2017). Using forests to manage carbon: a heated debate. *The Conversation*. Retrieved from https://theconversation.com/using-forests-to-manage-carbon-a-heated-debate-81363?utm_source=linkedin&utm_medium=linkedinbutton
- Tavoni, M., & Socolow, R. (2013). Modeling meets science and technology: an introduction to a special issue on negative emissions. *Climatic Change*, 118(1), 1-14. doi:10.1007/s10584-013-0757-9
- Tavoni, M., Sohngen, B., & Bosetti, V. (2007). Forestry and the carbon market response to stabilize climate. *Energy Policy*, 35(11), 5346-5353. doi:<https://doi.org/10.1016/j.enpol.2006.01.036>
- Tay, V., et al. (2013). Leaching Properties of a Biochar Derived from a Western Australia Pine Plantation. *Proceedings of Chemeca 2013: Challenging Tomorrow*, 1. Retrieved from <http://www.conference.net.au/chemeca2013/papers/30426.pdf>
- Taylor, A. M. (2013). *A life cycle inventory for switchgrass fuel pellets*. Retrieved from <https://ag.tennessee.edu/sungrant/Documents/Research%20Grants/SE%20Sun%20Grant%20Center%20UT%20Internal%20Competitive%20Grants%20Pro>

- gram/2009%20Funded%20Projects/A.%20Taylor/Taylor_FinalReport.pdf
- Taylor, C. (2021). Fight Carbon. With Coin. Retrieved from <https://mashable.com/feature/carbon-coin-climate-change-crypto/>
- Taylor, D. (2010). Biomass burning, humans and climate change in Southeast Asia. *Biodiversity and Conservation*, 19(4), 1025-1042. Retrieved from <https://link.springer.com/article/10.1007/s10531-009-9756-6>
- Taylor, G., & Jenkins, J. (2014). *Biochar Alters the Soil Microbiome: Results from Amplicon Surveys of Three European Field*. Paper presented at the Plant & Animal Genome XXIII. <https://pag.confex.com/pag/xxiii/webprogram/Paper17533.html>
- Taylor, L. L., et al. (2017). Simulating carbon capture by enhanced weathering with croplands: an overview of key processes highlighting areas of future model development. *Biology Letters*, 13(4), 1-8. Retrieved from <http://rsbl.royalsocietypublishing.org/content/roybiolett/13/4/20160868.full.pdf>
- Taylor, L. L., Driscoll, C. T., Groffman, P. M., Rau, G. H., Blum, J. D., & Beerling, D. J. (2020). Increased carbon capture by a silicate-treated forested watershed affected by acid deposition. *Biogeosciences Discuss.*, 2020, 1-29. doi:10.5194/bg-2020-288
- Taylor, L. L., Leake, J. R., Quirk, J., Hardy, K., Banwart, S. A., & Beerling, D. J. (2009). Biological weathering and the long-term carbon cycle: integrating mycorrhizal evolution and function into the current paradigm. *Geobiology*, 7(2), 171-191. doi:10.1111/j.1472-4669.2009.00194.x
- Taylor, L. L., Quirk, J., Thorley, R. M. S., Kharecha, P. A., Hansen, J., Ridgwell, A., . . . Beerling, D. J. (2016). Enhanced weathering strategies for stabilizing climate and averting ocean acidification. *Nature Climate Change*, 6(4), 402-406. doi:10.1038/nclimate2882
<http://www.nature.com/nclimate/journal/v6/n4/abs/nclimate2882.html#supplementary-information>
- Taylor, M. (2020). Governments urged to go beyond net zero climate targets. *The Guardian*. Retrieved from <https://www.theguardian.com/environment/2020/nov/13/governments-urged-to-go-beyond-net-zero-climate-targets>
- Taylor, P. (2010). *The Biochar Revolution*.
- Tcvetkov, P., Cherepovitsyn, A., & Fedoseev, S. (2019). Public perception of carbon capture and storage: A state-of-the-art overview. *Heliyon*, 5(12). doi:10.1016/j.heliyon.2019.e02845
- Teague, C. M., et al. (2019). Microporous and hollow carbon spheres derived from soft drinks: Promising CO₂ separation materials. *Microporous and Mesoporous Materials*, 286, 199-206. Retrieved from <https://www.sciencedirect.com/science/article/abs/pii/S1387181119302173?via%3Dihub#>
- Team, E. (2020). Chasing Carbon. *One Earth*, 3(2), 135-136. doi:10.1016/j.oneear.2020.08.005
- Teat, A. L., Neufeld, H. S., Gehl, R. J., & Gonzales, E. (2014). Growth and yield of Miscanthus × giganteus grown in fertilized and biochar-amended soils in the Western North Carolina Mountains. In.
- Technologies, L. (2020). *Wyoming Carbon Capture, Utilization, and Storage (CCUS) Study*. Retrieved from https://drive.google.com/file/d/1s-OmVyc9QSE795aqFGLWexFYZ6k_VhKu/view
- Technology, C. U. o. (2018). Plenary Presentations: International Conference on Negative CO₂ Emissions. Retrieved from <http://www.enteck.chalmers.se/lyngfelt/presentations/Plenaries.html>
- Technology, K. I. o. (2020). From Greenhouse Gas to a High-tech Resource Technologies for Negative Greenhouse Gas Emissions: Within the NECOC Research Project, a Test Facility for Conversion of CO₂ from the Air into Solid Carbon is being built at KIT [Press release]. Retrieved from https://www.kit.edu/kit/english/pi_2020_019_from-greenhouse-gas-to-a-high-tech-resource.php

- Teel, W. S. (2012). Capturing Heat from a Batch Biochar Production System for Use in Greenhouses and Hoop Houses. *Journal of Agricultural Science and Technology A*, 2, 1332-1342. Retrieved from <http://www.davidpublishing.com/davidpublishing/Upfile/1/15/2013/2013011573763825.pdf>
- Teichmann, I. (2014). Climate Protection Through Biochar in German Agriculture: Potentials and Costs. *DIW Economic Bulletin*, 4, 4-26. Retrieved from http://www.diw.de/documents/publikationen/73/diw_01.c.442766.de/diw_econ_bull_2014-04-3.pdf
- Teichmann, I. (2014). Technical Greenhouse-Gas Mitigation Potentials of Biochar Soil Incorporation in Germany. Retrieved from <http://ideas.repec.org/p/diw/diwwpp/dp1406.html>
- Teichmann, I. (2015). An Economic Assessment of Soil Carbon Sequestration with Biochar in Germany. *Deutsches Institut für Wirtschaftsforschung (German Institute for Economic Research)*, 1476, 1-99. Retrieved from http://www.soep.de/documents/publikationen/73/diw_01.c.502971.de/dp1476.pdf
- Teir, S., Auvinen, T., Said, A., Kotiranta, T., & Peltola, H. (2016). Performance of Separation Processes for Precipitated Calcium Carbonate Produced with an Innovative Method from Steelmaking Slag and Carbon Dioxide. 4(6). doi:10.3389/fenrg.2016.00006
- Teixidó, M., et al. . (2011). Speciation of the Ionizable Antibiotic Sulfamethazine on Black Carbon (Biochar). *Environmental Science and Technology*, 45(23), 10020-10027. doi:10.1021/es202487h
- Teixidó, M., et al. . (2013). Predicting Contaminant Adsorption in Black Carbon (Biochar)-Amended Soil for the Veterinary Antimicrobial Sulfamethazine. *Environmental Science and Technology*, 47(12), 6197-6205. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/es400911c>
- Teixido, M., & Pignatello, J. J. (2011). Sorption of the antimicrobial sulfamethazine to biochar.
- Tejada, L., & Rist, S. (2017). Seeing land deals through the lens of the 'land–water nexus': the case of biofuel production in Piura, Peru. *The Journal of Peasant Studies*, 1-24. doi:10.1080/03066150.2016.1259220
- Tejada, L., & Rist, S. (2018). Seeing land deals through the lens of the 'land–water nexus': the case of biofuel production in Piura, Peru. *The Journal of Peasant Studies*, 45(7), 1247-1271. doi:10.1080/03066150.2016.1259220
- Tejerina, M. R. (2010). *Biochar as a strategy for sustainable land management, poverty reduction and climate change mitigation/adaptation? Thermolysis of lignin for value-added products*. (MSc Environment and Resource Management). Vrije Universiteit, Retrieved from <https://www.osti.gov/etdeweb/biblio/21338958>
- Temperton, V. M., Buchmann, N., Buisson, E., Durigan, G., Kazmierczak, Ł., Perring, M. P., . . . Overbeck, G. E. (2019). Step back from the forest and step up to the Bonn Challenge: how a broad ecological perspective can promote successful landscape restoration. *Restoration Ecology*, 27(4), 705-719. doi:10.1111/rec.12989
- Temple, J. (2017). Potential Carbon Capture Game Changer Nears Completion. *MIT Technology Review*. Retrieved from <https://www.technologyreview.com/s/608755/potential-carbon-capture-game-changer-nears-completion/>
- Temple, J. (2019). Carbon farming is the hot (and overhyped) tool to fight climate change. *MIT Technology Review*. Retrieved from <https://www.technologyreview.com/s/613850/carbon-farming-is-the-hot-and-overhyped-tool-to-fight-climate-change/>
- Temple, J. (2019). Turning one greenhouse gas into another could combat climate change. *MIT Technology Review*. Retrieved from <https://www.technologyreview.com/s/613556/turning-one-greenhouse-gas-into-another-could-combat-climate-change/>
- Temple, J. (2019). Why the world's biggest CO₂-sucking plant would be used to ... err, dig up more oil? *MIT Technology Review*, (May 27). Retrieved from <https://www.technologyreview.com/s/613556/turning-one-greenhouse-gas-into-another-could-combat-climate-change/>

- www.technologyreview.com/s/613579/why-the-worlds-biggest-cosub2-sub-sucking-plant-would-be-used-to-err-dig-up-more-oil/
- Temple, J. (2020). Asbestos could be a powerful weapon against climate change (you read that right). *MIT Technology Review*. Retrieved from [https://www.technologyreview.com/2020/10/06/1009374/asbestos-could-be-a-powerful-weapon-against-climate-change-you-read-that-right/amp/](https://www.technologyreview.com/2020/10/06/1009374/asbestos-could-be-a-powerful-weapon-against-climate-change-you-read-that-right/)
- Temple, J. (2020). Biden calls for major investments into carbon removal tech. *MIT Technology Review*. Retrieved from <https://www.technologyreview.com/2020/11/09/1011859/biden-calls-for-major-investments-into-carbon-removal-tech/>
- Temple, J. (2020). How Amazon's offsets could exaggerate its progress toward "net zero" emissions. *MIT Technology Review*. Retrieved from [https://www.technologyreview.com/2020/11/02/1011500/amazon-forestry-offsets-netzero-carbon-climate-change/amp/](https://www.technologyreview.com/2020/11/02/1011500/amazon-forestry-offsets-net-zero-carbon-climate-change/amp/)
- Temple, J. (2020). How green sand could capture billions of tons of carbon dioxide. *MIT Technology Review*. Retrieved from <https://www.technologyreview.com/2020/06/22/1004218/how-green-sand-could-capture-billions-of-tons-of-carbon-dioxide/>
- Temple, J. (2020). *Why we can't count on carbon-sucking farms to slow climate change.* Retrieved from <https://www.technologyreview.com/2020/06/03/1002484/why-we-can-t-count-on-carbon-sucking-farms-to-slow-climate-change/>
- Temple, J. (2021). Carbon removal hype is becoming a dangerous distraction. *MIT Technology Review*. Retrieved from <https://www.technologyreview.com/2021/07/08/1027908/carbon-removal-hype-is-a-dangerous-distraction-climate-change>
- Temple, J. (2021). Companies hoping to grow carbon-sucking kelp may be rushing ahead of the science. *MIT Technology Review*. Retrieved from <https://www.technologyreview.com/2021/09/19/1035889/kelp-carbon-removal-seaweed-sinking-climate-change/>
- Temple, J. (2021). Here's Biden's plan to reboot climate innovation. *MIT Technology Review*. Retrieved from <https://www.technologyreview.com/2021/02/11/1018134/heres-bidens-plan-to-reboot-climate-innovation/amp/>
- ten Berge, H. F. M., et al. (2012). Olivine Weathering in Soil, and Its Effects on Growth and Nutrient Uptake in Ryegrass (*Lolium perenne* L.): A Pot Experiment. *Plos One*, 7(8), 1-8. Retrieved from <http://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0042098&type=printable>
- Tenenbaum, D. J. (2009). Biochar: Carbon Mitigation from the Ground Up. *Environmental Health Perspectives*, 117(2), A70-A73. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2649247/>
- Tenenbaum, D. J. (2009). Mitigation from the Ground Up. *Environmental Health Perspectives*, 117(2), A70-A73. Retrieved from <http://www.ehponline.org/docs/2009/117-2/innovations-abs.html>
- Tepe, J. B., & Dodge, B. F. (1943). Absorption of carbon dioxide by sodium hydroxide solutions in a packed column. *Trans. Am. Inst. Chem. Eng.*, 39, 255-276. Retrieved from [http://rephub.elsevier.com/S2542-4351\(18\)30225-3/sref29](http://rephub.elsevier.com/S2542-4351(18)30225-3/sref29)
- Terasawa, K. (2021). As A Proven And Flexible Technology, Carbon Capture Can Help Enable Net Zero – If We Support It. *Forbes*. Retrieved from [https://www.forbes.com/sites/mitsubishiheavyindustries/2021/06/08/as-a-proven-and-flexible-technology-carbon-capture-can-help-enable-netzero--if-we-support-it/?sh=27aa3d8c6ea7](https://www.forbes.com/sites/mitsubishiheavyindustries/2021/06/08/as-a-proven-and-flexible-technology-carbon-capture-can-help-enable-net-zero--if-we-support-it/?sh=27aa3d8c6ea7)
- Terlouw, T., Bauer, C., Rosa, L., & Mazzotti, M. (2021). Life cycle assessment of carbon dioxide removal technologies: a critical review. *Energy & Environmental Science*. doi:10.1039/D0EE03757E
- Terlouw, T., Treyer, K., Bauer, C., & Mazzotti, M. (2021). Life Cycle Assessment of Direct Air Carbon Capture and Storage with Low-Carbon Energy Sources. *Environmental Science & Technology*. doi:10.1021/acs.est.1c03263

- Ter-Mikaelian, M. T., Colombo, S. J., & Chen, J. (2015). The Burning Question: Does Forest Bioenergy Reduce Carbon Emissions? A Review of Common Misconceptions about Forest Carbon Accounting. *Journal of Forestry*, 113(1), 57-68. doi:10.5849/jof.14-016
- Terrer, C., Jackson, R. B., Prentice, I. C., Keenan, T. F., Kaiser, C., Vicca, S., . . . Franklin, O. (2019). Nitrogen and phosphorus constrain the CO₂ fertilization of global plant biomass. *Nature Climate Change*, 9(9), 684-689. doi:10.1038/s41558-019-0545-2
- Terrer, C., Phillips, R. P., Hungate, B. A., Rosende, J., Pett-Ridge, J., Craig, M. E., . . . Jackson, R. B. (2021). A trade-off between plant and soil carbon storage under elevated CO₂. *Nature*, 591(7851), 599-603. doi:10.1038/s41586-021-03306-8
- Terwel, B. W., & Daamen, D. D. L. (2012). Initial public reactions to carbon capture and storage (CCS): differentiating general and local views. *Climate Policy*, 12(3), 288-300. doi:10.1080/14693062.2011.637819
- Terwel, B. W., Harinck, F., Ellemers, N., & Daamen, D. D. L. (2009). Competence-Based and Integrity-Based Trust as Predictors of Acceptance of Carbon Dioxide Capture and Storage (CCS). *Risk Analysis*, 29(8), 1129-1140. doi:<https://doi.org/10.1111/j.1539-6924.2009.01256.x>
- Terwel, B. W., Harinck, F., Ellemers, N., & Daamen, D. D. L. (2011). Going beyond the properties of CO₂ capture and storage (CCS) technology: How trust in stakeholders affects public acceptance of CCS. *International Journal of Greenhouse Gas Control*, 5(2), 181-188. doi:<https://doi.org/10.1016/j.ijggc.2010.10.001>
- Terwel, B. W., ter Mors, E., & Daamen, D. D. L. (2012). It's not only about safety: Beliefs and attitudes of 811 local residents regarding a CCS project in Barendrecht. *International Journal of Greenhouse Gas Control*, 9, 41-51. doi:<https://doi.org/10.1016/j.ijggc.2012.02.017>
- Tesfaye, T., & Ramayya, V. (2015). Experimental Testing and Comparative Evaluation of Different Pyrolysis Cook Stove. In.
- Thakkar, J., Kumar, A., Ghatora, S., & Canter, C. (2016). Energy balance and greenhouse gas emissions from the production and sequestration of charcoal from agricultural residues. *Renewable Energy*, 94, 558-567. doi:<https://doi.org/10.1016/j.renene.2016.03.087>
- Thammasom, N., Vityakon, P., Lawongsa, P., & Saenjan, P. (2016). Biochar and rice straw have different effects on soil productivity, greenhouse gas emission and carbon sequestration in Northeast Thailand paddy soil. *Agriculture and Natural Resources*, 50(3), 192-198. doi:<http://dx.doi.org/10.1016/j.anres.2016.01.003>
- Thamo, T., & Pannell, D. J. (2016). Challenges in developing effective policy for soil carbon sequestration: perspectives on additionality, leakage, and permanence. *Climate Policy*, 16(8), 973-992. doi:10.1080/14693062.2015.1075372
- Thangalazhy-Gopakumar, S., Al-Nadheri, W. M. A., Jegarajan, D., Sahu, J. N., Mubarak, N. M., & Nizamuddin, S. (2014). Utilization of palm oil sludge through pyrolysis for bio-oil and bio-char production. *Bioresource Technology*, 178, 65-69. doi:10.1016/j.biortech.2014.09.068
- Thangarajan, R., Bolan, N., & Mandal, S. (2015). Biochar for inorganic contaminant Management in Soil. In *Biochar: Production, Characterization, and Applications*.
- Thangata, P. H., & Hildebrand, P. E. (2012). Carbon stock and sequestration potential of agroforestry systems in smallholder agroecosystems of sub-Saharan Africa: Mechanisms for 'reducing emissions from deforestation and forest degradation' (REDD+). *Agriculture, Ecosystems & Environment*, 158, 172-183. doi:<https://doi.org/10.1016/j.agee.2012.06.007>
- Theeba, M., Bachmann, R. T., Z.I. I., M. Z., M.H. H., & A.W. S. (2012). Characterization of Local Mill Rice Husk Charcoal and Its Effect on Compost Properties. *Malaysian Journal of Soil Science*, 16, 89-102. Retrieved from <http://www.msss.com.my/mjss/Full%20Text/>

Vol%2016/Theeba.pdf

- Theis, J. E., Rillig, M. C., & Graber, E. R. (2015). Biochar effects on the abundance , activity and diversity of the soil biota. In *Biochar for Environmental Management: Science and Technology and Implementation*.
- Theo, W. L., Lim, J. S., Hashim, H., Mustaffa, A. A., & Ho, W. S. (2016). Review of pre-combustion capture and ionic liquid in carbon capture and storage. *Applied Energy*, 183, 1633-1663. doi:<http://dx.doi.org/10.1016/j.apenergy.2016.09.103>
- Thiele, S., Fuchs, B. M., Ramaiah, N., & Amann, R. (2012). Microbial Community Response during the Iron Fertilization Experiment LOHAFEX. *Applied and Environmental Microbiology*, 78(24), 8803-8812. doi:10.1128/aem.01814-12
- Thiele, S., Wolf, C., Schulz, I. K., Assmy, P., Metfies, K., & Fuchs, B. M. (2014). Stable Composition of the Nano- and Picoplankton Community during the Ocean Iron Fertilization Experiment LOHAFEX. *Plos One*, 9(11), 9. doi:10.1371/journal.pone.0113244
- Thies, J. E., & Rillig, M. C. (2009). Characteristics of Biochar - Biological Properties. In J. Lehmann & S. Joseph (Eds.), *Biochar for Environmental Management: Science and Technology* (pp. 85-106). London, UK: Earthscan.
- Thies, J. E., & Rillig, M. C. (2009). Characteristics of Biochar: Biological Properties. In S. Lehmann & J. P. Joseph (Eds.), *Biochar for Environmental Management* (pp. 85-106).
- Thi Lan Anh, M., et al. (2015). Effect of enhanced biochar on green house gas emission and paddy rice yield from loamy sand soil after first year trial in Thai Nguyen, Viet Nam. In.
- Thiruvenkatachari, R., Su, S., An, H., & Yu, X. X. (2009). Post combustion CO₂ capture by carbon fibre monolithic adsorbents. *Progress in Energy and Combustion Science*, 35(5), 438-455. doi:<https://doi.org/10.1016/j.pecs.2009.05.003>
- Thomas, D. M., Mechery, J., & Paulose, S. V. (2016). Carbon dioxide capture strategies from flue gas using microalgae: a review. *Environmental Science and Pollution Research*, 23(17), 16926-16940. doi:10.1007/s11356-016-7158-3
- Thomas, G., Pidgeon, N., & Roberts, E. (2018). Ambivalence, naturalness and normality in public perceptions of carbon capture and storage in biomass, fossil energy, and industrial applications in the United Kingdom. *Energy Research & Social Science*, 46, 1-9. doi:<https://doi.org/10.1016/j.erss.2018.06.007>
- Thomas, H., Schiettecatte, L. S., Suykens, K., Koné, Y. J. M., Shadwick, E. H., Prowe, A. E. F., . . . Borges, A. V. (2009). Enhanced ocean carbon storage from anaerobic alkalinity generation in coastal sediments. *Biogeosciences*, 6(2), 267-274. doi:10.5194/bg-6-267-2009
- Thomas, S. (2014). Blue carbon: Knowledge gaps, critical issues, and novel approaches. *Ecological Economics*, 107, 22-38. doi:<https://doi.org/10.1016/j.ecolecon.2014.07.028>
- Thomas, S. C., & Gale, N. (2015). Biochar and forest restoration: a review and meta-analysis of tree growth responses. *New Forests*, 46(5), 931-946. doi:10.1007/s11056-015-9491-7
- Thomas, W. R. P., & Timothy, M. L. (2013). Scenarios for future biodiversity loss due to multiple drivers reveal conflict between mitigating climate change and preserving biodiversity. *Environmental Research Letters*, 8(2), 1-10. Retrieved from <http://stacks.iop.org/1748-9326/8/i=2/a=025024>
- Thomazini, A., Spokas, K., Hall, K., Ippolito, J., Lentz, R., & Novak, J. (2015). GHG impacts of biochar: Predictability for the same biochar. *Agriculture, Ecosystems & Environment*, 207, 183 - 191. doi:10.1016/j.agee.2015.04.012
- Thompson, A. (2017). The New Plants That Could Save Us From Climate Change. *Popular Mechanics*. Retrieved from <http://www.popularmechanics.com/science/green-tech/a14000753/the-plants-that-could-save-us-from-climate-change/>
- Thompson, A. (2017). The World's First Negative Emissions Plant Is Now Online. *Popular*

- Mechanics*. Retrieved from <http://www.popularmechanics.com/science/green-tech/news/a28629/first-negative-emissions-plant/>
- Thompson, J., & Beck, L. (2021). Scaling Up Climate Ambition: Carbon Capture, Removal, and Storage Priorities in the 117th Congress. Retrieved from <https://www.catf.us/2021/05/scaling-up-climate-ambition-carbon-capture-removal-and-storage-priorities-in-the-117th-congress/>
- Thompson, K., et al. (2017). *Storage of carbon by marine ecosystems and their contribution to climate change mitigation*. Retrieved from <http://www.greenpeace.to/greenpeace/wp-content/uploads/2017/05/Carbon-in-Marine-Ecosystems-Technical-Report-March-2017-GRL-TRR-03-2017.pdf>
- Thompson, W., Whistance, J., & Meyer, S. (2011). Effects of US biofuel policies on US and world petroleum product markets with consequences for greenhouse gas emissions. *Energy Policy*, 39(9), 5509-5518. doi:<https://doi.org/10.1016/j.enpol.2011.05.011>
- Thomson, A. M., César Izaurralde, R., Smith, S. J., & Clarke, L. E. (2008). Integrated estimates of global terrestrial carbon sequestration. *Global Environmental Change*, 18(1), 192-203. doi:<https://doi.org/10.1016/j.gloenvcha.2007.10.002>
- Thomson, L. (2021). Aggressive Approaches Needed to Curtail CO₂ Emissions. *AZo Cleantech*. Retrieved from <https://www.azocleantech.com/news.aspx?newsID=29862>
- Thoni, T., Beck, S., Borchers, M., Förster, J., Görl, K., Hahn, A., . . . Thrän, D. (2020). Deployment of Negative Emissions Technologies at the National Level: A Need for Holistic Feasibility Assessments. *Frontiers in Climate*, 2(12). doi:[10.3389/fclim.2020.590305](https://doi.org/10.3389/fclim.2020.590305)
- Thorley, R. M. S., Taylor, L. L., Banwart, S. A., Leake, J. R., & Beerling, D. J. (2015). The role of forest trees and their mycorrhizal fungi in carbonate rock weathering and its significance for global carbon cycling. *Plant, Cell & Environment*, 38(9), 1947-1961. doi:[10.1111/pce.12444](https://doi.org/10.1111/pce.12444)
- Thornley, P., et al. . (2015). Maximizing the greenhouse gas reductions from biomass: The role of life cycle assessment. *Biomass and Bioenergy*, 81, 35 - 43. doi:[10.1016/j.biombioe.2015.05.002](https://doi.org/10.1016/j.biombioe.2015.05.002)
- Thornley, P., & Cooper, D. (2008). The effectiveness of policy instruments in promoting bioenergy. *Biomass and Bioenergy*, 32(10), 903-913. doi:<https://doi.org/10.1016/j.biombioe.2008.01.011>
- Thornley, P., Gilbert, P., Shackley, S., & Hammond, J. (2015). Maximizing the greenhouse gas reductions from biomass: The role of life cycle assessment. *Biomass and Bioenergy*, 81, 35-43. doi:<https://doi.org/10.1016/j.biombioe.2015.05.002>
- Thornley, P., Upham, P., & Tomei, J. (2009). Sustainability constraints on UK bioenergy development. *Energy Policy*, 37(12), 5623-5635. doi:<https://doi.org/10.1016/j.enpol.2009.08.028>
- Thrän, D., Schaldach, R., Millinger, M., Wolf, V., Arendt, O., Ponitka, J., . . . Schüngel, J. (2016). The MILESTONES modeling framework: An integrated analysis of national bioenergy strategies and their global environmental impacts. *Environmental Modelling & Software*, 86, 14-29. doi:<https://doi.org/10.1016/j.envsoft.2016.09.005>
- Thrän, D., Seidenberger, T., Zeddies, J., & Offermann, R. (2010). Global biomass potentials – Resources, drivers and scenario results. *Energy for Sustainable Development*, 14(3), 200-205. doi:<https://doi.org/10.1016/j.esd.2010.07.004>
- Thu, T. N., Phuong, L. B. T., Van, T. M., & Hong, S. N. (2015). Effect of Water Regimes and Organic Matter Strategies on Mitigating Green House Gas Emission from Rice Cultivation and Co-benefits in Agriculture in Vietnam. In.
- Thuncher, J. (2020). Carbon capture firm grows. *Castanet.net*. Retrieved from <https://www.castanet.net/news/BC/311010/Carbon-Engineering-There-it-grows-again>

- Tian, J., Miller, V., Chiu, P. C., Maresca, J. A., Guo, M., & Imhoff, P. T. (2016). Nutrient release and ammonium sorption by poultry litter and wood biochars in stormwater treatment. *Science of The Total Environment*, 553, 596 - 606. doi:10.1016/j.scitotenv.2016.02.129
- Tian, Y., et al. . (2012). Biochar made from green waste as peat substitute in growth media for Calathea rotundifolia cv. Fasciata. *Scientia Horticulturae*, 143, 15–18. Retrieved from <http://www.sciencedirect.com/science/article/pii/S030442381200249X>
- Tickell, O. (2015). Olivine: Time for Action. In T. Goreau, R. Larson, & J. Campe (Eds.), *Geotherapy: Innovative Methods of Soil Fertility Restoration, Carbon Sequestration, and Reversing CO₂ Increase* (pp. 153-194).
- Tide, R. (2021). Leading Ocean Scientists to Advise, Evaluate Running Tide's Ocean-Based Climate Solution Retrieved from https://www.wfmz.com/news/pr_newswire/pr_newswire_technology/leading-ocean-scientists-to-advise-evaluate-running-tides-ocean-based-climate-solution/article_3264b02e-91f8-5381-b78a-43e3db30eb.html
- Tidy, J. (2018). Company captures carbon dioxide from the air in quest to avoid CO₂ shortages. *SkyNews*. Retrieved from <https://news.sky.com/story/company-captures-carbon-dioxide-from-the-air-in-quest-to-avoid-co2-shortages-11446011>
- TieZheng, M., et al. . (2015). Remediation of biological organic fertilizer and biochar in paddy soil contaminated by Cd and Pb. *Journal of Agricultural Resources and Environment*, 32(1), 14-19. Retrieved from <http://www.cabdirect.org/abstracts/20153202407.html>
- Tiiilikala, K. (2016). *Opportunities for biochar production and use in Finland - peat replacement?* Retrieved from <https://jukuri.luke.fi/bitstream/handle/10024/531175/Opportunities%20for%20Biochar%20use%20in%20Finland.pdf?sequence=1>
- Tilman, D., et al. (2009). Beneficial Biofuels—The Food, Energy, and Environment Trilemma. *Science*, 325, 270-271. Retrieved from <http://www.usclimatenetwork.org/resource-database/Tilman%20et%20al%202009.pdf>
- Tilman, D., Balzer, C., Hill, J., & Befort, B. L. (2011). Global food demand and the sustainable intensification of agriculture. *Proceedings of the National Academy of Sciences*, 108(50), 20260-20264. doi:10.1073/pnas.1116437108
- Tilman, D., Hill, J., & Lehman, C. (2006). Carbon-negative biofuels from low-input high-diversity grassland biomass. *Science*, 325, 270-271. Retrieved from <http://tamu.edu/faculty/tpd8/BICH407/1598.pdf>
- Timmer, J. (2017). Bacteria under pressure run reaction in reverse to sequester carbon. *ARS Technica*. Retrieved from <https://arstechnica.com/science/2017/12/bacteria-under-pressure-run-reaction-in-reverse-to-sequester-carbon/>
- Timothy, D. A., Wong, C. S., Nojiri, Y., Ianson, D. C., & Whitney, F. A. (2006). The effects of patch expansion on budgets of C, N and Si for the Subarctic Ecosystem Response to Iron Enrichment Study (SERIES). *Deep Sea Research Part II: Topical Studies in Oceanography*, 53(20), 2034-2052. doi:<https://doi.org/10.1016/j.dsr2.2006.05.042>
- Ting-Ting, Q., Li, D.-C., & Jiang, H. (2014). Thermochemical Behavior of Tris(2-Butoxyethyl) Phosphate (TBEP) during Co-pyrolysis with Biomass. *Environmental Science & Technology*, 48(18), 10734 - 10742. doi:10.1021/es502669s
- Tinsley, D., & Ennis, J. (2015).
- Tinwala, F., Joshi, A. K., Yadav, S., & Mohanty, P. (2015). Thermo-chemical conversion of sawdust through in-situ quenching of pyro-vapor for green fuel. *Industrial Crops and Products*, 77, 560 - 564. doi:10.1016/j.indcrop.2015.09.024
- Tinwala, F., Mohanty, P., Parmar, S., Patel, A., & Pant, K. K. (2015). Intermediate pyrolysis of agro-industrial biomasses in bench-scale pyrolyser: Product yields and its characterization. *Bioresource Technology*, 188, 258-264. doi:10.1016/j.biortech.2015.02.006
- Tipper, E. T., Stevenson, E. I., Alcock, V., Knight, A. C. G., Baronas, J. J., Hilton, R. G., . . .

- Hughes, G. (2021). Global silicate weathering flux overestimated because of sediment–water cation exchange. *Proceedings of the National Academy of Sciences*, 118(1), e2016430118. doi:10.1073/pnas.2016430118
- Titiladunayo, I. F., McDonald, A. G., & Olorunnisola, P. F. (2012). Effect of Temperature on Biochar Product Yield from Selected Lignocellulosic Biomass in a Pyrolysis Process. *Waste and Biomass Valorization*, 3(3), 311-318. doi:10.1007/s12649-012-9118-6
- Tiwari, D., Goel, C., Bhunia, H., & Bajpai, P. K. (2017). Dynamic CO₂ capture by carbon adsorbents: kinetics, isotherm and thermodynamic studies. *Separation and Purification Technology*. doi:<http://dx.doi.org/10.1016/j.seppur.2017.03.014>
- Todd, A. C. (2011). CCS – A multidisciplinary global activity for a global challenge. *Chemical Engineering Research and Design*, 89(9), 1443-1445. doi:<http://doi.org/10.1016/j.cherd.2011.04.018>
- Todd, J., Doshi, S., & McInnis, A. (2010). Beyond Coal: A Resilient New Economy for Appalachia. *Solutions*, 1, 45-52. Retrieved from <http://www.thesolutionsjournal.com/node/706>
- Toensmeier, E., & Garrity, D. (2020). How Climate Change Strategies That Use Biomass Can Be More Realistic. *Scientific American*. Retrieved from <https://www.scientificamerican.com/article/how-climate-change-strategies-that-use-biomass-can-be-more-realistic/>
- Tokarska, K. B., & Zickfeld, K. (2013). The effectiveness of net negative carbon dioxide emissions in reversing anthropogenic climate change. *Environmental Research Letters*, 10(094013), 1-11. Retrieved from <http://iopscience.iop.org/article/10.1088/1748-9326/10/9/094013/pdf>
- Tokimatsu, K., Konishi, S., Ishihara, K., Tezuka, T., Yasuoka, R., & Nishio, M. (2016). Role of innovative technologies under the global zero emissions scenarios. *Applied Energy*, 162, 1483-1493. doi:<http://dx.doi.org/10.1016/j.apenergy.2015.02.051>
- Tokimatsu, K., Yasuoka, R., & Nishio, M. (2017). Global zero emissions scenarios: The role of biomass energy with carbon capture and storage by forested land use. *Applied Energy*, 185, 1899-1906.
- Tokoro, T., Watanabe, K., Tada, K., & Kuwae, T. (2018). Air–Water CO₂ Flux in Shallow Coastal Waters: Theory, Methods, and Empirical Studies. In T. Kuwae & M. Hori (Eds.), *Blue Carbon in Shallow Coastal Ecosystems: Carbon Dynamics, Policy, and Implementation* (pp. 153-184). Singapore: Springer Singapore.
- Tokushige, K., Akimoto, K., & Tomoda, T. (2007). Public acceptance and risk-benefit perception of CO₂ geological storage for global warming mitigation in Japan. *Mitigation and Adaptation Strategies for Global Change*, 12(7), 1237-1251. doi:10.1007/s11027-006-9037-6
- Tokushige, K., Akimoto, K., & Tomoda, T. (2007). Public perceptions on the acceptance of geological storage of carbon dioxide and information influencing the acceptance. *International Journal of Greenhouse Gas Control*, 1(1), 101-112. doi:[https://doi.org/10.1016/S1750-5836\(07\)00020-5](https://doi.org/10.1016/S1750-5836(07)00020-5)
- Tollefson, D. (2014). Quorum Sensing Molecules for Unicellular Organisms: Spectroscopic and Computational Study of Conformational Behavior. In.
- Tollefson, J. (2015). Is the 2 °C world a fantasy? *Nature*, 527, 436-438. Retrieved from https://www.nature.com/polopoly_fs/1.18868!/menu/main/topColumns/topLeftColumn/pdf/527436a.pdf
- Tollefson, J. (2017). Iron-dumping ocean experiment sparks controversy. *Nature*, 545(7655), 393-394. Retrieved from <https://www.nature.com/news/iron-dumping-ocean-experiment-sparks-controversy-1.22031>
- Tomei, J., & Helliwell, R. (2016). Food versus fuel? Going beyond biofuels. *Land Use Policy*, 56,

- 320-326. doi:<http://dx.doi.org/10.1016/j.landusepol.2015.11.015>
- Tomlinson, T. (2010). Highlighting Progress on Biochar Research, Projects, and Technology. *Eos, Transactions American Geophysical Union*, 91(46), 1. doi:10.1029/2010eo460007
- Tong, D.-L., & Xu, R.-K. (2015). Ameliorating Effects of Fungus Chaff and Its Biochar on Soil Acidity. *Communications in Soil Science and Plant Analysis*, 46(15), 1913 - 1921. doi:10.1080/00103624.2015.1068323
- Tong, H., et al. (2014). Biochar enhances the microbial and chemical transformation of pentachlorophenol in paddy soil. *Soil Biology and Biochemistry*, 70, 142-150. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0038071713004458>
- Tong, L., et al. (2013). Soil Biochar Quantification via Hyperspectral Unmixing. Retrieved from http://www.ict.griffith.edu.au/~junzhou/papers/C_DICTA_2013_A.pdf
- Tong, L., et al. . (2015). Automatic Estimation of Soil Biochar Quantity via Hyperspectral Imaging. In *Computer Vision and Pattern Recognition in Environmental Informatics*.
- Tonucci, R. G., Nair, P. K. R., Nair, V. D., Garcia, R., & Bernardino, F. S. (2011). Soil Carbon Storage in Silvopasture and Related Land-Use Systems in the Brazilian Cerrado. 40(3), 833-841. doi:10.2134/jeq2010.0162
- Toplensky, R. (2021). Carbon Capture Is Key to Companies' Net Zero Pledges. *Wall Street Journal*. Retrieved from [https://www.wsj.com/articles/carbon-capture-is-key-to-companies-netzero-pledges-11615975780](https://www.wsj.com/articles/carbon-capture-is-key-to-companies-net-zero-pledges-11615975780)
- Topoliantz, S., Ponge, J. F., Arrouays, D., Ballof, S., & Lavelle, P. (2002). Effect of organic manure and the endogeic earthworm Pontoscolex corethrurus (Oligochaeta : Glossoscolecidae) on soil fertility and bean production. *Biology and Fertility of Soils*, 36(4), 313-319. Retrieved from <https://link.springer.com/article/10.1007/s00374-002-0535-8>
- Topoliantz, S., Ponge, J. F., & Ballof, S. (2005). Manioc peel and charcoal: a potential organic amendment for sustainable soil fertility in the tropics. *Biology and Fertility of Soils*, 41, 15-21.
- Torres, A. B., Marchant, R., Lovett, J. C., Smart, J. C. R., & Tipper, R. (2010). Analysis of the carbon sequestration costs of afforestation and reforestation agroforestry practices and the use of cost curves to evaluate their potential for implementation of climate change mitigation. *Ecological Economics*, 69(3), 469-477. doi:<https://doi.org/10.1016/j.ecolecon.2009.09.007>
- Torres-Rojas, D., et al. , & Lehmann, J. (2011). Biomass availability, energy consumption and biochar production in rural households of Western Kenya. *Biomass and Bioenergy*, 35(8), 3537-3546. doi:10.1016/j.biombioe.2011.05.002
- Torri, C., & Fabbri, D. (2014). Biochar enables anaerobic digestion of aqueous phase from intermediate pyrolysis of biomass. *Bioresource Technology*, 172, 335 - 341. doi:10.1016/j.biortech.2014.09.021
- Torvanger, A. (2018). Governance of bioenergy with carbon capture and storage (BECCS): accounting, rewarding, and the Paris agreement. *Climate Policy*, 19(3), 1-13. doi:10.1080/14693062.2018.1509044
- Torvanger, A., Grimstad, A.-A., Lindeberg, E., Rive, N., Rypdal, K., Skeie, R. B., . . . Tollefsen, P. (2012). Quality of geological CO₂ storage to avoid jeopardizing climate targets. *Climatic Change*, 114(2), 245-260. doi:10.1007/s10584-012-0447-z
- Torvanger, A., & Meadowcroft, J. (2011). The political economy of technology support: Making decisions about carbon capture and storage and low carbon energy technologies. *Global Environmental Change*, 21(2), 303-312. doi:<https://doi.org/10.1016/j.gloenvcha.2011.01.017>
- Torvanger, A., Rypdal, K., & Kallbekken, S. (2005). Geological CO₂ Storage as a Climate Change Mitigation Option. *Mitigation and Adaptation Strategies for Global Change*,

10(4), 693-715. doi:10.1007/s11027-005-2080-x

- Toselli, M., et al. (2014). *LA COLTURA DEL MELOGRANO IN AMBIENTE ROMAGNOLO:PRIME VALUTAZIONI AGRONOMICHE (THE CULTURE OF POMEGRANATE IN ENVIRONMENT ROMAGNOLO: PRIME AGRICULTURAL EVALUATIONS)*. Paper presented at the Notiziario RGV n.1-2/2014 numero Speciale "Convegno Melograno" (News RGV n.1-2 / 2014 Special number "Conference Pomegranate"). http://planta-res.entecria.it/rgvnews_pdf/Notiziario%201-2%202014.pdf#page=15
- Total. (2021). Total and Forêt Ressources Management to Plant a 40,000-Hectare Forest in the Republic of the Congo [Press release]. Retrieved from <https://www.total.com/media/news/press-releases/total-and-frm-to-plant-forest-in-congo>
- Toth, J. D., & Dou, Z. (2015). *SSSA Special Publication Agricultural and Environmental Applications of Biochar: Advances and Barriers Use and Impact of Biochar and Charcoal in Animal Production Systems*: Soil Science Society of America, Inc.
- Toufiq Reza, M., Werner, M., Pohl, M., & Mumme, J. (2014). Evaluation of Integrated Anaerobic Digestion and Hydrothermal Carbonization for Bioenergy Production. *Journal of Visualized Experiments*, 88, 1-9. doi:10.3791/51734
- Touray, N., Tsai, W.-T., Chen, H.-R., & Liu, S.-C. (2014). Thermochemical and pore properties of goat-manure-derived biochars prepared from different pyrolysis temperatures. *Journal of Analytical and Applied Pyrolysis*, 109, 116 - 122. doi:10.1016/j.jaap.2014.07.004
- Touray, N., Tsai, W.-T., & Li, M.-H. (2014). Effect of holding time during pyrolysis on thermochemical and physical properties of biochars derived from goat manure. *Waste and Biomass Valorization*, 5(6), 1029-1033. doi:10.1007/s12649-014-9315-6
- Toussaint, K. (2020). This biotech startup is making palm oil-substitutes and omega-3s from carbon emissions. Retrieved from <https://www.fastcompany.com/90586249/this-biotech-startup-is-making-palm-oil-substitutes-and-omega-3s-from-carbon-emissions>
- Townsend, A., & Havercroft, I. (2019). *The LCFS and CCS Protocol: An Overview for Policymakers and Project Developers*. Retrieved from https://www.globalccsinstitute.com/wp-content/uploads/2019/05/LCFS-and-CCS-Protocol_digital_version-2.pdf
- Trakal, L., et al. . (2011). Biochar application to metal-contaminated soil: Evaluating of Cd, Cu, Pb and Zn sorption behavior using single- and multi-element sorption experiment. *Plant Soil Environment*, 57, 372-380. Retrieved from <http://www.agriculturejournals.cz/publicFiles/44519.pdf>
- Trakal, L., et al. (2014). Copper removal from aqueous solution using biochar: Effect of chemical activation. *Arabian Journal of Chemistry*, 7(1), 43-52. doi:10.1016/j.arabjc.2013.08.001
- Trakal, L., et al. . (2014). Geochemical and spectroscopic investigations of Cd and Pb sorption mechanisms on contrasting biochars: Engineering implications. *Bioresource Technology*, 171, 442 - 451. doi:10.1016/j.biortech.2014.08.108
- Trakal, L., et al. (2016). Lead and cadmium sorption mechanisms on magnetically modified biochars. *Bioresource Technology*, 203, 318 - 324. doi:10.1016/j.biortech.2015.12.056
- Tran, H. N., You, S.-J., & Chao, H.-P. (2016). Effect of pyrolysis temperatures and times on the adsorption of cadmium onto orange peel derived biochar. *Waste Management & Research*, 34(2), 129 - 138. doi:10.1177/0734242x15615698
- Tran, P. D., Wong, L. H., Barber, J., & Loo, J. S. C. (2012). Recent advances in hybrid photocatalysts for solar fuel production. *Energy Environ. Sci.*, 5, 5902.
- Traxler, V. S. (2015).
- Traxler, V. S., Thompson, T. A., Faust, P., & Hago, W. (2015).
- Trazzi, P. A., Leahy, J. J., Hayes, M. H. B., & Kwapinski, W. (2016). Adsorption and desorption of phosphate on biochars. *Journal of Environmental Chemical Engineering*, 4(1), 37 - 46.

doi:10.1016/j.jece.2015.11.005

- Tredici, M. R. (1998). Photobiology of microalgae mass cultures: understanding the tools for the next green revolution. *Biofuels*, 1, 143-162. Retrieved from <http://www.tandfonline.com/doi/citedby/10.4155/bfs.09.10?scroll=top&needAccess=true>
- Tredici, M. R., Bassi, N., Prussi, M., Biondi, N., Rodolfi, L., Chini Zittelli, G., & Sampietro, G. (2015). Energy balance of algal biomass production in a 1-ha "Green Wall Panel" plant: How to produce algal biomass in a closed reactor achieving a high Net Energy Ratio. *Applied Energy*, 154, 1103-1111. doi:<https://doi.org/10.1016/j.apenergy.2015.01.086>
- Treguer, P., Bowler, C., Moriceau, B., Dutkiewicz, S., Gehlen, M., Aumont, O., . . . Pondaven, P. (2018). Influence of diatom diversity on the ocean biological carbon pump. *Nature Geoscience*, 11(1), 27-37. doi:10.1038/s41561-017-0028-x
- Treleaven, C. (2019). Could It Be the Holy Grail? *Medium*, (February 19). Retrieved from <https://medium.com/@ctreleaven/could-it-be-the-holy-grail-b311387f247a>
- Tremain, P., Zanganeh, J., Hugo, L., Curry, S., & Moghtaderi, B. (2014). Characterization of "Chailings": A Char Created from Coal Tailings. *Energy & Fuels*, 28(12), 7609 - 7615. doi:10.1021/ef501829f
- Trevathan-Tackett, S. M., Kelleway, J., Macreadie, P. I., Beardall, J., Ralph, P., & Bellgrove, A. (2015). Comparison of marine macrophytes for their contributions to blue carbon sequestration. *Ecology*, 96(11), 3043-3057. doi:10.1890/15-0149.1
- Trevor, C. T., Stephen, E., & W., L. J. (2016). When does seed limitation matter for scaling up reforestation from patches to landscapes? *Ecological Applications*, 26(8), 2439-2450. doi:doi:10.1002/eap.1410
- Trevor, R. (2015). Biochar - reversing the flow of carbon. *UTAR Agriculture Science Journal*, 1(1), 1-8. Retrieved from <http://eprints.utar.edu.my/1677/>
- Treweek, G. (2015). *The effect of winter grazing and a nitrification inhibitor on nitrous oxide emissions and denitrification in a stony soil*. Lincoln University, Retrieved from <http://researcharchive.lincoln.ac.nz/handle/10182/6591>
- Trexler, M. (2021). Time to Rethink Nature-Based Solutions? Retrieved from <https://illuminem.com/energyvoices/2cf8e0b0-46be-4c8e-abb1-71237461ece0>
- Trias, R., Ménez, B., le Campion, P., Zivanovic, Y., Lecourt, L., Lecoeuvre, A., . . . Gérard, E. (2017). High reactivity of deep biota under anthropogenic CO₂ injection into basalt. *Nature Communications*, 8(1), 1063. doi:10.1038/s41467-017-01288-8
- Triberti, L., Nastri, A., & Baldoni, G. (2016). Long-term effects of crop rotation, manure and mineral fertilisation on carbon sequestration and soil fertility. *European Journal of Agronomy*, 74, 47-55. doi:<https://doi.org/10.1016/j.eja.2015.11.024>
- Tributsch, H. (2008). Photovoltaic hydrogen generation. *Int. J. Hydrogen Energy*, 33, 5911.
- Trick, C. G., Bill, B. D., Cochlan, W. P., Wells, M. L., Trainer, V. L., & Pickell, L. D. (2010). Iron enrichment stimulates toxic diatom production in high-nitrate, low-chlorophyll areas. *Proceedings of the National Academy of Sciences*, 107(13), 5887-5892. doi:10.1073/pnas.0910579107
- Trigo, C., Spokas, K. A., Cox, L., & Koskinen, W. C. (2014). Influence of Soil Biochar Aging on Sorption of the Herbicides MCPA, Nicosulfuron, Terbutylazine, Indaziflam, and Fluoroethylidiaminotriazine. *Journal of Agricultural and Food Chemistry*, 62(45), 10855 - 10860. doi:10.1021/jf5034398
- Trimarchi, M. (2009). How could adding lime to seawater cut atmospheric CO₂? *HowStuffWorks*. Retrieved from <https://science.howstuffworks.com/environmental/green-science/lime-seawater.htm>
- Tripathi, M., Sahu, J. N., & Ganesan, P. (2016). Effect of process parameters on production of biochar from biomass waste through pyrolysis: A review. *Renewable and Sustainable Energy Reviews*, 55, 467 - 481. doi:10.1016/j.rser.2015.10.122

- Tripathy, S. C., & Jena, B. (2019). Iron-Stimulated Phytoplankton Blooms in the Southern Ocean: a Brief Review. *Remote Sensing in Earth Systems Sciences*, 2(1), 64-77. doi:10.1007/s41976-019-00012-y
- Trippe, K., Griffith, S., Banowetz, G., & Whitaker, G. (2015). Biochars Derived from Gasified Feedstocks Increase the Growth and Improve Nutrient Acquisition of *Triticum aestivum* (L.) Grown in Agricultural Alfisols. *Agriculture*, 5(3), 668 - 681. doi:10.3390/agriculture5030668
- Trippe, K. M., Griffith, S. M., Banowetz, G. M., & Whitaker, G. W. (2015). Changes in Soil Chemistry following Wood and Grass Biochar Amendments to an Acidic Agricultural Production Soil. *Agronomy Journal*, 107(4), 1440-1460. doi:10.2134/agronj14.0593
- Trivedi, P., Singh, B. P., & Singh, B. K. (2018). Chapter 1 - Soil Carbon: Introduction, Importance, Status, Threat, and Mitigation. In B. K. Singh (Ed.), *Soil Carbon Storage* (pp. 1-28): Academic Press.
- Trivedi, V. (2020). Carbon capture technology not on track to reduce CO₂ emissions. *Down To Earth*. Retrieved from <https://www.downtoearth.org.in/news/climate-change/carbon-capture-technology-not-on-track-to-reduce-co2-emissions-74718>
- Tromso, U. o. (2017). Battered Earth revived by mineral weathering after mass extinction. *Science Daily*. Retrieved from <https://www.sciencedaily.com/releases/2017/05/170505092607.htm>
- Troy, S. M., et al. . (2013). Impact of biochar addition to soil on greenhouse gas emissions following pig manure application. *Soil Biology and Biochemistry*, 60, 173-181. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0038071713000308>
- Troy, S. M., et al. (2014). The Impact of Biochar Addition on Nutrient Leaching and Soil Properties from Tillage Soil Amended with Pig Manure. *Water, Air, & Soil Pollution*, 225, 1-15. Retrieved from <https://link.springer.com/article/10.1007/s11270-014-1900-6>
- Troy, S. M., Lawlor, P. G., O' Flynn, C. J., & Healy, M. G. (2013). Impact of biochar addition to soil on greenhouse gas emissions following pig manure application. *Soil Biology and Biochemistry*, 60, 173-181. doi:<https://doi.org/10.1016/j.soilbio.2013.01.019>
- Trull, T., Rintoul, S. R., Hadfield, M., & Abraham, E. R. (2001). Circulation and seasonal evolution of polar waters south of Australia: implications for iron fertilization of the Southern Ocean. *Deep Sea Research Part II: Topical Studies in Oceanography*, 48(11–12), 2439-2466. doi:[http://dx.doi.org/10.1016/S0967-0645\(01\)00003-0](http://dx.doi.org/10.1016/S0967-0645(01)00003-0)
- Trull, T. W., & Armand, L. (2001). Insights into Southern Ocean carbon export from the δ¹³C of particles and dissolved inorganic carbon during the SOIREE iron release experiment. *Deep Sea Research Part II: Topical Studies in Oceanography*, 48(11), 2655-2680. doi:[https://doi.org/10.1016/S0967-0645\(01\)00013-3](https://doi.org/10.1016/S0967-0645(01)00013-3)
- Trull, T. W., Davies, D., & Casciotti, K. (2008). Insights into nutrient assimilation and export in naturally iron-fertilized waters of the Southern Ocean from nitrogen, carbon and oxygen isotopes. *Deep Sea Research Part II: Topical Studies in Oceanography*, 55(5), 820-840. doi:<https://doi.org/10.1016/j.dsr2.2007.12.035>
- Truong, C. C., & Mishra, D. K. (2020). Recent advances in the catalytic fixation of carbon dioxide to value-added chemicals over alkali metal salts. *Journal of CO₂ Utilization*, 41, 101252. doi:<https://doi.org/10.1016/j.jcou.2020.101252>
- Tryon, E. H. (1948). Effect of charcoal on certain physical, chemical, and biological properties of forest soils. *Ecological Monographs*, 18(1), 81-115. Retrieved from <http://onlinelibrary.wiley.com/doi/10.2307/1948629/abstract>
- Tsai, D. D.-W., et al. (2012). Growth condition study of algae function in ecosystem for CO₂ bio-fixation. *Journal of Photochemistry and Photobiology B: Biology*, 107, 27-34. Retrieved from [Growth condition study of algae function in ecosystem for CO₂ bio-fixation](http://onlinelibrary.wiley.com/doi/10.2307/1948629/abstract)
- Tsai, D. D.-W., Chen, P. H., & Ramaraj, R. (2017). The potential of carbon dioxide capture and

- sequestration with algae. *Ecological Engineering*, 98, 17-23. doi:<https://doi.org/10.1016/j.ecoleng.2016.10.049>
- Tsai, D. D.-W., Ramaraj, R., & Chen, P. H. (2016). Carbon dioxide bio-fixation by algae of high rate pond on natural water medium. *Ecological Engineering*, 92, 106-110. doi:<https://doi.org/10.1016/j.ecoleng.2016.03.021>
- Tsai, W. T., Lee, M. K., & Chang, Y. M. (2007). Fast pyrolysis of rice husk: Product yields and compositions. *Bioresource Technology*, 98(1), 22-28. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0960852405005651>
- Tsai, W.-T., Huang, C.-N., Chen, H.-R., & Cheng, H.-Y. (2015). Pyrolytic Conversion of Horse Manure into Biochar and Its Thermochemical and Physical Properties. *Waste and Biomass Valorization*, 6(6), 975-981. doi:[10.1007/s12649-015-9376-1](https://doi.org/10.1007/s12649-015-9376-1)
- Tsai, W.-T., Kuo, K.-C., Tsai, C.-Y., Chou, T.-C., Chen, H.-R., & Chang, Y.-M. (2011). Novel Preparation of Bamboo Biochar and Its Application on Cationic Dye Removal. *Journal of Biobased Materials and Bioenergy*, 5(4), 556-561. doi:<http://dx.doi.org/10.1166/jbmb.2011.1177>
- Tsai, W.-T., & Liu, S.-C. (2015). Thermochemical characterization of cattle manure relevant to its energy conversion and environmental implications. *Biomass Conversion and Biorefinery*, 6(1), 71-77. doi:[10.1007/s13399-015-0165-7](https://doi.org/10.1007/s13399-015-0165-7)
- Tsai, W.-T., Liu, S.-C., Chen, H.-R., Chang, Y.-M., & Tsai, Y.-L. (2012). Textural and chemical properties of swine-manure-derived biochar pertinent to its potential use as a soil amendment. *Chemosphere*, 89(2), 198-203. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0045653512007217>
- Tsaneva, V. N., Kwapinski, W., Teng, X., & Glowacki, B. A. (2014). Assessment of the structural evolution of carbons from microwave plasma natural gas reforming and biomass pyrolysis using Raman spectroscopy. *Carbon*, 80, 617 - 628. doi:[10.1016/j.carbon.2014.09.005](https://doi.org/10.1016/j.carbon.2014.09.005)
- Tsang, D. C. W., Beiyuan, J., & Deng, M. (2015). Emerging Applications of Biochar. In *Biochar: Production, Characterization, and Applications*.
- Tsiropoulos, I., Hoefnagels, R., van den Broek, M., Patel, M. K., & Faaij, A. P. C. (2017). The role of bioenergy and biochemicals in CO₂ mitigation through the energy system - a scenario analysis for the Netherlands. *Global Change Biology Bioenergy*, 9(9), 1489-1509. doi:[10.1111/gcbb.12447](https://doi.org/10.1111/gcbb.12447)
- Tsonkova, P., Quinkenstein, A., Böhm, C., Freese, D., & Schaller, E. (2014). Ecosystem services assessment tool for agroforestry (ESAT-A): An approach to assess selected ecosystem services provided by alley cropping systems. *Ecological Indicators*, 45, 285-299. doi:<https://doi.org/10.1016/j.ecolind.2014.04.024>
- Tsubaki, K., Maruyama, S., Komiya, A., & Mitsugashira, H. (2007). Continuous measurement of an artificial upwelling of deep sea water induced by the perpetual salt fountain. *Deep Sea Research Part I: Oceanographic Research Papers*, 54(1), 75-84. doi:<https://doi.org/10.1016/j.dsr.2006.10.002>
- Tsuda, A., Kiyosawa, H., Kuwata, A., Mochizuki, M., Shiga, N., Saito, H., . . . Ono, T. (2005). Responses of diatoms to iron-enrichment (SEEDS) in the western subarctic Pacific, temporal and spatial comparisons. *Progress in Oceanography*, 64(2), 189-205. doi:<https://doi.org/10.1016/j.pocean.2005.02.008>
- Tsuda, A., Saito, H., Nishioka, J., Ono, T., Noiri, Y., & Kudo, I. (2006). Mesozooplankton response to iron enrichment during the diatom bloom and bloom decline in SERIES (NE Pacific). *Deep Sea Research Part II: Topical Studies in Oceanography*, 53(20–22), 2281-2296. doi:<http://dx.doi.org/10.1016/j.dsrr.2006.05.041>
- Tsuda, A., Takeda, S., Saito, H., Nishioka, J., Kudo, I., Nojiri, Y., . . . Yoshie, N. (2007). Evidence for the grazing hypothesis: Grazing reduces phytoplankton responses of the HNLC

- ecosystem to iron enrichment in the western subarctic pacific (SEEDS II). *Journal of Oceanography*, 63(6), 983-994. doi:10.1007/s10872-007-0082-x
- Tsuda, A., Takeda, S., Saito, H., Nishioka, J., Nojiri, Y., Kudo, I., . . . Saino, T. (2003). A Mesoscale Iron Enrichment in the Western Subarctic Pacific Induces a Large Centric Diatom Bloom. *Science*, 300(5621), 958-961. doi:10.1126/science.1082000
- Tsui, L., & Roy, W. R. (2008). The potential applications of using compost chars for removing the hydrophobic herbicide atrazine from solution. *Bioresource Technology*, 99(13), 5673--5678. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0960852407008644>
- Tsuji, T., Sorai, M., Shiga, M., Fujikawa, S., & Kunitake, T. Geological storage of CO₂-N₂-O₂ mixtures produced by membrane-based direct air capture (DAC). *Greenhouse Gases: Science and Technology*, n/a(n/a). doi:<https://doi.org/10.1002/ghg.2099>
- Tsumune, D., Nishioka, J., Shimamoto, A., Takeda, S., & Tsuda, A. (2005). Physical behavior of the SEEDS iron-fertilized patch by sulphur hexafluoride tracer release. *Progress in Oceanography*, 64(2), 111-127. doi:<https://doi.org/10.1016/j.pocean.2005.02.018>
- Tsumune, D., Nishioka, J., Shimamoto, A., Watanabe, Y. W., Aramaki, T., Nojiri, Y., . . . Tsubono, T. (2009). Physical behaviors of the iron-fertilized patch in SEEDS II. *Deep Sea Research Part II: Topical Studies in Oceanography*, 56(26), 2948-2957. doi:<https://doi.org/10.1016/j.dsrr.2009.07.004>
- Tsupari, E., Arponen, T., Hankalin, V., Kärki, J., & Kouri, S. (2017). Feasibility comparison of bioenergy and CO₂ capture and storage in a large combined heat, power and cooling system. *Energy*. doi:<http://dx.doi.org/10.1016/j.energy.2017.08.022>
- Tu, Q., Wu, W., Lu, H., sun, B., Wang, C., deng, H., & Chen, Y. (2013). *The Effect of Biochar and Bacterium Agent on Humification During Swine Manure Composting*, Dordrecht.
- Tuana, N., Sriver, R. L., Svoboda, T., Olson, R., Irvine, P. J., Haqq-Misra, J., & Keller, K. (2012). Towards Integrated Ethical and Scientific Analysis of Geoengineering: A Research Agenda. *Ethics, Policy & Environment*, 15(2), 136-157. doi:10.1080/21550085.2012.685557
- Tubana, B. S., Babu, T., & Datnoff, L. E. (2016). A Review of Silicon in Soils and Plants and Its Role in US Agriculture: History and Future Perspectives. *Soil Science*, 181(9/10), 393-411. doi:10.1097/SS.0000000000000179
- Tulbure, M. G., et al. (2012). Climatic and genetic controls of yields of switchgrass, a model bioenergy species. *Agriculture, Ecosystems & Environment*, 146(1), 121-129. Retrieved from <https://www.cabdirect.org/cabdirect/abstract/20123064617>
- Tumiatti, V., Lenzi, F., & Tumiatti, M. (2015).
- Turan, G., & Neori, A. (2010). Intensive seaweed aquaculture: a potent solution against global warming. In A. Israel, R. Einav, & J. Seckbach (Eds.), *Seaweeds and Their Role in Globally Changing Environments* (pp. 359-372).
- Turk, J. K., Reay, D. S., & Haszeldine, R. S. (2018). UK grid electricity carbon intensity can be reduced by enhanced oil recovery with CO₂ sequestration. *Carbon Management*, 9(2), 115-126. doi:10.1080/17583004.2018.1435959
- Turkeysong. (2012). Biochar in 19th Century Europe and North America: A partial review. Retrieved from <https://turkeysong.wordpress.com/2012/05/18/some-citations-on-biochar-in-europe-and-america-in-the-19th-century/>
- Turner, M., & Rouse, P. (2021). Navigating the maze of climate-altering technology. Retrieved from <https://www.c2g2.net/navigating-the-maze-of-climate-altering-terminology/>
- Turner, P. A., Mach, K. J., Lobell, D. B., Benson, S. M., Baik, E., Sanchez, D. L., & Field, C. B. (2018). The global overlap of bioenergy and carbon sequestration potential. *Climatic Change*, 148(1), 1-10. doi:10.1007/s10584-018-2189-z
- Turner, S. M., Nightingale, P. D., Spokes, L. J., Liddicoat, M. I., & Liss, P. S. (1996). Increased

- dimethyl sulphide concentrations in sea water from in situ iron enrichment. *Nature*, 383(6600), 513-517. Retrieved from <http://dx.doi.org/10.1038/383513a0>
- Turner, W. R. (2018). Looking to nature for solutions. *Nature Climate Change*, 8(1), 18-19. doi:10.1038/s41558-017-0048-y
- Tursunov, O., & Dobrowolski, J. W. (2015). A Brief Review of Application of Laser Biotechnology as an Efficient Mechanism for the Increase of Biomass for Bio-energy Production Via Clean Thermo-Technologies. *American Journal of Renewable and Sustainable Energy*, 1(2), 66-71. Retrieved from <http://files.aiscience.org/journal/article/pdf/70190019.pdf>
- Turvey, C. C., Wilson, S. A., Hamilton, J. L., Tait, A. W., McCutcheon, J., Beinlich, A., . . . Southam, G. (2018). Hydrotalcites and hydrated Mg-carbonates as carbon sinks in serpentinite mineral wastes from the Woodsreef chrysotile mine, New South Wales, Australia: Controls on carbonate mineralogy and efficiency of CO₂ air capture in mine tailings. *International Journal of Greenhouse Gas Control*, 79, 38-60. doi:<https://doi.org/10.1016/j.ijggc.2018.09.015>
- Twedt, J. (2012). *The Effects of Geoengineering on the Southern Ocean*. Retrieved from https://atmos.washington.edu/~jtwedt/coursework/ClimateModeling/Ocn558FinalPaper_JTwedt.pdf
- Twidale, S. (2021). World must remove 1 bln tonnes CO₂ by 2025 to meet climate goal - report. *Reuters*. Retrieved from <https://www.reuters.com/world/world-must-remove-1-bln-tonnes-co2-by-2025-meet-climate-goal-report-2021-06-29/>
- Twining, B. S., Baines, S. B., Fisher, N. S., & Landry, M. R. (2004). Cellular iron contents of plankton during the Southern Ocean Iron Experiment (SOFeX). *Deep Sea Research Part I: Oceanographic Research Papers*, 51(12), 1827-1850. doi:<https://doi.org/10.1016/j.dsr.2004.08.007>
- Ty, C., et al. . (2013). Synergism between biochar and biodigester effluent as soil amenders for biomass production and nutritive value of Mustard green (*Brassica juncea*). *Livestock Research for Rural Development*, 25(4). Retrieved from <http://www.lrrd.org/lrrd25/4/chha25057.htm>
- Tyree, S., & Greenleaf, M. (2009). The Environmental Injustice of "Clean Coal": Expanding the National Conversation on Carbon Capture and Storage Technology to Include an Analysis of Potential Environmental Justice Impacts. *Environmental Justice*, 2(4), 167-171. doi:10.1089/env.2009.0040
- Tytłak, A., Oleszczuk, P., & Dobrowolski, R. (2014). Sorption and desorption of Cr(VI) ions from water by biochars in different environmental conditions. *Environmental Science and Pollution Research*, 22(8), 5985-5994. doi:10.1007/s11356-014-3752-4
- Tzankova, Z. (2021). Carbon offsetting can be a tool of environmental justice.
- Tzimas, E., et al. (2005). *Enhanced Oil Recovery using Carbon Dioxide in the European Energy System*. Retrieved from <http://publications.jrc.ec.europa.eu/repository/bitstream/JRC32102/P2005-277=EUR21895EN=PUBSY%20Request%202102.pdf>
- U.S. National Academies Sciences, E. M. (2021). A Research Strategy for Ocean Carbon Dioxide Removal and Sequestration: Workshop Series, Part 1
- Ubalde, J. M., et al. (2015). Application of Biochar Amendments to Mediterranean Soils: Effects on Vine Growth and Grapde Quality. In.
- Ubando, A. T., et al. (2014). Fuzzy mixed-integer linear programming model for optimizing a multi-functional bioenergy system with biochar production for negative carbon emissions. *Clean Technologies and Environmental Policy*, 16(8), 1537-1549. Retrieved from <https://link.springer.com/article/10.1007/s10098-014-0721-z>
- Uchikawa, J., & Zeebe, R. E. (2008). Influence of terrestrial weathering on ocean acidification and the next glacial inception. *Geophysical Research Letters*, 35(23), 1-5. doi:doi:10.1029/2008GL035963

- Uchimiya, M., et al.i (2010). Influence of soil properties on heavy metal sequestration by biochar amendment: 1. Copper sorption isotherms and the release of cations. *Chemosphere*, 82(10), 1431-1437. doi:10.1016/j.chemosphere.2010.11.050
- Uchimiya, M., et al. . (2011). Influence of Pyrolysis Temperature on Biochar Property and Function as a Heavy Metal Sorbent in Soil. *Journal of Agriculture and Food Chemistry*, 59(6), 2501-2510. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/jf104206c>
- Uchimiya, M. (2014). Influence of pH, Ionic Strength, and Multidentate Ligand on the Interaction of Cd ^{II} with Biochars. *ACS Sustainable Chemistry & Engineering*, 2(8), 2019-2027. doi:10.1021/sc5002269
- Uchimiya, M., & Bannon, D. I. (2013). Solubility of Lead and Copper in Biochar-Amended Small Arms Range Soils: Influence of Soil Organic Carbon and pH. *Journal of Agricultural and Food Chemistry*, 61(32), 7679-7688. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/jf401481x>
- Uchimiya, M., Bannon, D. I., & Wartelle, L. H. (2012). Retention of Heavy Metals by Carboxyl Functional Groups of Biochars in Small Arms Range Soil. *Journal of Agricultural and Food Chemistry*, 60(7), 1798-1809. doi:10.1021/jf2047898
- Uchimiya, M., Chang, S., & Klasson, K. T. (2011). Screening biochars for heavy metal retention in soil: Role of oxygen functional groups. *Journal of Hazardous Materials*, 190(1-3), 432-441. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0304389411003669>
- Uchimiya, M., Hiradate, S., & Antal, M. J. (2015). Dissolved Phosphorus Speciation of Flash Carbonization, Slow Pyrolysis, and Fast Pyrolysis Biochars. *ACS Sustainable Chemistry & Engineering*, 3(7), 1642-1649. doi:10.1021/acssuschemeng.5b00336
- Uchimiya, M., Hiradate, S., & Antal, M. J. (2015). Influence of Carbonization Methods on the Aromaticity of Pyrogenic Dissolved Organic Carbon. *Energy & Fuels*, 29(4), 2503-2513. doi:10.1021/acs.energyfuels.5b00146
- Uchimiya, M., Lima, I. M., Klasson, K. T., Chang, S. C., Wartelle, L. H., & Rodgers, J. E. (2010). Immobilization of Heavy Metal Ions (Cu-II, Cd-II, Ni-II, and Pb-II) by Broiler Litter-Derived Biochars in Water and Soil. *Journal of Agricultural and Food Chemistry*, 58, 5538-5544. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0045653510013573>
- Uchimiya, M., Lima, I. M., Klasson, K. T., & Wartelle, L. H. (2010). Contaminant immobilization and nutrient release by biochar soil amendment: Roles of natural organic matter. *Chemosphere*, 80(8), 935-940. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0045653510005965>
- Uchimiya, M., Liu, Z., & Sistani, K. (2016). Field-scale fluorescence fingerprinting of biochar-borne dissolved organic carbon. *Journal of Environmental Management*, 169, 184 - 190. doi:10.1016/j.jenvman.2015.12.009
- Uchimiya, M., Wartelle, L. H., & Boddu, V. M. (2012). Sorption of Triazine and Organophosphorus Pesticides on Soil and Biochar. *Journal of Agricultural and Food Chemistry*, 60(12), 2989-2997. doi:10.1021/jf205110g
- Udawatta, R. P., & Jose, S. (2012). Agroforestry strategies to sequester carbon in temperate North America. *Agroforestry Systems*, 86(2), 225-242. doi:10.1007/s10457-012-9561-1
- Uddin, S. N., & Barreto, L. (2007). Biomass-fired cogeneration systems with CO₂ capture and storage. *Renewable Energy*, 32(6), 1006-1019. doi:10.1016/j.renene.2006.04.009
- Uden, S., et al. (2021). Cutting through the noise on negative emissions. *Joule*. doi:<https://doi.org/10.1016/j.joule.2021.06.013>
- Uematsu, M., Wells, M. L., Tsuda, A., & Saito, H. (2009). Introduction to Subarctic iron Enrichment for Ecosystem Dynamics Study II (SEEDS II). *Deep Sea Research Part II: Topical Studies in Oceanography*, 56(26), 2731-2732. doi:<https://doi.org/10.1016/j.dsr2.2009.07.006>

- Uibu, M., & Kuusik, R. (2009). Mineral trapping of CO₂ via oil shale ash aqueous carbonation: Controlling mechanism of process rate and development of continuous-flow reactor system. *Oil Shale*, 26(1), 40-58. Retrieved from <https://www.scopus.com/record/display.uri?eid=2-s2.0-77949913506&origin=inward&txGid=696f8a51ca4e129ce6b11c7aecc4d700>
- Ukwattage, N. L., Ranjith, P. G., & Li, X. (2017). Steel-making slag for mineral sequestration of carbon dioxide by accelerated carbonation. *Measurement*, 97, 15-22. doi:<https://doi.org/10.1016/j.measurement.2016.10.057>
- Ukwattage, N. L., Ranjith, P. G., Yellishetty, M., Bui, H. H., & Xu, T. (2015). A laboratory-scale study of the aqueous mineral carbonation of coal fly ash for CO₂ sequestration. *Journal of Cleaner Production*, 103, 665-674. doi:<https://doi.org/10.1016/j.jclepro.2014.03.005>
- Ullah, K., Ahmad, M., Sofia, Sharma, V. K., Lu, P., Harvey, A., . . . Sultana, S. (2015). Assessing the potential of algal biomass opportunities for bioenergy industry: A review. *Fuel*, 143, 414-423. doi:<https://doi.org/10.1016/j.fuel.2014.10.064>
- Ullman, R., Bilbao-Bastida, V., & Grimsditch, G. (2013). Including Blue Carbon in climate market mechanisms. *Ocean & Coastal Management*, 83, 15-18. doi:<https://doi.org/10.1016/j.ocecoaman.2012.02.009>
- Ulrich, B. A., Im, E., Werner, D., & Higgins, C. P. (2015). Biochar and Activated Carbon for Enhanced Trace Organic Contaminant Retention in Stormwater Infiltration Systems. *Environmental Science and Technology*, 49(10), 6222-6230. doi:[10.1021/acs.est.5b00376](https://doi.org/10.1021/acs.est.5b00376)
- Ulusal, A., et al. (2015). Influence of Pyrolysis Temperature on Physicochemical Properties of Oak Sawdust Biochar for Soil Application. In.
- Ulyett, J., Sakrabani, R., Kibblewhite, M., & Hann, M. (2013). Impact of biochar addition on water retention, nitrification and carbon dioxide evolution from two sandy loam soils. *European Journal of Soil Science*, 65(1), 96-104. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/ejss.12081/abstract>
- Umweltforschungsplan des Bundesministeriums für Umwelt, N., Bau und Reaktorsicherheit. (2016). *Chancen und Risiken des Einsatzes von Biokohle und anderer „veränderter“ Biomasse als Bodenhilfsstoffe oder für die C-Sequestrierung in Böden*. Retrieved from <http://www.agrokarbo.info/uba-2016-4-biokohle/>
- Unger, N. (2014). Human land-use-driven reduction of forest volatiles cools global climate. *Nature Climate Change*, 4, 907. doi:[10.1038/nclimate2347](https://doi.org/10.1038/nclimate2347)
- <https://www.nature.com/articles/nclimate2347#supplementary-information>
- Unger, N. (2014). To Save the Planet, Don't Plant Trees. *New York Times*. Retrieved from <https://www.nytimes.com/2014/09/20/opinion/to-save-the-planet-dont-plant-trees.html>
- Unger, R., & Killorn, R. (2011). Effect of the Application of Biochar on Selected Soil Chemical Properties, Corn Grain, and Biomass Yields in Iowa. *Communications in Soil Science and Plant Analysis*, 42(20), 2441-2451. doi:[10.1080/00103624.2011.609253](https://doi.org/10.1080/00103624.2011.609253)
- Ungera, R., & Killorna, R. (2011). Effect of Three Different Qualities of Biochar on Selected Soil Properties. *Communications in Soil Science and Plant Analysis*, 42(18), 2274-2283. doi:[10.1080/00103624.2011.602448](https://doi.org/10.1080/00103624.2011.602448)
- Unit, E. I. (2020). Investing in Carbon Removal: Demystifying Existing Approaches. *The Economist*. Retrieved from <https://carbonremoval.economist.com/>
- Unit, M. D. R. (2020). CO₂ Sequestration in Mine Tailings. Retrieved from <https://www.mdru.ubc.ca/projects/co2-sequestration/>
- United Kingdom, D. f. B., Energy & Industrial Strategy. (2021). *The Role of Biomass in Achieving Net Zero: Call for Evidence*. Retrieved from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/978812/role-of-biomass-achieving-net-zero-call-for-evidence.pdf

- University, C. (2019). Iron fertilization won't work in much of Pacific, says study. *Phys.org*. Retrieved from https://phys.org/news/2016-05-iron-fertilization-wont-pacific.html?gclid=CjwKCAiA__HvBRACEiwAbViUxOUwVPkucHM4UxtANik4-qgJKrSxLWZRbZucERGe7H2IxYKZak--hoCu9YQAvD_BwE
- University, K. (2020). Membranes for capturing carbon dioxide from the air. *Phys.org*. Retrieved from <https://phys.org/news/2020-10-membranes-capturing-carbon-dioxide-air.html>
- University, M. (2020). New Record for Carbon Dioxide Capture Set Using Metal Organic Frameworks [Press release]. Retrieved from <https://scitechdaily.com/new-record-for-carbon-dioxide-capture-set-using-metal-organic-frameworks/>
- University, N. (2020). New self-forming membrane to protect our environment. *Phys.org*. Retrieved from <https://phys.org/news/2020-05-self-forming-membrane-environment.html>
- University of California, L. A. (2019). Carbon dioxide capture and use could become big business. *Phys.org*. Retrieved from <https://phys.org/news/2019-11-carbon-dioxide-capture-big-business.html?fbclid=IwAR0XujNtrh8OnRPIBkPerFBW-E1Q2jQVDp5hHlxAQzJnfROxdWNkdqupY4>
- University of Michigan, G. C. I. (2020). The Techno-Economic Assessment and Life Cycle Assessment Toolkit. Retrieved from <https://www.globalco2initiative.org/research/techno-economic-assessment-and-life-cycle-assessment-toolkit/>
- University, S. (2019). A cheap Carbon Capture breakthrough? MOF molecular cages that trap CO₂. *Energy Post.eu*. Retrieved from <https://energypost.eu/a-cheap-carbon-capture-breakthrough-mof-molecular-cages-that-trap-co2/>
- Uniyal, S. K., & Kumar, A. (2011). Charcoal making: going green with black. *Current Science*, 100(1), 9. Retrieved from <https://www.cabdirect.org/cabdirect/abstract/20113026557>
- Unluer, C. (2018). 7 - Carbon dioxide sequestration in magnesium-based binders. In F. Pacheco-Torgal, C. Shi, & A. P. Sanchez (Eds.), *Carbon Dioxide Sequestration in Cementitious Construction Materials* (pp. 129-173): Woodhead Publishing.
- Unnervik, D. (2020). Why planting trees won't be enough to tackle climate change. 1-3. Retrieved from <https://sofiesgroup.com/en/news/white-paper-sofies-co2-as-a-resource/>
- Upadhyay, K. (2015). *The influence of biochar on crop growth and the colonization of horticultural crops by arbuscular mycorrhizal fungi*. (Ph.D. PhD Thesis). University of Queensland, Retrieved from <http://espace.library.uq.edu.au/view/UQ:367181>
- Upadhyay, K. P., et al. (2014). The Influence of Biochar on Growth of Lettuce and Potato. *Journal of Integrative Agriculture*, 13(3), 541–546. Retrieved from <http://www.sciencedirect.com/science/article/pii/S2095311913607108>
- Upadhyay, T. P., Shahi, C., Leitch, M., & Pulkki, R. (2012). Economic feasibility of biomass gasification for power generation in three selected communities of northwestern Ontario, Canada. *Energy Policy*, 44, 235-244. doi:10.1016/j.enpol.2012.01.047
- UPFSI (Writer). (2018). Getting off (climate disruption) with our Rocks. In. YouTube.
- Upham, P., & Roberts, T. (2011). Public perceptions of CCS in context: Results of NearCO₂ focus groups in the UK, Belgium, the Netherlands, Germany, Spain and Poland. *Energy Procedia*, 4, 6338-6344. doi:<http://dx.doi.org/10.1016/j.egypro.2011.02.650>
- Upham, P., & Roberts, T. (2011). Public perceptions of CCS: Emergent themes in pan-European focus groups and implications for communications. *International Journal of Greenhouse Gas Control*, 5, 1359-1367. Retrieved from https://kar.kent.ac.uk/28706/1/Upham_Roberts_2011.pdf
- Upham, P., & Roberts, T. (2011). Public perceptions of CCS: Emergent themes in pan-European focus groups and implications for communications. *International Journal of Greenhouse Gas Control*, 5(5), 1359-1367. doi:<https://doi.org/10.1016/j.ijggc.2011.06.005>
- Upreti, B. R. (2004). Conflict over biomass energy development in the United Kingdom: some observations and lessons from England and Wales. *Energy Policy*, 32(6), 785-800.

- doi:[https://doi.org/10.1016/S0301-4215\(02\)00342-7](https://doi.org/10.1016/S0301-4215(02)00342-7)
- Upson, M. A., Burgess, P. J., & Morison, J. I. L. (2016). Soil carbon changes after establishing woodland and agroforestry trees in a grazed pasture. *Geoderma*, 283, 10-20. doi:<https://doi.org/10.1016/j.geoderma.2016.07.002>
- Upton, J. (2015). Pulp Fiction, Part 1: . Retrieved from <http://reports.climatecentral.org/pulp-fiction/1/#section-1>
- ur Rehman, A., Baek, J. W., Rene, E. R., Sergienko, N., Behera, S. K., & Park, H.-S. (2018). Effect of process parameters influencing the chemical modification of activated carbon fiber for carbon dioxide removal. *Process Safety and Environmental Protection*. doi:<https://doi.org/10.1016/j.psep.2018.07.004>
- Urbanova, O., Elbl, J., & Zahora, J. (2014). The effects of biochar on soil respiration in rhizosphere and non-rhizosphere soil. *Mendelnet*. Retrieved from http://mnet.mendelu.cz/mendelnet2014/articles/52_urbankova_1077.pdf
- USDA. (2018). Comet Farm: Whole Farm and Ranch Carbon and Greenhouse Gas Accounting System. Retrieved from <http://cometfarm.nrel.colostate.edu/>
- Usham, A. R. A., et al. (2015). Conocarpus biochar induces changes in soil nutrient availability and tomato growth under saline irrigation. *Pedosphere*, 26(1), 27-38. Retrieved from http://pedosphere.issas.ac.cn/trqen/ch/reader/view_abstract.aspx?file_no=20160103&flag=1
- Usman, A. R. A., Abduljabbar, A., Vithanage, M., Ok, Y. S., Ahmad, M., Ahmad, M., . . . Al-Wabel, M. I. (2015). Biochar production from date palm waste: Charring temperature induced changes in composition and surface chemistry. *Journal of Analytical and Applied Pyrolysis*, 115, 392 - 400. doi:[10.1016/j.jaat.2015.08.016](https://doi.org/10.1016/j.jaat.2015.08.016)
- Usman, A. R. A., Ahmad, M., EL-MAHROUKY, M., Al-Omran, A., Ok, Y. S., Sallam, A. S., . . . Al-Wabel, M. I. (2015). Chemically modified biochar produced from conocarpus waste increases NO₃ removal from aqueous solutions. *Environmental Geochemistry and Health*, 38, 511-528. doi:[10.1007/s10653-015-9736-6](https://doi.org/10.1007/s10653-015-9736-6)
- Ussiri, D. A. N., & Lal, R. (2017). Introduction to Terrestrial Carbon Sequestration. In *Carbon Sequestration for Climate Change Mitigation and Adaptation* (pp. 327-341). Cham: Springer International Publishing.
- Utomo, W. H., & Islami, T. (2015). Nitrogen fertilizer requirement of maize (*Zea mays L.*) on biochar-treated soil. In K. Hayashi (Ed.), *Biochar for future food security: learning from experiences and identifying research priorities* (pp. 32-78).
- Uygun, M., et al. (2015). Micromotor-Based Biomimetic Carbon Dioxide Sequestration: Towards Mobile Microscrubbers. *Angewandte Chemie International Edition*, 54(44), 12900-12904. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/anie.201505155/epdf>
- Uzoma, K. C., et al. (2011). Effect of cow manure biochar on maize productivity under sandy soil condition. *Soil Use and Management*, 27(2), 205-212. doi:[10.1111/j.1475-2743.2011.00340.x](https://doi.org/10.1111/j.1475-2743.2011.00340.x)
- Uzun, B., Apaydin-Varol, E., Ates, F., Ozbay, N., & Putun, A. (2010). Synthetic fuel production from tea waste: Characterisation of bio-oil and bio-char. *Fuel*, 89(1), 176-184. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0016236109004128>
- Vaccari, F., Baronti, S., Lugato, E., Genesio, L., Castaldi, S., & Fornasier, F. (2011). Biochar as a strategy to sequester carbon and increase yield in durum wheat. *European Journal of Agronomy*, 34(4), 231-238. doi:[10.1016/j.eja.2011.01.006](https://doi.org/10.1016/j.eja.2011.01.006)
- Vaidyanathan, G. (2016). Geoengineering Would Not Work in All Oceans. *Scientific American*(January 28). Retrieved from <https://www.scientificamerican.com/article/geoengineering-would-not-work-in-all-oceans/>
- Valili, S., et al. . (2015). Development of biochar sorbents from food-industry by-products for the removal of phenanthrene and mercury from aqueous solutions. In.

- Vall, M., Hultberg, J., Strømme, M., & Cheung, O. (2019). Carbon dioxide adsorption on mesoporous magnesium carbonate. *Energy Procedia*, 158, 4671-4676. doi:<https://doi.org/10.1016/j.egypro.2019.01.738>
- Valverde, J. M., Sanchez-Jimenez, P. E., Perejon, A., & Perez-Maqueda, L. A. (2013). Constant rate thermal analysis for enhancing the long-term CO₂ capture of CaO at Ca-looping conditions. *Applied Energy*, 108(Supplement C), 108-120. doi:<https://doi.org/10.1016/j.apenergy.2013.03.013>
- van Alphen, K., Hekkert, M. P., & Turkenburg, W. C. (2010). Accelerating the deployment of carbon capture and storage technologies by strengthening the innovation system. *International Journal of Greenhouse Gas Control*, 4(2), 396-409. doi:<https://doi.org/10.1016/j.ijggc.2009.09.019>
- van Alphen, K., van Ruijven, J., Kasa, S., Hekkert, M., & Turkenburg, W. (2009). The performance of the Norwegian carbon dioxide, capture and storage innovation system. *Energy Policy*, 37(1), 43-55. doi:<https://doi.org/10.1016/j.enpol.2008.07.029>
- van Alphen, K., van Voorst tot Voorst, Q., Hekkert, M. P., & Smits, R. E. H. M. (2007). Societal acceptance of carbon capture and storage technologies. *Energy Policy*, 35(8), 4368-4380. doi:<http://dx.doi.org/10.1016/j.enpol.2007.03.006>
- van Antwerpen, R., et al. (2013). Sugarcane as an Energy Crop: Its Role in Biomass Economy. In B. P. Singh (Ed.), *Biofuel Crop Sustainability* (pp. 53-108).
- van Asperen, H. L., et al. (2013). Properties of anthropogenic soils in ancient run-off capturing agricultural terraces in the Central Negev desert (Israel) and related effects of biochar and ash on crop growth. *Plant and Soil*, 374(1), 779-792. Retrieved from <http://link.springer.com/article/10.1007/s11104-013-1901-z>
- Van Bockhaven, J., De Vleesschauwer, D., & Höfte, M. (2012). Towards establishing broad-spectrum disease resistance in plants: silicon leads the way. *Journal of Experimental Botany*, 64(5), 1281-1293. doi:[10.1093/jxb/ers329](https://doi.org/10.1093/jxb/ers329)
- van Dam, J., & Junginger, M. (2011). Striving to further harmonization of sustainability criteria for bioenergy in Europe: Recommendations from a stakeholder questionnaire. *Energy Policy*, 39(7), 4051-4066. doi:<http://dx.doi.org/10.1016/j.enpol.2011.03.022>
- Van den Bergh, C. (2009). Biochar and Waste Law: A Comparative Analysis. *European Energy and Environmental Law Review*, 18, 243-253.
- van der Giesen, C., Kleijn, R., & Kramer, G. J. (2014). Energy and Climate Impacts of Producing Synthetic Hydrocarbon Fuels from CO₂. *Environmental Science & Technology*, 48(12), 7111-7121. doi:[10.1021/es500191g](https://doi.org/10.1021/es500191g)
- van der Giesen, C., Meinrenken, C. J., Kleijn, R., Sprecher, B., Lackner, K. S., & Kramer, G. J. (2017). A Life Cycle Assessment Case Study of Coal-Fired Electricity Generation with Humidity Swing Direct Air Capture of CO₂ versus MEA-Based Postcombustion Capture. *Environmental Science & Technology*, 51(2), 1024-1034. doi:[10.1021/acs.est.6b05028](https://doi.org/10.1021/acs.est.6b05028)
- van der Pol, L., et al. (2021). To make agriculture more climate-friendly, carbon farming needs clear rules. *The Conversation*. Retrieved from https://theconversation.com/to-make-agriculture-more-climate-friendly-carbon-farming-needs-clear-rules-160243?utm_medium=email&utm_campaign=Science%20Editors%20Picks%20%20June%2030%202021%20-%201989119528&utm_content=Science%20Editors%20Picks%20%20June%2030%202021%20-%201989119528+Version+B+CID_b7918d9f8ba755d552b15ce2dac1db2f&utm_source=campaign_monitor_us&utm_term=host%20of%20technical%20and%20economic%20issues%20need%20to%20be%20worked%20out
- van der Spek, M., Ramirez, A., & Faaij, A. (2017). Challenges and uncertainties of ex ante techno-economic analysis of low TRL CO₂ capture technology: Lessons from a case

- study of an NGCC with exhaust gas recycle and electric swing adsorption. *Applied Energy*, 208, 920-934. doi:<https://doi.org/10.1016/j.apenergy.2017.09.058>
- van der Werf, G. R., Morton, D. C., DeFries, R. S., Olivier, J. G. J., Kasibhatla, P. S., Jackson, R. B., . . . Randerson, J. T. (2009). CO₂ emissions from forest loss. *Nature Geoscience*, 2, 737. doi:10.1038/ngeo671
<https://www.nature.com/articles/ngeo671#supplementary-information>
- Van Hoang, N. T., & Maeda, M. (2017). NITROUS OXIDE AND CARBON DIOXIDE EMISSIONS FROM AGRICULTURAL SOIL AMENDED WITH DIFFERENT TYPES OF BIOCHAR AT THREE TEMPERATURES. *Journal of Environmental Science for Sustainable Society*, 8, 22-31. doi:10.3107/jesss.8.22
- van Kooten, C. G., Shaikh, S. L., & Suchánek, P. (2002). Mitigating climate change by planting trees: the transaction costs trap. *Land Economics*, 78(4), 559-572.
- van Kooten, C. G., & Sohngen, B. (2007). *Economics of Forest Ecosystem Carbon Sinks: A Review*. Retrieved from <https://web.uvic.ca/~repa/publications/REPA%20working%20papers/WorkingPaper2007-02.pdf>
- van Kooten, G. C., Grainger, A., Ley, E., Marland, G., & Solberg, B. (1997). Conceptual issues related to carbon sequestration: Uncertainty and time. *Critical Reviews in Environmental Science and Technology*, 27(sup001), 65-82. doi:10.1080/10643389709388510
- van Kooten, G. C., & Johnston, C. M. (2016). The economics of forest carbon offsets. *Annual Review of Resource Economics*, 8, 227-246. Retrieved from <https://www.annualreviews.org/doi/10.1146/annurev-resource-100815-095548>
- van Laer, T., de Smedt, P., Ronsse, F., Ruysschaert, G., Boeckx, P., Verstraete, W., . . . Lavrysen, L. J. (2015). Legal constraints and opportunities for biochar: a case analysis of EU law. *GCB Bioenergy*, 7(1), 14-24. doi:10.1111/gcbb.12114
- van Minnen, J. G., et al. (2007). Quantifying the effectiveness of climate change mitigation through forest plantations and carbon sequestration with an integrated land-use model. *Carbon Balance and Management*, 3(3), 1-20. Retrieved from <https://cbmjournal.springeropen.com/track/pdf/10.1186/1750-0680-3-3>
- Van Oost, K., Quine, T. A., Govers, G., DeGryze, S., Six, J., Harden, J. W., . . . Merckx, R. (2007). The Impact of Agricultural Soil Erosion on the Global Carbon Cycle. *Science*, 318(5850), 626-629. Retrieved from <http://science.sciencemag.org/content/318/5850/626>
- van Oosterzee, P. (2012). The integration of biodiversity and climate change: A contextual assessment of the carbon farming initiative. 13(3), 238-244. doi:10.1111/emr.12001
- van Renessen, S. (2021). CCU: Dangerous distraction or essential for the energy transition? *Energy Monitor*. Retrieved from <https://energymonitor.ai/technology/carbon-removal/ccu-dangerous-distraction-or-essential-for-the-energy-transition>
- van Soest, H. L., den Elzen, M. G. J., & van Vuuren, D. P. (2021). Net-zero emission targets for major emitting countries consistent with the Paris Agreement. *Nature Communications*, 12(1), 2140. doi:10.1038/s41467-021-22294-x
- Van Straaten, P. (2006). Farming with rocks and minerals: challenges and opportunities. *Anais da Academia Brasileira de Ciências*, 78(4), 731-747. Retrieved from http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0001-37652006000400009&lng=en&nrm=iso&tlang=en
- Van Thorre, D. M., Tait, C. D., Catto, M. L., & Scalzo, P. J. (2016).
- Van Vinh, N., et al. . (2014). Arsenic(III) removal from aqueous solution by raw and zinc-loaded pine cone biochar: equilibrium, kinetics, and thermodynamics studies. *International Journal of Environmental Science and Technology*, 12(4), 1283-1294. Retrieved from <https://link.springer.com/article/10.1007/s13762-014-0507-1>
- Van Voorhees, R. F. (2017). Crediting Carbon Dioxide Storage Associated with Enhanced Oil

- Recovery. *Energy Procedia*, 114, 7659-7666. doi:<https://doi.org/10.1016/j.egypro.2017.03.1898>
- Van Voorhis, C. (2021). The Genius of Nature. *Middlebury Eccentric*. Retrieved from <https://middleburgeccentric.com/2021/02/the-genius-of-nature/>
- van Vuuren, D., et al. (2017). Open discussion of negative emissions is urgently needed. *Nature Energy*, 2, 902-904. Retrieved from <https://www.nature.com/articles/s41560-017-0055-2.pdf>
- van Vuuren, D. P., Stehfest, E., Gernaat, D. E. H. J., van den Berg, M., Bijl, D. L., de Boer, H. S., . . . van Sluisveld, M. A. E. (2018). Alternative pathways to the 1.5 °C target reduce the need for negative emission technologies. *Nature Climate Change*. doi:10.1038/s41558-018-0119-8
- van Vuuren, D. P., van Vliet, J., & Stehfest, E. (2009). Future bio-energy potential under various natural constraints. *Energy Policy*, 37(11), 4220-4230. doi:<http://dx.doi.org/10.1016/j.enpol.2009.05.029>
- Van Wesenbeeck, S., Prins, W., Ronsse, F., & Antal, M. J. (2014). Sewage Sludge Carbonization for Biochar Applications. The Fate of Heavy Metals. *Energy & Fuels*, 28(8), 5318-5326. doi:10.1021/ef500875c
- van Wey, L. (2009). *Social and distributional impacts of biofuel production*. Paper presented at the Biofuels: Environmental Consequences and Interactions with Changing Land Use. Proceedings of the Scientific Committee on Problems of the Environment (SCOPE) International Biofuels Project Rapid Assessment.
- van Zelm, R., Muchada, P. A. N., van der Velde, M., Kindermann, G., Obersteiner, M., & Huijbregts, M. A. J. (2015). Impacts of biogenic CO₂ emissions on human health and terrestrial ecosystems: the case of increased wood extraction for bioenergy production on a global scale. *GCB Bioenergy*, 7(4), 608-617. doi:10.1111/gcbb.12153
- Van Zwieten, L., et al. (2009). Biochar and Emissions of non-CO₂ Greenhouse Gasses from Soil. In J. Lehmann & S. Joseph (Eds.), *Biochar for Environmental Management: Science and Technology* (pp. 227 - 249). London, UK: Earthscan.
- Van Zwieten, L., et al. (2014). An incubation study investigating the mechanisms that impact N₂O flux from soil following biochar application. *Agriculture, Ecosystems & Environment*, 191, 53-62. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0167880914001145>
- Van Zwieten, L., et al. (2016). Biochar effects on nitrous oxide and methane emissions from soil. In J. Lehmann & S. Joseph (Eds.), *Biochar for Environmental Management* (pp. 487-518).
- Van Zwieten, L., Kimber, S., Downie, A., Morris, S., Petty, S., Rust, J., & Chan, K. Y. (2010). A glasshouse study on the interaction of low mineral ash biochar with nitrogen in a sandy soil. *Australian Journal of Soil Research*, 48, 569-576.
- Van Zwieten, L., Kimber, S., Morris, S., Chan, K. Y., Downie, A., Rust, J., . . . Cowie, A. (2010). Effects of biochar from slow pyrolysis of papermill waste on agronomic performance and soil fertility. *Plant and Soil*, 327, 235-246. Retrieved from <https://link.springer.com/article/10.1007/s11104-009-0050-x>
- Van Zwieten, L., Kimber, S., Morris, S., Downie, A., Berger, E., Rust, J., & Scheer, C. (2010). Influence of biochars on flux of N₂O and CO₂ from Ferrosol. *Australian Journal of Soil Research*, 48(7), 555-568. Retrieved from <http://www.publish.csiro.au/sr/SR10004>
- Van Zwieten, L., Rose, T., Herridge, D., Kimber, S., Rust, J., Cowie, A., & Morris, S. (2015). Enhanced biological N₂ fixation and yield of faba bean (*Vicia faba* L.) in an acid soil following biochar addition: dissection of causal mechanisms. *Plant and Soil*, 395(1), 7-20. doi:10.1007/s11104-015-2427-3
- Van Zwieten, L., Singh, B. P., Kimber, S. W. L., Murphy, D. V., Macdonald, L. M., Rust, J., &

- Morris, S. (2014). An incubation study investigating the mechanisms that impact N₂O flux from soil following biochar application. *Agriculture, Ecosystems & Environment*, 191, 53-62. doi:<http://dx.doi.org/10.1016/j.agee.2014.02.030>
- Vanbergen, A. J., Aizen, M. A., Cordeau, S., Garibaldi, L. A., Garratt, M. P. D., Kovács-Hostyánszki, A., . . . Young, J. C. (2020). Transformation of agricultural landscapes in the Anthropocene: Nature's contributions to people, agriculture and food security. In *Advances in Ecological Research*: Academic Press.
- Vanbeveren, S. P. P., & Ceulemans, R. (2019). Biodiversity in short-rotation coppice. *Renewable and Sustainable Energy Reviews*, 111, 34-43. doi:<https://doi.org/10.1016/j.rser.2019.05.012>
- Vandecasteele, B., Sinicco, T., D'Hose, T., Vanden Nest, T., & Mondini, C. (2016). Biochar amendment before or after composting affects compost quality and N losses, but not P plant uptake. *Journal of Environmental Management*, 168, 200 - 209. doi:[10.1016/j.jenvman.2015.11.045](https://doi.org/10.1016/j.jenvman.2015.11.045)
- VandenBygaart, A. J. (2018). Comments on soil carbon 4 per mille by Minasny et al. 2017. *Geoderma*, 309, 113-114. doi:<https://doi.org/10.1016/j.geoderma.2017.05.024>
- Vanderzee, S. S. S. (2016). *Carbon sequestration through the production of precipitated calcium carbonate from waste concrete*. (MES Dissertation/Thesis). Queen's University, Retrieved from <https://search.proquest.com/docview/1826409866?accountid=14496>
- Vanek, S. J., & Lehmann, J. (2014). Phosphorus availability to beans via interactions between mycorrhizas and biochar. *Plant and Soil*, 395(1-2), 105-123. doi:[10.1007/s11104-014-2246-y](https://doi.org/10.1007/s11104-014-2246-y)
- Vangkilde-Pedersen, T., Anthonsen, K. L., Smith, N., Kirk, K., neele, F., van der Meer, B., . . . Peter Christensen, N. (2009). Assessing European capacity for geological storage of carbon dioxide—the EU GeoCapacity project. *Energy Procedia*, 1(1), 2663-2670. doi:<https://doi.org/10.1016/j.egypro.2009.02.034>
- Vansant, J., & Koziel, P. W. (2019). Technical and Industrial Applications of CO₂. In M. Aresta, I. Karimi, & S. Kawi (Eds.), *An Economy Based on Carbon Dioxide and Water: Potential of Large Scale Carbon Dioxide Utilization* (pp. 73-104). Retrieved from https://link.springer.com/content/pdf/10.1007%2F978-3-030-15868-2_3.pdf
- Vardon, D. R., et al. (2013). Complete Utilization of Spent Coffee Grounds To Produce Biodiesel, Bio-Oil, and Biochar. *ACS Sustainable Chem. Eng.*, 1(10), 1286-1294. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/sc400145w>
- Varela Milla, O., & Huang, W.-J. (2013). Identifying the Advantages of Using Municipal Solid Waste Bottom Ash in Combination with Rice Husk and Bamboo Biochar Mixtures as Soil Modifiers: Enhancement of the Release of Polyphenols from a Carbon Matrix. *Journal of Hazardous, Toxic, and Radioactive Waste Management*, 17, 204-210.
- Varinsky, D. (2018). We're altering the climate so severely that we'll soon face apocalyptic repercussions. Sucking carbon dioxide out of the air could save us. *Business Insider*. Retrieved from <https://www.businessinsider.com/how-to-stop-global-warming-plan-carbon-capture-2018-10>
- Varis, O. (2007). Water Demands for Bioenergy Production. *International Journal of Water Resources Development*, 23(3), 519-535. doi:[10.1080/07900620701486004](https://doi.org/10.1080/07900620701486004)
- Varjani, S., Humbal, A., & Srivastava, V. K. (2019). Carbon Sequestration a Viable Option to Mitigate Climate Change. In F. Winter, R. A. Agarwal, J. Hrdlicka, & S. Varjani (Eds.), *CO₂ Separation, Purification and Conversion to Chemicals and Fuels* (pp. 5-17). Singapore: Springer Singapore.
- Vassilev, N., et al. (2013). Biochar of animal origin: A sustainable solution to the global problem of high-grade rock phosphate scarcity? *Journal of the Science of Food and Agriculture*, 93(8), 1799-1804. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/23504602>

- Vassilev, S. V., & Vassileva, C. G. (2016). Composition, properties and challenges of algal biomass for biofuel application: An overview. *Fuel*, 181, 1-33. doi:<https://doi.org/10.1016/j.fuel.2016.04.106>
- Vasudevan, S., et al. (2019). Technoenergetic and Economic Analysis of CO₂ Conversion. In M. Aresta, I. Karimi, & S. Kawi (Eds.), *An Economy Based on Carbon Dioxide and Water: Potential of Large Scale Carbon Dioxide Utilization* (pp. 413-430). Retrieved from https://link.springer.com/chapter/10.1007/978-3-030-15868-2_12
- Vasudevan, S., Farooq, S., Karimi, I. A., Saeys, M., Quah, M. C. G., & Agrawal, R. (2016). Energy penalty estimates for CO₂ capture: Comparison between fuel types and capture-combustion modes. *Energy*, 103, 709-714. doi:<https://doi.org/10.1016/j.energy.2016.02.154>
- Vasujini, P., Dandeniya, W. S., & Dharmakeerthi, R. S. (2015). *An Assessing of the Quality of Biochar Produced from Coconut Husk Waste*. Paper presented at the Proceedings Peradeniya University International Research Sessions. <http://www.dlib.pdn.ac.lk/archive/handle/1/4976>
- Vat, V., et al. (2020). Effect of biochar and its combined application with manure and fertilizer on nitrogen leaching, greenhouse gas (GHG) emissions, and grain yield under alternate wetting and drying (AWD) system. *Journal of Agricultural and Crop Research*, 8(2), 33-47. Retrieved from <http://sciencewebpublishing.net/jacr/archive/2020/February/abstract/Vat%20et%20al.htm>
- Vaughan, A. (2020). Carbon-negative crops may mean water shortages for 4.5 billion people. *New Scientist*. Retrieved from <https://www.newscientist.com/article/2270227-carbon-negative-crops-may-mean-water-shortages-for-4-5-billion-people/>
- Vaughan, A. (2020). Scattering pulverised rock over the Earth's surface. *Fix the Planet*. Retrieved from <https://us3.campaign-archive.com/?u=6710b48697068ec8e08d69abf&id=39a706fb2f>
- Vaughan, A. (2021). Controversial geoengineering scheme will dump iron in the sea *New Scientist*. Retrieved from <https://www.newscientist.com/article/2282188-controversial-geoengineering-scheme-will-dump-iron-in-the-sea/>
- Vaughan, N., E., et al. (2018). Evaluating the use of biomass energy with carbon capture and storage in low emission scenarios. *Environmental Research Letters*, 13(4), 044014. Retrieved from <http://stacks.iop.org/1748-9326/13/i=4/a=044014>
- Vaughan, N. E., & Gough, C. (2016). Expert assessment concludes negative emissions scenarios may not deliver. *Environmental Research Letters*, 11(9), 7. doi:[10.1088/1748-9326/11/9/095003](https://doi.org/10.1088/1748-9326/11/9/095003)
- Vaughan, N. E., & Lenton, T. M. (2012). Interactions between reducing CO₂ emissions, CO₂ removal and solar radiation management. *Philosophical Transactions of the Royal Society a-Mathematical Physical and Engineering Sciences*, 370(1974), 4343-4364. doi:[10.1098/rsta.2012.0188](https://doi.org/10.1098/rsta.2012.0188)
- Vaughn, S. F., Kenar, J. A., Eller, F. J., Moser, B. R., Jackson, M. A., & Peterson, S. C. (2015). Physical and chemical characterization of biochars produced from coppiced wood of thirteen tree species for use in horticultural substrates. *Industrial Crops and Products*, 66, 44 - 51. doi:[10.1016/j.indcrop.2014.12.026](https://doi.org/10.1016/j.indcrop.2014.12.026)
- Vázquez, F. V., Koponen, J., Ruuskanen, V., Bajamundi, C., Kosonen, A., Simell, P., . . . Piermartini, P. (2018). Power-to-X technology using renewable electricity and carbon dioxide from ambient air: SOLETAIR proof-of-concept and improved process concept. *Journal of CO₂ Utilization*, 28, 235-246. doi:<https://doi.org/10.1016/j.jcou.2018.09.026>
- Vega, B., & Kovscek, A. R. (2010). 4 - Carbon dioxide (CO₂) sequestration in oil and gas reservoirs and use for enhanced oil recovery (EOR). In M. M. Maroto-Valer (Ed.), *Developments and Innovation in Carbon Dioxide (CO₂) Capture and Storage*

- Technology* (Vol. 2, pp. 104-126): Woodhead Publishing.
- Vega-Ortiz, C., Avendaño-Petronilo, F., Richards, B., Sorkhabi, R., Torres-Barragán, L., Martínez-Romero, N., & McLennan, J. (2021). Assessment of carbon geological storage at Tula de Allende as a potential solution for reducing greenhouse gas emissions in central Mexico. *International Journal of Greenhouse Gas Control*, 109, 103362. doi:<https://doi.org/10.1016/j.ijggc.2021.103362>
- Veksha, A., et al. (2013). Pyrolysis of wood to biochar: increasing yield while maintaining microporosity. *Bioresource Technology*, 153, 173-179.
- Veksha, A., Puja, P., & Hill, J. M. (2015). The removal of methyl orange from aqueous solution by biochar and activated carbon under microwave irradiation and in the presence of hydrogen peroxide. *Journal of Environmental Chemical Engineering*, 3(3), 1452-1458. doi:[10.1016/j.jece.2015.05.003](https://doi.org/10.1016/j.jece.2015.05.003)
- Veksha, A., Waheed, Z., Layzell, D. B., & Hill, J. M. (2014). Enhancing biochar yield by co-pyrolysis of bio-oil with biomass: Impacts of potassium hydroxide addition and air pretreatment prior to co-pyrolysis. *Bioresource Technology*, 171, 88 - 94. doi:[10.1016/j.biortech.2014.08.040](https://doi.org/10.1016/j.biortech.2014.08.040)
- Velasquez-Manoff, M. (2018). Can Dirt Save the Earth? *New York Times Magazine*. Retrieved from <https://www.nytimes.com/2018/04/18/magazine/dirt-save-earth-carbon-farming-climate-change.html>
- Velbel, M. A. (2009). Dissolution of olivine during natural weathering. *Geochimica Et Cosmochimica Acta*, 73(20), 6098-6113. doi:<https://doi.org/10.1016/j.gca.2009.07.024>
- Veld, K. v. t., Mason, C. F., & Leach, A. (2013). The Economics of CO₂ Sequestration Through Enhanced Oil Recovery. *Energy Procedia*, 37, 6909-6919. doi:<https://doi.org/10.1016/j.egypro.2013.06.623>
- Veldman, J. W., Aleman, J. C., Alvarado, S. T., Anderson, T. M., Archibald, S., Bond, W. J., . . . Zaloumis, N. P. (2019). Comment on “The global tree restoration potential”. 366(6463), eaay7976. doi:[10.1126/science.aay7976 %J Science](https://doi.org/10.1126/science.aay7976)
- Veldman, J. W., Overbeck, G. E., Negreiros, D., Mahy, G., Le Stradic, S., Fernandes, G. W., . . . Bond, W. J. (2015). Where Tree Planting and Forest Expansion are Bad for Biodiversity and Ecosystem Services. *BioScience*, 65(10), 1011-1018. doi:[10.1093/biosci/biv118](https://doi.org/10.1093/biosci/biv118)
- Velez, T. I. (2012). *Measuring the Impact of Melaleuca quinquenervia Biochar Application on Soil Quality, Plant Growth, and Microbial Gas Flux*. FIU, Retrieved from <http://digitalcommons.fiu.edu/etd/775>
- Vella, H. (2019). Drax’s great biomass carbon capture experiment. *Power Technology*, (May 20). Retrieved from <https://www.power-technology.com/features/draxs-carbon-capture/>
- Velthof, G. L., Kuikman, P. J., & Oenema, O. (2002). Nitrous oxide emission from soils amended with crop residues. *Nutrient Cycling in Agroecosystems*, 62(3), 249-261. doi:[10.1023/a:1021259107244](https://doi.org/10.1023/a:1021259107244)
- Veltman, K., Singh, B., & Hertwich, E. G. (2010). Human and Environmental Impact Assessment of Postcombustion CO₂ Capture Focusing on Emissions from Amine-Based Scrubbing Solvents to Air. *Environmental Science & Technology*, 44(4), 1496-1502. doi:[10.1021/es902116r](https://doi.org/10.1021/es902116r)
- Venables, H., & Moore, C. M. (2010). Phytoplankton and light limitation in the Southern Ocean: Learning from high-nutrient, high-chlorophyll areas. *Journal of Geophysical Research: Oceans*, 115(C2). doi:[doi:10.1029/2009JC005361](https://doi.org/10.1029/2009JC005361)
- Venegas, A., Rigol, A., & Vidal, M. (2016). Effect of ageing on the availability of heavy metals in soils amended with compost and biochar: evaluation of changes in soil and amendment properties. *Environmental Science and Pollution Research*, 23(20), 20619-20627. doi:[10.1007/s11356-016-7250-8](https://doi.org/10.1007/s11356-016-7250-8)
- Venkata Mohan, S., Modesta, J. A., Amulya, K., Butti, S. K., & Velvizhi, G. (2016). A Circular

- Bioeconomy with Biobased Products from CO₂ Sequestration. *Trends in Biotechnology*, 34(6), 506-519. doi:<http://dx.doi.org/10.1016/j.tibtech.2016.02.012>
- Venkatesan, A., et al. (2015). A Compressive Strength and Water Absorption Test on Brick Made of Wood Ash, Charcoal with Clay Bricks: A Comparative Study. *The International Journal Of Science & Technoledge*, 2(7), 1-4. Retrieved from <http://www.theijst.com/wp-content/uploads/2015/03/14.-ST1503-047.pdf>
- Venkatesh, G., et al. (2013). Biochar Production Technology for Conversion of Cotton Stalk Bioresidue into Biochar and its Characterization for Soil Amendment Qualities. *Indian Journal of Dryland Agricultural Research and Development*, 28(1), 48-57. Retrieved from https://www.researchgate.net/publication/258068939_Biochar_Production_Technology_for_Conversion_of_Cotton_Stalk_Bioresidue_into_Biochar_and_its_Characterization_for_Soil_Amendment_Qualities
- Venkatesh, G., et al. (2013). Operational Process for Biochar Preparation from Castor Bean Stalk and its Characterization for Soil Application. *Indian Journal of Dryland Agricultural Research and Development*, 28(2), 21-26. Retrieved from https://www.researchgate.net/publication/259659346_Operational_Process_for_Biochar_Preparation_from_Castor_bean_Stalk_and_its_Characterization_for_Soil_Application
- Ventili, S. (2016). *Biochar from grapevine canes : study upon phosphate sorption and water retention*. Retrieved from <https://www.politesi.polimi.it/bitstream/10589/114083/3/Frontespizio%20B%20Tesi.pdf>
- Ventilli, S. (2016). Biochar from grapevine canes: study upon phosphate sorption and water retention. In.
- Venton, D. (2016). Can bioenergy with carbon capture and storage make an impact? *Proceedings of the National Academy of Sciences of the United States of America*, 113(47), 13260-13262. doi:10.1073/pnas.1617583113
- Ventura, F., et al. . (2013). The effects of biochar on the physical properties of bare soil. *Earth and Environmental Science Transactions of the Royal Society of Edinburgh*, 103, 5-11. Retrieved from <https://www.cambridge.org/core/services/aop-cambridge-core/content/view/S1755691012000059>
- Ventura, J.-R. S., Yang, B., Lee, Y.-W., Lee, K., & Jahng, D. (2013). Life cycle analyses of CO₂, energy, and cost for four different routes of microalgal bioenergy conversion. *Bioresource Technology*, 137, 302-310. doi:<https://doi.org/10.1016/j.biortech.2013.02.104>
- Ventura, M., et al. (2012). Biochar Reduces Short-Term Nitrate Leaching from A Horizon in an Apple Orchard. *Journal of Environmental Quality*, 42, 76-82. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/23673741>
- Ventura, M., et al. . (2013). Effect of biochar addition on soil respiration partitioning and root dynamics in an apple orchard. *European Journal of Soil Science*, 65(1), 186-195. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/ejss.12095/abstract>
- Verbruggen, E., Struyf, E., & Vicca, S. Can arbuscular mycorrhizal fungi speed up carbon sequestration by enhanced weathering? *PLANTS, PEOPLE, PLANET*, n/a(n/a). doi:<https://doi.org/10.1002/ppp3.10179>
- Vercelli, S., Anderlucci, J., Memoli, R., Battisti, N., Mabon, L., & Lombardi, S. (2013). Informing People about CCS: A Review of Social Research Studies. *Energy Procedia*, 37, 7464-7473. doi:<https://doi.org/10.1016/j.egypro.2013.06.690>
- Verchot, L. V., Brienza, S., de Oliveira, V. C., Mutegi, J. K., Cattânia, J. H., & Davidson, E. A. (2008). Fluxes of CH₄, CO₂, NO, and N₂O in an improved fallow agroforestry system in eastern Amazonia. *Agriculture, Ecosystems & Environment*, 126(1), 113-121. doi:<https://doi.org/10.1016/j.agee.2008.01.012>

- Verchot, L. V., Van Noordwijk, M., Kandji, S., Tomich, T., Ong, C., Albrecht, A., . . . Palm, C. (2007). Climate change: linking adaptation and mitigation through agroforestry. *Mitigation and Adaptation Strategies for Global Change*, 12(5), 901-918. doi:10.1007/s11027-007-9105-6
- Verchot, W. M. J. A. L. V. (2011). *Implications of Biodiesel-Induced Land-Use Changes for CO₂ Emissions: Case Studies in Tropical America, Africa, and Southeast Asia. Ecology and Society*, 16(4), Article 14. Retrieved from <http://dx.doi.org/10.5751/ES-04403-160414>
- Verde, S. E., et al. (2021). *The Biochar System in the EU: the Pieces are Falling Into Place, but Key Policy Questions Remain*. Retrieved from <https://cadmus.eui.eu/handle/1814/70349>
- Verdegaal, W. M., Becker, S., & Olshausen, C. v. (2015). Power-to-Liquids: Synthetisches Rohöl aus CO₂, Wasser und Sonne. *Chemie Ingenieur Technik*, 87(4), 340-346. doi:10.1002/cite.201400098
- Vereš, J., et al. . (2014). Biochar Status Under International Law and Regulatory Issues for the Practical Application. *Chemical Engineering Transactions*, 37, 799-804. Retrieved from https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwj9yliRrv7uAhVWHc0KHRX_BY0QgAMoAHoECAMQAg&url=http%3A%2F%2Fscholar.google.com%2Fscholar_url%3Furl%3Dhttps%3A%2F%2Fcdrlaw.org%2Fwp-content%2Fuploads%2F2020%2F04%2F134.pdf%26hl%3Den%26sa%3DX%26ei%3D7hc0YOLNB5X0yASbiZCgAQ%26scisig%3DAAGBfm3KL1LFK-YEMs4JhGUwFN2ArwxlJA%26nossI%3D1%26oi%3Dscolarr&usg=AOvVaw3pOGpPSZdzCGmvJ5T_uG0b
- Vergragt, P. J., Markussen, N., & Karlsson, H. (2011). Carbon capture and storage, bio-energy with carbon capture and storage, and the escape from the fossil-fuel lock-in. *Global Environmental Change*, 21(2), 282-292. doi:<https://doi.org/10.1016/j.gloenvcha.2011.01.020>
- Verheijen, F., et al. (2010). *Biochar Application to Soils: A Critical Scientific Review of Effects on Soil Properties, Processes and Functions* (978-92-79-14293-2). Retrieved from http://www.biochar-international.org/sites/default/files/Verheijen%20et%20al%202010%20JRC_Biochar_Soils_Review.pdf
- Verheijen, F. G. A., et al. . (2013). Reductions in soil surface albedo as a function of biochar application rate: implications for global radiative forcing. *Environmental Research Letters*, 8(4), 1-8.
- Verheijen, F. G. A., Montanarella, L., & Bastos, A. C. (2012). Sustainability, certification, and regulation of biochar. *Pesquisa Agropecuária Brasileira*, 47, 649-653.
- Verhoeven, E., & Six, J. (2014). Biochar does not mitigate field-scale N₂O emissions in a Northern California vineyard: An assessment across two years. *Agriculture, Ecosystems & Environment*, 191, 27-38. doi:<http://dx.doi.org/10.1016/j.agee.2014.03.008>
- Verma, M., et al. . (2014). Thermochemical Transformation of Agro-biomass into Biochar: Simultaneous Carbon Sequestration and Soil Amendment. In S. K. Brar, et a. (Ed.), *Biotransformation of Waste Biomass into High Value Biochemicals* (pp. 51-70).
- Verma, V. S. (2017). Adoption and Introduction of Supercritical Technology in the Power Sector and Consequential Effects in Operation, Efficiency and Carbon Dioxide Emission in the Present Context. In M. Goel & M. Sudhakar (Eds.), *Carbon Utilization: Applications for the Energy Industry* (pp. 35-43). Singapore: Springer Singapore.
- Vermeulen, S., Bossio, D., Lehmann, J., Luu, P., Paustian, K., Webb, C., . . . Warnken, M. (2019). A global agenda for collective action on soil carbon. *Nature Sustainability*, 2(1), 2-4. doi:10.1038/s41893-018-0212-z
- Vermeulen, S., & Cotula, L. (2010). Over the heads of local people: consultation, consent, and recompense in large-scale land deals for biofuels projects in Africa. *The Journal of*

- Peasant Studies*, 37(4), 899-916. doi:10.1080/03066150.2010.512463
- Verschuuren, J. (2018). Towards an EU Regulatory Framework for Climate-Smart Agriculture: The Example of Soil Carbon Sequestration. *Transnational Environmental Law*, 1-22. doi:10.1017/S2047102517000395
- Veselovskaya, J. V., Derevshikov, V. S., Kardash, T. Y., Stonkus, O. A., Trubitsina, T. A., & Okunev, A. G. (2013). Direct CO₂ capture from ambient air using K₂CO₃/Al₂O₃ composite sorbent. *International Journal of Greenhouse Gas Control*, 17, 332-340. doi:<http://dx.doi.org/10.1016/j.ijggc.2013.05.006>
- Veselovskaya, J. V., Parunin, P. D., Netskina, O. V., & Okunev, A. G. (2018). A Novel Process for Renewable Methane Production: Combining Direct Air Capture by K₂CO₃/Alumina Sorbent with CO₂ Methanation over Ru/Alumina Catalyst. *Topics in Catalysis*, 61(15), 1528-1536. doi:10.1007/s11244-018-0997-z
- Veselovskaya, J. V., Parunin, P. D., & Okunev, A. G. (2017). Catalytic process for methane production from atmospheric carbon dioxide utilizing renewable energy. *Catalysis Today*, 298, 117-123. doi:<https://doi.org/10.1016/j.cattod.2017.05.044>
- Vetter, D. (2020). The Amazing Secret To Cutting 25% Of Carbon Could Be Under Your Feet. *Forbes*. Retrieved from https://www.forbes.com/sites/davidrvetter/2020/10/14/the-amazing-secret-to-cutting-25-of-carbon-could-be-under-your-feet/amp/?__twitter_impression=true
- Vetter, D. (2021). Could This Revolutionary Idea Pay Our Climate Change Debt And Supercharge CO₂ Reductions? *Forbes*. Retrieved from <https://www.forbes.com/sites/davidrvetter/2021/07/09/could-this-revolutionary-idea-pay-our-climate-change-debt-and-supercharge-co2-reductions/?sh=30eaa93c640a>
- Vichi, M., Navarra, A., & Fogli, P. G. (2013). Adjustment of the natural ocean carbon cycle to negative emission rates. *Climatic Change*, 118(1), 105-118. Retrieved from <http://link.springer.com/article/10.1007%2Fs10584-012-0677-0>
- Victoria, U. o. (2019). Rock-solid climate solutions: Negative emissions technology. Retrieved from https://www.eurekalert.org/pub_releases/2019-09/uov-rcs092519.php
- Vidal, J. (2018). How Bill Gates aims to clean up the planet. *The Guardian*. Retrieved from <https://www.theguardian.com/environment/2018/feb/04/carbon-emissions-negative-emissions-technologies-capture-storage-bill-gates>
- Viebahn, P., et al. (2019). The Potential Role of Direct Air Capture in the German Energy Research Program—Results of a Multi-Dimensional Analysis. *Energies*, 12(18), 1-27. Retrieved from <https://www.mdpi.com/1996-1073/12/18/3443>
- Viebahn, P., et al. (2020). Integrated Assessment of Carbon Capture and Storage (CCS) in South Africa's Power Sector. *Energies*, 8(12), 14380-14406. Retrieved from <https://www.mdpi.com/1996-1073/8/12/12432>
- Viebahn, P., & Chappin, E. J. L. (2018). Scrutinising the Gap between the Expected and Actual Deployment of Carbon Capture and Storage—A Bibliometric Analysis. *Energies*, 11(9), 2319. doi:<http://dx.doi.org/10.3390/en11092319>
- Viebahn, P., Vallentin, D., & Höller, S. (2014). Prospects of carbon capture and storage (CCS) in India's power sector – An integrated assessment. *Applied Energy*, 117, 62-75. doi:<http://doi.org/10.1016/j.apenergy.2013.11.054>
- Vierros, M. (2017). Communities and blue carbon: the role of traditional management systems in providing benefits for carbon storage, biodiversity conservation and livelihoods. *Climatic Change*, 140(1), 89-100. doi:10.1007/s10584-013-0920-3
- Viger, M., Hancock, R., Miglietta, F., & Taylor, G. (2014). More plant growth but less plant defence? First global gene expression data for plants grown in soil amended with biochar. *GCB Bioenergy*, 7(4), 658-672. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/gcbb.12182/abstract>

- Vihavainen, A. (2021). Nasdaq becomes majority investor in Puro.earth Retrieved from https://puro.earth/articles/nasdaq-becomes-majority-investor-in-puro-earth-643?utm_source=newsletter&utm_medium=email&utm_campaign=newsletter-42&utm_content=20210601-1
- Vijayanand, C., et al. (2015). Biochar production from arecanut waste. *International Journal of Farm Sciences - VIJAYANAND*, 6(1), 43-48. Retrieved from <http://inflibnet.ac.in/ojs/index.php/IJFS/article/view/3641>
- Vilarrasa, V., & Carrera, J. (2015). Geologic carbon storage is unlikely to trigger large earthquakes and reactivate faults through which CO₂ could leak. *Proceedings of the National Academy of Sciences*, 112(19), 5938-5943. doi:10.1073/pnas.1413284112
- Villar, A. (2012). *Biochar: A Solution to Oakland's Green Waste?* Retrieved from <http://escholarship.org/uc/item/7zh0n19v>
- Vilvanathan, S., & Shanthakumar, S. (2015). Biosorption of Co(II) ions from aqueous solution using Chrysanthemum indicum: Kinetics, equilibrium and thermodynamics. *Process Safety and Environmental Protection*, 96, 98 - 110. doi:10.1016/j.psep.2015.05.001
- Vinca, A., & Tavoni, M. (2018). *The role of carbon capture and storage electricity in attaining 1.5 and 2 °C* (Vol. 78).
- Vine, E. J. M., & Change, A. S. f. G. (2004). Regulatory Constraints to Carbon Sequestration in Terrestrial Ecosystems and Geologic Formations: A California Perspective. 9(1), 77-95. doi:10.1023/B:MITI.0000009916.29110.cb
- Vinh, H., et al. (2015). Integrated nutrient management of annual and perennial crops on sandy coastal plains of south-central coastal Vietnam. In S. Mann, M. Webb, & R. Bell (Eds.), *Sustainable and profitable crop and livestock systems in south-central coastal Vietnam* (pp. 80-90): Australian Centre for International Agricultural Research,.
- Vinh, N. C., et al. (2014). Biochar Treatment and its Effects on Rice and Vegetable Yields in Mountainous Areas of Northern Vietnam. *International Journal of Agricultural and Soil Science*, 2(1), 5-13. Retrieved from http://internationalinventjournals.org/journals/IJASS/Archive/2014/February_vol-2-issue-1/Fulltext/Vinh%20et%20al.pdf
- Visioli, G., Conti, F. D., Menta, C., Bandiera, M., Malcevschi, A., Jones, D. L., & Vamerali, T. (2016). Assessing biochar ecotoxicology for soil amendment by root phytotoxicity bioassays. *Environmental Monitoring and Assessment*, 188(3), 1-11. doi:10.1007/s10661-016-5173-y
- Vithanage, M., et al. . (2014). Acid-activated biochar increased sulfamethazine retention in soils. *Environmental Science and Pollution Research*, 22(3), 2175-2186. doi:10.1007/s11356-014-3434-2
- Vithanage, M., et al. . (2014). Role of Fungal-bacterial Biofilm and Woody Biochar on Soil Enzyme Activities and Ni Immobilization in Serpentine Soil. *2nd CLEAR*. Retrieved from http://www.researchgate.net/profile/Tharanga_Bandara2/publication/276954234_Role_of_Fungal-bacterial_Biofilm_and_Woody_Biochar_on_Soil_Ezyme_Activities_and_Ni_Immobilization_in_Serpentine_Soil/links/555c8dc708ae86c06b5d38f1.pdf
- Vithanage, M., et al. (2014). Sorption and transport of sulfamethazine in agricultural soils amended with invasive-plant-derived biochar. *Journal of Environmental Management*, 141, 95-103. doi:10.1016/j.jenvman.2014.02.030
- Vithanage, M., Mayakaduwa, S. S., Herath, I., Ok, Y. S., & Mohan, D. (2015). Kinetics, thermodynamics and mechanistic studies of carbofuran removal using biochars from tea waste and rice husks. *Chemosphere*, 150, 781-789. doi:10.1016/j.chemosphere.2015.11.002
- Vithanage, M., Rajapaksha, A. U., Ahmad, M., Uchimiya, M., Dou, X., ALESSI, D. S., & Ok, Y. S.

- (2015). Mechanisms of antimony adsorption onto soybean stover-derived biochar in aqueous solutions. *Journal of Environmental Management*, 151, 443 - 449. doi:10.1016/j.jenvman.2014.11.005
- Vochozka, M., Maroušková, A., Váchal, J., & Straková, J. (2016). Biochar pricing hampers biochar farming. *Clean Technologies and Environmental Policy*, 18(4), 1225-1231. doi:10.1007/s10098-016-1113-3
- Voegele, E. (2020). Drax, Velocys help launch Coalition for Negative Emissions. *Biomass Magazine*. Retrieved from <http://biomassmagazine.com/articles/17440/drax-velocys-help-launch-coalition-for-negative-emissions>
- Voegele, E. (2020). SCALE Act could help ethanol plants transport CO2 to customers. *Ethanol Producer Magazine*. Retrieved from <http://ethanolproducer.com/articles/17832/scale-act-could-help-ethanol-plants-transport-co2-to-customers>
- Voigt, M., Marieni, C., Baldermann, A., Galeczka, I. M., Wolff-Boenisch, D., Oelkers, E. H., & Gislason, S. R. (2021). An experimental study of basalt–seawater–CO2 interaction at 130 °C. *Geochimica Et Cosmochimica Acta*, 308, 21-41. doi:<https://doi.org/10.1016/j.gca.2021.05.056>
- Volk, T. A., et al. (2004). Growing fuel: a sustainability assessment of willow biomass crops. *Frontiers in Ecology and the Environment*, 2(8), 411-418. Retrieved from [http://onlinelibrary.wiley.com/doi/10.1890/1540-9295\(2004\)002\[0411:GFASAO\]2.0.CO;2/abstract?systemMessage=Wiley+Online+Library+will+be+unavailable+on+Saturday+7th+Oct+fro](http://onlinelibrary.wiley.com/doi/10.1890/1540-9295(2004)002[0411:GFASAO]2.0.CO;2/abstract?systemMessage=Wiley+Online+Library+will+be+unavailable+on+Saturday+7th+Oct+fro)
m+03.00+EDT+%2F+08%3A00+BST+%2F+12%3A30+IST+
%2F+15.00+SGT+to+08.00+EDT+%2F+13.00+BST+%2F+17%3A30+IST+
%2F+20.00+SGT+and+Sunday+8th+Oct+from+03.00+EDT+%2F+08%3A00+BST+
%2F+12%3A30+IST+%2F+15.00+SGT+to+06.00+EDT+%2F+11.00+BST+
%2F+15%3A30+IST+%2F+18.00+SGT+for+essential+maintenance.
+Apologies+for+the+inconvenience+caused+.
- Volpe, M., Panno, D., Volpe, R., & Messineo, A. (2015). Upgrade of citrus waste as a biofuel via slow pyrolysis. *Journal of Analytical and Applied Pyrolysis*. doi:10.1016/j.jaap.2015.06.015
- vom Eyser, C., Palmu, K., Otterpohl, R., Schmidt, T. C., & Tuerk, J. (2014). Determination of pharmaceuticals in sewage sludge and biochar from hydrothermal carbonization using different quantification approaches and matrix effect studies. *Analytical and Bioanalytical Chemistry*. doi:10.1007/s00216-014-8068-1
- vom Eyser, C., Palmu, K., Schmidt, T. C., & Tuerk, J. (2015). Pharmaceutical load in sewage sludge and biochar produced by hydrothermal carbonization. *Science of The Total Environment*, 537, 180 - 186. doi:10.1016/j.scitotenv.2015.08.021
- von Blottnitz, H., & Curran, M. A. (2007). A review of assessments conducted on bio-ethanol as a transportation fuel from a net energy, greenhouse gas, and environmental life cycle perspective. *Journal of Cleaner Production*, 15, 607-619. Retrieved from http://www.bren.ucsb.edu/academics/documents/biofuel_jcp.pdf
- von Blottnitz, H., & Curran, M. A. (2007). A review of assessments conducted on bio-ethanol as a transportation fuel from a net energy, greenhouse gas, and environmental life cycle perspective. *Journal of Cleaner Production*, 15, 607-619. Retrieved from http://www.bren.ucsb.edu/academics/documents/biofuel_jcp.pdf
- von der Assen, N., Jung, J., & Bardow, A. (2013). Life-cycle assessment of carbon dioxide capture and utilization: avoiding the pitfalls. *Energy & Environmental Science*, 6(9), 2721-2734. doi:10.1039/C3EE41151F
- Von der Assen, N., Voll, P., Peters, M., & Bardow, A. (2014). Life cycle assessment of CO2 capture and utilization: A tutorial review. *Chem. Soc. Rev.*

- von Hippel, T. (2018). Thermal removal of carbon dioxide from the atmosphere: energy requirements and scaling issues. *Climatic Change*. doi:10.1007/s10584-018-2208-0
- von Stechow, C., Watson, J., & Praetorius, B. (2011). Policy incentives for carbon capture and storage technologies in Europe: A qualitative multi-criteria analysis. *Global Environmental Change*, 21(2), 346-357. doi:<https://doi.org/10.1016/j.gloenvcha.2011.01.011>
- Vongkhamchanh, B., Inthapanya, S., & Preston, T. R. (2016). Methane production in an in vitro rumen fermentation is reduced when the carbohydrate substrate is fresh rather than ensiled or dried cassava root, and when biochar is added to the substrate. *Livestock Research for Rural Development*, 27(10). Retrieved from <http://www.lrrd.cipav.org.co/lrrd27/10/bobb27208.html>
- Vongsamphanh, P., Napasirth, V., Inthapanya, S., & Preston, T. R. (2016). Effect of biochar and leaves from sweet or bitter cassava on gas and methane production in an in vitro rumen incubation using cassava root pulp as source of energy. *Livestock Research for Rural Development*. Retrieved from <http://lrrd.cipav.org.co/lrrd27/4/phan27072.html>
- vonHedemann, N., et al. . (2020). Forest policy and management approaches for carbon dioxide removal. *Interface Focus*, 10(5), 20200001. doi:doi:10.1098/rsfs.2020.0001
- Voosen, P. (2018). Rise of carbon dioxide-absorbing mountains in tropics may set thermostat for global climate. *Science*. Retrieved from <https://www.sciencemag.org/news/2018/12/rise-carbon-dioxide-absorbing-mountains-tropics-may-set-thermostat-global-climate>
- Voskian, S., & Hatton, T. A. (2019). Faradaic electro-swing reactive adsorption for CO₂ capture. *Energy & Environmental Science*. doi:10.1039/C9EE02412C
- Vow. (2020). Vow ASA : A breakthrough solution in the fight against climate change. *Global Newswire*. Retrieved from <https://www.globenewswire.com/news-release/2020/12/09/2141894/0/en/Vow-ASA-A-breakthrough-solution-in-the-fight-against-climate-change.html>
- Vu, K. A., Tawfiq, K., & Chen, G. (2015). Rhamnolipid Transport in Biochar-Amended Agricultural Soil. *Water, Air, & Soil Pollution*, 226(8), 1-8. doi:10.1007/s11270-015-2497-0
- Vu, L. H., Seung-soo, K., Soo, K. J., & Woohuicheol. (2015). Effect of treatment method on pyrolysis of *saccharina japonica* alga in fluidized-bed reactor. *한국공업화학회 연구논문 (Korea Society of Industrial and Engineering Chemistry Research Papers)*. Retrieved from http://www.papersearch.net/view/detail.asp?detail_key=10916864
- Vu, Q. D., de Neergaard, A., Tran, T. D., Hoang, H. T. T., Vu, V. T. K., & Jensen, L. S. (2014). Greenhouse gas emissions from passive composting of manure and digestate with crop residues and biochar on small-scale livestock farms in Vietnam. *Environmental Technology*, 36(23), 1 - 12. doi:10.1080/09593330.2014.960475
- Vu, Q. D., de Neergaard, A., Tran, T. D., Hoang, Q. Q., Ly, P., Tran, T. M., & Jensen, L. S. (2015). Manure, biogas digestate and crop residue management affects methane gas emissions from rice paddy fields on Vietnamese smallholder livestock farms. *Nutrient Cycling in Agroecosystems*, 103(3), 329 - 346. doi:10.1007/s10705-015-9746-x
- Vyawahare, M. (2019). Natural forests best bet for fighting climate change, analysis finds. *Mongabay*, (April 9). Retrieved from <https://news.mongabay.com/2019/04/natural-forests-best-bet-for-fighting-climate-change-analysis-finds/>
- Wade, A. (2019). Direct action: Carbon capture gears up for climate battle. *The Engineer*. Retrieved from <https://www.theengineer.co.uk/carbon-capture-climate-battle/>
- Wade, J. P. (2015). *Biotic and Abiotic Remediation of Acetaminophen with Woodchip and Biochar-amended Woodchip Adsorbents*. Virginia Polytechnic Institute and State University, Retrieved from <https://vttechworks.lib.vt.edu/handle/10919/64157?show=full>
- Wagner, A., et al. (2013). Carbon Dioxide Capture from Ambient Air Using Amine-Grafted Mesoporous Adsorbents. *International Journal of Spectroscopy*, 2013(690186), 1-8.

- Wagner, A., & Kaupenjohann, M. (2015). Biochar addition enhanced growth of *Dactylis glomerata* L. and immobilized Zn and Cd but mobilized Cu and Pb on a former sewage field soil. *European Journal of Soil Science*, 66(3), 505-515. doi:10.1111/ejss.12246
- Wagner, A., Kaupenjohann, M., Hu, Y., Kruse, J., & Leinweber, P. (2015). Biochar-induced formation of Zn-P-phases in former sewage field soils studied by P K-edge XANES spectroscopy. *Journal of Plant Nutrition and Soil Science*, 178(4), 582 - 585. doi:10.1002/jpln.201400601
- Waheed, Q. M. K., Wu, C., & Williams, P. T. (2015). Hydrogen production from high temperature steam catalytic gasification of bio-char. In.
- Wahyuni, S. (2015). *EFFECTIVENESS OF UREA COATING ON THE ENRICHED WITH CHARCOAL INDIGENUS MICROBES TO DECREASE AND RESIDUAL HEKSAKLOROBENZEN* (translated from Indonesian language). Retrieved from <http://eprints.uns.ac.id/19911/>
- Wahyuni, S., Indratin, I., Dewi, W. S., & Atmanto, H. (2016). *Urea Coating with Activated Carbon Enriched by Microbial Indigenous Can Reduce Endrin Concentration*. Paper presented at the Prosiding Seminar Nasional Biologi (Proceedings of the National Seminar on Biological). <http://www.jurnal.fkip.uns.ac.id/index.php/prosbio/article/view/7220>
- Wainberg, R., & Downie, A. (2007, 6 February 2007). The Pay Dirt of El Dorado. Retrieved from http://www.wme.com.au/categories/waste_managemt/feb6_07.php
- Wajuimomgtyas, A., Roto, R., & Kuncaka, A. (2016). Study of Glucose Adsorption on Synthetic Humin. *Asian Journal of Chemistry*, 28(5), 987-992. Retrieved from http://www.asianjournalofchemistry.co.in/User/ViewFreeArticle.aspx?ArticleID=28_5_10
- Waldron, A., Garrity, D., Malhi, Y., Girardin, C., Miller, D. C., & Seddon, N. (2017). Agroforestry Can Enhance Food Security While Meeting Other Sustainable Development Goals. *Tropical Conservation Science*, 10, 1940082917720667. doi:10.1177/1940082917720667
- Waldron, A., Justicia, R., & Smith, L. E. (2015). Making biodiversity-friendly cocoa pay: combining yield, certification, and REDD for shade management. *Ecological Applications*, 25(2), 361-372. doi:<https://doi.org/10.1890/13-0313.1>
- Walia, J., et al. (2021). Reconfigurable carbon quantum emitters from CO₂ gas reduced via surface plasmons. *Optica*, 8, 708-709. Retrieved from <https://www.osapublishing.org/optica/fulltext.cfm?uri=optica-8-5-708&id=451118>
- Walker, J. C. G., Hays, P. B., & Kasting, J. F. (1981). A negative feedback mechanism for the long-term stabilization of Earth's surface temperature. *Journal of Geophysical Research: Oceans*, 86(C10), 9776-9782. doi:<https://doi.org/10.1029/JC086iC10p09776>
- Wallace, T. (2017). Biochar, the once and future agricultural mainstay. *Cosmos*. Retrieved from <https://cosmosmagazine.com/climate/biochar-the-once-and-future-agricultural-mainstay>
- Waller, L., Rayner, T., Chilvers, J., Gough, C. A., Lorenzoni, I., Jordan, A., & Vaughan, N. (2020). Contested framings of greenhouse gas removal and its feasibility: Social and political dimensions. *WIREs Climate Change*, 11(4), e649. doi:10.1002/wcc.649
- Waller, R. (2012). Iron Fertilization: Savior to Climate Change or Ocean Dumping? *National Geographic*, (October 18). Retrieved from <http://voices.nationalgeographic.com/2012/10/18/iron-fertilization-savior-to-climate-change-or-ocean-dumping/>
- Wallquist, L., Seigo, S. L. O., Visschers, V. H. M., & Siegrist, M. (2012). Public acceptance of CCS system elements: A conjoint measurement. *International Journal of Greenhouse Gas Control*, 6, 77-83. doi:<http://dx.doi.org/10.1016/j.ijggc.2011.11.008>
- Walsh, B., Ciais, P., Janssens, I. A., Peñuelas, J., Riahi, K., Rydzak, F., . . . Obersteiner, M. (2017). Pathways for balancing CO₂ emissions and sinks. *Nature Communications*, 8, 14856. doi:10.1038/ncomms14856
<https://www.nature.com/articles/ncomms14856#supplementary-information>

- Walsh, B. J., Rydzak, F., Palazzo, A., Kraxner, F., Herrero, M., Schenk, P. M., . . . Obersteiner, M. (2015). New feed sources key to ambitious climate targets. *Carbon Balance and Management*, 10(1), 26. doi:10.1186/s13021-015-0040-7
- Walsh, M., J., et al. . (2016). Algal food and fuel coproduction can mitigate greenhouse gas emissions while improving land and water-use efficiency. *Environmental Research Letters*, 11(11), 114006. Retrieved from <http://stacks.iop.org/1748-9326/11/i=11/a=114006>
- Walsh, M. E., de la Torre Ugarte, D. G., Shapouri, H., & Slinsky, S. P. (2003). Bioenergy Crop Production in the United States: Potential Quantities, Land Use Changes, and Economic Impacts on the Agricultural Sector. *Environmental and Resource Economics*, 24(4), 313-333. doi:10.1023/a:1023625519092
- Walter, R., & Rao, B. K. R. (2015). Biochars influence sweet-potato yield and nutrient uptake in tropical Papua New Guinea. *Journal of Plant Nutrition and Soil Science*, n/a - n/a. doi:10.1002/jpln.201400405
- Walter, S., Peeken, I., Lochte, K., Webb, A., & Bange, H. W. (2005). Nitrous oxide measurements during EIFEX, the European Iron Fertilization Experiment in the subpolar South Atlantic Ocean. *Geophysical Research Letters*, 32(23), n/a-n/a. doi:10.1029/2005GL024619
- Walters, R., et al. (2015). Investigating Bio-Char as Flow Modifier and Water Treatment Agent for Sustainable Pavement Design. *American Journal of Engineering and Applied Sciences*, 8(1), 138-146. Retrieved from <http://search.proquest.com/openview/fa408a4aec667e25a33c3f63ce007035/1?pq-origsite=gscholar>
- Walters, R. C., M.S. (2014). *Enhancing Asphalt Binder's Rheological Behavior and Aging Susceptibility Using Nano-Particles*. North Carolina Agricultural and Technical State University, Retrieved from <http://gradworks.umi.com/15/60/1560232.html>
- Walters, R. C., Fini, E. H., & Abu-Lebdeh, T. (2014). Enhancing Asphalt Rheological Behavior and AGing Susceptibility Using Bio-Char and Nano-Clay. *American Journal of Engineering and Applied Sciences*, 7(1), 66 - 76. doi:10.3844/ajeassp.2014.66.76
- Wang, B. (2018). Restore the oceans and get up to 50 times the fish and store a trillion tons of CO₂. *nextBIGfuture*. Retrieved from <https://www.nextbigfuture.com/2018/07/restore-the-oceans-and-get-up-to-50-times-the-fish-and-store-a-trillion-tons-of-co2.html>
- Wang, B., Jiang, Z., Yu, J. C.-m., Wang, J., & Wong, P. K. (2019). Enhanced CO₂ reduction and valuable C₂₊ chemical production by a CdS-Photosynthetic hybrid system. *Nanoscale*. doi:10.1039/C9NR02896J
- Wang, B., Li, Y., Wu, N., Lan, C. Q. J. A. M., & Biotechnology. (2008). CO₂ bio-mitigation using microalgae. 79(5), 707-718. doi:10.1007/s00253-008-1518-y
- Wang, B., Pan, Z., Cheng, H., Zhang, Z., & Cheng, F. (2021). A review of carbon dioxide sequestration by mineral carbonation of industrial byproduct gypsum. *Journal of Cleaner Production*, 126930. doi:<https://doi.org/10.1016/j.jclepro.2021.126930>
- Wang, C., et al. . (2013). Adsorption of deoxyribonucleic acid (DNA) by willow wood biochars produced at different pyrolysis temperatures. *Biological Fertility of Soils*, 50(1), 87-94. Retrieved from <http://link.springer.com/article/10.1007/s00374-013-0836-0>
- Wang, C., et al. (2013). Insight into the Effects of Biochar on Manure Composting: Evidence Supporting the Relationship between N₂O Emission and Denitrifying Community. *Environmental Science and Technology*, 47(13), 7341-7349.
- Wang, C., et al. . (2015). The chemical composition of native organic matter influences the response of bacterial community to input of biochar and fresh plant material. *Plant and Soil*, 395(1-2), 87-104. doi:10.1007/s11104-015-2621-3
- Wang, C., Walter, M. T., & Parlange, J.-Y. (2013). Modeling Simple Experiments of Biochar Erosion from Soil. *Journal of Hydrology*, 499, 140-145.

- Wang, D., et al. . (2012). Transport of Biochar Particles in Saturated Granular Media: Effects of Pyrolysis Temperature and Particle Size. *Environmental Science and Technology*, 47(2), 821-828.
- Wang, D., Zhang, W., & Zhou, D. (2013). Antagonistic Effects of Humic Acid and Iron Oxyhydroxide Grain-Coating on Biochar Nanoparticle Transport in Saturated Sand. *Environ. Sci. Technol.*
- Wang, D. Y., et al. (2014). Impact of Biochar on Water Holding Capacity of Two Chinese Agricultural Soil. *Advanced Materials Research*, 941-944, 952-955. Retrieved from <http://www.scientific.net/AMR.941-944.952>
- Wang, D. Y., et al. . (2015). Phenylurea herbicide sorption to biochars and agricultural soil. *Journal of Environmental Science and Health, Part B*, 50(8), 544-551. doi:10.1080/03601234.2015.1028830
- Wang, F., et al. . (2014). Species-dependent effects of biochar amendment on bioaccumulation of atrazine in earthworms. *Environmental Pollution*, 186, 241–247.
- Wang, F., et al. (2020). Addressing critical challenges in carbon dioxide removal. Retrieved from <https://www.climateworks.org/blog/addressing-critical-challenges-in-carbon-dioxide-removal/>
- Wang, F., Deng, S., Zhao, J., Zhao, J., Yang, G., & Yan, J. (2017). Integrating geothermal into coal-fired power plant with carbon capture: A comparative study with solar energy. *Energy Conversion and Management*, 148, 569-582. doi:<https://doi.org/10.1016/j.enconman.2017.06.016>
- Wang, F., Dreisinger, D., Jarvis, M., & Hitchins, T. (2019). Kinetics and mechanism of mineral carbonation of olivine for CO₂ sequestration. *Minerals Engineering*, 131, 185-197. doi:<https://doi.org/10.1016/j.mineng.2018.11.024>
- Wang, F., Dreisinger, D. B., Jarvis, M., & Hitchins, T. (2018). The technology of CO₂ sequestration by mineral carbonation: current status and future prospects. *Canadian Metallurgical Quarterly*, 57(1), 46-58. doi:10.1080/00084433.2017.1375221
- Wang, G., & Xu, Z. (2013). The Effects of Biochar on Germination and Growth of Wheat in Different Saline-alkali Soil. *Asian Agricultural Research*, 5(11), 116-119. Retrieved from <http://aagr.chinajournal.net.cn/WKB/WebPublication/paperDigest.aspx?paperID=b90014fc-905f-44c2-b561-67d3a9d0850e>
- Wang, H., Gao, B., Wang, S., Fang, J., Xue, Y., & Yang, K. (2015). Removal of Pb(II), Cu(II), and Cd(II) from aqueous solutions by biochar derived from KMnO₄ treated hickory wood. *Bioresource Technology*, 197, 356 - 362. doi:10.1016/j.biortech.2015.08.132
- Wang, H. L., Lin, K. D., Hou, Z. N., Richardson, B., & Gan, J. (2010). Sorption of the herbicide terbutylazine in two New Zealand forest soils amended with biosolids and biochars. *Journal of Soils and Sediments*, 10(2), 283-289. Retrieved from <https://link.springer.com/article/10.1007/s11368-009-0111-z>
- Wang, J., et al. . (2011). Effects of biochar addition on N₂O and CO₂ emissions from two paddy soils. *Biology and Fertility of Soils*, 47(8), 887-896. doi:10.1007/s00374-011-0595-8
- Wang, J., et al. . (2012). Effects of biochar amendment in two soils on greenhouse gas emissions and crop production. *Plant and Soil*, 360(1-2), 287-298. doi:10.1007/s11104-012-1250-3
- Wang, J., et al. (2015). Contrasting effects of aged and fresh biochars on glucose-induced priming and microbial activities in paddy soil. *Journal of Soils and Sediments*, 16(1), 191-203. doi:10.1007/s11368-015-1189-0
- Wang, J., et al. (2018). *Simultaneous H₂ Production with Carbon Storage by Enhanced Olivine Weathering in Laboratory-scale: An Investigation of CO₂ Effect*. Paper presented at the Second International Conference on Materials Chemistry and Environmental Protection - MEEP.

- Wang, J., Chen, Z., Xiong, Z., Chen, C., Xu, X., Zhou, Q., & Kuzyakov, Y. (2015). Effects of biochar amendment on greenhouse gas emissions, net ecosystem carbon budget and properties of an acidic soil under intensive vegetable production. *Soil Use and Management*, 31(3), 375-383. doi:10.1111/sum.12202
- Wang, J., Feng, L., Palmer, P. I., Liu, Y., Fang, S., Bösch, H., . . . Xia, C. (2020). Large Chinese land carbon sink estimated from atmospheric carbon dioxide data. *Nature*, 586(7831), 720-723. doi:10.1038/s41586-020-2849-9
- Wang, J., Xiong, Z., & Kuzyakov, Y. (2015). Biochar stability in soil: meta-analysis of decomposition and priming effects. *GCB Bioenergy*, 8(3), 512-523. doi:10.1111/gcbb.12266
- Wang, J., Xiong, Z., Yan, X., & Kuzyakov, Y. (2016). Carbon budget by priming in a biochar-amended soil. *European Journal of Soil Biology*, 76, 26-34. doi:<https://doi.org/10.1016/j.ejsobi.2016.07.003>
- Wang, J., Zhao, J., Wang, Y., Deng, S., Sun, T., & Li, K. (2017). Application potential of solar-assisted post-combustion carbon capture and storage (CCS) in China: A life cycle approach. *Journal of Cleaner Production*, 154, 541-552. doi:<https://doi.org/10.1016/j.jclepro.2017.04.021>
- Wang, K., et al. . (2012). Fast pyrolysis of microalgae remnants in a fluidized bed reactor for bio-oil and biochar production. *Bioresource Technology*, 127, 494-499. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0960852412011844>
- Wang, L., et al. (2013). Effect of crop residue biochar on soil acidity amelioration in strongly acidic tea garden soils. *Soil Use and Management*.
- Wang, L. (2014). *Biofuels and BiorefineriesProduction of Biofuels and Chemicals with Microwave Techno-Economic Analysis of Microwave-Assisted Pyrolysis for Production of Biofuels* (Vol. 3). Dordrecht: Springer Netherlands.
- Wang, L., Chen, L., Poon, C. S., Wang, C.-H., Ok, Y. S., Mechtcherine, V., & Tsang, D. C. W. (2021). Roles of Biochar and CO₂ Curing in Sustainable Magnesia Cement-Based Composites. *ACS Sustainable Chemistry & Engineering*. doi:10.1021/acssuschemeng.1c02008
- Wang, L., Gao, C., Yang, K., Sheng, Y., Xu, J., Zhao, Y., . . . Zhu, L. (2021). Effects of biochar aging in the soil on its mechanical property and performance for soil CO₂ and N₂O emissions. *Science of The Total Environment*, 146824. doi:<https://doi.org/10.1016/j.scitotenv.2021.146824>
- Wang, L., Higgins, D. C., Ji, Y., Morales-Guio, C. G., Chan, K., Hahn, C., & Jaramillo, T. F. (2020). Selective reduction of CO to acetaldehyde with CuAg electrocatalysts. *Proceedings of the National Academy of Sciences*, 117(23), 12572-12575. doi:10.1073/pnas.1821683117
- Wang, L., Li, X., Ma, J., Wu, Q., & Duan, X. (2014). Non-activated, N, S-co-doped Biochar Derived from Banana with Superior Capacitive Properties. *Sustainable Energy*, 2(2), 39-43. doi:10.12691/rse-2-2-1
- Wang, M., Sun, X., Zhong, N., Cai, D., & Wu, Z. (2015). Promising Approach for Improving Adhesion Capacity of Foliar Nitrogen Fertilizer. *ACS Sustainable Chemistry & Engineering*, 3(3), 499-506. doi:10.1021/acssuschemeng.5b00064
- Wang, M., Wang, S., Sun, Y., & Li, Y. (2019). Improving Public Acceptance of Carbon Capture and Storage(CCS) in China. *IOP Conference Series: Earth and Environmental Science*, 371, 032071. doi:10.1088/1755-1315/371/3/032071
- Wang, M. C., Sheng, G. D., & Qiu, Y. P. (2014). A novel manganese-oxide/biochar composite for efficient removal of lead(II) from aqueous solutions. *International Journal of Environmental Science and Technology*, 12(5), 1719-1726. Retrieved from <https://link.springer.com/article/10.1007/s13762-014-0538-7>

- Wang, M. E., Peng, C., & Chen, W. P. (2016). Effects of Rice Cultivar and Typical Soil Improvement Measures on the Uptake of Cd in Rice Grains. *Europe PMC: Huan Jing ke Xue*, 36(11), 4283-4290. Retrieved from <http://europepmc.org/abstract/med/26911020>
- Wang, M. M., & Zhou, Q. X. (2013). Long-Term Carbon Sequestration and Environmental Immobilization of Biochar: A Review. *Advanced Materials Research*, 790, 475-479. Retrieved from <https://www.scientific.net/AMR.790.475>
- Wang, N., Akimoto, K., & Nemet, G. F. (2021). What went wrong? Learning from three decades of carbon capture, utilization and sequestration (CCUS) pilot and demonstration projects. *Energy Policy*, 158, 112546. doi:<https://doi.org/10.1016/j.enpol.2021.112546>
- Wang, N., Chang, Z.-Z., Xue, X.-M., Yu, J.-G., Shi, X.-X., Ma, L. Q., & Li, H.-B. (2017). Biochar decreases nitrogen oxide and enhances methane emissions via altering microbial community composition of anaerobic paddy soil. *Science of The Total Environment*, 581, 689-696. doi:<http://dx.doi.org/10.1016/j.scitotenv.2016.12.181>
- Wang, P., Guo, Y., Zhao, C., Yan, J., & Lu, P. (2017). Biomass derived wood ash with amine modification for post-combustion CO₂ capture. *Applied Energy*, 201, 34-44. doi:<https://doi.org/10.1016/j.apenergy.2017.05.096>
- Wang, P., Yin, Y., Guo, Y., & Wang, C. (2015). Removal of chlorpyrifos from waste water by wheat straw-derived biochar synthesized through oxygen-limited method. *RSC Adv.*, 5(89), 72572 - 72578. doi:[10.1039/c5ra10487d](https://doi.org/10.1039/c5ra10487d)
- Wang, P., Yin, Y., Guo, Y., & Wang, C. (2016). Preponderant adsorption for chlorpyrifos over atrazine by wheat straw-derived biochar: experimental and theoretical studies. *RSC Adv.*, 6(13), 10615 - 10624. doi:[10.1039/c5ra24248g](https://doi.org/10.1039/c5ra24248g)
- Wang, Q., Li, J., Chen, J., Hong, H., Lu, H., Liu, J., . . . Yan, C. (2018). Glomalin-related soil protein deposition and carbon sequestration in the Old Yellow River delta. *Science of The Total Environment*, 625, 619-626. doi:<https://doi.org/10.1016/j.scitotenv.2017.12.303>
- Wang, Q. X., Mao, L. A., Wang, D., Yan, D. D., Ma, T. T., Liu, P. F., . . . Cao, A. C. (2014). Emission Reduction of 1,3-Dichloropropene by Soil Amendment with Biochar. *Journal of Environmental Quality*. Retrieved from <http://ir.ipe.ac.cn/handle/122111/11689>
- Wang, R., et al. (2015). Research progress on preparing biochar and its effect on soil physicochemical properties. *Journal of Agricultural Science and Technology (Beijing)*, 17(2), 126-133. Retrieved from <http://www.cabdrect.org/abstracts/20153172001.html>
- Wang, R., Peng, F., Song, K., Feng, G., & Guo, Z. (2018). Molecular dynamics study of interfacial properties in CO₂ enhanced oil recovery. *Fluid Phase Equilibria*, 467, 25-32. doi:<https://doi.org/10.1016/j.fluid.2018.03.022>
- Wang, S., et al. . (2012). Large-scale Biochar Production from Crop Residue: A New Idea and the Biogas-Energy Pyrolysis System. *Bioresources.com*, 8(1), 8-11. Retrieved from http://www.ncsu.edu/bioresources/BioRes_08/BioRes_08_1_0008_Wang_ZXY_Editorial_Biochar_Crop_Biogas_Pyrol_3257.pdf
- Wang, S. (2015). *Iron (Fe) and manganese (Mn) oxide mineral modified biochars: Characterization and removal of arsenate and lead*. UNIVERSITY OF FLORIDA, Retrieved from <http://gradworks.umi.com/37/16/3716993.html>
- Wang, S., Gao, B., Li, Y., Creamer, A. E., & He, F. (2016). Adsorptive removal of arsenate from aqueous solutions by biochar supported zero-valent iron nanocomposite: Batch and continuous flow tests. *Journal of Hazardous Materials*. doi:[10.1016/j.jhazmat.2016.01.052](https://doi.org/10.1016/j.jhazmat.2016.01.052)
- Wang, S., Gao, B., Li, Y., Mosa, A., Zimmerman, A. R., Ma, L. Q., . . . Migliaccio, K. W. (2015). Manganese oxide-modified biochars: Preparation, characterization, and sorption of arsenate and lead. *Bioresource Technology*, 181, 13 - 17. doi:[10.1016/j.biortech.2015.01.044](https://doi.org/10.1016/j.biortech.2015.01.044)
- Wang, S., Gao, B., Li, Y., Wan, Y., & Creamer, A. E. (2015). Sorption of arsenate onto magnetic

- iron–manganese (Fe–Mn) biochar composites. *RSC Adv.*, 5(83), 67971 - 67978. doi:10.1039/c5ra12137j
- Wang, S., Gao, B., Li, Y., Zimmerman, A. R., & Cao, X. (2016). Sorption of arsenic onto Ni/Fe layered double hydroxide (LDH)-biochar composites. *RSC Adv.*, 6(22), 17792 - 17799. doi:10.1039/c5ra17490b
- Wang, S., Gao, B., Zimmerman, A. R., Li, Y., Ma, L., Harris, W. G., & Migliaccio, K. W. (2015). Physicochemical and sorptive properties of biochars derived from woody and herbaceous biomass. *Chemosphere*, 134, 257 - 262. doi:10.1016/j.chemosphere.2015.04.062
- Wang, S., Gao, B., Zimmerman, A. R., Li, Y., Ma, L., Harris, W. G., & Migliaccio, K. W. (2015). Removal of arsenic by magnetic biochar prepared from pinewood and natural hematite. *Bioresource Technology*, 175, 391 - 395. doi:10.1016/j.biortech.2014.10.104
- Wang, S., Ma, S., Shan, J., Xia, Y., Lin, J., & Yan, X. (2019). A 2-year study on the effect of biochar on methane and nitrous oxide emissions in an intensive rice–wheat cropping system. *Biochar*, 1(2), 177-186. doi:10.1007/s42773-019-00011-8
- Wang, S., Shiau, B., Chen, C., Harwell, J. H., & Kadhum, M. J. (2017). Development of in Situ CO₂ Generation Formulations for Enhanced Oil Recovery. *Energy & Fuels*, 31(12), 13475-13486. doi:<http://dx.doi.org/10.1021/acs.energyfuels.7b02810>
- Wang, S.-y., Tang, Y.-k., Chen, C., Wu, J.-t., Huang, Z., Mo, Y.-y., . . . Chen, J.-b. (2015). Regeneration of magnetic biochar derived from eucalyptus leaf residue for lead(II) removal. *Bioresource Technology*. doi:10.1016/j.biortech.2015.03.139
- Wang, S.-y., Tang, Y.-k., Li, K., Mo, Y.-y., Li, H.-f., & Gu, Z.-q. (2014). Combined performance of biochar sorption and magnetic separation processes for treatment of chromium-contained electroplating wastewater. *Bioresource Technology*, 174, 67 - 73. doi:10.1016/j.biortech.2014.10.007
- Wang, T., et al. . (2012). Chemical and bioassay characterisation of nitrogen availability in biochar produced from dairy manure and biosolids. *Organic Geochemistry*, 51, 45-54.
- Wang, T. (2012). Fuel synthesis with CO₂ captured from atmosphere: Thermodynamic analysis. *ECS Trans.*, 41, 13.
- Wang, T., Camps-Arbestain, M., & Hedley, M. (2013). Predicting C aromaticity of biochars based on their elemental composition. *Organic Geochemistry*, 62, 1-6. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0146638013001423>
- Wang, T., Ge, K., Wu, Y. S., Chen, K. X., Fang, M. X., & Luo, Z. Y. (2017). Designing Moisture-Swing CO₂ Sorbents through Anion Screening of Polymeric Ionic Liquids. *Energy & Fuels*, 31(10), 11127-11133. doi:10.1021/acs.energyfuels.7b02200
- Wang, T., Hou, C. L., Ge, K., Lackner, K. S., Shi, X. Y., Liu, J., . . . Luo, Z. Y. (2017). Spontaneous Cooling Absorption of CO₂ by a Polymeric Ionic Liquid for Direct Air Capture. *Journal of Physical Chemistry Letters*, 8(17), 3986-3990. doi:10.1021/acs.jpclett.7b01726
- Wang, T., Huang, J., He, X., Wu, J., Fang, M., & Cheng, J. (2014). CO₂ Fertilization System Integrated with a Low-cost Direct Air Capture Technology. *Energy Procedia*, 63, 6842-6851. doi:<http://dx.doi.org/10.1016/j.egypro.2014.11.718>
- Wang, T., Lackner, K. S., & Wright, A. (2011). Moisture Swing Sorbent for Carbon Dioxide Capture from Ambient Air. *Environmental Science & Technology*, 45(15), 6670-6675. doi:10.1021/es201180v
- Wang, T., Liu, J., Fang, M., & Luo, Z. (2013). A Moisture Swing Sorbent for Direct Air Capture of Carbon Dioxide: Thermodynamic and Kinetic analysis. *Energy Procedia*, 37, 6096-6104. doi:<http://dx.doi.org/10.1016/j.egypro.2013.06.538>
- Wang, T., Liu, J., Huang, H., Fang, M., & Luo, Z. (2016). Preparation and kinetics of a heterogeneous sorbent for CO₂ capture from the atmosphere. *Chemical Engineering*

Journal, 284, 679-686. doi:<http://dx.doi.org/10.1016/j.cej.2015.09.009>

- Wang, T., Wang, X., Hou, C., & Liu, J. (2020). Quaternary functionalized mesoporous adsorbents for ultra-high kinetics of CO₂ capture from air. *Scientific Reports*, 10(1), 21429. doi:10.1038/s41598-020-77477-1
- Wang, T.-T., et al. (2012). Effect of biochar amendment on the bioavailability of pesticide chlorantraniliprole in soil to earthworm. *Ecotoxicology and Environmental Safety*, 83, 96-101. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0147651312001947>
- Wang, T.-T., et al. . (2015). Suppression of Chlorantraniliprole Sorption on Biochar in Soil–Biochar Systems. *Bulletin of Environmental Contamination and Toxicology*, 95(3), 401-406. doi:10.1007/s00128-015-1541-5
- Wang, T. T., et al. (2012). Impact of biochar amendment on the sorption and dissipation of chlorantraniliprole in soils. *Huan Jing Ke Xue*, 33, 1339-1345. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0960852407008644>
- Wang, W.-L., Ren, X.-Y., Chang, J.-M., Cai, L.-P., & Shi, S. Q. (2015). Characterization of bio-oils and bio-chars obtained from the catalytic pyrolysis of alkali lignin with metal chlorides. *Fuel Processing Technology*. doi:10.1016/j.fuproc.2015.06.048
- Wang, X., Hu, Z., Deng, S., Wang, Y., & Tan, H. (2014). Kinetics investigation on the combustion of biochar in O₂/CO₂ atmosphere. *Environmental Progress & Sustainable Energy*, 34(3), 923-932. doi:10.1002/ep.12063
- Wang, X., Peng, B., Tan, C., Ma, L., & Rathinasabapathi, B. (2015). Recent advances in arsenic bioavailability, transport, and speciation in rice. *Environmental Science and Pollution Research*, 22(8), 5742-5750. doi:10.1007/s11356-014-4065-3
- Wang, X., Sato, T., & Xing, B. (2006). Competitive Sorption of Pyrene on Wood Chars. *Environmental Science and Technology*, 40, 3267-3272.
- Wang, X., & Song, C. (2019). Capture of CO₂ from Concentrated Sources and the Atmosphere. In M. Aresta, I. Karimi, & S. Kawi (Eds.), *An Economy Based on Carbon Dioxide and Water: Potential of Large Scale Carbon Dioxide Utilization* (pp. 35-72). Retrieved from https://link.springer.com/chapter/10.1007/978-3-030-15868-2_2
- Wang, X., Song, D., Liang, G., Zhang, Q., Ai, C., & Zhou, W. (2015). Maize biochar addition rate influences soil enzyme activity and microbial community composition in a fluvo-aquic soil. *Applied Soil Ecology*, 96, 265 - 272. doi:10.1016/j.apsoil.2015.08.018
- Wang, X., van 't Veld, K., Marcy, P., Huzurbazar, S., & Alvarado, V. (2018). Economic co-optimization of oil recovery and CO₂ sequestration. *Applied Energy*, 222, 132-147. doi:<https://doi.org/10.1016/j.apenergy.2018.03.166>
- Wang, X., Zhang, F., & Lipiński, W. (2020). Research progress and challenges in hydrate-based carbon dioxide capture applications. *Applied Energy*, 269, 114928. doi:<https://doi.org/10.1016/j.apenergy.2020.114928>
- Wang, X., Zhou, W., Liang, G., Song, D., & Zhang, X. (2015). Characteristics of maize biochar with different pyrolysis temperatures and its effects on organic carbon, nitrogen and enzymatic activities after addition to fluvo-aquic soil. *Science of The Total Environment*, 538, 137 - 144. doi:10.1016/j.scitotenv.2015.08.026
- Wang, Y., et al. (2013). Comparisons of biochar properties from wood material and crop residues at different temperatures and residence time. *Energy Fuels*, 27(10), 5890-5899. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/ef400972z>
- Wang, Y., et al. . (2014). Effects of biochar on photosynthesis and antioxidative system of *Malus hupehensis* Rehd. seedlings under replant conditions. *Scientia Horticulturae*, 175, 9-15. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0304423814002957>
- Wang, Y., et al. (2015). Measuring the bioavailability of polychlorinated biphenyls to earthworms in soil enriched with biochar or activated carbon using triolein-embedded cellulose

- acetate membrane. *Journal of Soils and Sediments*, 16(2), 527-536. Retrieved from <http://link.springer.com/article/10.1007/s11368-015-1245-9>
- Wang, Y., Dong, Y., Zhang, L., Chu, G., Zou, H., Sun, B., & Zeng, X. (2021). Carbon Dioxide Capture by Non-aqueous Blend in Rotating Packed Bed Reactor: Absorption and Desorption Investigation. *Separation and Purification Technology*, 118714. doi:<https://doi.org/10.1016/j.seppur.2021.118714>
- Wang, Y., Guo, C.-h., Zhuang, S.-r., Chen, X.-j., Jia, L.-q., Chen, Z.-y., . . . Wu, Z. (2021). Major contribution to carbon neutrality by China's geosciences and geological technologies. *China Geology*, 4(2), 329-352. doi:<https://doi.org/10.31035/cg2021037>
- Wang, Y., Lin, Y., Chiu, P. C., Imhoff, P. T., & Guo, M. (2015). Phosphorus release behaviors of poultry litter biochar as a soil amendment. *Science of The Total Environment*, 512-513, 454 - 463. doi:[10.1016/j.scitotenv.2015.01.093](https://doi.org/10.1016/j.scitotenv.2015.01.093)
- Wang, Y., Lu, J., Wu, J., Liu, Q., Zhang, H., & Jin, S. (2015). Adsorptive Removal of Fluoroquinolone Antibiotics Using Bamboo Biochar. *Sustainability*, 7(9), 12947 - 12957. doi:[10.3390/su70912947](https://doi.org/10.3390/su70912947)
- Wang, Y., Yan, X., & Wang, Z. (2014). The biogeophysical effects of extreme afforestation in modeling future climate. *Theoretical and Applied Climatology*, 118(3), 511-521. doi:[10.1007/s00704-013-1085-8](https://doi.org/10.1007/s00704-013-1085-8)
- Wang, Y., Yin, R., & Liu, R. (2014). Characterization of biochar from fast pyrolysis and its effect on chemical properties of the tea garden soil. *Journal of Analytical and Applied Pyrolysis*, 110, 375 - 381. doi:[10.1016/j.jaatp.2014.10.006](https://doi.org/10.1016/j.jaatp.2014.10.006)
- Wang, Y., Zhang, L., Yang, H., Yan, G., Xu, Z., Chen, C., & Zhang, D. (2016). Biochar nutrient availability rather than its water holding capacity governs the growth of both C3 and C4 plants. *Journal of Soils and Sediments*, 16(3), 801 - 810. doi:[10.1007/s11368-016-1357-x](https://doi.org/10.1007/s11368-016-1357-x)
- Wang, Z., et al. . (2013). Effects of co-produced biochar on life cycle greenhouse gas emissions of pyrolysis-derived renewable fuels. *Biofuels, Bioproducts and Biorefining*, 8(2), 189-204. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/bbb.1447/abstract>
- Wang, Z., et al. (2014). Contrasting effects of bamboo leaf and its biochar on soil CO₂ efflux and labile organic carbon in an intensively managed Chinese chestnut plantation. *Biology and Fertility of Soils*, 50(7), 1109-1119. Retrieved from <http://link.springer.com/article/10.1007/s00374-014-0933-8>
- Wang, Z., et al. . (2015). Reduced nitrification and abundance of ammonia-oxidizing bacteria in acidic soil amended with biochar. *Chemosphere*, 138, 576 - 583. doi:[10.1016/j.chemosphere.2015.06.084](https://doi.org/10.1016/j.chemosphere.2015.06.084)
- Wang, Z., Guo, H., Shen, F., Yang, G., Zhang, Y., Zeng, Y., . . . Deng, S. (2015). Biochar produced from oak sawdust by Lanthanum (La)-involved pyrolysis for adsorption of ammonium (NH₄⁺), nitrate (NO₃⁻), and phosphate (PO₄³⁻). *Chemosphere*, 119, 646 - 653. doi:[10.1016/j.chemosphere.2014.07.084](https://doi.org/10.1016/j.chemosphere.2014.07.084)
- Wang, Z., Shen, D., Shen, F., & Li, T. (2016). Phosphate adsorption on lanthanum loaded biochar. *Chemosphere*, 150, 1 - 7. doi:[10.1016/j.chemosphere.2016.02.004](https://doi.org/10.1016/j.chemosphere.2016.02.004)
- Wang, Z., Zheng, H., Luo, Y., Deng, X., Herbert, S., & Xing, B. (2013). Characterization and influence of biochars on nitrous oxide emission from agricultural soil. *Environmental Pollution*, 174, 289-296. doi:<https://doi.org/10.1016/j.envpol.2012.12.003>
- Wang, Z. C., Dunn, J. B., Han, J. W., & Wang, M. Q. (2014). Effects of co-produced biochar on life cycle greenhouse gas emissions of pyrolysis-derived renewable fuels. *Biofuels, Bioproducts & Biorefining*, 8(2), 189-204. Retrieved from <http://www.cabdirect.org/abstracts/20143131389.html>
- Wang, Z. L., et al. (2015). Effect of bamboo leaf biochar addition on soil CO₂ efflux and labile organic carbon pool in a Chinese chestnut plantation. *Ying Yong Sheng Tai Xue Bao*,

- 25(11), 3152-3160. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/25898611>
- Wani, S., et al. (2013). Hydrological consequences of jatropha on waste lands in developing countries. In J. F. Dellemand & P. W. Gerbens-Leenes (Eds.), *Bioenergy and Water* (pp. 103-116): European Commission.
- Wankhede, S., Saini, M. K., Kothari, S. L., Bala, N., Singh, G., & Gour, V. S. (2017). Evaluation of Carbon Sequestration Potential in Amla (*Emblica officinalis Gaertn.*) Orchards in Semi-arid Region of India. *Proceedings of the National Academy of Sciences, India Section B: Biological Sciences*. doi:10.1007/s40011-017-0917-1
- Waqas, M., et al. (2013). The effects of sewage sludge and sewage sludge biochar on PAHs and potentially toxic element bioaccumulation in *Cucumis sativa L.* *Chemosphere*, 105, 53-61. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/24360844>
- Waramit, N., Moore, K. J., & Heggenstaller, A. H. (2011). Composition of Native Warm-Season Grasses for Bioenergy Production in Response to Nitrogen Fertilization Rate and Harvest Date All rights reserved. No part of this periodical may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage and retrieval system, without permission in writing from the publisher. *Agronomy Journal*, 103(3), 655-662. doi:10.2134/agronj2010.0374
- Wararam, W., Chunkao, K., Phewnil, O., Tangkananuruk, N., Tangkananuruk, K., Pattamapitoon, T., . . . Peumsinb, J. (2015). Applicable VFCW Technology in Parallel with Biochar-Mixed Soils for Treating Formaldehyde in Ethylene Glycol Factory Wastewater. *Modern Applied Science*, 9(12), 154. doi:10.5539/mas.v9n12p154
- Ward, J., Rasul, M. G., & Bhuiya, M. M. K. (2014). Energy Recovery from Biomass by Fast Pyrolysis. *Procedia Engineering*, 90, 669 - 674. doi:10.1016/j.proeng.2014.11.791
- Wardle, D., Nilsson, M.-C., & Zackrisson, O. (2008). Fire-Derived Charcoal Causes Loss of Forest Humus. *Science*, 320(5876), 629. Retrieved from <https://www.sciencemag.org/cgi/content/abstract/320/5876/629>
- Wardle, D., Nilsson, M.-C., & Zackrisson, O. (2008). Response to Comment on "Fire-derived Charcoal Causes Loss of Forest Humus". *Science*, 321(5894), 1295. Retrieved from <http://www.sciencemag.org/cgi/content/full/sci;321/5894/1295d>
- Waring, B. (2021). There aren't enough trees in the world to offset society's carbon emissions – and there never will be. *The Conversation*. Retrieved from https://theconversation.com.cdn.ampproject.org/v/s/theconversation.com/amp/there-arent-enough-trees-in-the-world-to-offset-societys-carbon-emissions-and-there-never-will-be-158181?amp_js_v=a6&_gsa=1&usqp=mq331AQFKAGwASA%3D#aoh=16192491278967&csi=0&referrer=https%3A%2F%2Fwww.google.com_&_tf=From%20%251%24s&share=https%3A%2F%2Ftheconversation.com%2Fthere-arent-enough-trees-in-the-world-to-offset-societys-carbon-emissions-and-there-never-will-be-158181
- Waring, B., Neumann, M., Prentice, I. C., Adams, M., Smith, P., & Siegert, M. (2020). Forests and Decarbonization – Roles of Natural and Planted Forests. *Frontiers in Forests and Global Change*, 3(58). doi:10.3389/ffgc.2020.00058
- Warner, E., et al. (2013). Modeling biofuel expansion effects on land use change dynamics. *Environmental Research Letters*, 8, 2-10. Retrieved from <http://iopscience.iop.org/article/10.1088/1748-9326/8/1/015003/pdf>
- Warning.org, S. (2018). David Beerling - Saving Ourselves with Rocks, Crops & Soil. *YouTube*. Retrieved from <https://www.youtube.com/watch?v=0iAqxOMy61U&t=19s>
- Warnock, D. D., et al. (2010). Influences of non-herbaceous biochar on arbuscular mycorrhizal fungal abundances in roots and soils: Results from growth-chamber and field experiments. *Applied Soil Ecology*, 46(3), 450 - 456. Retrieved from <http://science.cjb.net/science/article/>

B6T4B-5172K98-1/2/692a54925f1f4de64a2e02333c9cdb8c

- Warnock, D. D., Lehmann, J., Kuyper, T. W., & Rillig, M. C. (2007). Mycorrhizal responses to biochar in soil – concepts and mechanisms. *Plant and Soil*, 300(1), 9-20. doi:10.1007/s11104-007-9391-5
- Warren, A., & Sombroek, W. (1967). Amazon soils - a reconnaissance of soils of the brazilian Amazon region. *Geographical Journal*, 133(4). Retrieved from https://www.researchgate.net/publication/275979371_Amazon_Soils_A_Reconnaissance_of_the_Soils_of_the_Brazilian_Amazon_Region
- Warren, G. P., Robinson, J. S., & Someus, E. (2009). Dissolution of phosphorus from animal bone char in 12 soils. *Nutrient Cycling in Agroecosystems*, 84(2), 167-178. Retrieved from <http://link.springer.com/article/10.1007/s10705-008-9235-6>
- Warren, L. (2019). CCUS is a necessity not an option if we're to have any hope of achieving net zero emissions by 2050. *Energy Voice*. Retrieved from <https://www.energyvoice.com/otherenergy/199633/ccus-is-a-necessity-not-an-option-if-were-to-have-any-hope-of-achieving-net-zero-emissions-by-2050/>
- Warring, B., et al. (2020). *What role can forests play in tackling climate change?* Retrieved from <https://www.imperial.ac.uk/grantham/publications/earth-and-life-sciences/what-role-can-forests-play-in-tackling-climate-change.php>
- Warszawski, L., et al. (2021). All options, not silver bullets, needed to limit global warming to 1.5 °C: a scenario appraisal. *Environmental Research Letters*, 16(6), 064037. doi:10.1088/1748-9326/abfeec
- Warwick, P. D., Verma, M. K., Attanasi, E. D., Olea, R. A., Blondes, M. S., Freeman, P. A., . . . Lohr, C. D. (2017). A Database and Probabilistic Assessment Methodology for Carbon Dioxide-enhanced Oil Recovery and Associated Carbon Dioxide Retention in the United States. *Energy Procedia*, 114, 7055-7059. doi:<https://doi.org/10.1016/j.egypro.2017.03.1847>
- Warwick, P. D., Verma, M. K., Freeman, P. A., Corum, M. D., & Hickman, S. H. (2014). U.S. Geological Survey Carbon Sequestration – Geologic Research and Assessments. *Energy Procedia*, 63, 5305-5309. doi:<https://doi.org/10.1016/j.egypro.2014.11.561>
- Washbourne, C. L., Renforth, P., & Manning, D. A. C. (2012). Investigating carbonate formation in urban soils as a method for capture and storage of atmospheric carbon. *Science of The Total Environment*, 431, 166-175. doi:<http://dx.doi.org/10.1016/j.scitotenv.2012.05.037>
- Watanabe, A., Ikeya, K., Kanazaki, N., Makabe, S., Sugiura, Y., & Shibata, A. (2014). Five crop seasons' records of greenhouse gas fluxes from upland fields with repetitive applications of biochar and cattle manure. *Journal of Environmental Management*, 144, 168 - 175. doi:10.1016/j.jenvman.2014.05.032
- Watanabe, A., & Nakamura, T. (2018). Carbon Dynamics in Coral Reefs. In T. Kuwae & M. Hori (Eds.), *Blue Carbon in Shallow Coastal Ecosystems: Carbon Dynamics, Policy, and Implementation* (pp. 273-293). Singapore: Springer Singapore.
- Watanabe, K., Yoshida, G., Hori, M., Umezawa, Y., Moki, H., & Kuwae, T. (2020). Macroalgal metabolism and lateral carbon flows can create significant carbon sinks. *Biogeosciences*, 17(9), 2425-2440. doi:10.5194/bg-17-2425-2020
- Watanabe, S., & Sato, S. (2015). Priming effect of bamboo (*Phyllostachys edulis* Carrière) biochar application in a soil amended with legume. *Soil Science and Plant Nutrition*, 61(6), 934 - 939. doi:10.1080/00380768.2015.1105112
- Watanabe, Y., & Hall, D. O. (1996). Photosynthetic CO₂ conversion technologies using a photobioreactor incorporating microalgae - energy and material balances. *Energy Conversion and Management*, 37(6), 1321-1326. doi:<https://doi.org/>

10.1016/0196-8904(95)00340-1

- Waters, C. N., Zalasiewicz, J., Summerhayes, C., Barnosky, A. D., Poirier, C., Gałuszka, A., . . . Wolfe, A. P. (2016). *Science*, 351, aad2622.
- Waters, D., et al. (2011). Biochar in Soil for Climate Change Mitigation and Adaptation. *Soil Health and Climate Change*, 29, 345-368. doi:10.1007/978-3-642-20256-8_15
- Watson, A., Liss, P., & Duce, R. (1991). Design of a small-scale in situ iron fertilization experiment. *Limnology and Oceanography*, 36(8), 1960-1965. doi:doi:10.4319/lo.1991.36.8.1960
- Watson, A. J., Bakker, D. C. E., Ridgwell, A. J., Boyd, P. W., & Law, C. S. (2000). Effect of iron supply on Southern Ocean CO₂ uptake and implications for glacial atmospheric CO₂. *Nature*, 407(6805), 730-733. doi:http://www.nature.com/nature/journal/v407/n6805/suppinfo/407730a0_S1.html
- Watson, A. J., Boyd, P. W., Turner, S. M., Jickells, T. D., & Liss, P. S. (2008). Designing the next generation of ocean iron fertilization experiments. *Marine Ecology Progress Series*, 364, 303-309. Retrieved from <http://www.int-res.com/abstracts/meps/v364/p303-309/>
- Watson, F., & Dart, J. (2020). Shell Australia to buy land-use carbon offsets company. *S&P Global Platts*. Retrieved from <https://www.spglobal.com/platts/en/market-insights/latest-news/coal/080320-shell-australia-to-buy-land-use-carbon-offsets-company>
- Watson, J. E. M., Evans, T., Venter, O., Williams, B., Tulloch, A., Stewart, C., . . . Lindenmayer, D. (2018). The exceptional value of intact forest ecosystems. *Nature Ecology & Evolution*. doi:10.1038/s41559-018-0490-x
- Watts, J. D., Lawrence, R. L., Miller, P., & Montagne, C. (2011). An analysis of cropland carbon sequestration estimates for North Central Montana. *Climatic Change*, 108(1), 301-331. doi:10.1007/s10584-010-0009-1
- Watzinger, A., et al. . (2013). Soil microbial communities responded to biochar application in temperate soils and slowly metabolized 13C-labelled biochar as revealed by 13C PLFA analyses: results from a short-term incubation and pot experiment. *European Journal of Soil Science*, 65(1), 40-51. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/ejss.12100/abstract>
- Webb, A., & Coates, D. (2012). *Biofuels and Biodiversity*. Retrieved from
- Webb, R. (2020). *The Law of Enhanced Weathering for Carbon Dioxide Removal*. Retrieved from <https://climate.law.columbia.edu/sites/default/files/content/Webb%20-%20The%20Law%20of%20Enhanced%20Weathering%20for%20CO2%20Removal%20-%20Sept.%202020.pdf>
- Webb, R. (2021). *The Law of Enhanced Weathering for Carbon Dioxide Removal: Volume 2 - Legal Issues Associated with Materials Source*. Retrieved from https://climate.law.columbia.edu/sites/default/files/content/Webb_Enhanced%20Weathering%20for%20CO2%20Removal_Vol%202_Mar21.pdf
- Webb, R., et al. (2021). *REMOVING CARBON DIOXIDE THROUGH OCEAN ALKALINITY ENHANCEMENT AND SEAWEED CULTIVATION: Legal Challenges and Opportunities*. Retrieved from <https://climate.law.columbia.edu/sites/default/files/content/Webb%20et%20al%20-%20Removing%20CO2%20Through%20Ocean%20Alkalinity%20Enhancement%20and%20Seaweed%20Cultivation%20-%20Feb.%202021.pdf>
- Webb, R., & Gerrard, M. (2021). *THE LEGAL FRAMEWORK FOR OFFSHORE CARBON CAPTURE AND STORAGE IN CANADA*. Retrieved from <https://climate.law.columbia.edu/sites/default/files/content/Webb%20-%20Gerrard%20-%20Offshore%20CCS%20in%20Canada.pdf>
- Webb, R. M., et al. (2021). *Removing Carbon Dioxide Removal Through Ocean Alkalinity Enhancement: Legal Challenges and Opportunities*. Retrieved from <https://climate.law.columbia.edu/sites/default/files/content/Webb%20-%20Removing%20CO2%20Through%20Ocean%20Alkalinity%20Enhancement%20-%20Legal%20Challenges%20and%20Opportunities.pdf>

- climate.law.columbia.edu/sites/default/files/content/Webb%20et%20al.%20-%20Removing%20CO2%20Through%20Ocean%20Alkalinity%20Enhancement%20%20-%20August%202021.pdf
- Webb, R. M., & Gerrard, M. B. (2017). *Policy Readiness for Offshore Carbon Dioxide Storage in the Northeast*. Retrieved from <https://climate.law.columbia.edu/sites/default/files/content/docs/others/Webb-and-Gerrard-2017-06-Offshore-Carbon-Storage.pdf>
- Webb, R. M., & Gerrard, M. B. (2019). *Overcoming Impediments to Offshore Carbon Dioxide Storage: Legal Issues in the U.S. and Canada*. Retrieved from <http://columbiaclimatelaw.com/files/2019/03/Webb-Gerrard-2019-03-Offshore-Carbon-Dioxide-Storage.pdf>
- Webber, J. B. W., Corbett, P., Semple, K. T., Ogbonnaya, U., Teel, W. S., Masiello, C. A., . . . Hu, Q. (2013). An NMR study of porous rock and biochar containing organic material. *Microporous and Mesoporous Materials*, 178, 94-98. doi:<https://doi.org/10.1016/j.micromeso.2013.04.004>
- Weber, C., Boscagli, C., Raffelt, K., Richter, D., & Zevaco, T. (2015). Fast Pyrolysis of Fresh Bio Waste and Ensiled Municipal Green Cut. *Chemie Ingenieur Technik*, 87(12), 1696 - 1706. doi:[10.1002/cite.201500040](https://doi.org/10.1002/cite.201500040)
- Weber, T. (2017). A Low-Carbon Growth Strategy for India: Synergies from Oxy-Combustion, Carbon Capture, and ECBM. In M. Goel & M. Sudhakar (Eds.), *Carbon Utilization: Applications for the Energy Industry* (pp. 205-214). Singapore: Springer Singapore.
- Webley, P. A., & Danaci, D. (2020). Chapter 5 CO₂ Capture by Adsorption Processes. In *Carbon Capture and Storage* (pp. 106-167): The Royal Society of Chemistry.
- Webster, C. (2014). *THE EFFECTS OF BIOCHAR APPLICATION ON CARBON DIOXIDE AND METHANE SOIL SURFACE FLUXES*. (Master's thesis). Retrieved from https://circle.ubc.ca/bitstream/handle/2429/46262/ubc_2014_spring_webster_cameron.pdf?sequence=1
- Wedding, L. M., Moritsch, M., Verutes, G., Arkema, K., Hartge, E., Reiblich, J., . . . Strong, A. L. (2021). Incorporating blue carbon sequestration benefits into sub-national climate policies. *Global Environmental Change*, 102206. doi:<https://doi.org/10.1016/j.gloenvcha.2020.102206>
- Wee, J.-H. (2013). A review on carbon dioxide capture and storage technology using coal fly ash. *Applied Energy*, 106, 143-151. doi:<https://doi.org/10.1016/j.apenergy.2013.01.062>
- Wei, J., Ge, Q., Yao, R., Wen, Z., Fang, C., Guo, L., . . . Sun, J. (2017). Directly converting CO₂ into a gasoline fuel. *Nature Communications*, 8, 1-9. doi:[10.1038/ncomms15174](https://doi.org/10.1038/ncomms15174)
<https://www.nature.com/articles/ncomms15174#supplementary-information>
- Wei, L., et al. . (2015). Production and characterization of bio-oil and biochar from the pyrolysis of residual bacterial biomass from a polyhydroxyalkanoate production process. *Journal of Analytical and Applied Pyrolysis*, 115, 268-278. doi:[10.1016/j.jaat.2015.08.005](https://doi.org/10.1016/j.jaat.2015.08.005)
- Wei, L., Shutao, W., Jin, Z., & Tong, X. (2014). Biochar influences the microbial community structure during tomato stalk composting with chicken manure. *Bioresource Technology*, 154, 148-154. doi:<https://doi.org/10.1016/j.biortech.2013.12.022>
- Wei, L. L., et al. (2013). Regulating environmental factors of nutrients release from wheat straw biochar for sustainable agriculture. *CLEAN – Soil, Air, Water*, 41(7), 697-701. Retrieved from <https://onlinelibrary.wiley.com/doi/epdf/10.1002/clen.201200347>
- Wei, N., Li, X., Dahowski, R. T., Davidson, C. L., Liu, S., & Zha, Y. (2015). Economic evaluation on CO₂-EOR of onshore oil fields in China. *International Journal of Greenhouse Gas Control*, 37, 170-181. doi:<https://doi.org/10.1016/j.ijggc.2015.01.014>
- Wei, X., Li, Q., Liu, Y., Liu, S., Guo, X., Zhang, L., . . . Zhang, W. (2013). Restoring ecosystem carbon sequestration through afforestation: A sub-tropic restoration case study. *Forest Ecology and Management*, 300, 60-67. doi:<https://doi.org/10.1016/j.foreco.2012.06.018>

- Weil, G. (2022). Global Climate Governance in 3D: Mainstreaming Geoengineering within a Unified Framework
University of Pittsburgh Law Review, 81(3), 1-78. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3788661
- Weiner, P.-M. (2021). Fast Company Recognizes Recapture's Profitable Carbon Capture Model As A World Changing Idea in 2021 [Press release]. Retrieved from https://www.prweb.com/releases/fast_company_recognizes_recaptures_profitable_carbon_capture_model_as_a_world_changing_idea_in_2021/prweb17915635.htm
- Weisberg, P., Delaney, M., & Hawkes, J. (2010). *Carbon Market Investment Criteria for Biochar Projects*. Retrieved from http://www.biochar-international.org/sites/default/files/WestCARB_Biochar_Report_DRAFT.pdf
- Weissman, J. C., Radway, J. C., Wilde, E. W., & Benemann, J. R. (1998). Growth and production of thermophilic cyanobacteria in a simulated thermal mitigation process. *Bioresource Technology*, 65(1), 87-95. doi:[https://doi.org/10.1016/S0960-8524\(98\)00008-X](https://doi.org/10.1016/S0960-8524(98)00008-X)
- Weiwei, L. i., et al. (2016). Influence of afforestation, reforestation, forest logging, climate change, CO₂ concentration rise, fire, and insects on the carbon sequestration capacity of the forest ecosystem. *Acta Ecologica Sinica*, 36(8). doi:[10.5846/stxb201411022143](https://doi.org/10.5846/stxb201411022143)
- Welch, A. (2020). This tech nonprofit is moving carbon capture from sci-fi to reality. *Climate and Capital Media*. Retrieved from <https://www.climateandcapitalmedia.com/the-tech-nonprofit-moving-carbon-capture-from-sci-fi-to-reality/>
- Welch, A. J., Dunn, E., DuChene, J. S., & Atwater, H. A. (2020). Bicarbonate or Carbonate Processes for Coupling Carbon Dioxide Capture and Electrochemical Conversion. *ACS Energy Letters*, 5(3), 940-945. doi:[10.1021/acsenergylett.0c00234](https://doi.org/10.1021/acsenergylett.0c00234)
- Welch, A. J., Dunn, E., DuChene, J. S., & Atwater, H. A. (2020). Bicarbonate or Carbonate Processes for Coupling Carbon Dioxide Capture and Electrochemical Conversion. *ACS Energy Letters*, 5(3), 940-945. doi:[10.1021/acsenergylett.0c00234](https://doi.org/10.1021/acsenergylett.0c00234)
- Welch, B., Gauci, V., & Sayer, E. J. (2019). Tree stem bases are sources of CH₄ and N₂O in a tropical forest on upland soil during the dry to wet season transition. 25(1), 361-372. doi:[10.1111/gcb.14498](https://doi.org/10.1111/gcb.14498)
- Welch, C. (2019). To curb climate change, we have to suck carbon from the sky. But how? *National Geographic*. Retrieved from <https://www.nationalgeographic.com/environment/2019/01/carbon-capture-trees-atmosphere-climate-change/>
- Welch, L. M., Vijayaraghavan, M., Greenwell, F., Satherley, J., & Cowan, A. J. (2021). Electrochemical carbon dioxide reduction in ionic liquids at high pressure. *Faraday Discussions*, 230(0), 331-343. doi:[10.1039/D0FD00140F](https://doi.org/10.1039/D0FD00140F)
- Weldemichael, Y., & Assefa, G. (2016). Assessing the energy production and GHG (greenhouse gas) emissions mitigation potential of biomass resources for Alberta. *Journal of Cleaner Production*, 112(Part 5), 4257-4264. doi:<https://doi.org/10.1016/j.jclepro.2015.08.118>
- Welfle, A. (2017). Balancing growing global bioenergy resource demands - Brazil's biomass potential and the availability of resource for trade. *Biomass and Bioenergy*, 105, 83-95. doi:<https://doi.org/10.1016/j.biombioe.2017.06.011>
- Welfle, A., Gilbert, P., & Thornley, P. (2014). Securing a bioenergy future without imports. *Energy Policy*, 68, 1-14. doi:<http://dx.doi.org/10.1016/j.enpol.2013.11.079>
- Welkenhuysen, K., Compernolle, T., Piessens, K., Ramírez, A., Rupert, J., & Swennen, R. (2014). Geological Uncertainty and Investment Risk in CO₂-enhanced Oil Recovery. *Energy Procedia*, 63, 7878-7883. doi:<https://doi.org/10.1016/j.egypro.2014.11.823>
- Welkenhuysen, K., Meyvis, B., & Piessens, K. (2017). A Profitability Study of CO₂-EOR and Subsequent CO₂ Storage in the North Sea under Low Oil Market Prices. *Energy*

- Procedia*, 114, 7060-7069. doi:<https://doi.org/10.1016/j.egypro.2017.03.1848>
- Welkenhuysen, K., Rupert, J., Compernolle, T., Ramirez, A., Swennen, R., & Piessens, K. (2017). Considering economic and geological uncertainty in the simulation of realistic investment decisions for CO₂-EOR projects in the North Sea. *Applied Energy*, 185, 745-761. doi:<https://doi.org/10.1016/j.apenergy.2016.10.105>
- Wellington, S. (2014). Liming the oceans. Retrieved from <http://climate-engineering-the-answer.blogspot.com/2014/11/liming-oceans.html>
- Wells, H. (2021). LG&E, KU partner with UK to study carbon dioxide emissions. Retrieved from <https://www.wtvq.com/2021/09/08/lge-ku-partner-with-uk-to-study-carbon-dioxide-emissions/>
- Wells, H. C., et al. . (2014). Stabilizing Chromium from Leather Waste in Biochar. *ACS Sustainable Chemical Engineering*, 2(7), 1864-1870. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/sc500212r>
- Wells, J. M., Crow, S. E., Meki, M. N., Sierra, C. A., Carlson, K. M., Youkhana, A., . . . Deem, L. (2017). Maximizing Soil Carbon Sequestration: Assessing Procedural Barriers to Carbon Management in Cultivated Tropical Perennial Grass Systems. In Y. Yun (Ed.), *Recent Advances in Carbon Capture and Storage* (pp. Ch. 07). Rijeka: InTech.
- Wells, M. L., Trick, C. G., Cochlan, W. P., & Beall, B. (2009). Persistence of iron limitation in the western subarctic Pacific SEEDS II mesoscale fertilization experiment. *Deep Sea Research Part II: Topical Studies in Oceanography*, 56(26), 2810-2821. doi:<https://doi.org/10.1016/j.dsr2.2009.06.007>
- Wells, N. S., & Baggs, E. M. (2014). Char Amendments Impact Soil Nitrous Oxide Production during Ammonia Oxidation. *Soil Science Society of America Journal*, 78(5), 1656. doi:[10.2136/sssaj2013.11.0468n](https://doi.org/10.2136/sssaj2013.11.0468n)
- Welz, A. (2021). Are Huge Tree Planting Projects More Hype than Solution? *Yale Environment 360*. Retrieved from <https://e360.yale.edu/features/are-huge-tree-planting-projects-more-hype-than-solution>
- Wen, C., Karvounis, N., Walther, J. H., Yan, Y., Feng, Y., & Yang, Y. (2019). An efficient approach to separate CO₂ using supersonic flows for carbon capture and storage. *Applied Energy*, 238, 311-319. doi:<https://doi.org/10.1016/j.apenergy.2019.01.062>
- Wen, D., Zhai, W., & Noll, K. E. (2017). Relationship Between Mineral Soil Surface Area and Carbon Sequestration Rate for Biosolids Added to Soil. In Y. Yun (Ed.), *Recent Advances in Carbon Capture and Storage* (pp. Ch. 08). Rijeka: InTech.
- Weng, L.-C., Bell, A. T., & Weber, A. Z. (2018). Modeling gas-diffusion electrodes for CO₂ reduction. *Physical Chemistry Chemical Physics*, 20(25), 16973-16984. doi:[10.1039/C8CP01319E](https://doi.org/10.1039/C8CP01319E)
- Weng, Y., Cai, W., & Wang, C. (2021). Evaluating the use of BECCS and afforestation under China's carbon-neutral target for 2060. *Applied Energy*, 117263. doi:<https://doi.org/10.1016/j.apenergy.2021.117263>
- Weng, Z., Van Zwieten, L., Singh, B. P., Tavakkoli, E., Joseph, S., Macdonald, L. M., . . . Cowie, A. (2017). Biochar built soil carbon over a decade by stabilizing rhizodeposits. *Nature Climate Change*, 7(5), 371-376. doi:[10.1038/nclimate3276](https://doi.org/10.1038/nclimate3276)
- <http://www.nature.com/nclimate/journal/v7/n5/abs/nclimate3276.html#supplementary-information>
- Weng, Z., Zwieten, L. V., Singh, B. P., Kimber, S., Morris, S., Cowie, A., & Macdonald, L. M. (2015). Plant-biochar interactions drive the negative priming of soil organic carbon in an annual ryegrass field system. *Soil Biology and Biochemistry*, 90, 111 - 121. doi:[10.1016/j.soilbio.2015.08.005](https://doi.org/10.1016/j.soilbio.2015.08.005)
- Wenger, S. (2021). If We Need Negative Emissions, Why Not Just Plant Trees? Retrieved from <https://removecarbon.co/f/if-we-need-negative-emissions-why-not-just-plant-trees>

- Wenger, S. (2021). Let's Get Excited About DAC Hubs. Retrieved from <https://bipartisanpolicy.org/blog/dac-hubs/>
- Wennersten, R., Sun, Q., & Li, H. (2015). The future potential for Carbon Capture and Storage in climate change mitigation – an overview from perspectives of technology, economy and risk. *Journal of Cleaner Production*, 103, 724-736. doi:<http://dx.doi.org/10.1016/j.jclepro.2014.09.023>
- Werling, B. P., Dickson, T. L., Isaacs, R., Gaines, H., Gratton, C., Gross, K. L., . . . Landis, D. A. (2014). Perennial grasslands enhance biodiversity and multiple ecosystem services in bioenergy landscapes. *Proceedings of the National Academy of Sciences*, 111(4), 1652-1657. doi:<10.1073/pnas.1309492111>
- Werner, C., et al. (2018). Biogeochemical potential of biomass pyrolysis systems for limiting global warming to 1.5 °C. *Environmental Research Letters*, 13(4), 044036. Retrieved from <http://stacks.iop.org/1748-9326/13/i=4/a=044036>
- West, A. J., Galy, A., & Bickle, M. (2005). Tectonic and climatic controls on silicate weathering. *Earth and Planetary Science Letters*, 235(1), 211-228. doi:<https://doi.org/10.1016/j.epsl.2005.03.020>
- West, T. A. P., Börner, J., Sills, E. O., & Kontoleon, A. (2020). Overstated carbon emission reductions from voluntary REDD+ projects in the Brazilian Amazon. *Proceedings of the National Academy of Sciences*, 117(39), 24188-24194. doi:<10.1073/pnas.2004334117>
- West, T. O., & Marland, G. (2002). A synthesis of carbon sequestration, carbon emissions, and net carbon flux in agriculture: comparing tillage practices in the United States. *Agriculture, Ecosystems & Environment*, 91(1), 217-232. doi:[https://doi.org/10.1016/S0167-8809\(01\)00233-X](https://doi.org/10.1016/S0167-8809(01)00233-X)
- West, T. O., & Post, W. M. (2002). Soil Organic Carbon Sequestration by Tillage and Crop Rotation: A Global Data Analysis. *Soil Science of America Journal*, 66, 1930-1946. Retrieved from <http://cdiac.ornl.gov/programs/CSEQ/terrestrial/westpost2002/westpost2002.html>
- Westberry, T. K., Behrenfeld, M. J., Milligan, A. J., & Doney, S. C. (2013). Retrospective satellite ocean color analysis of purposeful and natural ocean iron fertilization. *Deep Sea Research Part I: Oceanographic Research Papers*, 73, 1-16. doi:<http://dx.doi.org/10.1016/j.dsr.2012.11.010>
- Westerman, B. (2020). *HR 5859 Trillion Trees Act*. Retrieved from <https://www.congress.gov/bill/116th-congress/house-bill/5859/text#toc-HFD0EE6B7246E4B768C7D6CD6665ADB46>
- Weston, P. (2019). Tackle climate change by fertilising ocean with iron, expert says. *The Independent*. Retrieved from <https://www.independent.co.uk/environment/climate-change-ocean-iron-aerosols-fertilise-science-david-king-a8988241.html>
- Wettengel, J. (2019). Merkel puts contentious CCS technology back on German agenda. *Clean Energy Wire*. Retrieved from <https://www.cleanenergywire.org/news/merkel-puts-contentious-ccs-technology-back-german-agenda>
- Wettengel, J. (2019). Merkel's net-zero 2050 pledge "nod to Paris", revival of CCS debate – opinions. *Clean Energy Wire*. Retrieved from <https://www.cleanenergywire.org/news/merkels-net-zero-2050-pledge-nod-paris-revival-ccs-debate-opinions>
- Wettengel, J. (2020). Germany must put CCS back on the table, says Merkel. *EnergyPost.eu*. Retrieved from <https://energypost.eu/germany-must-put-ccs-back-on-the-table-says-merkel/>
- Wettengel, J. (2021). German government paves way for CO2 exports – media report. Retrieved from <https://www.cleanenergywire.org/news/german-government-paves-way-co2-exports-media-report>
- Wettengel, J. (2021). Quest for climate neutrality puts CCS back on the table in Germany. *Clean*

- Energy Wire*. Retrieved from <https://www.cleanenergywire.org/factsheets/quest-climate-neutrality-puts-ccs-back-table-germany>
- Weyers, S. L., & Spokas, K. A. (2011). Impact of Biochar on Earthworm Populations: A Review. *Applied and Environmental Soil Science*, 1-12. doi:10.1155/2011/541592
- Weyers, S. L., & Spokas, K. A. (2014). Crop residue decomposition in Minnesota biochar amended plots. *Solid Earth Discuss.*, 6, 599–617. Retrieved from <http://www.solid-earth-discuss.net/6/599/2014/sed-6-599-2014.pdf>
- Whipple, T. (2019). Fertilising ocean with iron can combat climate change. *The Times*. Retrieved from <https://www.thetimes.co.uk/article/fertilising-ocean-with-iron-can-combat-climate-change-dzj5m76qd?shareToken=ecfbe6c1f92f9ce05f309495d16e7190>
- Whitaker, J., Field, J. L., Bernacchi, C. J., Cerri, C. E. P., Ceulemans, R., Davies, C. A., . . . McNamara, N. P. (2018). Consensus, uncertainties and challenges for perennial bioenergy crops and land-use. *GCB Bioenergy*, 10(3), 150-164. doi:10.1111/gcbb.12488
- White, A. F., Björkman, K., Grabowski, E., Letelier, R., Poulos, S., Watkins, B., & Karl, D. (2010). An Open Ocean Trial of Controlled Upwelling Using Wave Pump Technology. *Journal of Atmospheric and Oceanic Technology*, 27(2), 385-396. doi:10.1175/2009jtecho679.1
- White, A. F., & Brantley, S. F. (1995). Chemical weathering rates of silicate minerals: an overview. In A. F. White & S. F. Brantley (Eds.), *Reviews in Mineralogy and Geochemistry* (Vol. 31, pp. 1-22).
- White, A. F., & Brantley, S. L. (2003). The effect of time on the weathering of silicate minerals: why do weathering rates differ in the laboratory and field? *Chemical Geology*, 202(3), 479-506. doi:<https://doi.org/10.1016/j.chemgeo.2003.03.001>
- White, J. (2015). *Promotion of Clean Emissions Charcoal Production and Use of Biochar*. Retrieved from http://www.biochar-international.org/sites/default/files/TLUD%26Biochar%20Report_Thailand_for_IBI.pdf
- White, M. (2021). 2021 Outlook – “BECCS is critical to achieve net zero”. *Bioenergy Insight*. Retrieved from <https://www.bioenergy-news.com/news/2021-outlook-beccs-is-critical-to-achieve-net-zero/>
- White, P. M., Potter, T. L., & Lima, I. M. (2015). Sugarcane and pinewood biochar effects on activity and aerobic soil dissipation of metribuzin and pendimethalin. *Industrial Crops and Products*, 74, 737 - 744. doi:10.1016/j.indcrop.2015.04.022
- White, R. E., Davidson, B., Lam, S. K., & Chen, D. (2018). A critique of the paper ‘Soil carbon 4 per mille’ by Minasny et al. (2017). *Geoderma*, 309, 115-117. doi:<https://doi.org/10.1016/j.geoderma.2017.05.025>
- Whitehead, D., Schipper, L. A., Pronger, J., Moinet, G. Y. K., Mudge, P. L., Calvelo Pereira, R., . . . Camps-Arbestain, M. (2018). Management practices to reduce losses or increase soil carbon stocks in temperate grazed grasslands: New Zealand as a case study. *Agriculture, Ecosystems & Environment*, 265, 432-443. doi:<https://doi.org/10.1016/j.agee.2018.06.022>
- Whitford, B. (2008). Biochar: Ancient Fertilizer for Modern Farms. In.
- Whiting, K. (2020). An expert explains: How to turn industrial carbon emissions into building materials. Retrieved from <https://www.weforum.org/agenda/2020/11/an-expert-explains-how-to-turn-carbon-into-useful-building-materials/>
- Whiting, K. (2020). An expert explains: How to turn industrial carbon emissions into building materials. Retrieved from <https://www.weforum.org/agenda/2020/11/an-expert-explains-how-to-turn-carbon-into-useful-building-materials/>
- Whiting, K. (2020). How carbon removal can turn industrial emissions into building materials. *GreenBiz*. Retrieved from <https://www.greenbiz.com/article/how-carbon-removal-can-turn-industrial-emissions-building-materials>
- Whitman, T. (2015). *When Is 2+2 > 4? Interactive Priming Of Pyrogenic Organic Matter, Soil*

- Organic Carbon, And Plant Roots In Natural And Managed Ecosystems.* Cornell University, Retrieved from <http://ecommons.library.cornell.edu/handle/1813/38934>
- Whitman, T., & Lehmann, J. (2009). Biochar—One way forward for soil carbon in offset mechanisms in Africa? *Environmental Science & Policy*, 12, 1024-1027. Retrieved from <http://www.css.cornell.edu/faculty/lehmann/publ/EnvSciPolicy%202012,%20201024-1027,%20202009,%20Whitman.pdf>
- Whitman, T., Nicholson, C. F., Torres, D., & Lehmann, J. (2011). Climate Change Impact of Biochar Cook Stoves in Western Kenyan Farm Households: System Dynamics Model Analysis. *Environmental Science and Technology*, 45(8), 3687-3694. doi:10.1021/es103301k
- Whitman, T., Scholz, S. M., & Lehmann, J. (2010). Biochar projects for mitigating climate change: an investigation of critical methodology issues for carbon accounting. *Carbon Management*, 1, 89-107. Retrieved from <http://www.future-science.com/doi/full/10.4155/cmt.10.4>
- Whitman, T., Singh, B. P., & Zimmerman, A. R. (2015). Priming effects in biochar-amended soils: implications of biochar-soil organic matter interactions for carbon storage. In *Biochar For Environmental Engineering*.
- Whitman, T., Zhu, Z., & Lehmann, J. (2014). Carbon Mineralizability Determines Interactive Effects on Mineralization of Pyrogenic Organic Matter and Soil Organic Carbon. *Environmental Science & Technology*, 48(23), 13727-13734. doi:10.1021/es503331y
- Whitmarsh, L., Xenias, D., & Jones, C. R. (2019). Framing effects on public support for carbon capture and storage. *Palgrave Communications*, 5(1), 17. doi:10.1057/s41599-019-0217-x
- Wicke, B. (2011). The global technical and economic potential of bioenergy from salt-affected soils. *Energy & Environmental Science*, 8, 2669-2671. Retrieved from <http://pubs.rsc.org/en/Content/ArticleLanding/2011/EE/c1ee01029h#divAbstract>
- Wicke, B., van der Hilst, F., Daioglou, V., Banse, M., Beringer, T., Gerssen-Gondelach, S., . . . Faaij, A. P. C. (2015). Model collaboration for the improved assessment of biomass supply, demand, and impacts. *GCB Bioenergy*, 7(3), 422-437. doi:10.1111/gcbb.12176
- Widowati, & Asnah. (2014). Biochar Can Enhance Potassium Fertilization Efficiency and Economic Feasibility of Maize Cultivation. *Journal of Agricultural Science*, 6, 24. Retrieved from <http://www.ccsenet.org/journal/index.php/jas/article/view/21421>
- Widowati, Utomo, W. H., Guritno, B., & Soehono, L. A. (2016). Evaluating the effects of biochar on N absorption and N use efficiency in maize. In *Biochar for future food security: learning from experiences and identifying research priorities*.
- Widowati, W., & Asnah, A. (2014). BIOCHAR EFFECT AT POTASSIUM FERTILIZER AND DOSAGE LEACHING POTASSIUM FOR TWO-CORN PLANTING SEASON. *AGRIVITA journal of agricultural scienc*. Retrieved from <http://www.agrivita.ub.ac.id/index.php/agrivita/article/view/359>
- Widowati, W., Asnah, A., & Utomo, W. H. (2014). The use of biochar to reduce nitrogen and potassium leaching from soil cultivated with maize. *Journal of Degraded and Mining Lands Management*. Retrieved from <http://www.jdmlm.ub.ac.id/index.php/jdmlm/article/view/87>
- Widowati, W., Utomo, H., Guritno, B., & Soehono, L. A. (2012). The Effect of Biochar on the Growth and N Fertilizer Requirement of Maize (*Zea mays L.*) in Green House Experiment. *Journal of Agricultural Science*, Vol 4(5), 255-262. Retrieved from <http://ccsenet.org/journal/index.php/jas/article/view/16140/10929>
- Widowati, W., Utomo, H., Soehono, L. A., & Guritno, B. (2011). Effect of biochar on the Release and Loss of Nitrogen from Urea Fertilization. *J. Agric. Food. Tech.*, 1, 127-132. Retrieved from <http://www.textroad.com/pdf/JAFT/J.%20Agric.%20Food.%20Tech.,>

- %201(7)%20127-132,%202011.pdf
- Wiedemeier, D. B., Abiven, S., Hockaday, W. C., Keiluweit, M., Kleber, M., Masiello, C. A., . . . Schmidt, M. W. I. (2014). Aromaticity and degree of aromatic condensation of char. *Organic Geochemistry*. doi:10.1016/j.orggeochem.2014.10.002
- Wiedner, K., et al. (2015). Acceleration of Biochar Surface Oxidation during Composting? *Journal of Agricultural and Food Chemistry*, 63(15), 3830-3837. doi:10.1021/acs.jafc.5b00846
- Wiedner, K., & Glaser, B. (2015). Traditional use of biochar. In *Biochar for Environmental Management: Science and Technology and Implementation*.
- Wiesberg, I. L., Brigagão, G. V., de Medeiros, J. L., & de Queiroz Fernandes Araújo, O. (2017). Carbon dioxide utilization in a microalga-based biorefinery: Efficiency of carbon removal and economic performance under carbon taxation. *Journal of Environmental Management*, 203, 988-998. doi:<https://doi.org/10.1016/j.jenvman.2017.03.005>
- Wiesmeier, M., Urbanski, L., Hobley, E., Lang, B., von Lützow, M., Marin-Spiotta, E., . . . Kögel-Knabner, I. (2019). Soil organic carbon storage as a key function of soils - A review of drivers and indicators at various scales. *Geoderma*, 333, 149-162. doi:<https://doi.org/10.1016/j.geoderma.2018.07.026>
- Wight, A. (2019). This Start-Up Wants To Make Reforestation More High-Tech. *Forbes*. Retrieved from [https://www.forbes.com/sites/andrewwight/2019/11/11/this-start-up-wants-to-make-reforestation-more-high-tech/amp/?__twitter_impression=true](https://www.forbes.com/sites/andrewwight/2019/11/11/this-start-up-wants-to-make-reforestation-more-high-tech/)
- Wijayanta, A. T., et al. (2013). Combustibility of biochar injected into the raceway of a blast furnace. *Fuel Processing Technology*, 117, 53-59.
- Wijayanta, A. T., et al. (2014). Numerical Study on Pulverized Biochar Injection in Blast Furnace. *ISIJ International*, 54(7), 1521 - 1529. doi:10.2355/isijinternational.54.1521
- Wijesiri, R. P., et al. (2019). Technoeconomic Evaluation of a Process Capturing CO₂ Directly from Air. *Processes*, 7(8), 1-23. Retrieved from <https://www.mdpi.com/2227-9717/7/8/503#>
- Wijesiri, R. P., Knowles, G. P., Yeasmin, H., Hoadley, A. F. A., & Chaffee, A. L. (2019). CO₂ Capture from Air Using Pelletized Polyethylenimine Impregnated MCF Silica. *Industrial & Engineering Chemistry Research*, 58(8), 3293-3303. doi:10.1021/acs.iecr.8b04973
- Wijitkosum, S., & Kallayasiri, W. (2015). The Use of Biochar to Increase Productivity of Indigenous Upland Rice (*Oryza sativa* L.) and Improve Soil Properties. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*, 6(2), 1326-1336. Retrieved from [http://www.rjpbc.som/pdf/2015_6\(2\)/\[196\].pdf](http://www.rjpbc.som/pdf/2015_6(2)/[196].pdf)
- Wilcox, J. (2018). A new way to remove CO₂ from the atmosphere. April. Retrieved from https://www.ted.com/talks/jennifer_wilcox_a_new_way_to_remove_co2_from_the_atmosphere?language=en
- Wilcox, J. (2020). The DAC-up plan for climate change—w/ Dr. Jen Wilcox of Worcester Polytechnic Institute. Retrieved from https://anchor.fm/reversingclimatechange/episodes/S2E25-The-DAC-up-plan-for-climate-change-Dr--Jen-Wilcox-of-Worcester-Polytechnic-Institute-ehvfi1?utm_medium=email&_hsmi=93058059&_hsenc=p2ANqtz-9EdPW2j7HKxBfwfyMbeZr1cMvMYooyY1a7H0_z6BKoJW4nFLKAIQN8mnQvypo3i9LdiNIR_8wZ9X6qG5ubNNvRshmhn&utm_content=93056681&utm_source=hs_email
- Wilcox, J. (2020). An electro-swing approach. *Nature Energy*. doi:10.1038/s41560-020-0554-4
- Wilcox, J., Haghpanah, R., Rupp, E. C., He, J., & Lee, K. (2014). Advancing Adsorption and Membrane Separation Processes for the Gigaton Carbon Capture Challenge. *Annual Review of Chemical and Biomolecular Engineering*, 5(1), 479. Retrieved from <http://www.annualreviews.org/doi/pdf/10.1146/annurev-chembioeng-060713-040100>
- Wilcox, J., Kolosz, B., & Freeman, J. (2021). *CDR Primer*. Retrieved from <https://cdrprimer.org/>

- Wilcox, J., Psarras, P. C., & Liguori, S. (2017). Assessment of reasonable opportunities for direct air capture. *Environmental Research Letters*, 12(6). doi:10.1088/1748-9326/aa6de5
- Wilcox, J., Rochana, P., Kirchofer, A., Glatz, G., & He, J. (2014). Revisiting film theory to consider approaches for enhanced solvent-process design for carbon capture. *Energy & Environmental Science*, 7(5), 1769-1785. doi:10.1039/C4EE00001C
- Wilfried, R., Christine, M., Fabian, R., David, K., & Andreas, O. (2019). (Mis)conceptions about modelling of negative emissions technologies. *Environmental Research Letters*. Retrieved from <http://iopscience.iop.org/10.1088/1748-9326/ab3ab4>
- Wilkes, P., Disney, M., Vicari, M. B., Calders, K., & Burt, A. (2018). Estimating urban above ground biomass with multi-scale LiDAR. *Carbon Balance and Management*, 13(1), 10. doi:10.1186/s13021-018-0098-0
- Wilkin, R. T., & DiGiulio, D. C. (2010). Geochemical Impacts to Groundwater from Geologic Carbon Sequestration: Controls on pH and Inorganic Carbon Concentrations from Reaction Path and Kinetic Modeling. *Environmental Science & Technology*, 44(12), 4821-4827. doi:10.1021/es100559j
- Willauer, H. D., DiMascio, F., Hardy, D. R., & Williams, F. W. (2017). Development of an Electrolytic Cation Exchange Module for the Simultaneous Extraction of Carbon Dioxide and Hydrogen Gas from Natural Seawater. *Energy & Fuels*, 31(2), 1723-1730. doi:10.1021/acs.energyfuels.6b02586
- Williams, C. A. (2020). Mining technologies could capture 'billions of tonnes of CO₂ per year,' says UBC professor. *Northern Miner*. Retrieved from <https://www.northernminer.com/subscribe-login/?id=1003814933>
- Williams, C. L., Dahiya, A., & Porter, P. (2020). Chapter 1 - Introduction to bioenergy and waste to energy. In A. Dahiya (Ed.), *Bioenergy (Second Edition)* (pp. 5-44): Academic Press.
- Williams, J. (2020). Engineers look to improve carbon dioxide storage in coal reserves. *World Coal*. Retrieved from <https://www.worldcoal.com/coal/21072020/engineers-look-to-improve-co2-storage-in-coal-reserves/>
- Williams, M., & Arnott, J. C. (2010). A Comparison of Variable Economic Costs Associated with Two Proposed Biochar Application Methods. *Annals of Environmental Science*, 4, 23-30. Retrieved from <http://openjournals.neu.edu/aes/journal/article/view/v4art3>
- Williams, M., Martin, S., & Kookana, R. S. (2015). Sorption and plant uptake of pharmaceuticals from an artificially contaminated soil amended with biochars. *Plant and Soil*, 395(1), 75-86. doi:10.1007/s11104-015-2421-9
- Williams, M. I., Dumroese, R. K., Page-Dumroese, D. S., & Hardegree, S. P. (2016). Can biochar be used as a seed coating to improve native plant germination and growth in arid conditions? *Journal of Arid Environments*, 125, 8 - 15. doi:10.1016/j.jaridenv.2015.09.011
- Williams, R. (2016). Effectiveness of Biochar Addition in Reducing Concentrations of Selected Nutrients and Bacteria in Runoff. In.
- Williams, R., Jack, C., Gamboa, D., & Shackley, S. (2021). Decarbonising steel production using CO₂ Capture and Storage (CCS): Results of focus group discussions in a Welsh steel-making community. *International Journal of Greenhouse Gas Control*, 104, 103218. doi:<https://doi.org/10.1016/j.ijggc.2020.103218>
- Williams, T. (2018). Some Top Funders Back a Controversial Way to Fight Climate Change. *Inside Philanthropy*. Retrieved from <https://www.insidephilanthropy.com/home/2018/7/6/its-a-controversial-way-to-fight-climate-change-but-some-top-funders-are-on-board>
- Williamson, P. (2016). Emissions reduction: Scrutinize CO₂ removal methods. *Science*. Retrieved from <http://www.nature.com/news/emissions-reduction-scrutinize-co2-removal-methods-1.19318>

- Williamson, P. (2018). Guest post: 13 ‘ocean-based solutions’ for tackling climate change. *CarbonBrief*. Retrieved from https://www.carbonbrief.org/guest-post-13-ocean-based-solutions-for-tackling-climate-change/amp?__twitter_impression=true
- Williamson, P., & Turley, C. (2012). Ocean acidification in a geoengineering context. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, 370(1974), 4317-4342. doi:10.1098/rsta.2012.0167
- Williamson, P., Wallace, D. W. R., Law, C. S., Boyd, P. W., Collos, Y., Croot, P., . . . Vivian, C. (2012). Ocean fertilization for geoengineering: A review of effectiveness, environmental impacts and emerging governance. *Process Safety and Environmental Protection*, 90(6), 475-488. doi:<http://dx.doi.org/10.1016/j.psep.2012.10.007>
- Willis, K. (2018). Scientists identify new minerals for carbon capture and storage. *Folio*. Retrieved from <https://www.folio.ca/scientists-identify-new-minerals-for-carbon-capture-and-storage/>
- Wilson, B. (2021). Past the Tipping Point, but With Hope of Return: How Creating a Geoengineering Compulsory Licensing Scheme Can Incentivize Innovation. *Washington and Lee Journal of Civil Rights and Social Justice*, 27(2), 791-831. Retrieved from <https://scholarlycommons.law.wlu.edu/crsj/vol27/iss2/13/>
- Wilson, E. J., Morgan, M. G., Apt, J., Bonner, M., Bunting, C., Gode, J., . . . Wright, I. W. (2008). Regulating the Geological Sequestration of CO₂. *Environmental Science & Technology*, 42(8), 2718-2722. doi:10.1021/es087037k
- Wilson, G. (2014). Murky Waters: Ambiguous International Law for Ocean Fertilization and Other Geoengineering. *Texas International Law Journal*, 49, 507-557. Retrieved from <http://www.lexisnexis.com/hottopics/lnacademic/>
- Wilson, G., et al. (2015). *A Strategic European Research and Innovation Agenda for Smart CO₂ Transformation in Europe CO₂ as a resource*. Retrieved from <http://www.scotproject.org/images/SCOT%20SERIA.pdf>
- Wilson, J. (2004). Weathering of the primary rock-forming minerals: Processes, products and rates. *Clay Minerals*, 39, 233-266. doi:10.1180/0009855043930133
- Wilson, K. (2007). The Good Black Magic That Could Save the Earth: Terra Preta. In (pp. 52 - 57).
- Wilson, K. (2013). Justus von Liebig and the Birth of Modern Biochar. *Ithaka Journal*. Retrieved from <http://www.ithaka-journal.net/english-justus-von-liebig-and-the-birth-of-modern-biochar>
- Wilson, K. (2014). How Biochar Works in Soil. *the Biochar Journal*. Retrieved from <https://www.biochar-journal.org/en/ct/32-How-Biochar-Works-in-Soil>
- Wilson, K. (2015). *Biochar for Forest Restoration in the Western United States*. Retrieved from http://greenyourhead.typepad.com/files/biochar_for_forest_restoration_wba.pdf
- Wilson, R., Hago, W., & Bontchev, R. P. (2014).
- Wilson, S. A., Dipple, G. M., Power, I. M., Barker, S. L. L., Fallon, S. J., & Southam, G. (2011). Subarctic Weathering of Mineral Wastes Provides a Sink for Atmospheric CO₂. *Environmental Science & Technology*, 45(18), 7727-7736. doi:10.1021/es202112y
- Wilson, S. A., Dipple, G. M., Power, I. M., Thom, J. M., Anderson, R. G., Raudsepp, M., . . . Southam, G. (2009). Carbon Dioxide Fixation within Mine Wastes of Ultramafic-Hosted Ore Deposits: Examples from the Clinton Creek and Cassiar Chrysotile Deposits, Canada. *Economic Geology*, 104(1), 95-112. doi:10.2113/gsecongeo.104.1.95
- Wilson, S. A., Harrison, A. L., Dipple, G. M., Power, I. M., Barker, S. L. L., Ulrich Mayer, K., . . . Southam, G. (2014). Offsetting of CO₂ emissions by air capture in mine tailings at the Mount Keith Nickel Mine, Western Australia: Rates, controls and prospects for carbon neutral mining. *International Journal of Greenhouse Gas Control*, 25, 121-140. doi:<https://doi.org/10.1016/j.ijggc.2014.04.002>

- Wilujeng, E. D. I., Ningtyas, W., & Nuraini, Y. (2015). Combined applications of biochar and legume residues to improve growth and yield of sweet potato in a dry land area of East Java. *Journal of Degraded and Mining Lands Management*, 2(4), 377-382. Retrieved from <http://jdmlm.ub.ac.id/index.php/jdmlm/article/view/128>
- Win, T. T., et al. (2015). PREPARATION AND STRUCTURAL PROPERTIES OF PALM SHELL. *International Journal of Technical Research and Applications*. Retrieved from <http://www.ijtra.com/view/flood-routing-with-real-time-method-for-flash-flood-forecasting-in-the-plain-bou-salem.pdf>
- Windeatt, J. H. (2015). *Assessing the potential of biochar from crop residues to sequester CO₂: Scenarios to 2100*. University of Leeds, Retrieved from <http://etheses.whiterose.ac.uk/8439/>
- Windeatt, J. H., Ross, A. B., Williams, P. T., Forster, P. M., Nahil, M. A., & Singh, S. (2014). Characteristics of biochars from crop residues: Potential for carbon sequestration and soil amendment. *Journal of Environmental Management*, 146, 189 - 197. doi:10.1016/j.jenvman.2014.08.003
- Windham-Myers, L., et al., . (2018). Potential for negative emissions of greenhouse gases (CO₂, CH₄ and N₂O) through coastal peatland re-establishment: Novel insights from high frequency flux data at meter and kilometer scales. *Environmental Research Letters*, 13(4), 045005. Retrieved from <http://stacks.iop.org/1748-9326/13/i=4/a=045005>
- Wingenter, O. W., et al. (2004). Changing concentrations of CO, CH₄, C₅H₈, CH₃Br, CH₃I, and dimethyl sulfide during the Southern Ocean Iron Enrichment Experiments. *PNAS*, 101(23), 8537-8541.
- Wingenter, O. W., Elliot, S. M., & Blake, D. R. (2007). New Directions: Enhancing the natural sulfur cycle to slow global warming. *Atmospheric Environment*, 41(34), 7373-7375. doi:<http://dx.doi.org/10.1016/j.atmosenv.2007.07.021>
- Winickoff, D. E., & Mondou, M. (2016). The problem of epistemic jurisdiction in global governance: The case of sustainability standards for biofuels. *Social Studies of Science*, 1-26. doi:DOI: 10.1177/0306312716667855
- Winjum, J. K., Dixon, R. K., & Schroeder, P. E. (1992). Estimating the global potential of forest and agroforest management practices to sequester carbon. *Water, Air, and Soil Pollution*, 64(1), 213-227. doi:10.1007/BF00477103
- Winning, M., Pye, S., Glynn, J., Scamman, D., & Welsby, D. (2018). How Low Can We Go? The Implications of Delayed Ratcheting and Negative Emissions Technologies on Achieving Well Below 2 °C. In G. Giannakidis, K. Karlsson, M. Labriet, & B. Ó. Gallachóir (Eds.), *Limiting Global Warming to Well Below 2 °C: Energy System Modelling and Policy Development* (pp. 51-65). Cham: Springer International Publishing.
- Winsley, P. (2007). Biochar and bioenergy production for climate change mitigation. *New Zealand Science Review*, 64(1), 5-10. Retrieved from http://www.biochar-international.org/images/NZSR64_1_Winsley.pdf
- Winter, E., Lowe, S., & Campbell, L. (2013). Biochar applications in a King Valley Vineyard. *Australian and New Zealand Grapegrower and Winemaker*, Issue 597. Retrieved from <https://search.informit.com.au/documentSummary;dn=656237170757422;res=IELHSS>
- Wirawan, D., Kim, J., Wong, H. C., Low, H. Y., & Tan, M. C. (2021). Textured carbon capture composite (C3) films for distributed direct air capture in urban spaces. *Cleaner Engineering and Technology*, 4, 100145. doi:<https://doi.org/10.1016/j.clet.2021.100145>
- Wise, L., Marland, E., Marland, G., Hoyle, J., Kowalczyk, T., Ruseva, T., . . . Kinlaw, T. (2019). Optimizing sequestered carbon in forest offset programs: balancing accounting stringency and participation. *Carbon Balance and Management*, 14(1), 16. doi:10.1186/s13021-019-0131-y
- Wise, M., Calvin, K., Thomson, A., Clarke, L., Bond-Lamberty, B., Sands, R., . . . Edmonds, J.

- (2009). Implications of Limiting CO₂ Concentrations for Land Use and Energy. *Science*, 324(5931), 1183-1186. doi:10.1126/science.1168475
- Wise, M., Dooley, J., Luckow, P., Calvin, K., & Kyle, P. (2014). Agriculture, land use, energy and carbon emission impacts of global biofuel mandates to mid-century. *Applied Energy*, 114, 763-773. doi:<http://dx.doi.org/10.1016/j.apenergy.2013.08.042>
- Wise, M. A. (2014). Assessing the Interactions among U.S. Climate Policy, Biomass Energy, and Agricultural Trade. *The Energy Journal*, 35. Retrieved from <http://econpapers.repec.org/article/aenjournl/ej35-si1-09.htm>
- Wisnubroto, E. I. (2015). *Investigation on the effect of biochar addition and the use of pasture species with different rooting systems on soil fertility and carbon storage : a thesis presented in partial fulfilment of the requirements for the degree of Master of Philosophy (MPhil)*. Massey University, Retrieved from <http://mro.massey.ac.nz/handle/10179/7180>
- Wiszniewska, A., et al. (2015). Natural organic amendments for improved phytoremediation of polluted soils: A review of recent progress. *Pedosphere*, 26(1), 1-12. Retrieved from http://pedosphere.issas.ac.cn/trqen/ch/reader/view_abstract.aspx?file_no=20160101&flag=1
- Withey, P., Johnston, C., & Guo, J. (2019). Quantifying the global warming potential of carbon dioxide emissions from bioenergy with carbon capture and storage. *Renewable and Sustainable Energy Reviews*, 115, 109408. doi:<https://doi.org/10.1016/j.rser.2019.109408>
- Witzgall, K., Vidal, A., Schubert, D. I., Höschen, C., Schweizer, S. A., Buegger, F., . . . Mueller, C. W. (2021). Particulate organic matter as a functional soil component for persistent soil organic carbon. *Nature Communications*, 12(1), 4115. doi:10.1038/s41467-021-24192-8
- Witzke, B. J., et al. (2018). *Potential for Geologic Sequestration of CO₂ in Iowa*. Retrieved from https://www.iahr.uiowa.edu/igs/publications/uploads/2018-09-28_09-09-33_tis-58.pdf
- Wogelius, R. A., & Walther, J. V. (1991). Olivine dissolution at 25°C: Effects of pH, CO₂, and organic acids. *Geochimica Et Cosmochimica Acta*, 55, 943-954. Retrieved from https://www.researchgate.net/publication/256177813_Olivine_dissolution_at_25C_Effects_of_pH_CO2_and_organic_acids
- Wogelius, R. A., & Walther, J. V. (1992). Olivine dissolution kinetics at near-surface conditions. *Chemical Geology*, 97(1), 101-112. doi:[http://dx.doi.org/10.1016/0009-2541\(92\)90138-U](http://dx.doi.org/10.1016/0009-2541(92)90138-U)
- Wohland, J., Witthaut, D., & Schleussner, C.-F. (2018). Negative Emission Potential of Direct Air Capture Powered by Renewable Excess Electricity in Europe. *Earth's Future*, 6(10), 1380-1384. doi:[doi:10.1029/2018EF000954](https://doi.org/10.1029/2018EF000954)
- Wolf, J., et al. (2003). Exploratory study on the land area required for global food supply and the potential global production of bioenergy. *Agricultural Systems*, 76(3), 841-861. Retrieved from https://www.researchgate.net/publication/222567956_Exploratory_study_on_the_land_area_required_for_global_food_supply_and_the_potential_global_production_of_bioenergy
- Wolff-Boenisch, D., Gislason, S. R., & Oelkers, E. H. (2006). The effect of crystallinity on dissolution rates and CO₂ consumption capacity of silicates. *Geochimica Et Cosmochimica Acta*, 70(4), 858-870. doi:<https://doi.org/10.1016/j.gca.2005.10.016>
- Wolff-Boenisch, D., Wenau, S., Gislason, S. R., & Oelkers, E. H. (2011). Dissolution of basalts and peridotite in seawater, in the presence of ligands, and CO₂: Implications for mineral sequestration of carbon dioxide. *Geochimica Et Cosmochimica Acta*, 75(19), 5510-5525. doi:<https://doi.org/10.1016/j.gca.2011.07.004>
- Wolske, K. S., Raimi, K. T., Campbell-Arvai, V., & Hart, P. S. (2019). Public support for carbon dioxide removal strategies: the role of tampering with nature perceptions. *Climatic Change*. doi:10.1007/s10584-019-02375-z
- Wong, C. S., & Crawford, D. W. (2006). Evolution of phytoplankton pigments in an in-situ iron

- enrichment experiment in the subarctic NE Pacific. *Deep Sea Research Part II: Topical Studies in Oceanography*, 53(20–22), 2152-2167. doi:<http://dx.doi.org/10.1016/j.dsr2.2006.05.043>
- Wong, C. S., Johnson, W. K., Sutherland, N., Nishioka, J., Timothy, D. A., Robert, M., & Takeda, S. (2006). Iron speciation and dynamics during SERIES, a mesoscale iron enrichment experiment in the NE Pacific. *Deep Sea Research Part II: Topical Studies in Oceanography*, 53(20–22), 2075-2094. doi:<http://dx.doi.org/10.1016/j.dsr2.2006.05.037>
- Wong, C. S., & Matear, R. (1993). The storage of anthropogenic carbon dioxide in the ocean. *Energy Conversion and Management*, 34(9), 873-880. doi:[https://doi.org/10.1016/0196-8904\(93\)90031-5](https://doi.org/10.1016/0196-8904(93)90031-5)
- Wong, C. S., Timothy, D. A., Law, C. S., Nojiri, Y., Xie, L., Wong, S.-K. E., & Page, J. S. (2006). Carbon distribution and fluxes during the SERIES iron fertilization experiment with special reference to the fugacity of carbon dioxide (fCO₂). *Deep Sea Research Part II: Topical Studies in Oceanography*, 53(20–22), 2053-2074. doi:<http://dx.doi.org/10.1016/j.dsr2.2006.05.036>
- Wong, J. T. F., Chen, Z., Ng, C. W. W., & Wong, M. H. (2015). Gas permeability of biochar-amended clay: potential alternative landfill final cover material. *Environmental Science and Pollution Research*, 23(8), 7126-7131. doi:[10.1007/s11356-015-4871-2](https://doi.org/10.1007/s11356-015-4871-2)
- Wong, R., et al. (2011). *Net Greenhouse Gas Impact of Storing CO₂ Through Enhanced Oil Recovery*. Retrieved from <https://www.pembina.org/pub/2458>
- Wong-Parodi, G., Ray, I., & Farrell, A. E. (2008). Environmental non-government organizations' perceptions of geologic sequestration. *Environmental Research Letters*, 3(2), 1-8. Retrieved from <http://stacks.iop.org/1748-9326/3/i=2/a=024007>
- Woo, S. H. (2013). Biochar for soil carbon sequestration. *Clean Technology*, 19(3), 201 - 211. doi:[10.7464/ksct.2013.19.3.201](https://doi.org/10.7464/ksct.2013.19.3.201)
- Wood, J., et al. (2021). From jet fuel to clothes, microbes can help us recycle carbon dioxide into everyday products *The Conversation*. Retrieved from <https://theconversation.com/from-jet-fuel-to-clothes-microbes-can-help-us-recycle-carbon-dioxide-into-everyday-products-165242>
- Wood, S. M., & Layzell, D. B. (2003). *A Canadian Biomass Inventory: Feedstocks for a Bio-based Economy*. Canada: BIOCAP Canada Foundation, Queen's University Ontario.
- Wood, W. (2019). How Carbon Farming Can Help Stop Climate Change in Its Tracks. *The Nation*. Retrieved from <https://www.thenation.com/article/agriculture-carbon-farming-ranching-soil/>
- Woodall, C., et al. (2020). Capturing and Reusing CO₂ by Converting It To Rock. *Frontiers Young Minds*, 9(592018). Retrieved from <https://kids.frontiersin.org/articles/10.3389/frym.2020.592018>
- Woodhouse, M. T., Mann, G. W., Carslaw, K. S., & Boucher, O. (2008). New Directions: The impact of oceanic iron fertilisation on cloud condensation nuclei. *Atmospheric Environment*, 42(22), 5728-5730. doi:<http://dx.doi.org/10.1016/j.atmosenv.2008.05.005>
- Woods, W. I., Falcao, N. P. S., & Teixeira, W. G. (2006). Biochar trials aim to enrich soil for smallholders. *Nature*, 443(7108), 144. Retrieved from <http://www.nature.com/nature/journal/v443/n7108/full/443144b.html>
- Woods, W. J., et al. (2009). *Amazonian Dark Earths: Wim Sombroek's Vision*. Berlin: Springer.
- Woolerton, T. W., Sheard, S., Chaudhary, Y. S., & Armstrong, F. A. (2012). Enzymes and bio-inspired electrocatalysts in solar fuel devices. *Energy Environ. Sci.*, 5, 7470.
- Woolf, D. (2014). Biofuels from pyrolysis in perspective: trade-offs between energy yields and soil-carbon additions. *Environmental Science & Technology*, 48(11), 6492-6499. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/es500474q>
- Woolf, D., Amonette, J. E., Street-Perrott, F. A., Lehmann, J., & Joseph, S. (2010). Sustainable

- biochar to mitigate global climate change. *Nature Communications*, 1(1), 1-9. Retrieved from file:///C:/Users/Gateway/Downloads/ncomms1053.pdf
- Woolf, D., & Lehmann, J. (2012). Modelling the long-term response to positive and negative priming of soil organic carbon by black carbon. *BioGeoChem*, 111(1), 83-95. Retrieved from <https://link.springer.com/article/10.1007/s10533-012-9764-6>
- Woolf, D., Lehmann, J., & Lee, D. R. (2016). Optimal bioenergy power generation for climate change mitigation with or without carbon sequestration. *Nature Communications*, 7, 1-11. doi:10.1038/ncomms13160
- (2020). *Field Work* [Retrieved from https://www.fieldworktalk.org/episode/2020/05/20/the-new-cash-crop-carbon?utm_medium=email&_hs_mi=88504870&_hsenc=p2ANqtz--d-HThVDiL1cgUpIXG12UDvyfaShOBdrJhg_ngyeFwaCZBywKOViwuWbbGffjPp4jOgzZN-vIMKIGkMcO5v66TLRAeA&utm_content=88504802&utm_source=hs_email
- Workman, M., Dooley, K., Lomax, G., Maltby, J., & Darch, G. (2020). Decision making in contexts of deep uncertainty - An alternative approach for long-term climate policy. *Environmental Science & Policy*, 103, 77-84. doi:<https://doi.org/10.1016/j.envsci.2019.10.002>
- Workman, M., McGlashan, N., Chalmers, H., & Shah, N. (2011). An assessment of options for CO₂ removal from the atmosphere. In J. Gale, C. Hendriks, & W. Turkenberg (Eds.), *10th International Conference on Greenhouse Gas Control Technologies* (Vol. 4, pp. 2877-2884). Amsterdam: Elsevier Science Bv.
- Works, F. C. (2021). Friday Fall-back Story: Planetary Hydrogen Announces Plans for First Sale of Carbon Removal to Shopify. Retrieved from <https://fuelcellsworks.com/news/friday-fall-back-story-planetary-hydrogen-announces-plans-for-first-sale-of-carbon-removal-to-shopify/>
- Worrall, F., Bell, M. J., & Bhogal, A. (2010). Assessing the probability of carbon and greenhouse gas benefit from the management of peat soils. *Science of The Total Environment*, 408(13), 2657-2666. doi:<https://doi.org/10.1016/j.scitotenv.2010.01.033>
- Wozniacka, G. (2019). Can regenerative agriculture reverse climate change? Big Food is banking on it. *NBC News*. Retrieved from <https://www.nbcnews.com/news/us-news/can-regenerative-agriculture-reverse-climate-change-big-food-banking-it-n1072941>
- Writer, O. S. (2019). Sucking Carbon From Air, Swiss Firm Wins New Funds for Climate Fix. *Osborn Oracle*. Retrieved from <https://osburnoracle.com/sucking-carbon-from-air-swiss-firm-wins-new-funds-for-climate-fix/56567/>
- Wróbel-Tobiszewska, A. (2015). *Biochar as a soil amendment and productivity stimulus for Eucalyptus nitens plantations*. University of Tasmania, Retrieved from <http://eprints.utas.edu.au/18751/>
- Wrobel-Tobiszewska, A., Boersma, M., Sargison, J., Adams, P., & Jarick, S. (2015). An economic analysis of biochar production using residues from Eucalypt plantations. *Biomass and Bioenergy*, 81, 177 - 182. doi:10.1016/j.biombioe.2015.06.015
- Wu, C., et al. . (2015). CO₂ gasification of bio-char derived from conventional and microwave pyrolysis. *Applied Energy*, 157, 533-539. doi:10.1016/j.apenergy.2015.04.075
- Wu, C. F., et al. (2012). Novel application of biochar from biomass pyrolysis for low temperature selective catalytic reduction. *Journal of the Energy Institute*, 85(4), 236-239. doi:<http://dx.doi.org/10.1179/1743967112Z.00000000033>
- Wu, C.-H., et al. (2015). Improvement of oxygen release from calcium peroxide-polyvinyl alcohol bead by adding low-cost bamboo biochar and its application in bioremediation. 環境與安全衛生工程系所 (*The Environmental Health and Safety Engineering*), 43(2), 287-295. Retrieved from <http://ir.lib.yuntech.edu.tw/ir/handle/310060000/10728>
- Wu, C.-H., Chang, S.-H., & Lin, C.-W. (2014). Improvement of Oxygen Release from Calcium Peroxide-polyvinyl Alcohol Beads by Adding Low-cost Bamboo Biochar and Its

- Application in Bioremediation. *CLEAN – Soil, Air, Water*, 43(2), 287-295. doi:10.1002/clen.201400059
- Wu, D., Feng, Y., Xue, L., Liu, M., Yang, B., Hu, F., & Yang, L. (2019). Biochar Combined with Vermicompost Increases Crop Production While Reducing Ammonia and Nitrous Oxide Emissions from a Paddy Soil. *Pedosphere*, 29(1), 82-94. doi:[https://doi.org/10.1016/S1002-0160\(18\)60050-5](https://doi.org/10.1016/S1002-0160(18)60050-5)
- Wu, F., et al. . (2012). Contrasting effects of wheat straw and its biochar on greenhouse gas emissions and enzyme activities in a Chernozemic soil. *Biology and Fertility of Soils*, 49(5), 555-565. doi:10.1007/s00374-012-0745-7
- Wu, H., Che, X., Ding, Z., Hu, X., Creamer, A. E., Chen, H., & Gao, B. (2015). Release of soluble elements from biochars derived from various biomass feedstocks. *Environmental Science and Pollution Research*, 23(2), 1905-1915. doi:10.1007/s11356-015-5451-1
- Wu, H., & Maginn, E. J. (2014). *Fluid Phase Equilib.*, 368, 72.
- Wu, M., Feng, Q., Sun, X., Wang, H., Gielen, G., & Wu, W. (2015). Rice (*Oryza sativa* L) plantation affects the stability of biochar in paddy soil. *Scientific Reports*, 5(10001), 1-10. doi:10.1038/srep10001
- Wu, M., Han, X., Zhong, T., Yuan, M., & Wu, W. (2016). Soil organic carbon content affects the stability of biochar in paddy soil. *Agriculture, Ecosystems & Environment*, 223, 59 - 66. doi:10.1016/j.agee.2016.02.033
- Wu, M., Ma, J., Cai, Z., Tian, G., Yang, S., Wang, Y., & Liu, X. e. (2015). Rational synthesis of zerovalent iron/bamboo charcoal composites with high saturation magnetization. *RSC Adv.*, 5(108), 88703 - 88709. doi:10.1039/c5ra13236c
- Wu, S. c., Lin, F., & Yang, J. y. (2011). *Modular Biochar Torrefaction System for Rural Taiwan*. Paper presented at the 2011 International Conference on Management and Service Science (MASS).
- Wu, S.-R., Chang, C.-C., Chang, Y.-H., & Wan, H.-P. (2016). Comparison of oil-tea shell and Douglas-fir sawdust for the production of bio-oils and chars in a fluidized-bed fast pyrolysis system. *Fuel*, 175, 57 - 63. doi:10.1016/j.fuel.2016.02.008
- Wu, W., et al. (2012). Chemical characterization of rice straw-derived biochar for soil amendment. *Biomass and Bioenergy*, 47, 268-276. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0961953412003741>
- Wu, X. D., et al. (2014). Carbon Capture and Storage (CCS) policy for China: Implications from Some Representative Countries and Regions. *Journal of Environmental Accounting and Management*, 2(1), 43-63. Retrieved from https://www.researchgate.net/publication/327551671_Carbon_Capture_and_Storage_CCS_policy_for_China_Implications_from_Some_Representative_Countries_and_Regions
- Wu, X. H., Luo, J., Wang, H., & Fang, Z. (2014). Characteristics of Products from Hydrothermal Carbonization of Bamboo. *Applied Mechanics and Materials*, 654, 7 - 10. doi:10.4028/www.scientific.net/AMM.654.7
- Wu, Y., Ge, S., Xia, C., Cai, L., Mei, C., Sonne, C., . . . Shiung Lam, S. (2020). Using low carbon footprint high-pressure carbon dioxide in bioconversion of aspen branch waste for sustainable bioethanol production. *Bioresource Technology*, 123675. doi:<https://doi.org/10.1016/j.biortech.2020.123675>
- Wu, Y., Xu, G., & Shao, H. B. (2014). Furfural and its biochar improve the general properties of a saline soil. *Solid Earth*, 5(5), 665-671. Retrieved from <http://www.solid-earth.net/5/665/2014/se-5-665-2014.pdf>
- Wu, Y., Zhang, P., Zhang, H., Zeng, G., Liu, J., Ye, J., . . . Gou, X. (2016). Possibility of sludge conditioning and dewatering with rice husk biochar modified by ferric chloride. *Bioresource Technology*, 205, 258 - 263. doi:10.1016/j.biortech.2016.01.020
- Wu, Z., Nan, Y., Zhao, Y., Wang, X., Huang, S., & Shi, J. (2020). Immobilization of carbonic

- anhydrase for facilitated CO₂ capture and separation. *Chinese Journal of Chemical Engineering*. doi:<https://doi.org/10.1016/j.cjche.2020.06.002>
- Wu, Z., Song, Y., Shen, H., Jiang, X., Li, B., & Xiong, Z. (2019). Biochar can mitigate methane emissions by improving methanotrophs for prolonged period in fertilized paddy soils. *Environmental Pollution*, 253, 1038-1046. doi:<https://doi.org/10.1016/j.envpol.2019.07.073>
- Wullschleger, S. D., et al. (2010). Biomass Production in Switchgrass across the United States: Database Description and Determinants of Yield. *Agronomy Journal*, 102(4), 1158-1168. Retrieved from <https://dl.sciencesocieties.org/publications/aj/abstracts/102/4/1158>
- Wurzbacher, J. A., Gebald, C., Brunner, S., & Steinfeld, A. (2016). Heat and mass transfer of temperature–vacuum swing desorption for CO₂ capture from air. *Chemical Engineering Journal*, 283, 1329-1338. doi:<http://dx.doi.org/10.1016/j.cej.2015.08.035>
- Wurzbacher, J. A., Gebald, C., Piatkowski, N., & Steinfeld, A. (2012). Concurrent Separation of CO₂ and H₂O from Air by a Temperature-Vacuum Swing Adsorption/Desorption Cycle. *Environmental Science & Technology*, 46(16), 9191-9198. doi:<10.1021/es301953k>
- Wurzler, T., Borchert, U., Wittmann, L., & Szymczyk, J. A. (2016). Technology Development and Conceptual Design of a Test Stand for the Optimization of a Gasification Process. *Applied Mechanics & Materials*, 831, 316-324. Retrieved from <http://web.b.ebscohost.com/abstract?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=16627482&AN=112810460&h=oa9yRioEq3TQxQWdEhysX1M9pTSamoYQxz%2f%2fhyFwldqMaC6r8qjk%2bFe8yQJpAvCu3H2%2fI%2f6F2uFn9tHzog%2bIPg%3d%3d&crl=c&resultNs=AdminWebAuth&res>
- WWF, & RSPB. (2020). *The Role of Nature in a UK NDC*. Retrieved from https://www.rspb.org.uk/globalassets/downloads/Nature_Based_Solutions_NDC_ReportV2.pdf
- Wylie, L., Sutton-Grier, A. E., & Moore, A. (2016). Keys to successful blue carbon projects: Lessons learned from global case studies. *Marine Policy*, 65, 76-84. doi:<https://doi.org/10.1016/j.marpol.2015.12.020>
- Wynn, G. (2017). The Carbon-Capture Dream is Dying. Retrieved from http://www.theenergycollective.com/gerard-wynn/2410045/carbon-capture-dream-dying?utm_source=feedburner&utm_medium=email&utm_campaign=The+Energy+Collective+%28all+posts%29
- X.B., Y., G.G., Y., P.A., P., L., W., J.L., Z., L.J., Z., . . . H.P., H. (2010). Influence of Biochars on Plant Uptake and Dissipation of Two Pesticides in an Agricultural Soil. *Journal of Agricultural and Food Chemistry*, 58, 7915-7921. doi:<10.1021/jf1011352>
- Xenias, D., & Whitmarsh, L. (2018). Carbon capture and storage (CCS) experts' attitudes to and experience with public engagement. *International Journal of Greenhouse Gas Control*, 78, 103-116. doi:<https://doi.org/10.1016/j.ijggc.2018.07.030>
- Xi, X., Yan, J., Quan, G., & Cui, L. (2014). Removal of the Pesticide Pymetrozine from Aqueous Solution by Biochar Produced from Brewer's Spent Grain at Different Pyrolytic Temperatures. *BioResources*, 9(4), 7696-7709. Retrieved from http://ojs.cnr.ncsu.edu/index.php/BioRes/article/view/BioRes_09_4_7696_Xi_Removal_Pesticide_Biochar/3157
- Xia, L., Wang, Y., & Meng, J. (2016). *Communications in Computer and Information ScienceGeo-Informatics in Resource Management and Sustainable Ecosystem The Influencing Factors of Biochar's Characteristics and the Development of Carbonization Equipments: A Review* (Vol. 569). Berlin, Heidelberg: Springer Berlin Heidelberg.
- Xia, Y., Liu, M. H., Song, X. N., & Zheng, H. (2014). Impact of Biochar Modified by HNO₃ on Plant Growth in Low Nutrient Coastal Saline Soil. *Applied Mechanics and Materials*, 707, 255 - 258. doi:<10.4028/www.scientific.net/AMM.707.255>
- Xiang, J., Liu, D., Ding, W., Yuan, J., & Lin, Y. (2014). Effects of biochar on nitrous oxide and

- nitric oxide emissions from paddy field during the wheat growth season. *Journal of Cleaner Production*. doi:10.1016/j.jclepro.2014.12.038
- Xiang, L., Liu, S., Ye, S., Yang, H., Song, B., Qin, F., . . . Tan, X. (2021). Potential hazards of biochar: The negative environmental impacts of biochar applications. *Journal of Hazardous Materials*, 420, 126611. doi:<https://doi.org/10.1016/j.jhazmat.2021.126611>
- Xiang, Y., Cai, L., Guan, Y., Liu, W., He, T., & Li, J. (2019). Study on the biomass-based integrated gasification combined cycle with negative CO₂ emissions under different temperatures and pressures. *Energy*. doi:<https://doi.org/10.1016/j.energy.2019.05.011>
- Xiang, Y., Yan, M., Choi, Y.-S., Young, D., & Nesic, S. (2014). Time-dependent electrochemical behavior of carbon steel in MEA-based CO₂ capture process. *International Journal of Greenhouse Gas Control*, 30, 125-132. doi:<https://doi.org/10.1016/j.ijggc.2014.09.003>
- XiangHong, L., Feng-Peng, H., & Zhang, X.-C. (2012). Effect of biochar on soil aggregates in the Loess Plateau: results from incubation experiments. *International Journal of Agriculture and Biology*, 14, 975-979. Retrieved from <https://search.proquest.com/docview/1267099382/fulltextPDF/1485D34AE77A4B3BPQ/1?accountid=14496>
- Xiao, F., & Pignatello, J. J. (2015). Interactions of triazine herbicides with biochar: Steric and electronic effects. *Water Research*, 80, 179 - 188. doi:10.1016/j.watres.2015.04.040
- Xiao, F., & Pignatello, J. J. (2015). π+–π Interactions between (Hetero)aromatic Amine Cations and the Graphitic Surfaces of Pyrogenic Carbonaceous Materials. *Environmental Science & Technology*, 49(2), 906 - 914. doi:10.1021/es5043029
- Xiao, J., Guo, X., & Song, C. (2019). Use of CO₂ as Source of Carbon for Energy-Rich C_n Products. In M. Aresta, I. Karimi, & S. Kawi (Eds.), *An Economy Based on Carbon Dioxide and Water: Potential of Large Scale Carbon Dioxide Utilization* (pp. 211-238). Retrieved from https://link.springer.com/chapter/10.1007/978-3-030-15868-2_6
- Xiao, N., Luo, H., Wei, W., Tang, Z., Hu, B., Kong, L., & Sun, Y. (2015). Microwave-assisted gasification of rice straw pyrolytic biochar promoted by alkali and alkaline earth metals. *Journal of Analytical and Applied Pyrolysis*. doi:10.1016/j.jaat.2015.02.001
- Xiao, Q., et al. (2015). Effects of biochar on water infiltration, evaporation and nitrate leaching in semi-arid loess area. *Transactions of the Chinese Society of Agricultural Engineering*, 31(16), 128-134. Retrieved from <http://web.b.ebscohost.com/abstract?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=10026819&AN=109052430&h=krAXIohuUhEyDCGzj%2fX5ovlZt3bbxp6lPc6sBq%2bigunL5fnLiXmg4Yal0WwgdjzV3iJ9DpXz7DdGux56JJQOnA%3d%3d&crl=c&resultNs=AdminWebAuth&resultLocal>
- Xiao, Q., et al. (2015). Soil amendment with biochar increases maize yields in a semi-arid region by improving soil quality and root growth. *Crop & Pasture Science*, 67, 495-507. Retrieved from <https://www.publish.csiro.au/cp/pdf/CP15351>
- Xiao, R., Wang, J. J., Gaston, L. A., Zhou, B., Park, J.-H., Li, R., . . . Zhang, Z. (2018). Biochar produced from mineral salt-impregnated chicken manure: Fertility properties and potential for carbon sequestration. *Waste Management*, 78, 802-810. doi:<https://doi.org/10.1016/j.wasman.2018.06.047>
- Xiao, R., & Yang, W. (2016). Kinetics characteristics of straw semi-char gasification with carbon dioxide. *Bioresource Technology*, 207, 180 - 187. doi:10.1016/j.biortech.2016.02.010
- Xiao, X., & Chen, B. (2015). *SSSA Special Publication Agricultural and Environmental Applications of Biochar: Advances and Barriers/Interaction Mechanisms between Biochar and Organic Pollutants*: Soil Science Society of America, Inc.
- Xiao, X., Chen, Z., & Chen, B. (2016). H/C atomic ratio as a smart linkage between pyrolytic temperatures, aromatic clusters and sorption properties of biochars derived from diverse precursory materials. *Scientific Reports*, 6, 1-13. doi:10.1038/srep22644
- Xiao, X., Sheng, G. D., & Qiu, Y. (2011). Improved understanding of tributyltin sorption on natural and biochar-amended sediments. *Environmental Toxicology and Chemistry*,

- 30(12), 2682-2687. doi:10.1002/etc.672
- Xiao, Y., Che, Y., Zhang, F., Li, Y., & Liu, M. (2018). Effects of Biochar, N Fertilizer, and Crop Residues on Greenhouse Gas Emissions from Acidic Soils. *46*(7), 1700346. doi:10.1002/clen.201700346
- Xie, H., Jiang, W., Liu, T., Wu, Y., Wang, Y., Chen, B., . . . Liang, B. (2020). Low-Energy Electrochemical Carbon Dioxide Capture Based on a Biological Redox Proton Carrier. *Cell Reports Physical Science*, *1*(5). doi:10.1016/j.xcrp.2020.100046
- Xie, H., Jiang, W., Liu, T., Wu, Y., Wang, Y., Chen, B., . . . Liang, B. (2020). Low-Energy Electrochemical Carbon Dioxide Capture Based on a Biological Redox Proton Carrier. *Cell Reports Physical Science*, *1*(5), 100046. doi:<https://doi.org/10.1016/j.xcrp.2020.100046>
- Xie, H., Yue, H., Zhu, J., Liang, B., Li, C., Wang, Y., . . . Zhou, X. (2015). Scientific and Engineering Progress in CO₂ Mineralization Using Industrial Waste and Natural Minerals. *Engineering*, *1*(1), 150-157. doi:<https://doi.org/10.15302/J-ENG-2015017>
- Xie, M., et al. (2013). Sorption of Monoaromatic Compounds to Heated and Unheated Coals, Humic Acid, and Biochar: Implication for Using Combustion Method to Quantify Sorption Contribution of Carbonaceous Geosorbents in Soil. *Applied Geochemistry*, *35*, 289-296. Retrieved from <http://www.sciencedirect.com/science/article/pii/S088329271300125X>
- Xie, Q. (2016). *Fast microwave-assisted thermochemical conversion of biomass for biofuel production*. University of Minnesota, Retrieved from <http://conservancy.umn.edu/handle/11299/177123>
- Xie, Q., Peng, P., Liu, S., Min, M., Cheng, Y., Wan, Y., . . . Ruan, R. (2014). Fast microwave-assisted catalytic pyrolysis of sewage sludge for bio-oil production. *Bioresource Technology*, *172*, 162 - 168. doi:10.1016/j.biortech.2014.09.006
- Xie, T., et al. (2014). Effects of Amendment of Biochar Produced from Woody Biomass on Soil Quality and Crop Yield. *Geoenvironmental Engineering*, *170*-180. Retrieved from <http://cedb.asce.org/cgi/WWWdisplay.cgi?318416>
- Xie, T., et al. (2015). Review of the Effects of Biochar Amendment on Soil Properties and Carbon Sequestration. *Journal of Hazardous, Toxic, and Radioactive Waste*, *20*(1), 04015013. doi:10.1061/(asce)hz.2153-5515.0000293
- Xie, X., & Economides, M. J. (2009). The impact of carbon geological sequestration. *Journal of Natural Gas Science and Engineering*, *1*(3), 103-111. doi:<https://doi.org/10.1016/j.jngse.2009.06.002>
- Xie, Z., Xu, Y., Liu, G., Liu, Q., Zhu, J., Tu, C., . . . Hu, S. (2013). Impact of biochar application on nitrogen nutrition of rice, greenhouse-gas emissions and soil organic carbon dynamics in two paddy soils of China. *Plant and Soil*, *370*(1), 527-540. doi:10.1007/s11104-013-1636-x
- Xin, C., Addy, M. M., Zhao, J., Cheng, Y., Cheng, S., Mu, D., . . . Ruan, R. (2016). Comprehensive techno-economic analysis of wastewater-based algal biofuel production: A case study. *Bioresource Technology*, *211*, 584-593. doi:<https://doi.org/10.1016/j.biortech.2016.03.102>
- Xin, J., et al. (2014). Effects of biochar-BDE-47 interactions on BDE-47 bioaccessibility and biodegradation by *Pseudomonas putida* TZ-1. *Ecotoxicology and Environmental Safety*, *106*, 27-32. doi:10.1016/j.ecoenv.2014.04.036
- Xing, L., Darton, R. C., & Yang, A. (2021). Enhanced weathering to capture atmospheric carbon dioxide: Modeling of a trickle-bed reactor. *AIChE Journal*, *67*(5), e17202. doi:<https://doi.org/10.1002/aic.17202>
- Xingcan, T., Jinlin, C., & Wenqing, L. (2014). Cu²⁺ Adsorption Characteristic of Biochar and Its Influential Factor. *Journal of Anhui Agricultural Sciences*. Retrieved from http://d.wanfangdata.com.cn/periodical_ahnykx201405070.aspx

- Xiong, W., Wells, R. K., Menefee, A. H., Skemer, P., Ellis, B. R., & Giammar, D. E. (2017). CO₂ mineral trapping in fractured basalt. *International Journal of Greenhouse Gas Control*, 66, 204-217. doi:<https://doi.org/10.1016/j.ijggc.2017.10.003>
- Xu, C.-Y., Bai, S. H., Hao, Y., Rachaputi, R. C. N., Xu, Z., & Wallace, H. M. (2015). Peanut shell biochar improves soil properties and peanut kernel quality on a red Ferrosol. *Journal of Soils and Sediments*, 15(11), 2220-2231. doi:[10.1007/s11368-015-1242-z](https://doi.org/10.1007/s11368-015-1242-z)
- Xu, C.-Y., Bai, S. H., Xu, Z., Blumfielda, T. J., Zhao, H., Wang, H., . . . Zwieten, L. V. (2015). Biochar application increases soil available nitrogen and plant-to-soil carbon input. In.
- Xu, C.-Y., Hosseini-Bai, S., Hao, Y., Rachaputi, R. C. N., Wang, H., Xu, Z., & Wallace, H. (2014). Effect of biochar amendment on yield and photosynthesis of peanut on two types of soils. *Environmental Science and Pollution Research*, 22(8), 6112-6125. doi:[10.1007/s11356-014-3820-9](https://doi.org/10.1007/s11356-014-3820-9)
- Xu, D., et al. . (2014). Cadmium adsorption on plant- and manure-derived biochar and biochar-amended sandy soils: Impact of bulk and surface properties. *Chemosphere*, 111, 320-326. doi:[10.1016/j.chemosphere.2014.04.043](https://doi.org/10.1016/j.chemosphere.2014.04.043)
- Xu, D.-y., et al. (2014). Characterization of Biochar by X-Ray Photoelectron Spectroscopy and ¹³C Nuclear Magnetic Resonance. In.
- Xu, G., et al. (2011). Impacts of Biochar on Agriculture Soils and Environmental Implications. *Journal Advanced Materials Research*, 391 - 392, 1055-1058. doi:[10.4028/www.scientific.net/AMR.391-392.1055](https://doi.org/10.4028/www.scientific.net/AMR.391-392.1055)
- Xu, G., et al. . (2012). Recent Advances in Biochar Applications in Agricultural Soils: Benefits and Environmental Implications. *CLEAN – Soil, Air, Water*, 40(10), 1093-1098. doi:[10.1002/clen.201100738](https://doi.org/10.1002/clen.201100738)
- Xu, G., et al. (2013). What is more important for enhancing nutrient bioavailability with biochar application into a sandy soil: Direct or indirect mechanism? *Ecological Engineering*, 52, 119–124. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0925857412004533>
- Xu, G., et al. (2014). Biochar had effects on phosphorus sorption and desorption in three soils with differing acidity. *Ecological Engineering*, 62, 54-60. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0925857413004515>
- Xu, H., Cai, A., Wu, D., Liang, G., Xiao, J., Xu, M., . . . Zhang, W. (2021). Effects of biochar application on crop productivity, soil carbon sequestration, and global warming potential controlled by biochar C:N ratio and soil pH: A global meta-analysis. *Soil and Tillage Research*, 213, 105125. doi:<https://doi.org/10.1016/j.still.2021.105125>
- Xu, H.-J., Wang, X.-H., Li, H., Yao, H.-Y., Su, J.-Q., & Zhu, Y.-G. (2014). Biochar Impacts Soil Microbial Community Composition and Nitrogen Cycling in an Acidic Soil Planted with Rape. *Environmental Science & Technology*, 48(16), 9391 - 9399. doi:[10.1021/es5021058](https://doi.org/10.1021/es5021058)
- Xu, J. Y., Wu, H. Y., Wang, Z., Qiao, Z. H., Zhao, S., & Wang, J. X. (2018). Recent advances on the membrane processes for CO₂ separation. *Chinese Journal of Chemical Engineering*, 26(11), 2280-2291. doi:[10.1016/j.cjche.2018.08.020](https://doi.org/10.1016/j.cjche.2018.08.020)
- Xu, L., Yao, Q., Deng, J., Han, Z., Zhang, Y., Fu, Y., . . . Guo, Q. (2015). Renewable N-Heterocycles Production by Thermocatalytic Conversion and Ammonization of Biomass over ZSM-5. *ACS Sustainable Chemistry & Engineering*, 3(11), 2890 - 2899. doi:[10.1021/acssuschemeng.5b00841](https://doi.org/10.1021/acssuschemeng.5b00841)
- Xu, M., & Shang, H. (2016). Contribution of soil respiration to the global carbon equation. *Journal of Plant Physiology*, 203(Supplement C), 16-28. doi:<https://doi.org/10.1016/j.jplph.2016.08.007>
- Xu, N., Zhang, B., Tan, G., Li, J., & Wang, H. (2015). Influence of biochar on sorption, leaching and dissipation of bisphenol A and 17 α -ethynodiol in soil. *Environ. Science:*

- Processes & Impacts*, 17(10), 1722-1730. doi:10.1039/c5em00190k
- Xu, R., et al. (2011). Thermal self-sustainability of biochar production by pyrolysis. *Journal of Analytical and Applied Pyrolysis*, 91(1), 55-66. Retrieved from <http://www.sciencedirect.com/science/article/B6TG7-51XH964-1/2/7e405197368040d67ff93c10e7c7ecbd>
- Xu, R.-K., et al. . (2015). Adsorption Properties of Subtropical and Tropical Variable Charge Soils: Implications from Climate Change and Biochar Amendment. *Advances in Agronomy*, 135, 1-58. doi:10.1016/bs.agron.2015.09.001
- Xu, S., Adhikari, D., Huang, R., Zhang, H., Tang, Y., Roden, E., & Yang, Y. (2016). Biochar-Facilitated Microbial Reduction of Hematite. *Environmental Science & Technology*, 50(5), 2389 - 2395. doi:10.1021/acs.est.5b05517
- Xu, S., & Dai, S. (2021). CCUS As a second-best choice for China's carbon neutrality: an institutional analysis. *Climate Policy*, 21(7), 927-938. doi:10.1080/14693062.2021.1947766
- Xu, W., Jian, H., Liu, Y., Zeng, G., Li, X., Gu, Y., & Tan, X. (2015). Removal of chromium (VI) from aqueous solution using mycelial pellets of *Penicillium simplicissimum* impregnated with powdered biochar. *Bioremediation Journal*, 19(4), 259-268. doi:10.1080/10889868.2015.1066302
- Xu, W., Pignatello, J. J., & Mitch, W. A. (2015). Reduction of Nitroaromatics Sorbed to Black Carbon by Direct Reaction with Sorbed Sulfides. *Environmental Science & Technology*, 49(6), 3419-3426. doi:10.1021/es5045198
- Xu, X., et al. (2012). Removal of Cu, Zn, and Cd from aqueous solutions by the dairy manure-derived biochar. *Environmental Science and Pollution Research*, 20(1), 358-368. doi:10.1007/s11356-012-0873-5
- Xu, X., et al. . (2014). Comparison of sewage sludge- and pig manure-derived biochars for hydrogen sulfide removal. *Chemosphere*, 111, 296-303. doi:10.1016/j.chemosphere.2014.04.014
- Xu, X., et al. . (2014). Interaction of organic and inorganic fractions of biochar with Pb. *RSC Adv.*, 4(85), 44930 - 44937. doi:10.1039/c4ra07303g
- Xu, X., et al. . (2016). Comparison of the characteristics and mechanisms of Hg(II) sorption by biochars and activated carbon. *Journal of Colloid and Interface Science*, 463, 55 - 60. doi:10.1016/j.jcis.2015.10.003
- Xu, X., Cheng, K., Wu, H., Sun, J., Yue, Q., & Pan, G. (2019). Greenhouse gas mitigation potential in crop production with biochar soil amendment—a carbon footprint assessment for cross-site field experiments from China. 11(4), 592-605. doi:10.1111/gcbb.12561
- Xu, X., Gu, X., Wang, Z., Shatner, W., & Wang, Z. (2019). Progress, challenges and solutions of research on photosynthetic carbon sequestration efficiency of microalgae. *Renewable and Sustainable Energy Reviews*, 110, 65-82. doi:<https://doi.org/10.1016/j.rser.2019.04.050>
- Xu, X., Kan, Y., Zhao, L., & Cao, X. (2016). Chemical transformation of CO₂ during its capture by waste biomass derived biochars. *Environmental Pollution*, 213, 533-540. doi:<https://doi.org/10.1016/j.envpol.2016.03.013>
- Xu, X., Wu, Z., Dong, Y., Zhou, Z., & Xiong, Z. (2016). Effects of nitrogen and biochar amendment on soil methane concentration profiles and diffusion in a rice-wheat annual rotation system. *Scientific Reports*, 6, 38688. doi:10.1038/srep38688
<http://www.nature.com/articles/srep38688#supplementary-information>
- Xu, Y., & Chen, B. (2014). Organic carbon and inorganic silicon speciation in rice-bran-derived biochars affect its capacity to adsorb cadmium in solution. *Journal of Soils and Sediments*. doi:10.1007/s11368-014-0969-2

- Xu, Y., Lou, Z., Yi, P., Chen, J., Ma, X., Wang, Y., . . . Qian, G. (2014). Improving abiotic reducing ability of hydrothermal biochar by low temperature oxidation under air. *Bioresource Technology*, 172, 212 - 218. doi:10.1016/j.biortech.2014.09.018
- Xua, T., Lou, L., Luo, L., Cao, R., Duan, D., & Chen, Y. (2011). Effect of bamboo biochar on pentachlorophenol leachability and bioavailability in agricultural soil. *Science of The Total Environment*. doi:10.1016/j.scitotenv.2011.11.005
- Xuan, D., & Poon, C. S. (2019). 16 - Sequestration of carbon dioxide by RCAs and enhancement of properties of RAC by accelerated carbonation. In J. de Brito & F. Agrela (Eds.), *New Trends in Eco-efficient and Recycled Concrete* (pp. 477-497): Woodhead Publishing.
- Xue, B., Yu, Y., & Chen, J. (2017). Process simulation and energy consumption for CO₂ capture with different flowsheets. *International Journal of Greenhouse Gas Control*, 12(2), 207-227. Retrieved from <http://www.inderscience.com/info/inarticle.php?artid=84514>
- Xue, X., et al. (2016). Study on microwave-assisted pyrolysis of hemicellulose. *Kezaisheng Nengyuan / Renewable Energy Resources*, 33(11), 1749-1754. Retrieved from <http://www.cabdirect.org/abstracts/20153416550.html;jsessionid=08C12AE8783C422B97BEEAA9278D844F>
- Xue, Y., et al. (2012). Hydrogen peroxide modification enhances the ability of biochar (hydrochar) produced from hydrothermal carbonization of peanut hull to remove aqueous heavy metals: Batch and column tests. *Chemical Engineering Journal*, 200-202, 673-680. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1385894712008467>
- Xue, Y. (2016). *Influence of birch biochar on strawberry plants in greenhouse under attack of gray mold*. University of Helsinki, Retrieved from <https://helda.helsinki.fi/handle/10138/159927>
- Xue, Y., Zhou, S., Brown, R. C., Kelkar, A., & Bai, X. (2015). Fast pyrolysis of biomass and waste plastic in a fluidized bed reactor. *Fuel*, 156, 40 - 46. doi:10.1016/j.fuel.2015.04.033
- Xuefeng, L., et al. (2015). In-situ remediation of Cd polluted paddy soil using sepiolite and combined amendments. *Geoderma*, 235-236, 9-18. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0016706114002596>
- XuSheng, H., et al. . (2011). Implications of production and agricultural utilization of biochar and its international dynamic. *Transactions of the Chinese Society of Agricultural Engineering*, 27, 1-7. Retrieved from <http://www.tcsae.org>
- Y., Y., B, G., H, C., L, J., M, I., AR, Z., . . . H, L. (2012). Adsorption of sulfamethoxazole on biochar and its impact on reclaimed water irrigation. *Journal of Hazardous Materials*, 209-210, 408-413. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0304389412000775>
- Yaashikaa, P. R., Senthil Kumar, P., Varjani, S. J., & Saravanan, A. (2019). A review on photochemical, biochemical and electrochemical transformation of CO₂ into value-added products. *Journal of CO₂ Utilization*, 33, 131-147. doi:<https://doi.org/10.1016/j.jcou.2019.05.017>
- Yachigo, M., & Sato, S. (2013). Leachability and Vegetable Absorption of Heavy Metals from Sewage Sludge Biochar. Retrieved from http://cdn.intechopen.com/pdfs/43245/InTech-Leachability_and_vegetable_absorption_of_heavy_metals_from_sewage_sludge_biochar.pdf
- Yadav, G., & Sen, R. (2017). Microalgal green refinery concept for biosequestration of carbon-dioxide vis-à-vis wastewater remediation and bioenergy production: Recent technological advances in climate research. *Journal of CO₂ Utilization*, 17, 188-206. doi:<https://doi.org/10.1016/j.jcou.2016.12.006>
- Yadav, G. S., Kandpal, B. K., Das, A., Babu, S., Mohapatra, K. P., Devi, A. G., . . . Barman, K. K.

- (2021). Impact of 28 year old agroforestry systems on soil carbon dynamics in Eastern Himalayas. *Journal of Environmental Management*, 283, 111978. doi:<https://doi.org/10.1016/j.jenvman.2021.111978>
- Yadav, S., & Mehra, A. (2017). Experimental study of dissolution of minerals and CO₂ sequestration in steel slag. *Waste Management*, 64, 348-357. doi:<https://doi.org/10.1016/j.wasman.2017.03.032>
- Yadav, S., & Tyagi, D. K. (2011). Equilibrium and Kinetic Studies on Adsorption of Aniline Blue from Aqueous Solution onto Rice Husk Carbon. *International Journal of Chemistry Research*, 2(3), 59-64. Retrieved from <http://www.ijcr.info/Vol2Issue3/202.pdf>
- Yadav, V., Shrivastava, P., Deshmukh, Y., Shanker, K., & Khare, P. (2015). Evaluation of solid phase extraction efficiency of functionalized biochar for polyphenols from Punica granatum. *Asia-Pacific Journal of Chemical Engineering*, n/a - n/a. doi:10.1002/apj.1956
- Yadava, P. S., & Thokchom, A. (2017). Soil Carbon Stock and CO₂ Flux in Different Ecosystems of North-East India. In M. Goel & M. Sudhakar (Eds.), *Carbon Utilization: Applications for the Energy Industry* (pp. 69-79). Singapore: Springer Singapore.
- Yager, D. B., & Stanton, M. R. (2014). *Metals sequestration by biochar in sulfide bearing mine waste leachate experiments: Implications for mine waste reclamation and carbon sequestration*. Retrieved from ftp://ftp.crustal.cr.usgs.gov/pub/KSmith/IMDP%20Circular/IMDP%20Circular_6-21-13/REVIEW%20VERSION/Minerals-Energy-Climate/Yager_IMDP_draft_120911-4-Review.docx
- Yakout, S. M. (2015). Monitoring the Changes of Chemical Properties of Rice Straw-Derived Biochars Modified by Different Oxidizing Agents and Their Adsorptive Performance for Organics. *Bioremediation Journal*, 19(2), 171 - 182. doi:10.1080/10889868.2015.1029115
- Yakout, S. M., & Elsherif, E. (2015). Biosorption behavior of Sr²⁺ using straw-derived biochar: equilibrium and isotherm study. *Desalination and Water Treatment*, 1 - 8. doi:10.1080/19443994.2015.1019362
- Yakout, S. M., & Elsherif, E. (2015). Investigation of Strontium Sorption Kinetic and Thermodynamic onto Straw Biochar. *Particulate Science and Technology*, 150427135415001. doi:10.1080/02726351.2015.1008712
- Yamafuji, K. (2014). *INCUBATION STUDIES OF BIOCHAR AND MANURE TO MITIGATE CARBON DIOXIDE RELEASE AND NITROGEN DEFICIENCY IN SEMI-ARID SOILS*. University of Arizona, Retrieved from <http://arizona.openrepository.com/arizona/handle/10150/326281>
- Yamagata, Y. (2018). Global Negative Emission Land Use Scenarios and Their Ecological Implications. In *Reference Module in Earth Systems and Environmental Sciences*: Elsevier.
- Yamagata, Y., Hanasaki, N., Ito, A., Kinoshita, T., Murakami, D., & Zhou, Q. (2018). Estimating water–food–ecosystem trade-offs for the global negative emission scenario (IPCC-RCP2.6). *Sustainability Science*. doi:10.1007/s11625-017-0522-5
- Yamamoto, A., Yamaji, K., & Fujino, J. (1999). Evaluation of bioenergy resources with a global land use and energy model formulated with SD technique. *Applied Energy*, 63(2), 101-113. Retrieved from http://econpapers.repec.org/article/eeeappene/v_3a63_3ay_3a1999_3ai_3a2_3ap_3a101-113.htm
- Yamamoto, H., Fujino, J., & Yamaji, K. (2001). Evaluation of bioenergy potential with a multi-regional global-land-use-and-energy model. *Biomass and Bioenergy*, 21(3), 185-203. doi:[http://dx.doi.org/10.1016/S0961-9534\(01\)00025-3](http://dx.doi.org/10.1016/S0961-9534(01)00025-3)
- Yamamoto, H., Yamaji, K., & Fujino, J. (2000). Scenario analysis of bioenergy resources and CO₂ emissions with a global land use and energy model. *Applied Energy*, 66(4), 325-337. doi:[http://dx.doi.org/10.1016/S0306-2619\(00\)00019-2](http://dx.doi.org/10.1016/S0306-2619(00)00019-2)

- Yamane, V. K., & Green, R. E. (1972). *Adsorption of Ametryne and Atrazine on an Oxisol, Montmorillonite, and Charcoal in Relation to pH and Solubility Effects*.
- Yamato, M., et al. (2006). Effects of the Application of Charred Bark of Acacia Mangium on the Yield of Maize, Cowpea and Peanut, and Soil Chemical Properties in South Sumatra, Indonesia. *Soil Science and Plant Nutrition*, 52(4), 489-495. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/j.1747-0765.2006.00065.x/abstract>
- Yamauchi, S., Yamagishi, T., Kirikoshi, K., & Yatagai, M. (2014). Cesium adsorption from aqueous solutions onto Japanese oak charcoal I: effects of the presence of group 1 and 2 metal ions. *Journal of Wood Science*. doi:10.1007/s10086-014-1431-1
- Yan, F., et al. (2015). Optimized preparation of lanthanum uploaded biochar and its application in adsorbing pentavalent arsenic ions from aqueous solution. *China Environmental Science*, 35(8), 2433-2441. Retrieved from <http://www.cabdrect.org/abstracts/20153314910.html;jsessionid=884132458603550B9DAAE2DEFAF7C84F>
- Yan, J., Han, L., Gao, W., Xue, S., & Chen, M. (2015). Biochar supported nanoscale zerovalent iron composite used as persulfate activator for removing trichloroethylene. *Bioresource Technology*, 175, 269 - 274. doi:10.1016/j.biortech.2014.10.103
- Yan, L., Kong, L., Qu, Z., Li, L., & Shen, G. (2014). Magnetic Biochar Decorated with ZnS Nanocrystals for Pb (II) Removal. *ACS Sustainable Chemistry & Engineering*, 141125102254006. doi:10.1021/sc500619r
- Yan, Q., et al. . (2013). Iron Nanoparticles in situ Encapsulated in Biochar-based Carbon as an Effective Catalyst for Conversion of Biomass-derived Syngas to Liquid Hydrocarbons. *Green Chemistry*, 15, 1631-1640. Retrieved from <http://pubs.rsc.org/en/content/articlehtml/2013/gc/c3gc37107g>
- Yan, Q., et al. (2014). Formation of nanocarbon spheres by thermal treatment of woody char from fast pyrolysis process. *Wood and Fiber Science*, 46(4), 437-450. Retrieved from <http://www.swst.org/publications/wfs/preprints/46%284%29/WFS1712.pdf>
- Yan, Q., et al. . (2015). Synthesis of Tungsten Carbide Nanoparticles in Biochar Matrix as a Catalyst for Dry Reforming of Methane to Syngas. *Catalysis Science & Technology*, 5, 3270-3280. doi:10.1039/c5cy00029g
- Yanagi, M., Watanabe, Y., & Saiki, H. (1995). CO₂ fixation by Chlorella sp. HA-1 and its utilization. *Energy Conversion and Management*, 36(6), 713-716. doi:[https://doi.org/10.1016/0196-8904\(95\)00104-L](https://doi.org/10.1016/0196-8904(95)00104-L)
- Yanagisawa, M., Kawai, S., & Murata, K. (2013). Strategies for the production of high concentrations of bioethanol from seaweeds. *Bioengineered*, 4(4), 224-235. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3728193/>
- Yanai, Y., Toyota, K., & Okazaki, M. (2007). Effects of charcoal addition on N₂O emissions from soil resulting from rewetting air-dried soil in short-term laboratory experiments. *Soil Science and Plant Nutrition*, 53(2), 181-188. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/j.1747-0765.2007.00123.x/abstract>
- Yanardağ, İ. H., Zornoza, R., Cano, A. F., Yanardağ, A. B., & Mermut, A. R. (2015). Evaluation of carbon and nitrogen dynamics in different soil types amended with pig slurry, pig manure and its biochar by chemical and thermogravimetric analysis. *Biology and Fertility of Soils*, 51(2), 183 - 196. doi:10.1007/s00374-014-0962-3
- Yang, A. L. C., & Ani, F. N. (2016). Controlled Microwave-Induced Pyrolysis of Waste Rubber Tires. *International Journal of Technology*, 7(2), 314. doi:10.14716/ijtech.v7i2.2973
- Yang, E., Jun, M., Haijun, H., & Wenfu, C. (2015). Chemical composition and potential bioactivity of volatile from fast pyrolysis of rice husk. *Journal of Analytical and Applied Pyrolysis*, 112, 394 - 400. doi:10.1016/j.jaat.2015.02.021
- Yang, F., et al. (2015). Short-term effects of rice straw biochar on sorption, emission, and transformation of soil NH₄ +N. *Environmental Science and Pollution Research*, 22(12),

- 9184-9192. doi:10.1007/s11356-014-4067-1
- Yang, F., et al. (2016). Environmental Assessment of Biochar for Security Applications. In *Architectural, Energy and Information Engineering*.
- Yang, F., et al. (2016). The Interfacial Behavior between Biochar and Soil Minerals and Its Effect on Biochar Stability. *Environmental Science & Technology*, 50(5), 2264 - 2271. doi:10.1021/acs.est.5b03656
- Yang, F., Lee, X.-q., & Wang, B. (2015). Characterization of biochars produced from seven biomasses grown in three different climate zones. *Chinese Journal of Geochemistry*, 34(4), 592 - 600. doi:10.1007/s11631-015-0072-4
- Yang, F., Meerman, J. C., & Faaij, A. P. C. (2021). Carbon capture and biomass in industry: A techno-economic analysis and comparison of negative emission options. *Renewable and Sustainable Energy Reviews*, 144, 111028. doi:<https://doi.org/10.1016/j.rser.2021.111028>
- Yang, G., Sun, Y., Zhang, J. P., & Wen, C. (2016). Fast carbonization using fluidized bed for biochar production from reed black liquor: optimization for H₂S removal. *Environmental Technology*, 1 - 10. doi:10.1080/0959330.2016.1151463
- Yang, G., Wang, Z., Xian, Q., Shen, F., Sun, C., Zhang, Y., & Wu, J. (2015). Effects of pyrolysis temperature on the physicochemical properties of biochar derived from vermicompost and its potential use as an environmental amendment. *RSC Adv.*, 50, 40117-40125. doi:10.1039/c5ra02836a
- Yang, G.-X., & Jiang, H. (2013). Amino modification of biochar for enhanced adsorption of copper ions from synthetic wastewater. *Water Research*, 48, 396-405. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0043135413007598>
- Yang, H., & Sheng, K. (2012). Characterization of Biochar Properties Affected by Different Pyrolysis Temperatures Using Visible-Near-Infrared Spectroscopy. *ISRN Spectroscopy*, 2012, 1-7. doi:10.5402/2012/712837
- Yang, H., Zhou, Y., & Liu, J. (2009). Land and water requirements of biofuel and implications for food supply and the environment in China. *Energy Policy*, 37(5), 1875-1885. Retrieved from https://www.researchgate.net/publication/223392364_Land_and_water_requirements_of_biofuel_and_implications_for_food_supply_and_the_environment_in_China
- Yang, J., Pan, B., Li, H., Liao, S., Zhang, D., Wu, M., & Xing, B. (2015). Degradation of p-Nitrophenol on Biochars: Role of Persistent Free Radicals. *Environmental Science & Technology*, 50(2), 694-700. doi:10.1021/acs.est.5b04042
- Yang, K., Yang, J., Jiang, Y., Wu, W., & Lin, D. (2016). Correlations and adsorption mechanisms of aromatic compounds on a high heat temperature treated bamboo biochar. *Environmental Pollution*, 210, 57 - 64. doi:10.1016/j.envpol.2015.12.004
- Yang, L., et al. . (2015). Biochar Improves Sugarcane Seedling Root and Soil Properties Under a Pot Experiment. *Sugar Tech*, 17(1), 36 - 40. doi:10.1007/s12355-014-0335-0
- Yang, L., Jiang, L., Wang, G., Chen, Y., Shen, Z., & Luo, C. (2015). Assessment of amendments for the immobilization of Cu in soils containing EDDS leachates. *Environmental Science and Pollution Research*, 22(21), 16525-16534. doi:10.1007/s11356-015-4840-9
- Yang, L., Zhang, X., & McAlinden, K. J. (2016). The effect of trust on people's acceptance of CCS (carbon capture and storage) technologies: Evidence from a survey in the People's Republic of China. *Energy*, 96, 69-79. doi:<https://doi.org/10.1016/j.energy.2015.12.044>
- Yang, Q., Han, F., Chen, Y., Yang, H., & Chen, H. (2016). Greenhouse gas emissions of a biomass-based pyrolysis plant in China. *Renewable and Sustainable Energy Reviews*, 53, 1580 - 1590. doi:10.1016/j.rser.2015.09.049
- Yang, Q., Hewen, Z., Bartocci, P., Fantozzi, F., Mašek, O., Foster, A., . . . Michael, M. (2021). Prospective contributions of biomass pyrolysis to China's 2050 carbon reduction and

- renewable energy goals. *Nature Communications*. Retrieved from <https://www.nature.com/articles/s41467-021-21868-z>
- Yang, Q., Mašek, O., Zhao, L., Nan, H., Yu, S., Yin, J., . . . Cao, X. (2020). Country-level potential of carbon sequestration and environmental benefits by utilizing crop residues for biochar implementation. *Applied Energy*, 116275. doi:<https://doi.org/10.1016/j.apenergy.2020.116275>
- Yang, S. (2017). Solar-to-Fuel System Recycles CO₂ to Make Ethanol and Ethylene [Press release]. Retrieved from <http://newscenter.lbl.gov/2017/09/18/solar-fuel-system-recycles-co2-for-ethanol-ethylene/>
- Yang, W. (2012). *Investigation of Extractable Materials from Biochar*. (Master of Science). The University of Waikato, Retrieved from <http://researchcommons.waikato.ac.nz/bitstream/handle/10289/6522/thesis.pdf?sequence=5>
- Yang, X., et al. (2015). Bioavailability of Cd and Zn in soils treated with biochars derived from tobacco stalk and dead pigs. *Journal of Soils and Sediments*, 17(3), 751-762. doi:[10.1007/s11368-015-1326-9](https://doi.org/10.1007/s11368-015-1326-9)
- Yang, X., et al. (2015). Effect of biochar on the extractability of heavy metals (Cd, Cu, Pb, and Zn) and enzyme activity in soil. *Environmental Science and Pollution Research*, 23(2), 974-984. doi:[10.1007/s11356-015-4233-0](https://doi.org/10.1007/s11356-015-4233-0)
- Yang, X. J., et al. . (2013). Research Progress of Biochar, Pyroligneous Acid and Organic Fertilizer Mixture and its Components in Agricultural Production. *Applied Mechanics and Materials*, 448 - 453, 680-687. Retrieved from <https://www.scientific.net/AMM.448-453.680>
- Yang, Y., et al. (2013). Evaluation of adsorption potential of bamboo biochar for metal-complex dye: equilibrium, kinetics and artificial neural network modeling. *International Journal of Environmental Science and Technology*, 11(4), 1093-1100. Retrieved from <https://link.springer.com/article/10.1007/s13762-013-0306-0>
- Yang, Y., & Gao, K. (2003). Effects of CO₂ concentrations on the freshwater microalgae, Chlamydomonas reinhardtii, Chlorella pyrenoidosa and Scenedesmus obliquus (Chlorophyta). *Journal of Applied Phycology*, 15(5), 379-389. doi:[10.1023/a:1026021021774](https://doi.org/10.1023/a:1026021021774)
- Yang, Y., Hobbie, S. E., Hernandez, R. R., Fargione, J., Grodsky, S. M., Tilman, D., . . . Chen, W.-Q. (2020). Restoring Abandoned Farmland to Mitigate Climate Change on a Full Earth. *One Earth*, 3(2), 176-186. doi:[10.1016/j.oneear.2020.07.019](https://doi.org/10.1016/j.oneear.2020.07.019)
- Yang, Y., Ma, S., Zhao, Y., Jing, M., Xu, Y., & Chen, J. (2015). A Field Experiment on Enhancement of Crop Yield by Rice Straw and Corn Stalk-Derived Biochar in Northern China. *Sustainability*, 7(10), 13713 - 13725. doi:[10.3390/su71013713](https://doi.org/10.3390/su71013713)
- Yang, Y., Reilly, E. C., Jungers, J. M., Chen, J., & Smith, T. M. (2019). Climate Benefits of Increasing Plant Diversity in Perennial Bioenergy Crops. *One Earth*, 1(4), 434-445. doi:<https://doi.org/10.1016/j.oneear.2019.11.011>
- Yang, Y., Tilman, D., Furey, G., & Lehman, C. (2019). Soil carbon sequestration accelerated by restoration of grassland biodiversity. *Nature Communications*, 10(1), 718. doi:[10.1038/s41467-019-08636-w](https://doi.org/10.1038/s41467-019-08636-w)
- Yang, Y., Wei, Z., Zhang, X., Chen, X., Yue, D., Yin, Q., . . . Yang, L. (2014). Biochar from Alternanthera philoxeroides could remove Pb(II) efficiently. *Bioresource Technology*, 171, 227 - 232. doi:[10.1016/j.biortech.2014.08.015](https://doi.org/10.1016/j.biortech.2014.08.015)
- Yang, Y., Yan, J. L., & Ding, C. (2013). Effects of Biochar Amendment on the Dynamics of Enzyme Activities from a Paddy Soil Polluted by Heavy Metals. *Journal Advanced Materials Research*, 610 - 613, 2129-2133.
- Yang, Y., Zhai, R., Duan, L., Kavosh, M., Patchigolla, K., & Oakey, J. (2010). Integration and evaluation of a power plant with a CaO-based CO₂ capture system. *International Journal*

- of Greenhouse Gas Control*, 4(4), 603-612. doi:<https://doi.org/10.1016/j.ijggc.2010.01.004>
- Yang, Y.-l., et al. (2015). Effects of Biochar on Saline-sodic Soil Physical and Chemical Properties. *Soil and Crop*, 3, 113-119. doi:10.11689/j.issn.2095-2961.2015.03.003
- Yang, Y. N., Sheng, G. Y., & Huang, M. S. (2006). Bioavailability of diuron in soil containing wheat-straw-derived char. *Sci. Total Environ.*, 354, 170-178.
- Yang, Y.-W., Li, M.-J., Tao, W.-Q., & Huang, D. (2021). Study of carbon dioxide sequestration and electricity generation by a new hybrid bioenergy system with the novelty catalyst. *Applied Thermal Engineering*, 117366. doi:<https://doi.org/10.1016/j.applthermaleng.2021.117366>
- Yang, Z., et al. (2016). Potential application of gasification to recycle food waste and rehabilitate acidic soil from secondary forests on degraded land in Southeast Asia. *Journal of Environmental Management*, 172, 40-48. doi:10.1016/j.jenvman.2016.02.020
- Yanik, J., Stahl, R., Troeger, N., & Sinag, A. (2013). Pyrolysis of algal biomass. *Journal of Analytical and Applied Pyrolysis*, 103, 134-141. doi:<https://doi.org/10.1016/j.jaap.2012.08.016>
- YanWen, Y., et al. (2014). Design and manufacture of horizontal continuous biomass carbonization equipment. *Transactions of the Chinese Society of Agricultural Engineering*, 30(13), 203-210. Retrieved from <http://www.cabdirect.org/abstracts/20143349110.html>
- YanWen, Y., YiShui, T., LiXin, Z., & HaiBo, M. (2012). The research process of the biochar application. *Kezaisheng Nengyuan / Renewable Energy Resources*, 30, 45-49.
- Yao, B., Xiao, T., Makgae, O. A., Jie, X., Gonzalez-Cortes, S., Guan, S., . . . Edwards, P. P. (2020). Transforming carbon dioxide into jet fuel using an organic combustion-synthesized Fe-Mn-K catalyst. *Nature Communications*, 11(1), 6395. doi:10.1038/s41467-020-20214-z
- Yao, C., et al. (2015). Developing More Effective Enhanced Biochar Fertilisers for Improvement of Pepper Yield and Quality. *Pedosphere*, 25(5), 703 - 712. doi:10.1016/s1002-0160(15)30051-5
- Yao, F. X., Camps Arbestain, M., Virgel, S., Blanco, F., Arostegui, J., Macia-Agullo, J. A., & Macias, F. (2010). Simulated geochemical weathering of a mineral ash-rich biochar in a modified Soxhlet reactor. *Chemosphere*, 80, 724-732.
- Yao, H., et al. (2012). Adsorption of Fluoroquinolone Antibiotics by Wastewater Sludge Biochar: Role of the Sludge Source. *Water, Air, & Soil Pollution*, 224(1370), 1-9. Retrieved from <http://link.springer.com/article/10.1007/s11270-012-1370-7/fulltext.html>
- Yao, J., & Kong, X. (2018). Modeling the effects of land-use optimization on the soil organic carbon sequestration potential. *Journal of Geographical Sciences*, 28(11), 1641-1658. doi:10.1007/s11442-018-1534-5
- Yao, J. G., Fennell, P. S., & Hallett, J. P. (2020). Chapter 4 Ionic Liquids. In *Carbon Capture and Storage* (pp. 69-105): The Royal Society of Chemistry.
- Yao, M., Lian, B., Teng, H. H., Tian, Y., & Yang, X. (2013). Serpentine Dissolution in the Presence of Bacteria *Bacillus mucilaginosus*. *Geomicrobiology Journal*, 30(1), 72-80. doi:10.1080/01490451.2011.653087
- Yao, X., Fan, Y., Zhu, L., & Zhang, X. (2020). Optimization of dynamic incentive for the deployment of carbon dioxide removal technology: A nonlinear dynamic approach combined with real options. *Energy Economics*, 104643. doi:<https://doi.org/10.1016/j.eneco.2019.104643>
- Yao, Y., et al. (2011). Biochar Derived from Anaerobically Digested Sugar Beet Tailings: Characterization and Phosphate Removal Potential. *Bioresource Technology*, 102(10), 6273-6278. doi:10.1016/j.biortech.2011.03.006

- Yao, Y., et al. (2011). Removal of Phosphate from Aqueous Solution by Biochar Derived from Anaerobically Digested Sugar Beet Tailings. *Journal of Hazardous Materials*, 190(1-3), 501-507. doi:10.1016/j.jhazmat.2011.03.083
- Yao, Y., et al. . (2012). Effect of biochar amendment on sorption and leaching of nitrate, ammonium, and phosphate in a sandy soil. *Chemosphere*, 89(11), 1467-1471.
- Yao, Y., et al. (2013). An engineered biochar reclaims phosphate from aqueous solutions: mechanisms and potential application as a slow-release fertilizer. *Environmental Science and Technology*, 47(15), 8700-8708. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/es4012977>
- Yao, Y., et al. (2013). Engineered carbon (biochar) prepared by direct pyrolysis of Mg- accumulated tomato tissues: characterization and phosphate removal potential. *Bioresource Technology*, 138, 8-13. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0960852413004252>
- Yao, Y., et al. (2014). Characterization and environmental applications of clay-biochar composites. *Chemical Engineering Journal*, 242, 136-143. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1385894713016434>
- Yao, Y., et al. (2015). Engineered biochar from biofuel residue: characterization and its silver removal potential. *Acs Applied Materials & Interfaces*, 7(19), 10634–10640. doi:10.1021/acsmami.5b03131
- Yaping, P., et al. (2013). Promotion of biochar on adsorption of cadmium and retardation on water transport in paddy soil. *Transactions of the Chinese Society of Agricultural Engineering*, 29(11), 107-114. Retrieved from https://www.researchgate.net/publication/287749684_Promotion_of_biochar_on_adsorption_of_cadmium_and_retardation_on_water_transport_in_paddy_soil
- Yargicoglu, E. N. (2014). *Evaluation of PAH and Metal Contents of Different Biochars for Use in Climate Change Mitigation Systems*. Paper presented at the International Conference on Sustainable Infrastructure 2014ICSI 2014, Long Beach, CaliforniaReston, VA. <http://ascelibrary.org/doi/abs/10.1061/9780784478745.011>
- Yarrow, D. (2015). Geology into Biology: Carbon, Minerals, and Microbes - Tools to Remineralize Soil, Sequester Carbon, and Restore the Earth. In T. Goreau, R. Larson, & J. Campe (Eds.), *Geotherapy: Innovative Methods of Soil Fertility Restoration, Carbon Sequestration, and Reversing CO₂ Increase* (pp. 195-234).
- Yates, R. A. (2011). Sugarcane, carbon sequestration and food supplies. *International Sugar Journal*, 113(1353), 672-676. Retrieved from <http://cat.inist.fr/?aModele=afficheN&cpsidt=24516288>
- Yau, Y.-Y., & Easterling, M. (2018). Novel Molecular Tools for Metabolic Engineering to Improve Microalgae-Based Biofuel Production. In A. Kumar, S. Ogita, & Y.-Y. Yau (Eds.), *Biofuels: Greenhouse Gas Mitigation and Global Warming: Next Generation Biofuels and Role of Biotechnology* (pp. 407-420). New Delhi: Springer India.
- Yavari, S., et al. (2014). The Effects of Feedstock Sources and Pyrolytic Temperature on Biochars Sorptive Characteristics. *Applied Mechanics and Materials*, 567, 150-154. Retrieved from <http://eds.a.ebscohost.com/abstract?site=eds&scope=site&jrnl=16627482&AN=99665032&h=DnSW3Z0mWAautCB0lCFfsdo gq7XKuPdxQO2ltGNGTiohQv87yvzfc6icsXU1rLX%2foOzO8RBu0ZHb3UCNt1A7nw%3d%3d&crl=c&resultLocal=ErrCrlnoResults&resultNs=Ehost&crlhashurl=login.aspx%3fdirect%3dtrue%26profile%3dehost%26scope%3dsite%26authtype%3dcrawler%26jrnl%3d16627482%26AN%3d99665032>
- Yavari, S., Malakhammad, A., & Sapari, N. B. (2015). Biochar efficiency in pesticides sorption as a function of production variables—a review. *Environmental Science and Pollution Research*. doi:10.1007/s11356-015-5114-2

- Yaya, F. V., Suh, C., Lendzemo, V., & Akume, N. D. (2015). Plantain acclimatisation in relation to substrate type. *International Journal of Agriculture Innovations and Research*. Retrieved from <http://www.cabdirect.org/abstracts/20153325102.html>
- Ye, F., et al. . (2015). SiO₂对改性生物质焦理化特性的影响 (Influence of silica on physicochemical characteristic of modified biochars). In.
- Ye, J., et al. (2016). A combination of biochar-mineral complexes and compost improves soil bacterial processes, soil quality and plant properties. *Frontiers in Microbiology*, 7, 1-13. Retrieved from <http://journal.frontiersin.org/file/downloadfile/100348/octet-stream/table%201.docx/311/1/187418>
- Ye, L., Zhang, J., Zhao, J., Luo, Z., Tu, S., & Yin, Y. (2015). Properties of biochar obtained from pyrolysis of bamboo shoot shell. *Journal of Analytical and Applied Pyrolysis*, 114, 172-178. doi:10.1016/j.jaat.2015.05.016
- Ye, M., Sun, M., Feng, Y., Wan, J., Xie, S., Tian, D., . . . Jiang, X. (2015). Effect of biochar amendment on the control of soil sulfonamides, antibiotic-resistant bacteria, and gene enrichment in lettuce tissues. *Journal of Hazardous Materials*. doi:10.1016/j.jhazmat.2015.10.074
- Yeardley, R. B., Lazorchak, J. M., & Gast, L. C. (1996). The Potential of an Earthworm Avoidance Test for Evaluation of Hazardous Waste Sites. *Environmental Toxicology and Chemistry*, 15(9), 1532-1537. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/etc.5620150915/abstract>
- Yeboah, F. E., et al. (2006). *Cost Assessment of CO₂ Sequestration by Mineral Carbonation*. Retrieved from <http://hdl.handle.net/1969.1/5660>.
- Yeluripati, J. B., del Prado, A., Sanz-Cobeña, A., Rees, R. M., Li, C., Chadwick, D., . . . Smith, P. (2015). Global Research Alliance Modelling Platform (GRAMP): An open web platform for modelling greenhouse gas emissions from agro-ecosystems. *Computers and Electronics in Agriculture*, 111, 112-120. doi:<https://doi.org/10.1016/j.compag.2014.11.016>
- Yeo, T. Y., & Bue, J. (2019). Mineral Carbonation for Carbon Capture and Utilization. In M. Aresta, I. Karimi, & S. Kawi (Eds.), *An Economy Based on Carbon Dioxide and Water: Potential of Large Scale Carbon Dioxide Utilization* (pp. 105-153). Retrieved from https://link.springer.com/content/pdf/10.1007%2F978-3-030-15868-2_4.pdf
- Yi, P., Pignatello, J. J., Uchimiya, M., & White, J. C. (2015). Heteroaggregation of Cerium Oxide Nanoparticles and Nanoparticles of Pyrolyzed Biomass. *Environmental Science & Technology*, 49(22), 13294-13303. doi:10.1021/acs.est.5b03541
- Yi, Q., et al. , & u. (2012). Thermogravimetric analysis of co-combustion of biomass and biochar. *Journal of Thermal Analysis and Calorimetry*, 112(3), 1475-1479. Retrieved from <http://link.springer.com/article/10.1007/s10973-012-2744-1>
- Yì qí guó, e. a. (2014). 木质生物燃料与其半焦的混燃实验研究 (Woody biomass fuel combustion and its semi-coke mixed experimental study): Experimental studies on co-firing lignocellulosic biomass with biochar. *Environmental Sciences*, 34(9), 2407-2412. Retrieved from http://www.actasc.cn/hjkxxb/ch/reader/view_abstract.aspx?file_no=20140127002
- Yi, S., Gao, B., Sun, Y., Wu, J., Shi, X., Wu, B., & Hu, X. (2016). Removal of levofloxacin from aqueous solution using rice-husk and wood-chip biochars. *Chemosphere*, 150, 694-701. doi:10.1016/j.chemosphere.2015.12.112
- Yi, S., N., C., Guo, M., & Imhoff, P. T. (2015). Toward a mechanistic understanding of the effect of biochar addition on soil water retention. *American Geophysical Union, Fall Meeting*. Retrieved from <http://adsabs.harvard.edu/abs/2014AGUFM.B54A..07Y>
- Yi, S., Witt, B., Chiu, P., Guo, M., & Imhoff, P. (2015). The Origin and Reversible Nature of Poultry Litter Biochar Hydrophobicity. *Journal of Environment Quality*, 44(3), 963.

doi:10.2134/jeq2014.09.0385

Yilangai, R., Manu, S., Pineau, W., Mailumo, S., & Okeke-Agulu, K. (2014). The Effect of Biochar and Crop Veil on Growth and Yield of Tomato (*Lycopersicum esculentus* Mill) in Jos, North central Nigeria. *Current Agriculture Research Journal*, 2(1), 37 - 42. doi:10.12944/carj.2.1.05

Yin, D. W., et al. . (2012). Effects of Biochar on Acid Black Soil Nutrient, Soybean Root and Yield. *Journal Advanced Materials Research*, 524-527, 2278-2289. doi:10.4028/www.scientific.net/AMR.524-527.2278

Ying, B., Lin, G., Jin, L., Zhao, Y., Zhang, T., & Tang, J. (2015). Adsorption and degradation of 2,4-dichlorophenoxyacetic acid in spiked soil with Fe0 nanoparticles supported by biochar. *Acta Agriculturae Scandinavica, Section B — Soil & Plant Science*, 65(3), 1 - 7. doi:10.1080/09064710.2014.992939

Ying, C., & Yuan, X. (2020). Implications of geoengineering under the 1.5 °c target: Analysis and policy suggestions. *Advances in Climate Change Research*, 8, 123-129. doi:<https://doi.org/10.1016/j.accre.2017.05.003>

Ying, m., et al. (2014). Effect of biochar on nitrogen forms and related microorganisms of rhizosphere soil of seedling maize. *Zhongguo Shengtai Nongye Xuebao / Chinese Journal of Eco-Agriculture*, 22(3), 270-276. Retrieved from <http://www.cabdirect.org/abstracts/20143148185.html;jsessionid=500881B1A27E7B84E4F758DACE6F5ED4>

YinHai, L., Wei, L., & Hui, W. (2014). Adsorption efficiencies of pentachlorophenol from aqueous solution onto biochars. *China Environmental Science*, 34(8), 2017-2023. Retrieved from <http://www.cabdirect.org/abstracts/20143317750.html>

Yinxin, Z., Jishi, Z., & Yi, M. (2015). Preparation and Application of Biochar from Brewery's Spent Grain and Sewage Sludge. *The Open Chemical Engineering Journal*, 9, 14-19. Retrieved from <http://www.bentham-open.com/contents/pdf/TOCENGJ/TOCENGJ-9-14.pdf>

Yip, K., et al. (2010). Biochar as a Fuel: 3. Mechanistic Understanding on Biochar Thermal Annealing at Mild Temperatures and Its Effect on Biochar Reactivity. *Energy Fuels*, 25(1), 406-414. doi:10.1021/ef101472f

Yoder, J., Galinato, S., Granatstein, D., & Garcia-Pérez, M. (2011). Economic tradeoff between biochar and bio-oil production via pyrolysis. *Biomass and Bioenergy*, 35(5), 1851-1862. Retrieved from <http://www.sciencedirect.com/science/article/B6V22-524P751-2/2/6afcf19498a86e18d09771d3c10116fb>

Yoder, J., Galinato, S., Granatstein, D., & Garcia-Prez, M. (2011). Economic tradeoff between biochar and bio-oil production via pyrolysis. *Biomass Bioenergy*, 35. doi:10.1016/j.biombioe.2011.01.026

Yoo, G., et al. . (2014). Effects of Biochar Addition on Nitrogen Leaching and Soil Structure following Fertilizer Application to Rice Paddy Soil. *Soil Science Society of America Journal*, 78(3), 852-860. Retrieved from <https://dl.sciencesocieties.org/publications/sssaj/abstracts/78/3/852?access=0&view=pdf>

Yoo, G., et al. . (2015). Investigation of greenhouse gas emissions from the soil amended with rice straw biochar. *KSCE Journal of Civil Engineering*, 20(6), 2197-2207. doi:10.1007/s12205-015-0449-2

Yoo, G., & Kang, H. (2012). Effects of biochar addition on greenhouse gas emissions and microbial responses in a short-term laboratory experiment. *Journal of Environmental Quality*, 41(4), 1193-1202. Retrieved from <https://dl.sciencesocieties.org/publications/jeq/articles/41/4/1193>

Yool, A., Shepherd, J. G., Bryden, H. L., & Oschlies, A. (2009). Low efficiency of nutrient translocation for enhancing oceanic uptake of carbon dioxide. *Journal of Geophysical Research: Oceans*, 114(C8 (C08009)), 1-13. Retrieved from <http://>

- onlinelibrary.wiley.com/doi/10.1029/2008JC004792/epdf
- Yoon, J. E., Yoo, K. C., Macdonald, A. M., Yoon, H. I., Park, K. T., Yang, E. J., . . . Kim, I. N. (2018). Reviews and syntheses: Ocean iron fertilization experiments – past, present, and future looking to a future Korean Iron Fertilization Experiment in the Southern Ocean (KIFES) project. *Biogeosciences*, 15(19), 5847-5889. doi:10.5194/bg-15-5847-2018
- Yoon, J. E., Yoo, K. C., Macdonald, A. M., Yoon, H. I., Park, K. T., Yang, E. J., . . . Kim, I. N. (2016). Ocean Iron Fertilization Experiments: Past–Present–Future with Introduction to Korean Iron Fertilization Experiment in the Southern Ocean (KIFES) Project. *Biogeosciences Discuss.*, 2016, 1-41. doi:10.5194/bg-2016-472
- Yoon, K., Cho, D.-W., Tsang, Y. F., Tsang, D. C. W., Kwon, E. E., & Song, H. (2018). Synthesis of functionalised biochar using red mud, lignin, and carbon dioxide as raw materials. *Chemical Engineering Journal*. doi:<https://doi.org/10.1016/j.cej.2018.11.012>
- Yooyen, J., Wijitkosum, S., & Sriburi, T. (2015). INCREASING YIELD OF SOYBEAN BY ADDING BIOCHAR. *Journal of Environmental Research and Development*. Retrieved from <http://search.proquest.com/openview/e8d9c5cd942e4a6e311c17bb06889ea7/1?pq-origsite=gscholar>
- Yosef, G., Walko, R., Avisar, R., Tatarinov, F., Rotenberg, E., & Yakir, D. (2018). Large-scale semi-arid afforestation can enhance precipitation and carbon sequestration potential. *Scientific Reports*, 8(1), 996. doi:10.1038/s41598-018-19265-6
- Yoshida, G., et al. (2018). Carbon Sequestration by Seagrass and Macroalgae in Japan: Estimates and Future Needs. In T. Kuwae & M. Hori (Eds.), *Blue Carbon in Shallow Coastal Ecosystems: Carbon Dynamics, Policy, and Implementation* (pp. 101-127).
- Yoshida, T., & Antal Jr., M. J. (2009). Sewage Sludge Carbonization for Terra Preta Applications. *Energy and Fuels*, 23(11), 5454-5459. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/ef900610k@proofing>
- Yoshie, N., Fujii, M., & Yamanaka, Y. (2005). Ecosystem changes after the SEEDS iron fertilization in the western North Pacific simulated by a one-dimensional ecosystem model. *Progress in Oceanography*, 64(2), 283-306. doi:<https://doi.org/10.1016/j.pocean.2005.02.014>
- Yoshihara, K.-I., Nagase, H., Eguchi, K., Hirata, K., & Miyamoto, K. (1996). Biological elimination of nitric oxide and carbon dioxide from flue gas by marine microalga NOA-113 cultivated in a long tubular photobioreactor. *Journal of Fermentation and Bioengineering*, 82(4), 351-354. doi:[https://doi.org/10.1016/0922-338X\(96\)89149-5](https://doi.org/10.1016/0922-338X(96)89149-5)
- Yoshizawa, S. (2000). *Compost with Charcoal Containing Abundant Microorganisms: Proposal of Environmental Recycle of Biomass Resources*. Retrieved from Hino, Tokyo Japan:
- Yoshizawa, S., et al. . (2005, 2005). *Composting of food garbage and livestock waste containing biomass charcoal*. Paper presented at the International Conference of Natural Resources and Environmental Management, Kuching, Sarawak.
- Yoshizawa, S., et al. (2007). *Estimation of Microbial Community Structure During Composting Rice Bran with Charcoal*. Paper presented at the Carbon 2007, Seattle, WA, USA.
- Yoshizawa, S., et al. (2008). *Proliferation of aerobic complex microorganisms during composting of rice bran with charcoal*. Retrieved from
- Yoshizawa, S., et al. . (2010). Change of Microbial Community Structure during Composting Rice Bran with Charcoal.
- Yoshizawa, S. (2015). Biochar for carbon storage in the soil and for soil improvement. *TANSO*, 2015(270), 232 - 240. doi:10.7209/tanso.2015.232
- Yoshizawa, S., Fujioka, K., Goto, S., Tanaka, S., Ohata, M., & Mineki, S. (2006, 09/2006). *Proliferation of aerobic complex microorganisms during composting of rice bran with charcoal*. Paper presented at the ORBIT 2006, Weimar, Germany.
- Yoshizawa, S., Fujioka, K., Kokubun, T., Goto, S., Tanaka, S., Ohata, M., & Mineki, S. (2006).

- Promotion effect of various charcoals on the proliferation of composting microorganisms. *TANSO*, 261-265.
- You, H., Seo, Y., Huh, C., & Chang, D. (2014). Performance Analysis of Cold Energy Recovery from CO₂ Injection in Ship-Based Carbon Capture and Storage (CCS). *Energies*, 7(11), 7266-7281. Retrieved from <https://www.mdpi.com/1996-1073/7/11/7266>
- You, S., Ok, Y. S., Chen, S. S., Tsang, D. C. W., Kwon, E. E., Lee, J., & Wang, C.-H. (2017). A critical review on sustainable biochar system through gasification: Energy and environmental applications. *Bioresource Technology*, 246, 242-253. doi:<https://doi.org/10.1016/j.biortech.2017.06.177>
- You, S., & Wang, X. (2019). Chapter 20 - On the Carbon Abatement Potential and Economic Viability of Biochar Production Systems: Cost-Benefit and Life Cycle Assessment. In Y. S. Ok, D. C. W. Tsang, N. Bolan, & J. M. Novak (Eds.), *Biochar from Biomass and Waste* (pp. 385-408): Elsevier.
- Youchi, Z., Tang, X., & Luo, W. (2015). Metal Removal with Two Biochars Made from Municipal Organic Waste: Adsorptive Characterization and Surface Complexation Modeling. *Toxicological & Environmental Chemistry*, 96(10), 1463-1475. doi:[10.1080/02772248.2015.1030668](https://doi.org/10.1080/02772248.2015.1030668)
- Youn, M. H., Park, K. T., Lee, Y. H., Kang, S.-P., Lee, S. M., Kim, S. S., . . . Lee, W. (2019). Carbon dioxide sequestration process for the cement industry. *Journal of CO₂ Utilization*, 34, 325-334. doi:<https://doi.org/10.1016/j.jcou.2019.07.023>
- Young, C. (2021). New Carbon Removal Facility Will Capture 1 Million Tons Per Year. *Interesting Engineering*. Retrieved from <https://interestingengineering.com/new-carbon-removal-facility-will-capture-1-million-tons-per-year>
- Young, E. (2007). Can 'fertilising' the ocean combat climate change? *New Scientist*, 195(2621), 42-45. doi:[https://doi.org/10.1016/S0262-4079\(07\)62348-3](https://doi.org/10.1016/S0262-4079(07)62348-3)
- Young, J., García-Díez, E., Garcia, S., & van der Spek, M. (2021). The impact of binary water-CO₂ isotherm models on the optimal performance of sorbent-based direct air capture processes. *Energy & Environmental Science*. doi:[10.1039/D1EE01272J](https://doi.org/10.1039/D1EE01272J)
- Youngs, H. L. (2012). The Effects of Stakeholder Values on Biofuel Feedstock Choices. In C. Taylor, R. Lomneth, & F. WoodBlack (Eds.), *Perspectives on Biofuels: Potential Benefits and Possible Pitfalls* (Vol. 1116, pp. 29-67). Washington: Amer Chemical Soc.
- Younis, U., et al. . (2014). Biochar role in improving biometric and growth attributes of *S. oleracea* and *T. corniculata* under cadmium stress. *International Journal of Biosciences (IJB)*, 5(8), 84 - 90. doi:[10.12692/ijb/5.8.84-90](https://doi.org/10.12692/ijb/5.8.84-90)
- Younis, U., et al. (2014). Nutrient shifts modeling in Fenugreek (*Trigonella corniculata* L.) under biochar and cadmium treatments. *International Journal of Biosciences (IJB)*, 5(8), 64 - 74. doi:[10.12692/ijb/5.8.64-74](https://doi.org/10.12692/ijb/5.8.64-74)
- Younis, U., et al. . (2015). Biochar affects growth and biochemical activities of fenugreek (*Trigonella corniculata*) in cadmium polluted soil. In.
- Younis, U., et al. . (2015). Growth, survival, and heavy metal (Cd and Ni) uptake of spinach (*Spinacia oleracea*) and fenugreek (*Trigonella corniculata*) in a biochar-amended sewage-irrigated contaminated soil. *Journal of Plant Nutrition and Soil Science*, 178, 209-217. doi:[10.1002/jpln.201400325](https://doi.org/10.1002/jpln.201400325)
- Younis, U., et a. (2015). Nutrient shifts modeling in *Spinacea oleracea* L. and *Trigonella corniculata* L. in contaminated soil amended with biochar. *International Journal of Biosciences*, 5(9), 89-98. Retrieved from <http://www.cabdirect.org/abstracts/20153063539.html;jsessionid=0B5A203C8880F92937EBB1187AC6D917>
- Younis, U., Athar, M., Malik, S. A., Shah, M. H. R., & Mahmood, S. (2015). Biochar impact on physiological and biochemical attributes of Spinach (*Spinacia oleracea* L.) in nickel contaminated soil. *Global Journal of Environmental Science and Management*.

Retrieved from http://www.gjesm.net/article_12307_1612.html

- Yousaf, B., Liu, G., Wang, R., Zia-ur-Rehman, M., Rizwan, M. S., Imtiaz, M., . . . Shakoor, A. (2016). Investigating the potential influence of biochar and traditional organic amendments on the bioavailability and transfer of Cd in the soil–plant system. *Environmental Earth Sciences*, 75(5). doi:10.1007/s12665-016-5285-2
- Yousef, S., Eimontas, J., Striūgas, N., Tatarants, M., Abdelnaby, M. A., Tuckute, S., & Kliucininkas, L. (2019). A sustainable bioenergy conversion strategy for textile waste with self-catalysts using mini-pyrolysis plant. *Energy Conversion and Management*, 196, 688-704. doi:<https://doi.org/10.1016/j.enconman.2019.06.050>
- Yu, B., Li, L., Yu, H., Maeder, M., Puxty, G., Yang, Q., . . . Chen, Z. (2018). Insights into the Chemical Mechanism for CO₂(aq) and H⁺ in Aqueous Diamine Solutions - An Experimental Stopped-Flow Kinetic and ¹H/¹³C NMR Study of Aqueous Solutions of N,N-Dimethylethylenediamine for Postcombustion CO₂ Capture. *Environmental Science & Technology*, 52(2), 916-926. doi:10.1021/acs.est.7b05226
- Yu, C.-H. (2012). A Review of CO₂ Capture by Absorption and Adsorption. *Aerosol and Air Quality Research*, 12, 745-769. Retrieved from http://aaqr.org/files/article/1009/7_AAQR-12-05-IR-0132_745-769.pdf
- Yu, J., & Chuang, S. S. C. (2017). The Role of Water in CO₂ Capture by Amine. *Industrial & Engineering Chemistry Research*, 56(21), 6337-6347. doi:10.1021/acs.iecr.7b00715
- Yu, J. T., Dehkhoda, A. M., & Ellis, N. (2010). Development of Biochar-based Catalyst for Transesterification of Canola Oil. *Energy Fuels*, 25(1), 337-344. doi:10.1021/ef100977d
- Yu, K. L., Lau, B. F., Show, P. L., Ong, H. C., Ling, T. C., Chen, W.-H., . . . Chang, J.-S. (2017). Recent developments on algal biochar production and characterization. *Bioresource Technology*, 246, 2-11. doi:<https://doi.org/10.1016/j.biortech.2017.08.009>
- Yu, L., et al. (2012). Effects of biochar application on soil methane emission at different soil moisture levels. *Biology and Fertility of Soils*, 49(2), 119-128. doi:10.1007/s00374-012-0703-4
- Yu, L., Wang, Y., Yuan, Y., Tang, J., & Zhou, S. G. (2015). Biochar as electron acceptor for microbial extracellular respiration. *Geomicrobiology Journal*, 00 - 00. doi:10.1080/01490451.2015.1062060
- Yu, L., Yuan, Y., Tang, J., Wang, Y., & Zhou, S. G. (2015). Biochar as an electron shuttle for reductive dechlorination of pentachlorophenol by Geobacter sulfurreducens. *Scientific Reports*, 5. doi:10.1038/srep16221
- Yu, M., Liu, L., Yang, S., Yu, Z., Li, S., Yang, Y., & Shi, X. (2016). Experimental identification of CO₂–oil–brine–rock interactions: Implications for CO₂ sequestration after termination of a CO₂-EOR project. *Applied Geochemistry*, 75, 137-151. doi:<https://doi.org/10.1016/j.apgeochem.2016.10.018>
- Yu, O.-Y., Raichle, B., & Sink, S. (2013). Impact of biochar on the water holding capacity of loamy sand soil. *International Journal of Energy and Environmental Engineering*, 4(44), 1-9. Retrieved from <http://www.journal-iieee.com/content/4/1/44/>
- Yu, Q. (2018). *Direct Capture of CO₂ from Ambient Air using Solid Sorbents*. (Ph.D.). University of Twente, Retrieved from <https://research.utwente.nl/en/publications/direct-capture-of-co2-from-ambient-air-using-solid-sorbents>
- Yu, S., & Jain, P. K. (2019). Plasmonic photosynthesis of C₁–C₃ hydrocarbons from carbon dioxide assisted by an ionic liquid. *Nature Communications*, 10(1), 2022. doi:10.1038/s41467-019-10084-5
- Yu, X., Hassan, M., Ocone, R., & Makkawi, Y. (2015). A CFD study of biomass pyrolysis in a downer reactor equipped with a novel gas–solid separator-II thermochemical performance and products. *Fuel Processing Technology*, 133, 51 - 63. doi:10.1016/j.fuproc.2015.01.002

- Yu, X., Wu, C., Fu, Y., Brookes, P. C., & Lu, S. (2015). Three-dimensional pore structure and carbon distribution of macroaggregates in biochar-amended soil. *European Journal of Soil Science*, 67(1), 109 - 120. doi:10.1111/ejss.12305
- Yu, X., Ying, G., & Kookana, R. S. (2006). Sorption and desorption behaviors of diuron in soils amended with charcoal. *Journal of Agricultural and Food Chemistry*, 54(22), 8545-8550. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/jf061354y>
- Yu, X. Y., et al. (2011). Impact of woodchip biochar amendment on the sorption and dissipation of pesticide acetamiprid in agricultural soils. *Chemosphere*, 85(8), 1284-1289. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0045653511008678>
- Yu, X. Y., Pan, L. G., Ying, G. G., & Kookana, R. S. (2010). Enhanced and irreversible sorption of pesticide pyrimethanil by soil amended with biochars. *Journal of Environmental Sciences-China*, 22(4), 615-620. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1001074209601534>
- Yu, X. Y., Ying, G. G., & Kookana, R. S. (2009). Reduced plant uptake of pesticides with biochar additions to soil. *Chemosphere*, 76(5), 665-671. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0045653509004226>
- Yu, X.-Y., Ying, G.-G., & Kookana, R. S. (2009). Reduced plant uptake of pesticides with biochar additions to soil. *Chemosphere*, 76(5), 665-671. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0045653509004226>
- Yu, Y., Fu, X., Yu, L., Liu, R., & Cai, J. (2016). Combustion kinetics of pine sawdust biochar. *Journal of Thermal Analysis and Calorimetry*, 124(3), 1641-1649. doi:10.1007/s10973-016-5296-y
- Yu, Y., & Wu, H. W. (2010). Bioslurry as a Fuel. 2. Life-Cycle Energy and Carbon Footprints of Bioslurry Fuels from Mallee Biomass in Western Australia. *Energy & Fuels*, 24, 5660-5668.
- Yu, Z., et al. (2015). Effects of a manganese oxide-modified biochar composite on adsorption of arsenic in red soil. *Journal of Environmental Management*, 163, 155 - 162. doi:10.1016/j.jenvman.2015.08.020
- Yuan, H. R., et al. (2013). Influence of temperature on product distribution and biochar properties by municipal sludge pyrolysis. *Journal of Material Cycles and Waste Management*, 15(3), 357-361. Retrieved from <http://link.springer.com/article/10.1007/s10163-013-0126-9#>
- Yuan, H. R., et al. (2014). Influence of pyrolysis temperature and holding time on properties of biochar derived from medicinal herb (*radix isatidis*) residue and its effect on soil CO₂ emission. *Journal of Analytical and Applied Pyrolysis*, 110, 277-284. doi:10.1016/j.jaat.2014.09.016
- Yuan, H. R., et al. . (2014). Nonactivated and Activated Biochar Derived from Bananas as Alternative Cathode Catalyst in Microbial Fuel Cells. *The Scientific World Journal*, 2014(2), 1- 8. doi:10.1155/2014/832850
- Yuan, H. R., et al. . (2015). Influence of pyrolysis temperature on physical and chemical properties of biochar made from sewage sludge. *Journal of Analytical and Applied Pyrolysis*, 112, 284-289. doi:10.1016/j.jaat.2015.01.010
- Yuan, H. R., et al. (2016). Sewage sludge biochar: Nutrient composition and its effect on the leaching of soil nutrients. *Geoderma*, 267, 17 - 23. doi:10.1016/j.geoderma.2015.12.020
- Yuan, J.-H., & Xu, R.-K. (2010). The amelioration effects of low temperature biochar generated from nine crop residues on an acidic Ultisol. *Soil Use and Management*, 27(1), 110-115. doi:10.1111/j.1475-2743.2010.00317.x
- Yuan, J.-H., Xu, R.-K., Qian, W., & Wang, R.-H. (2011). Comparison of the ameliorating effects on an acidic ultisol between four crop straws and their biochars. *Journal of Soils and Sediments*, 11(5), 741-750. Retrieved from <https://link.springer.com/article/10.1007/s10703-011-0641-1>

s11368-011-0365-0

- Yuan, J.-H., Xu, R.-K., & Zhang, H. (2010). The forms of alkalis in the biochar produced from crop residues at different temperatures. *Bioresource Technology*, 102(3), 3488-3497. doi:10.1016/j.biortech.2010.11.018
- Yuan, L.-m., et al. (2015). Progress on Biochar-based Fertilizer Production Technology and Equipment in China. In.
- Yuan, R.-n., et al. (2015). Effects of biochar additions combined with three nitrogen fertilizer levels on soil nitrogen mineralization in loessal soil. In.
- Yuan, Y., et al. (2013). Sewage sludge biochar as an efficient catalyst for oxygen reduction reaction in an microbial fuel cell. *Bioresource Technology*, 144, 115-120. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0960852413009942>
- Yuan, Y., et al. (2015). Conversion of sewage sludge into high-performance bifunctional electrode materials for microbial energy harvesting. *Journal of Materials Chemistry A*, 3, 8475–8482. doi:10.1039/c5ta00458f
- Yuan, Y. (2015). *Important Chemical Products from Macroalgae (Ascophyllum nodosum) Biorefinery by Assistance of Microwave Technology*. University of York, Retrieved from <http://etheses.whiterose.ac.uk/11198/>
- Yuan, Y., & Macquarrie, D. J. (2015). Microwave assisted acid hydrolysis of brown seaweed *Ascophyllum nodosum* for bioethanol production and characterization of alga residue. *ACS Sustainable Chemistry & Engineering*, 3(7), 1359-1365. doi:10.1021/acssuschemeng.5b00094
- Yuan, Y., & Macquarrie, D. J. (2015). Microwave assisted step-by-step process for the production of fucoidan, alginate sodium, sugars and biochar from *Ascophyllum nodosum* through a biorefinery concept. *Bioresource Technology*, 198, 819 - 827. doi:10.1016/j.biortech.2015.09.090
- Yue, L., & Chen, W. (2005). Isolation and determination of cultural characteristics of a new highly CO₂ tolerant fresh water microalgae. *Energy Conversion and Management*, 46(11–12), 1868-1876. doi:<https://doi.org/10.1016/j.enconman.2004.10.010>
- Yue, L. F., & Fei, W. J. (2013). Estimation of carbon emission from burning and carbon sequestration from biochar producing using crop straw in China. *Transactions of the Chinese Society of Agricultural Engineering*, 29(14), 1-7. Retrieved from https://www.researchgate.net/publication/286944169_Estimation_of_carbon_emission_from_burning_and_carbon_sequestration_from_biochar_producing_using_crop_straw_in_China
- Yue, Y., Cui, L., Lin, Q., Li, G., & Zhao, X. (2017). Efficiency of sewage sludge biochar in improving urban soil properties and promoting grass growth. *Chemosphere*, 173, 551-556. doi:<https://doi.org/10.1016/j.chemosphere.2017.01.096>
- Yuen, Y. T., Sharratt, P. N., & Jie, B. (2016). Carbon dioxide mineralization process design and evaluation: concepts, case studies, and considerations. *Environmental Science and Pollution Research*, 23(22), 22309-22330. doi:10.1007/s11356-016-6512-9
- YuMei, L., et al. (2015). Effects of bio-char on sugar beet growth in clomazone residual soil. *Journal of Agricultural Resources and Environment*, 32(3), 269-274. Retrieved from <http://www.cabdrect.org/abstracts/20153323570.html>
- Yun-feng, Y., et al. . (2014). Effects of Rice Straw and Its Biochar Addition on Soil Labile Carbon and Soil Organic Carbon. *Journal of Integrative Agriculture*, 13(3), 491–498.
- Yusof, J. M., et al. (2014). Characterisation of Carbon Particles (CPs) Derived from Dry Milled Kenaf Biochar. *Journal of Engineering Science and Technology*, October, 125-131. Retrieved from http://jestec.taylors.edu.my/Special%20Issue%20SAES2013_9_5_2014/SAES%202013_125_131.pdf
- Yusof, M. R. M., Ahmed, O. H., King, W. S., & Zakry, F. A. A. (2015). Effects of biochar and

- chicken litter ash on selected soil chemical properties and nutrients uptake by *Oryza sativa* L. var. MR 219. *International Journal of Biosciences*, 6(3), 360-369. Retrieved from <http://www.cabdirect.org/abstracts/20153179510.html>
- Ywih, C. n. H. (2015). Improving Phosphorus Availability in an Acid Soil Using Organic Amendments Produced from Agroindustrial Wastes. *Experimental Agriculture*, 2014, 1-6. doi:10.1017/s0014479715000204
- Zaafouri, K., Ben Hassen Trabelsi, A., Krichah, S., Ouerghi, A., Aydi, A., Claumann, C. A., . . . Hamdi, M. (2016). Enhancement of biofuels production by means of co-pyrolysis of *Posidonia oceanica* (L.) and frying oil wastes: Experimental study and process modeling. *Bioresource Technology*, 207, 387 - 398. doi:10.1016/j.biortech.2016.02.004
- Zabaniotou, A., et al. (2008). Experimental Study of Pyrolysis for Potential Energy, Hydrogen and Carbon Material Production from Lignocellulosic Biomass. *International Journal of Hydrogen Energy*, 33(10), 2433-2444. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0360319908002231>
- Zabaniotou, A., et al. (2014). Boosting circular economy and closing the loop in agriculture: Case study of a small-scale pyrolysis–biochar based system integrated in an olive farm in symbiosis with an olive mill. *Environmental Development*, 14, 22-36. doi:10.1016/j.envdev.2014.12.002
- Zabaniotou, A., Rovas, D., & Monteleone, M. (2015). Management of Olive Grove Pruning and Solid Waste from Olive Oil Extraction Via Thermochemical Processes. *Waste and Biomass Valorization*. doi:10.1007/s12649-015-9403-2
- Zabranska, J., & Pokorna, D. (2018). Bioconversion of carbon dioxide to methane using hydrogen and hydrogenotrophic methanogens. *Biotechnology Advances*, 36(3), 707-720. doi:<https://doi.org/10.1016/j.biotechadv.2017.12.003>
- Zacharia, P. U., Kaladharan, P., & Rohith, G. (2015). *Seaweed Farming as a Climate Resilient Strategy for Indian Coastal Waters*. Paper presented at the The International Conference on Integrating Climate, Crop, Ecology–The Emerging Areas of Agriculture, Horticulture, Livestock, Fishery, Forestry, Biodiversity and Policy Issues. <http://eprints.cmfri.org.in/10491/>
- Zackrisson, O., Nilsson, M. C., & Wardle, D. A. (1996). Key Ecological Function of Charcoal from Wildfire in the Boreal Forest. *Oikos*, 77(1), 10-19. Retrieved from https://www.jstor.org/stable/3545580?seq=1#page_scan_tab_contents
- Zahariev, K., Christian, J. R., & Denman, K. L. (2008). Preindustrial, historical, and fertilization simulations using a global ocean carbon model with new parameterizations of iron limitation, calcification, and N₂ fixation. *Progress in Oceanography*, 77(1), 56-82. doi:<http://dx.doi.org/10.1016/j.pocean.2008.01.007>
- Zahasky, C., & Krevor, S. (2020). Global geologic carbon storage requirements of climate change mitigation scenarios. *Energy & Environmental Science*. doi:10.1039/D0EE00674B
- Zahida, R. (2017). Biochar: A Tool for Mitigating Climate Change - A Review. *Chemical Science Review and Letters*, 6(23), 1-14. Retrieved from https://chesci.com/wp-content/uploads/2017/08/V6i23_33_CS122048061_Zahida_1561-1574.pdf
- ZaiFu, Y., XueJing, W., & LianLian, X. (2015). Effect of biochar application on organophosphorus pesticide migration and transformation under different rainfall conditions. *Academia Journal of Agricultural Research*, 3(4), 53-63. Retrieved from <http://www.cabdirect.org/abstracts/20153288417.html;jsessionid=EE10F1C7BDCA560A99624D87A8E32FF6>
- Zailani, R., Ghafar, H., & So'ib, M. S. (2013). Effect of Oxygen on Biochar Yield and Properties. *World Academy of Science, Engineering and Technology*, 73. Retrieved from <http://waset.org/publications/10316/effect-of-oxygen-on-biochar-yield-and-properties>

- Zaitun, Nisa, K., Sufardi, C., Gani, A., Slavich, P., & McLeod, M. (2013). Effect of NPK fertilizer and biochar applications on growth and yield of irrigation rice. In *Improving food, energy and environment with better crops*.
- Zakharova, N. V., Goldberg, D. S., Sullivan, E. C., Herron, M. M., & Grau, J. A. (2012). Petrophysical and geochemical properties of Columbia River flood basalt: Implications for carbon sequestration. *Geochemistry, Geophysics, Geosystems*, 13(11). doi:10.1029/2012gc004305
- Zakkour, P., Kemper, J., & Dixon, T. (2014). Incentivising and Accounting for Negative Emission Technologies. *Energy Procedia*, 63, 6824-6833. doi:<http://dx.doi.org/10.1016/j.egypro.2014.11.716>
- Zakkour, P., Scowcroft, J., & Heidug, W. (2014). The Role of UNFCCC Mechanisms in Demonstration and Deployment of CCS Technologies. *Energy Procedia*, 63, 6945-6958. doi:<https://doi.org/10.1016/j.egypro.2014.11.728>
- Zanchi, G., Pena, N., & Bird, N. (2012). Is woody bioenergy carbon neutral? A comparative assessment of emissions from consumption of woody bioenergy and fossil fuel. *GCB Bioenergy*, 4(6), 761-772. doi:doi:10.1111/j.1757-1707.2011.01149.x
- Zanco, S. E., Ambrosetti, M., Groppi, G., Tronconi, E., & Mazzotti, M. (2021). Heat transfer intensification with packed open-cell foams in TSA processes for CO₂ capture. *Chemical Engineering Journal*, 131000. doi:<https://doi.org/10.1016/j.cej.2021.131000>
- Zang, G., Jia, J., Tejasvi, S., Ratner, A., & Silva Lora, E. (2018). Techno-economic comparative analysis of Biomass Integrated Gasification Combined Cycles with and without CO₂ capture. *International Journal of Greenhouse Gas Control*, 78, 73-84. doi:<https://doi.org/10.1016/j.ijggc.2018.07.023>
- Zarate-Barrera, T. G., & Maldonado, J. H. (2015). Valuing Blue Carbon: Carbon Sequestration Benefits Provided by the Marine Protected Areas in Colombia. *Plos One*, 10(5), e0126627. doi:10.1371/journal.pone.0126627
- Zavalloni, C., et al. (2011). Microbial mineralization of biochar and wheat straw mixture in soil: A short-term study. *Applied Soil Ecology*, 50, 45-51. doi:10.1016/j.apsoil.2011.07.012
- Zaverl, M. J., Misra, M., & Mohanty, A. K. (2014). *Using Taguchi's Statistical Method for Optimizing Co-Injected Biochar Composites*. Paper presented at the The 19th International Conference on Composite Materials. <http://confsys.encs.concordia.ca/ICCM19/AIPapers/FinalVersion/MIS81673.pdf>
- Zaybak, Z., Logan, B. E., & Pisciotta, J. M. (2018). Electrotrophic activity and electrosynthetic acetate production by Desulfobacterium autotrophicum HRM2. *Bioelectrochemistry*, 123, 150-155. doi:<https://doi.org/10.1016/j.bioelechem.2018.04.019>
- Zech, W., et al. (1997). Factors Controlling Humification and Mineralization of Soil Organic Matter in the Tropics. *Geoderma*, 79(1-4), 117-161. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0016706197000402>
- Zeebe, R. E., & Archer, D. (2005). Feasibility of ocean fertilization and its impact on future atmospheric CO₂ levels. *Geophysical Research Letters*, 32(9), 1-5. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1029/2005GL022449/abstract>
- Zegart, D. (2021). The Gassing Of Satartia *Huffington Post*. Retrieved from https://www.huffpost.com/entry/gassing-satartia-mississippi-co2-pipeline_n_60ddea9fe4b0ddef8b0ddc8f
- Zeiler, K. G., Heacox, D. A., Toon, S. T., Kadam, K. L., & Brown, L. M. (1995). The use of microalgae for assimilation and utilization of carbon dioxide from fossil fuel-fired power plant flue gas. *Energy Conversion and Management*, 36(6), 707-712. doi:[https://doi.org/10.1016/0196-8904\(95\)00103-K](https://doi.org/10.1016/0196-8904(95)00103-K)
- Zeldis, J. (2001). Mesozooplankton community composition, feeding, and export production during SOIREE. *Deep Sea Research Part II: Topical Studies in Oceanography*, 48(11-

- 12), 2615-2634. doi:[http://dx.doi.org/10.1016/S0967-0645\(01\)00011-X](http://dx.doi.org/10.1016/S0967-0645(01)00011-X)
- Zelikova, J. (2020). In search of carbon removal offsets. Retrieved from <https://carbon180.medium.com/in-search-of-carbon-removal-offsets-42abf71b3ccc>
- Zelikova, J., et al. (2021). A buyer's guide to soil carbon offsets. Retrieved from <https://carbonplan.org/research/soil-protocols-explainer>
- Zelikova, T. J. (2020). The future of carbon dioxide removal must be transdisciplinary. *Interface Focus*, 10(5), 20200038. doi:[doi:10.1098/rsfs.2020.0038](https://doi.org/10.1098/rsfs.2020.0038)
- Zellner, W., Friedrich, R. L., Kim, S., Sturtz, D., Frantz, J., Altland, J., & Krause, C. (2015). Continuing Assessment of the 5-Day Sodium Carbonate-Ammonium Nitrate Extraction Assay as an Indicator Test for Silicon Fertilizers. *Journal of AOAC International*, 98(4), 890 - 895. doi:[10.5740/jaoacint.14-205](https://doi.org/10.5740/jaoacint.14-205)
- Zeman, F. (2007). Energy and Material Balance of CO₂ Capture from Ambient Air. *Environmental Science & Technology*, 41(21), 7558-7563. doi:[10.1021/es070874m](https://doi.org/10.1021/es070874m)
- Zeman, F. (2008). Effect of steam hydration on performance of lime sorbent for CO₂ capture. *International Journal of Greenhouse Gas Control*, 2(2), 203-209. doi:[http://dx.doi.org/10.1016/S1750-5836\(07\)00115-6](https://doi.org/10.1016/S1750-5836(07)00115-6)
- Zeman, F. (2014). Reducing the Cost of Ca-Based Direct Air Capture of CO₂. *Environmental Science & Technology*, 48(19), 11730-11735. doi:[10.1021/es502887y](https://doi.org/10.1021/es502887y)
- Zeman, F. S., & Lackner, K. S. (2004). Capturing Carbon Dioxide Directly from the Atmosphere. *World Resource Review*, 16(2), 157-172. Retrieved from http://wordpress.ei.columbia.edu/lenfest/files/2012/11/ZEMAN_LACKNER_2004.pdf
- Zemke, W., W.L., & Smith, J. E. (2006). *Environmental impacts of seaweed farming in the tropics*. Retrieved from <https://www.nceas.ucsb.edu/~jsmith/PDFs/Zemke-White%20and%20Smith%202006.pdf>
- Zeng, G., Wu, H., Liang, J., Guo, S., Huang, L., Xu, P., . . . He, Y. (2015). Efficiency of biochar and compost (or composting) combined amendments for reducing Cd, Cu, Zn and Pb bioavailability, mobility and ecological risk in wetland soil. *RSC Adv.*, 5(44), 34541 - 34548. doi:[10.1039/c5ra04834f](https://doi.org/10.1039/c5ra04834f)
- Zeng, N. (2008). Carbon sequestration via wood burial. *Carbon Balance and Management*, 3(1), 1-12. doi:[10.1186/1750-0680-3-1](https://doi.org/10.1186/1750-0680-3-1)
- Zeng, S., Liu, Z., & Kaufmann, G. (2019). Sensitivity of the global carbonate weathering carbon-sink flux to climate and land-use changes. *Nature Communications*, 10(1), 5749. doi:[10.1038/s41467-019-13772-4](https://doi.org/10.1038/s41467-019-13772-4)
- Zeng, W. Q., Zhu, L. J., & Wang, Q. (2013). Steam Gasification of Biochar Derived from Fast Pyrolysis for Hydrogen-Rich Gas Production. *Advanced Materials Research*, 830, 477-480. Retrieved from <https://www.scientific.net/AMR.830.477>
- Zenid. (2021). Sustainable aviation fuel made from air. Fully circular. Retrieved from <https://zenidfuel.com/>
- Zetterberg, L., & Chen, D. (2015). The time aspect of bioenergy – climate impacts of solid biofuels due to carbon dynamics. *GCB Bioenergy*, 7(4), 785-796. doi:[10.1111/gcbb.12174](https://doi.org/10.1111/gcbb.12174)
- Zevenhoven, R., Eloneva, S., & Teir, S. (2006). Chemical fixation of CO₂ in carbonates: Routes to valuable products and long-term storage. *Catalysis Today*, 115(1), 73-79. doi:<https://doi.org/10.1016/j.cattod.2006.02.020>
- Zevenhoven, R., Fagerlund, J., & Songok, J. K. (2011). CO₂ mineral sequestration: developments toward large-scale application. *Greenhouse Gases: Science and Technology*, 1(1), 48-57. doi:[doi:10.1002/ghg3.7](https://doi.org/10.1002/ghg3.7)
- Zevenhoven, R., Slotte, M., Åbacka, J., & Highfield, J. (2016). A comparison of CO₂ mineral sequestration processes involving a dry or wet carbonation step. *Energy*, 117, 604-611. doi:<https://doi.org/10.1016/j.energy.2016.05.066>

- Zhai, L., CaiJi, Z., Liu, J., Wang, H., Ren, T., Gai, X., . . . Liu, H. (2014). Short-term effects of maize residue biochar on phosphorus availability in two soils with different phosphorus sorption capacities. *Biology and Fertility of Soils*, 51(1), 113-122. doi:10.1007/s00374-014-0954-3
- Zhang, A., et al. (2011). Effect of biochar amendment on maize yield and greenhouse gas emissions from a soil organic carbon poor calcareous loamy soil from Central China Plain. *Plant and Soil*, 351(1), 263-275. doi:10.1007/s11104-011-0957-x
- Zhang, A., et al. (2012). Effects of biochar amendment on soil quality, crop yield and greenhouse gas emission in a Chinese rice paddy: A field study of 2 consecutive rice growing cycles. *Field Crops Research*, 127, 153–160.
- Zhang, A., et al. (2013). Change in net global warming potential of a rice–wheat cropping system with biochar soil amendment in a rice paddy from China. *Agriculture, Ecosystems & Environment*, 173, 37–45.
- Zhang, A., et al. (2015). Enhanced rice production but greatly reduced carbon emission following biochar amendment in a metal-polluted rice paddy. *Environmental Science and Pollution Research*, 22(23), 18977–18986. doi:10.1007/s11356-015-4967-8
- Zhang, A. F., Cui, L. Q., Pan, G. X., Li, L. Q., Hussain, Q., Zhang, X. H., . . . Crowley, D. (2010). Effect of biochar amendment on yield and methane and nitrous oxide emissions from a rice paddy from Tai Lake plain, China. *Agriculture, Ecosystems & Environment*, 139(4), 469–475. Retrieved from http://ac.els-cdn.com/S0167880910002215/1-s2.0-S0167880910002215-main.pdf?_tid=aa014724-e9d0-11e6-af92-00000aab0f27&acdnat=1486099489_5ad334eb6637f0aa4733ed10c3814882
- Zhang, B., Zhong, Z., Xie, Q., Liu, S., & Ruan, R. (2016). Two-step fast microwave-assisted pyrolysis of biomass for bio-oil production using microwave absorbent and HZSM-5 catalyst. *Journal of Environmental Sciences*, 45, 240-247. doi:10.1016/j.jes.2015.12.019
- Zhang, C., et al. (2012). Ionic liquid-functionalized biochar sulfonic acid as a biomimetic catalyst for hydrolysis of cellulose and bamboo under microwave irradiation. *Green Chemistry*, 7(14), 1928-1934. doi:10.1039/c2gc35071h
- Zhang, C., et al. (2013). Chlorocuprate ionic liquid functionalized biochar sulfonic acid as an efficiently biomimetic catalyst for direct hydrolysis of bamboo under microwave irradiation. *Industrial and Engineering Chemistry Research*, 52(33), 11537–11543. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/ie401100x>
- Zhang, C., et al. (2014). Biochar sulfonic acid immobilized chlorozincate ionic liquid: an efficiently biomimetic and reusable catalyst for hydrolysis of cellulose and bamboo under microwave irradiation. *Cellulose*, 21(3), 1227-1237. Retrieved from <https://link.springer.com/article/10.1007/s10570-014-0167-9>
- Zhang, C., Clark, G. J., Patti, A. F., Bolan, N., Cheng, M., Sale, P. W. G., & Tang, C. (2015). Contrasting effects of organic amendments on phytoextraction of heavy metals in a contaminated sediment. *Plant and Soil*, 397(1), 331-345. doi:10.1007/s11104-015-2615-1
- Zhang, C., Zeng, G., Huang, D., Lai, C., Chen, M., Cheng, M., . . . Wang, R. (2019). Biochar for environmental management: Mitigating greenhouse gas emissions, contaminant treatment, and potential negative impacts. *Chemical Engineering Journal*, 373, 902-922. doi:<https://doi.org/10.1016/j.cej.2019.05.139>
- Zhang, C. X., Jiang, Y. F., Zhou, M., Hu, X. F., & J. Yves, U. (2014). Adsorption Equilibrium and Thermodynamics Behavior of Sodium Pentachlorophenol to Biomass-Derived Biochars at Two Pyrolytic Temperatures. *Advanced Materials Research*, 955-959, 2243 - 2247. doi:10.4028/www.scientific.net/AMR.955-959.2243
- Zhang, D., et al. (2014). Catalytic Pyrolysis of Bamboo Residues for Composite Biochar and Bamboo Oil. *Applied Mechanics and Materials*, 472, 921-925. Retrieved from <https://>

www.scientific.net/AMM.472.921

- Zhang, D., et al. (2016). Reviews of power supply and environmental energy conversions for artificial upwelling. *Renewable & Sustainable Energy Reviews*, 56, 659-668. Retrieved from <http://or.nsfc.gov.cn/bitstream/00001903-5/276662/1/1000014397751.pdf>
- Zhang, D. (2017). The Performance and Carbon Sequestration of the Biochar Concrete. *Hans.*, 7(6), 465-475. Retrieved from <https://doi.org/10.12677/aep.2017.76060>
- Zhang, D., Bui, M., Fajard, M., Patrizio, P., Kraxner, F., & Dowell, N. M. (2019). Unlocking the potential of BECCS with indigenous sources of biomass at a national scale. *Sustainable Energy & Fuels*. doi:10.1039/C9SE00609E
- Zhang, D., Pan, G., Wu, G., Kibue, G. W., Li, L., Zhang, X., . . . Liu, X. (2015). Biochar helps enhance maize productivity and reduce greenhouse gas emissions under balanced fertilization in a rainfed low fertility inceptisol. *Chemosphere*, 142, 106-113. doi:10.1016/j.chemosphere.2015.04.088
- Zhang, D., Yan, M., Niu, Y., Liu, X., van Zwieten, L., Chen, D., . . . Pan, G. (2016). Is current biochar research addressing global soil constraints for sustainable agriculture? *Agriculture, Ecosystems & Environment*, 226, 25-32. doi:<http://dx.doi.org/10.1016/j.agee.2016.04.010>
- Zhang, D., Zhu, M., & Zhang, Z. (2015). *Handbook of Clean Energy SystemsCombined Heat and Power (CHP) Generation Using Gas Engines Fueled with Pyrolysis Gases*. Chichester, UK: John Wiley & Sons, Ltd.
- Zhang, F., Wang, X., Yin, D., Peng, B., Tan, C., Liu, Y., . . . Wu, S. (2015). Efficiency and mechanisms of Cd removal from aqueous solution by biochar derived from water hyacinth (*Eichornia crassipes*). *Journal of Environmental Management*, 153, 68 - 73. doi:10.1016/j.jenvman.2015.01.043
- Zhang, G., et al. (2017). Review and outlook for agromineral research in agriculture and climate mitigation. *Soil Research*, 56(2), 113-122. Retrieved from <https://www.publish.csiro.au/sr/SR17157>
- Zhang, H., et al. (2015). Biochar Effects on Soil Organic Carbon Storage. In *Biochar: Production, Characterization, and Applications*.
- Zhang, H., et al. (2016). A novel bioremediation strategy for petroleum hydrocarbon pollutants using salt tolerant *Corynebacterium variabile* HRJ4 and biochar. *Journal of Environmental Sciences*, 47, 7-13. doi:10.1016/j.jes.2015.12.023
- Zhang, H. (2016). Sulfur-enriched biochar as a potential soil amendment and fertilizer. *Soil Research*, 55, 93-99. Retrieved from <http://www.publish.csiro.au/SR/pdf/SR15256>
- Zhang, H., Voroney, R. P., & Price, G. W. (2014). Effects of biochar amendments on soil microbial biomass and activity. In.
- Zhang, H., Voroney, R. P., & Price, G. W. (2015). Effects of temperature and processing conditions on biochar chemical properties and their influence on soil C and N transformations. *Soil Biology and Biochemistry*, 83, 19 - 28. doi:10.1016/j.soilbio.2015.01.006
- Zhang, H., Xiao, R., Huang, H., & Xiao, G. (2009). Comparison of non-catalytic and catalytic fast pyrolysis of corncob in a fluidized bed reactor. *Bioresource Technology*, 100.
- Zhang, H., Yu, F., Kang, W., & Shen, Q. (2015). Encapsulating selenium into macro-/micro-porous biochar-based framework for high-performance lithium-selenium batteries. *Carbon*, 95, 354 - 363. doi:10.1016/j.carbon.2015.08.050
- Zhang, H. H., Lin, K. D., Wang, H. L., & Gan, J. (2010). Effect of *Pinus radiata* derived biochars on soil sorption and desorption of phenanthrene. *Environmental Pollution*, 158, 2821-2825.
- Zhang, J., et al. (2014). Humification characterization of biochar and its potential as a composting amendment. *Journal of Environmental Sciences*, 26(2), 390–397. Retrieved

- from <http://www.sciencedirect.com/science/article/pii/S1001074213604210>
- Zhang, J., et al. (2014). The use of Biochar-amended composting to Improve the Humification and Degradation of Sewage Sludge. *Bioresource Technology*, 168, 252-258. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/24656550>
- Zhang, J., et al. (2015). Multiscale visualization of the structural and characteristic changes of sewage sludge biochar oriented towards potential agronomic and environmental implication. *Scientific Reports*, 5, 1-8. doi:10.1038/srep09406
- Zhang, J., et al. (2016). Straw biochar hastens organic matter degradation and produces nutrient-rich compost. *Bioresource Technology*, 200, 876-883. doi:10.1016/j.biortech.2015.11.016
- Zhang, J., et al. (2017). Analysis of the impact of CO₂ content on the physical properties of the liquid phase mixtures in oil production wells. *International Journal of Greenhouse Gas Control*, 12(2), 261-271. Retrieved from <http://www.inderscience.com/info/inarticle.php?artid=84508>
- Zhang, J., Chen, Q., & You, C. (2015). Numerical simulation of mass and heat transfer between biochar and sandy soil. *International Journal of Heat and Mass Transfer*, 91, 119 - 126. doi:10.1016/j.ijheatmasstransfer.2015.07.104
- Zhang, J., Chen, Q., & You, C. (2016). Biochar Effect on Water Evaporation and Hydraulic Conductivity in Sandy Soil. *Pedosphere*, 26(2), 265 - 272. doi:10.1016/s1002-0160(15)60041-8
- Zhang, J., Lin, Q., Zhao, X., & Li, G. (2015). Effect of hydrothermal carbonization temperature and time on characteristics of bio-chars from chicken manure. *Transactions of the Chinese Society of Agricultural Engineering*, 31(24), 239-244. Retrieved from <http://www.ingentaconnect.com/content/tcsae/tcsae/2015/00000031/00000024/art00036>
- Zhang, J., Liu, J., & Liu, R. (2015). Effects of pyrolysis temperature and heating time on biochar obtained from the pyrolysis of straw and lignosulfonate. *Bioresource Technology*, 176, 288-291. doi:10.1016/j.biortech.2014.11.011
- Zhang, J. S., & Wang, Q. (2015). Sustainable mechanisms of biochar derived from brewers' spent grain and sewage sludge for ammonia-nitrogen capture. *Journal of Cleaner Production*, 112(5), 3927-3934. doi:10.1016/j.jclepro.2015.07.096
- Zhang, K., Kurano, N., & Miyachi, S. (2002). Optimized aeration by carbon dioxide gas for microalgal production and mass transfer characterization in a vertical flat-plate photobioreactor. *Bioprocess and Biosystems Engineering*, 25(2), 97-101. doi:10.1007/s00449-002-0284-y
- Zhang, L., et al. (2014). Mini-chunk biochar supercapacitors. *Journal of Applied Electrochemistry*, 44(10), 1145-1151. doi:10.1007/s10800-014-0726-7
- Zhang, L. (2015). *Exploring N and P reduction in bioreactors*. (University of Minnesota). Retrieved from <http://conservancy.umn.edu/handle/11299/172627>
- Zhang, L., & Sun, X. (2014). Changes in physical, chemical, and microbiological properties during the two-stage co-composting of green waste with spent mushroom compost and biochar. *Bioresource Technology*, 171, 274 - 284. doi:10.1016/j.biortech.2014.08.079
- Zhang, L., Sun, X.-y., Tian, Y., & Gong, X.-q. (2014). Biochar and humic acid amendments improve the quality of composted green waste as a growth medium for the ornamental plant Calathea insignis. *Scientia Horticulturae*, 176, 70 - 78. doi:10.1016/j.scientia.2014.06.021
- Zhang, L., Wang, X., Fujii, M., Yang, L., & Song, C. (2017). CO₂ capture over molecular basket sorbents: Effects of SiO₂ supports and PEG additive. *Journal of Energy Chemistry*, 26(5), 1030-1038. doi:<https://doi.org/10.1016/j.jec.2017.09.002>
- Zhang, L., & Zhang, J. S. (2013). Biochar from Sewage Sludge: Preparation, Characterization and Ammonia-Phosphorus Capture. *Advanced Materials Research*, 830, 473-476.

Retrieved from <https://www.scientific.net/AMR.830.473>

- Zhang, M., et al. (2012). Preparation and characterization of a novel magnetic biochar for arsenic removal. *Bioresource Technology*, 130, 457-462. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0960852412018366>
- Zhang, M., et al. (2012). Synthesis of porous MgO-biochar nanocomposites for removal of phosphate and nitrate from aqueous solutions. *Chemical Engineering Journal*, 210, 26-32. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1385894712011175>
- Zhang, M., et al. (2012). Synthesis, characterization, and environmental implications of graphene-coated biochar. *Science of The Total Environment*, 435-436, 567-572. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0048969712009837>
- Zhang, M., et al. (2013). Phosphate removal ability of biochar/MgAl-LDH ultra-fine composites prepared by liquid-phase deposition. *Chemosphere*, 92(8), 1042-1047. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0045653513003585>
- Zhang, M., et al. (2015). Adsorptive Removal of Trichloroethylene in Water by Crop Residue Biochars Pyrolyzed at Contrasting Temperatures: Continuous Fixed-Bed Experiments. *Journal of Chemistry*, 2015, 1-6. Retrieved from <http://downloads.hindawi.com/journals/jchem/aa/647072.pdf>
- Zhang, M. (2015). *Properties of bio-oil based fuel mixtures: biochar/bio-oil slurry fuels and glycerol/bio-oil fuel blends*. Curtin University, Retrieved from http://espace.library.curtin.edu.au/R?func=dbin-jump-full&object_id=234321
- Zhang, M., & Gao, B. (2013). Removal of arsenic, methylene blue, and phosphate by biochar/AIOOH nanocomposite. *Chemical Engineering Journal*, 226, 286-292. Retrieved from <http://www.sciencedirect.com/science/article/pii/S138589471300555X>
- Zhang, M., & Lu, L. (2015). Biochar for Organic Contaminant Management in Water and Wastewater. In *Biochar: Production, Characterization, and Applications*.
- Zhang, M., & Ok, Y. S. (2014). Biochar soil amendment for sustainable agriculture with carbon and contaminant sequestration. *Carbon Management*, 5(3), 255-257. doi:10.1080/17583004.2014.973684
- Zhang, M., Shu, L., Guo, X., Shen, X., Zhang, H., Shen, G., . . . Wang, X. (2015). Impact of humic acid coating on sorption of naphthalene by biochars. *Carbon*, 94, 946 - 954. doi:10.1016/j.carbon.2015.07.079
- Zhang, M., Shu, L., Shen, X., Guo, X., Tao, S., Xing, B., & Wang, X. (2014). Characterization of nitrogen-rich biomaterial-derived biochars and their sorption for aromatic compounds. *Environmental Pollution*, 195, 84-90. doi:10.1016/j.envpol.2014.08.018
- Zhang, M., & Wu, H. (2015). Bioslurry as a Fuel. 6. Leaching Characteristics of Alkali and Alkaline Earth Metallic Species from Biochar by Bio-oil Model Compounds. *Energy & Fuels*, 29(4), 2535-2541. doi:10.1021/acs.energyfuels.5b00274
- Zhang, M. k., et al. (2012). Degradation characteristic of different biochar materials in soil environments. *Journal of Zhejiang University (Agriculture and Life Sciences)*, 2012(03), 329-335. Retrieved from http://en.cnki.com.cn/Article_en/CJFDTOTAL-ZJNY201203015.htm
- Zhang, M.-m., Liu, Y.-g., Li, T.-t., Xu, W.-h., Zheng, B.-h., Tan, X.-f., . . . Wang, S.-f. (2015). Chitosan modification of magnetic biochar produced from Eichhornia crassipes for enhanced sorption of Cr(VI) from aqueous solution. *RSC Adv.*, 5(58), 46955-46964. doi:10.1039/c5ra02388b
- Zhang, N., Santos, R. M., Smith, S. M., & Šiller, L. (2019). Acceleration of CO₂ mineralisation of alkaline brines with nickel nanoparticles catalysts in continuous tubular reactor. *Chemical Engineering Journal*, 377, 120479. doi:<https://doi.org/10.1016/j.cej.2018.11.177>
- Zhang, P., Sheng, G. Y., Feng, Y. H., & Miller, D. M. (2006). Predominance of char sorption over

- substrate concentration and soil pH in influencing biodegradation of benzonitrile. *Biodegradation*, 17(1), 1-8. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/16453166>
- Zhang, Q., Gong, J., Skwarczek, M., Yue, D., & You, F. (2014). Sustainable process design and synthesis of hydrocarbon biorefinery through fast pyrolysis and hydroprocessing. *AIChE Journal*, 60(3), 980-994. doi:doi:10.1002/aic.14344
- Zhang, Q. z., et al. (2013). Biochar impact on nitrate accumulation in an alkaline soil. *CSIRO Publishing*, 51(6), 521. Retrieved from https://www.researchgate.net/publication/270806967_Impact_of_biochar_on_nitrate_accumulation_in_an_alkaline_soil
- Zhang, Q. z., et al. . (2015). Effect of biochar amendment on soil thermal conductivity, reflectance and temperatures. *Soil Science Society of America Journal*, 77(5), 1478-1487. Retrieved from http://www.researchgate.net/publication/264496596_Effect_of_biochar_amendment_on_soil_thermal_conductivity_reflectance_and_temperatures
- Zhang, Q. z., et al. . (2015). A one-year short-term biochar application improved carbon accumulation in large macroaggregate fractions. *CATENA*, 127, 26 - 31. doi:10.1016/j.catena.2014.12.009
- Zhang, S., Dong, Q., Zhang, L., Xiong, Y., Liu, X., & Zhu, S. (2015). Effects of water washing and torrefaction pretreatments on rice husk pyrolysis by microwave heating. *Bioresource Technology*, 193, 442 - 448. doi:10.1016/j.biortech.2015.06.142
- Zhang, S., Li, J., Wang, J., Zhang, F., Wang, Z., & Liu, H. (2017). Co-Deoxy-Liquefaction of Macroalgae and Lignocellulosic Biomass for Production of High-quality Liquid Oil. *ChemistrySelect*, 2(5), 1820-1824. doi:10.1002/slct.201601903
- Zhang, S., Wang, D., Fan, P.-P., & Sun, L.-P. (2015). Enhancement of gas-to-liquid oxygen transfer in the presence of fine solid particles for air-exposed multiphase system. *Chemical Engineering Research and Design*, 100, 434-443. doi:10.1016/j.cherd.2015.04.024
- Zhang, S., & Xiong, Y. (2016). Washing pretreatment with light bio-oil and its effect on pyrolysis products of bio-oil and biochar. *RSC Adv.*, 6(7), 5270 - 5277. doi:10.1039/c5ra22350d
- Zhang, T., et al. . (2013). Application of Biochar for Phosphate Adsorption and Recovery from Wastewater. *Periodical Advanced Materials Research*, 750-752, 1389-1392. Retrieved from https://www.researchgate.net/publication/271982638_Application_of_Biochar_for_Phosphate_Adsorption_and_Recovery_from_Wastewater
- Zhang, W. (2010). *Fate And Transport Of Phosphorus, Colloids, And Biochar In Soils*. Cornell University, Ithaca. Retrieved from <http://hdl.handle.net/1813/17698>
- Zhang, W., Liu, H., Sun, C., Drage, T. C., & Snape, C. E. (2014). Capturing CO₂ from ambient air using a polyethyleneimine–silica adsorbent in fluidized beds. *Chemical Engineering Science*, 116, 306-316. doi:<http://dx.doi.org/10.1016/j.ces.2014.05.018>
- Zhang, W., Liu, H., Sun, C., Drage, T. C., & Snape, C. E. (2014). Performance of polyethyleneimine–silica adsorbent for post-combustion CO₂ capture in a bubbling fluidized bed. *Chemical Engineering Journal*, 251, 293-303. doi:<https://doi.org/10.1016/j.cej.2014.04.063>
- Zhang, W., Niu, J., Morales, V. L., Chen, X., Hay, A. G., Lehmann, J., & Steenhuis, T. S. (2010). Transport and retention of Biochar particles in porous media: effect of pH, ionic strength, and particle size. *Ecohydrology*, 3(4), 497-508. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/eco.160/abstract>
- Zhang, W., Zheng, J., Zheng, P., & Qiu, R. (2015). Atrazine immobilization on sludge derived biochar and the interactive influence of coexisting Pb(II) or Cr(VI) ions. *Chemosphere*, 134, 438 - 445. doi:10.1016/j.chemosphere.2015.05.011

- Zhang, W., Zheng, J., Zheng, P., Tsang, D. C. W., & Qiu, R. (2015). Sludge-Derived Biochar for Arsenic(III) Immobilization: Effects of Solution Chemistry on Sorption Behavior. *Journal of Environment Quality*, 44(4), 1119-1126. doi:10.2134/jeq2014.12.0536
- Zhang, X., et al. . (2013). Using biochar for remediation of soils contaminated with heavy metals and organic pollutants. *Environmental Science and Pollution Research*, 20(12), 8472-8483. Retrieved from <https://link.springer.com/article/10.1007/s11356-013-1659-0>
- Zhang, X. (2014). *Dairy farm waste treatment by using microbial fuel cells (MFCs) and pyrolysis*. University of Nottingham, Retrieved from <http://ethos.bl.uk/OrderDetails.do?uin=uk.bl.ethos.662212>
- Zhang, X., et al. . (2015). Biochar for Organic Contaminant Management in Soil. In *Biochar: Production, Characterization, and Applications*.
- Zhang, X., et al. (2015). Effect of aging process on adsorption of diethyl phthalate in soils amended with bamboo biochar. *Chemosphere*, 142, 28-34. doi:10.1016/j.chemosphere.2015.05.037
- Zhang, X., et al. (2015). *SSSA Special Publication Agricultural and Environmental Applications of Biochar: Advances and Barriers Research and Application of Biochar in China*: Soil Science Society of America, Inc.
- Zhang, X., Deng, J., Pupucevski, M., Impeng, S., Yang, B., Chen, G., . . . Zhang, D. (2021). High-Performance Binary Mo–Ni Catalysts for Efficient Carbon Removal during Carbon Dioxide Reforming of Methane. *ACS Catalysis*, 12087-12095. doi:10.1021/acs.catal.1c02124
- Zhang, X., Zhang, S., Yang, H., Feng, Y., Chen, Y., Wang, X., & Chen, H. (2014). Nitrogen enriched biochar modified by high temperature CO₂-ammonia treatment: characterization and adsorption of CO₂. *Chemical Engineering Journal*, 257, 20-27. doi:10.1016/j.cej.2014.07.024
- Zhang, X., Zhang, S., Yang, H., Shao, J., Chen, Y., Feng, Y., . . . Chen, H. (2015). Effects of hydrofluoric acid pre-deashing of rice husk on physicochemical properties and CO₂ adsorption performance of nitrogen-enriched biochar. *Energy*, 91, 903 - 910. doi:10.1016/j.energy.2015.08.028
- Zhang, X.-K., et al. (2013). Soil Nematode Response to Biochar Addition in a Chinese Wheat Field. *Pedosphere*, 23(1), 98-103. Retrieved from <http://www.sciencedirect.com/science/article/pii/S1002016012600848>
- Zhang, X. N., Mao, G. Y., Jiao, Y. B., Shang, Y., & Han, R. P. (2014). Adsorption of anionic dye on magnesium hydroxide-coated pyrolytic bio-char and reuse by microwave irradiation. *International Journal of Environmental Science and Technology*, 11(5), 1439 - 1448. doi:10.1007/s13762-013-0338-5
- Zhang, Y. (2010). *Life cycle environmental and cost evaluation of bioenergy systems*. Dissertation: University of Toronto.
- Zhang, Y., et al. . (2014). A promising approach to co-processing calcium-rich coal and an aqueous condensate from biomass carbonization. *Fuel*, 133, 82-88. doi:10.1016/j.fuel.2014.05.007
- Zhang, Y., Li, Z., & Mahmood, I. B. (2015). Effects of corn cob produced biochars on urea recovery from human urine and their application as soil conditioners. *CLEAN - Soil, Air, Water*, n/a - n/a. doi:10.1002/clen.201400489
- Zhang, Y., Lin, F., Wang, X., Zou, J., & Liu, S. (2016). Annual accounting of net greenhouse gas balance response to biochar addition in a coastal saline bioenergy cropping system in China. *Soil and Tillage Research*, 158, 39 - 48. doi:10.1016/j.still.2015.11.006
- Zhang, Y., Liu, G., & Liu, H. (2013). Effects of biochar application on petroleum ether extract and aroma constituent of flue-cured tobacco leaves. *Acta Agriculturae Jiangxi*(5), 96-100. Retrieved from <http://caod.oriprobe.com/order.htm?id=36438402&ftext=base>

- Zhang, Y., & Luo, W. (2014). Adsorptive Removal of Heavy Metal from Acidic Wastewater with Biochar Produced from Anaerobically Digested Residues: Kinetics and Surface Complexation Modeling. *BioResources*, 9(2), 2484-2489. Retrieved from http://ojs.cnr.ncsu.edu/index.php/BioRes/article/view/BioRes_09_2_2484_Zhang_Luo_Adsorptive_Removal_Heavy_Metal/2665
- Zhang, Y., McKechnie, J., Cormier, D., Lyng, R., Mabee, W., Ogino, A., & MacLean, H. L. (2010). Life Cycle Emissions and Cost of Producing Electricity from Coal, Natural Gas, and Wood Pellets in Ontario, Canada. *Environmental Science & Technology*, 44(1), 538-544. doi:10.1021/es902555a
- Zhang, Y., Tan, Q., Hu, C., Zheng, C., Gui, H., Zeng, W., . . . Zhao, X. (2014). Differences in responses of soil microbial properties and trifoliolate orange seedling to biochar derived from three feedstocks. *Journal of Soils and Sediments*, 15(3), 541-551. doi:10.1007/s11368-014-1032-z
- Zhang, Y., Yao, A., & Song, K. (2016). Torrefaction of cultivation residue of Auricularia auricula-judae to obtain biochar with enhanced fuel properties. *Bioresource Technology*, 206, 211 - 216. doi:10.1016/j.biortech.2016.01.099
- Zhang, Y.-l., Chen, L.-j., Duan, Z.-h., Wu, Z.-j., Sun, C.-x., & Wang, J.-y. (2014). Change in Soil Enzymes Activities after Adding Biochar or Straw by Fluorescent Microplate Method. *Guang Pu Xue Yu Guang Pu Fen Xi*, 34(2), 455-459. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/24822420>
- Zhang, Z., Luo, D., Lui, G., Li, G., Jiang, G., Cano, Z. P., . . . Chen, Z. (2019). In-situ ion-activated carbon nanospheres with tunable ultramicroporosity for superior CO₂ capture. *Carbon*, 143, 531-541. doi:<https://doi.org/10.1016/j.carbon.2018.10.096>
- Zhang, Z., Moore, J. C., Huisingsh, D., & Zhao, Y. (2015). Review of geoengineering approaches to mitigating climate change. *Journal of Cleaner Production*, 103, 898-907. doi:<http://dx.doi.org/10.1016/j.jclepro.2014.09.076>
- Zhang, Z., Pan, S.-Y., Li, H., Cai, J., Olabi, A. G., Anthony, E. J., & Manovic, V. (2020). Recent advances in carbon dioxide utilization. *Renewable and Sustainable Energy Reviews*, 125, 109799. doi:<https://doi.org/10.1016/j.rser.2020.109799>
- Zhang, Z., Yani, S., Zhu, M., Li, J., & Zhang, D. (2013). Effect of Temperature and Heating Rate in Pyrolysis on the Yield, Structure and Oxidation Reactivity of Pine Sawdust Biochar. Retrieved from <http://www.conference.net.au/chemeca2013/papers/30430.pdf>
- Zhang, Z., Zhu, Z., Shen, B., & Liu, L. (2019). Insights into biochar and hydrochar production and applications: A review. *Energy*, 171, 581-598. doi:<https://doi.org/10.1016/j.energy.2019.01.035>
- Zhang, Z.-b., Cao, X.-h., Liang, P., & Liu, Y.-h. (2012). Adsorption of uranium from aqueous solution using biochar produced by hydrothermal carbonization. *Journal of Radioanalytical and Nuclear Chemistry*, 295(2), 1201-1208. Retrieved from <http://link.springer.com/article/10.1007/s10967-012-2017-2>
- Zhang, Z. X., et al. (2012). A biochar manufacturing furnace based on laboratory studies. *Journal of Advanced Manufacturing Systems*, 11(2).
- Zhang, Z. X., et al. . (2014). A Monitoring System of Biochar Production Device Based on MCGS. *Advanced Materials Research*, 898, 672-675.
- Zhang, Z. X., Wu, J., & Chen, W. F. (2014). Review on Preparation and Application of Biochar. *Advanced Materials Research*, 898, 456-460.
- Zhang, Z. X., Wu, J., Meng, J., & Chen, W. F. (2014). Research on carbonised process characteristics of biomass. *Materials Research Innovations*, 18(S5), S5-79 - S75-81. doi:10.1179/1432891714z.000000000915
- Zhang, Z. X., Wu, J., Meng, J., & Chen, W. F. (2014). Study of Biochar Pyrolysis Mechanism and Production Technology. *Applied Mechanics and Materials*, 709, 364 - 369.

doi:10.4028/www.scientific.net/AMM.709.364

- Zhang, Z. Y., Meng, J., Dang, S., Gao, M. C., & Che, W. F. (2013). Research on Cadmium Adsorption-Desorption Dynamics of Biochar. *Advanced Materials Research*, 726 - 731, 179-183. Retrieved from <https://www.scientific.net/AMR.726-731.179>
- ZHANG, Z.-y., Meng, J., Dang, S., & CHEN, W.-F. (2014). Effect of Biochar on Relieving Cadmium Stress and Reducing Accumulation in Super japonica Rice. *Journal of Integrative Agriculture*, 13(3), 547–553. Retrieved from <http://www.sciencedirect.com/science/article/pii/S209531191360711X>
- Zhang, Z. Z., Zhu, M. M., Liu, P. F., Wan, W. C., Zhou, W. X., Chan, Y. L., & Zhang, D. K. (2015). Effect of Biochar on the Cracking of Tar from the Pyrolysis of a Pine Sawdust in a Fixed Bed Reactor. *Energy Procedia*, 75, 196 - 201. doi:10.1016/j.egypro.2015.07.299
- Zhang, Ming, e. a. (2014). Self-assembly of needle-like layered double hydroxide (LDH) nanocrystals on hydrochar: characterization and phosphate removal ability. *RSC Advances*, 4(53), 28171-28175. doi:10.1039/c4ra02332c
- Zhangrui. (2017). udy: organic carbon can resist breakdown in underground environment. Retrieved from <http://english.cctv.com/2017/05/04/ARTI6XVdH8JdVrxeEcTMwHFw170504.shtml>
- Zhao, B., & Su, Y. (2014). Process effect of microalgal-carbon dioxide fixation and biomass production: A review. *Renewable and Sustainable Energy Reviews*, 31, 121-132. doi:<https://doi.org/10.1016/j.rser.2013.11.054>
- Zhao, C., Lv, P., Yang, L., Xing, S., Luo, W., & Wang, Z. (2018). Biodiesel synthesis over biochar-based catalyst from biomass waste pomelo peel. *Energy Conversion and Management*, 160, 477-485. doi:<https://doi.org/10.1016/j.enconman.2018.01.059>
- Zhao, D., Huang, S., & Huang, J. (2015). Effects of biochar on hydraulic parameters and shrinkage-swelling rate of silty clay. *Transactions of the Chinese Society of Agricultural Engineering*. Retrieved from <http://www.ingentaconnect.com/content/tcsae/tcsae/2015/00000031/00000017/art00018>
- Zhao, H. (2014). Tailored formation of mineral carbonates in the presence of various chemical additives for in-situ and ex-situ carbon storage. In A.-H. A. Park (Ed.): ProQuest Dissertations Publishing.
- Zhao, L., et al. . (2013). Heterogeneity of biochar properties as a function of feedstock sources and production temperatures. *Journal of Hazardous Materials*, 256-257, 1-9. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0304389413002707>
- Zhao, L., et al. (2015). Endogenous minerals have influences on surface electrochemistry and ion exchange properties of biochar. *Chemosphere*, 136, 133 - 139. doi:10.1016/j.chemosphere.2015.04.053
- Zhao, L., Qi, Y., & Chen, G. (2015). Isolation and characterization of microalgae for biodiesel production from seawater. *Bioresource Technology*, 184, 42-46. doi:<https://doi.org/10.1016/j.biortech.2014.10.063>
- Zhao, L., Zheng, W., & Cao, X. (2014). Distribution and evolution of organic matter phases during biochar formation and their importance in carbon loss and pore structure. *Chemical Engineering Journal*, 250, 240-247. doi:10.1016/j.cej.2014.04.053
- Zhao, M. Y., Enders, A., & Lehmann, J. (2014). Short- and long-term flammability of biochars. *Biomass and Bioenergy*, 69, 183 - 191. doi:10.1016/j.biombioe.2014.07.017
- Zhao, P. P., Gu, W. H., Huang, A. Y., Wu, S. C., Liu, C. H., Huan, L., . . . Wang, G. C. (2018). Effect of iron on the growth of Phaeodactylum tricornutum via photosynthesis. *Journal of Phycology*, 54(1), 34-43. doi:10.1111/jpy.12607
- Zhao, R., Coles, N., Kong, Z., & Wu, J. (2015). Effects of aged and fresh biochars on soil acidity under different incubation conditions. *Soil and Tillage Research*, 146, 133 - 138. doi:10.1016/j.still.2014.10.014

- Zhao, R., Coles, N., & Wu, J. (2015). Carbon mineralization following additions of fresh and aged biochar to an infertile soil. *CATENA*, 125, 183 - 189. doi:10.1016/j.catena.2014.10.026
- Zhao, R., Coles, N., & Wu, J. (2015). Soil carbon mineralization following biochar addition associated with external nitrogen. *Chilean Journal of Agricultural Research*, 75(4), 465 - 471. doi:10.4067/s0718-58392015000500012
- Zhao, R., Deng, S., Zhao, L., Li, S., Zhang, Y., & Liu, B. (2017). Performance analysis of temperature swing adsorption for CO₂ capture using thermodynamic properties of adsorbed phase. *Applied Thermal Engineering*, 123(Supplement C), 205-215. doi:<https://doi.org/10.1016/j.applthermaleng.2017.05.042>
- Zhao, R., Jiang, D., Coles, N., & Wu, J. (2015). Effects of biochar on the acidity of a loamy clay soil under different incubation conditions. *Journal of Soils and Sediments*, 15(9), 1919-1926. doi:10.1007/s11368-015-1143-1
- Zhao, R., Liu, L., Zhao, L., Deng, S., Li, S., Zhang, Y., & Li, H. (2019). Thermodynamic exploration of temperature vacuum swing adsorption for direct air capture of carbon dioxide in buildings. *Energy Conversion and Management*, 183, 418-426. doi:<https://doi.org/10.1016/j.enconman.2019.01.009>
- Zhao, S., Huang, B., & Ye, P. (2014). Laboratory Evaluation of Asphalt Cement and Mixture Modified by Bio-Char Produced through Fast Pyrolysis. *Geo-Shanghai 2014*. doi:10.1061/9780784413418.015
- Zhao, S., Luo, Y., Zhang, Y., & Long, Y. (2015). Experimental investigation of the synergy effect of partial oxidation and bio-char on biomass tar reduction. *Journal of Analytical and Applied Pyrolysis*, 112, 262-269. doi:10.1016/j.jaat.2015.01.016
- Zhao, T., & Liu, Z. (2019). A novel analysis of carbon capture and storage (CCS) technology adoption: An evolutionary game model between stakeholders. *Energy*, 189, 116352. doi:<https://doi.org/10.1016/j.energy.2019.116352>
- Zhao, X., et al. (2013). Effects of the addition of rice-straw-based biochar on leaching and retention of fertilizer N in highly fertilized cropland soils. *Soil Science and Plant Nutrition*, 59(5), 771-782. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/00380768.2013.830229>
- Zhao, X., et al. (2013). Nitrification, acidification, and nitrogen leaching from subtropical cropland soils as affected by rice straw-based biochar: laboratory incubation and column leaching studies. *Journal of Soils and Sediments*, 14(3), 471-482. Retrieved from <https://link.springer.com/article/10.1007/s11368-013-0803-2>
- Zhao, X., et al. (2014). Effects of crop-straw biochar on crop growth and soil fertility over a wheat-millet rotation in soils of China. *Soil Use and Management*, 30(3), 311-319. doi:10.1111/sum.12124
- Zhao, X., et al. (2014). Successive straw biochar application as a strategy to sequester carbon and improve fertility: A pot experiment with two rice/wheat rotations in paddy soil. *Plant and Soil*, 378(1), 279-294. Retrieved from <https://link.springer.com/article/10.1007/s11104-014-2025-9>
- Zhao, X., Liu, S.-L., Pu, C., Zhang, X.-Q., Xue, J.-F., Zhang, R., . . . Chen, F. (2016). Methane and nitrous oxide emissions under no-till farming in China: a meta-analysis. 22(4), 1372-1384. doi:doi:10.1111/gcb.13185
- Zhao, X.-r., et al. (2014). Does Biochar Addition Influence the Change Points of Soil Phosphorus Leaching? *Journal of Integrative Agriculture*, 13(3), 499–506. Retrieved from <http://www.sciencedirect.com/science/article/pii/S2095311913607054>
- Zhao, Y., Feng, D., Zhang, Y., Huang, Y., & Sun, S. (2015). Effect of pyrolysis temperature on char structure and chemical speciation of alkali and alkaline earth metallic species in biochar. *Fuel Processing Technology*, 141(1), 54-60. doi:10.1016/j.fuproc.2015.06.029

- Zhao, Y., & Li, Y. (2014). Utilization of corn cob biochar in a direct carbon fuel cell. *Journal of Power Sources*, 270, 312 - 317. doi:10.1016/j.jpowsour.2014.07.125
- Zhao, Y., Wang, J., Ji, Z., Liu, J., Guo, X., & Yuan, J. (2020). A novel technology of carbon dioxide adsorption and mineralization via seawater decalcification by bipolar membrane electrodialysis system with a crystallizer. *Chemical Engineering Journal*, 381, 122542. doi:<https://doi.org/10.1016/j.cej.2019.122542>
- Zhao, Y., Wang, M., Hu, S., Zhang, X., Ouyang, Z., Zhang, G., . . . Shi, X. (2018). Economics- and policy-driven organic carbon input enhancement dominates soil organic carbon accumulation in Chinese croplands. *Proceedings of the National Academy of Sciences*, 115(16), 4045-4050. doi:10.1073/pnas.1700292114
- Zhao, Y., Wu, M., Guo, X., Zhang, Y., Ji, Z., Wang, J., . . . Yuan, J. (2019). Thorough conversion of CO₂ through two-step accelerated mineral carbonation in the MgCl₂-CaCl₂-H₂O system. *Separation and Purification Technology*, 210, 343-354. doi:<https://doi.org/10.1016/j.seppur.2018.08.011>
- Zhao, Y., Zhang, Y., Liu, J., Gao, J., Ji, Z., Guo, X., . . . Yuan, J. (2017). Trash to treasure: Seawater pretreatment by CO₂ mineral carbonation using brine pretreatment waste of soda ash plant as alkali source. *Desalination*, 407, 85-92. doi:<https://doi.org/10.1016/j.desal.2016.12.018>
- Zhao, Y.-Y., et al. (2015). Temperature Impact on the Hydrothermal Depolymerization of Cunninghamia lanceolata Enzymatic/Mild Acidolysis Lignin in Subcritical Water. *BioResources*, 11(1), 21-32. Retrieved from http://ojs.cnr.ncsu.edu/index.php/BioRes/article/view/BioRes_11_1_21_Zhao_Temperature_Impact_Hydrothermal_Depolymerization/3975
- Zhao, Z., Zhang, Y., Holmes, D. E., Dang, Y., Woodard, T. L., Nevin, K. P., & Lovley, D. R. (2016). Potential enhancement of direct interspecies electron transfer for syntrophic metabolism of propionate and butyrate with biochar in up-flow anaerobic sludge blanket reactors. *Bioresource Technology*, 209, 148 - 156. doi:10.1016/j.biortech.2016.03.005
- Zhao, Z., Zhang, Y., Woodard, T. L., Nevin, K. P., & Lovley, D. R. (2015). Enhancing syntrophic metabolism in up-flow anaerobic sludge blanket reactors with conductive carbon materials. *Bioresource Technology*, 191, 140 - 145. doi:10.1016/j.biortech.2015.05.007
- Zheng, B., & Xu, J. (2014). Carbon Capture and Storage Development Trends from a Techno-Paradigm Perspective. *Energies*, 7(8), 5221-5250. Retrieved from <http://www.mdpi.com/1996-1073/7/8/5221>
- Zheng, H., et al. (2013). Impact of Pyrolysis Temperature on Nutrient Properties of Biochar. In J. Xu, J. Wu, & Y. He (Eds.), *Functions of Natural Organic Matter in Changing Environment* (pp. 975-978).
- Zheng, H., et al. . (2013). Impacts of adding biochar on nitrogen retention and bioavailability in agricultural soil. *Geoderma*, 206, 32-39. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0016706113001365>
- Zheng, Q.-f., et al. (2014). Study on Structural Properties of Biochar under Different Materials and Carbonized by FTIR. *Spectroscopy and Spectral Analysis*, 34, 962-966. Retrieved from https://www.researchgate.net/publication/263534855_Study_on_Structural_Properties_of_Biochar_under_Different_Materials_and_Carbonized_by_FTIR
- Zheng, R., Chen, Z., Cai, C., Tie, B., Liu, X., Reid, B. J., . . . Baltrénaitė, E. (2015). Mitigating heavy metal accumulation into rice (*Oryza sativa* L.) using biochar amendment — a field experiment in Hunan, China. *Environmental Science and Pollution Research*, 22(14), 11097-11008. doi:10.1007/s11356-015-4268-2
- Zheng, W., Guo, M. X., Chow, T., Bennett, D. N., & Rajagopalan, N. (2010). Sorption properties of greenwaste biochar for two triazine pesticides. *Journal of Hazardous Materials*,

- 181(1-3), 121-126. doi:10.1016/j.jhazmat.2010.04.103
- Zheng, Y., Tang, Q., Wang, T., & Wang, J. (2015). Lumping Strategy in Kinetic Modeling of Vacuum Pyrolysis of Plant Oil Asphalt. *Energy & Fuels*, 29(3), 1729 - 1734. doi:10.1021/ef502530q
- Zhi-dan, W., et al. (2014). Application of Biochar for Tea Plantation. *Fujian Journal of Agricultural Sciences*, 2014(06). Retrieved from <http://www.fjnyxb.cn/CN/abstract/abstract2453.shtml>
- Zhi-hui, Y., et al. (2013). Cr(III) adsorption by sugarcane pulp residue and biochar. *J. Cent. South Univ.*, 20, 1319-1325. Retrieved from http://edu.zndxzk.com.cn/down/2013/05_znen/24-p1319-e122108.pdf
- Zhi-lin, F., et al. . (2006). Experimental Study of NOReduction through Reburning of Biogas. *Energy Fuels*, 20(2), 579–582. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/ef050198e>
- Zhongyang, L., et al. (2015). Influences of biochars on growth, yield, water use efficiency and root morphology of winter wheat. *Transactions of the Chinese Society of Agricultural Engineering*, 31(12), 119-124. Retrieved from <http://web.b.ebscohost.com/abstract?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=10026819&AN=103550929&h=cl96P8STUPVmVPY4eEfYXQMqa5eclofNN5Omf826H1Wt9zhCGnBmTZ%2fuWYRrbAcgz3EnnYfVWzmiWIRNfQUL2g%3d%3d&crl=c&resultNs=AdminWebAuth&resultLocal=E>
- Zhongyi, Q., & Changjian, L. (2015). The Effect of Biochar with Different Content on Soil Hydraulic Conductivity. *Inicio*, 19(3), 41. Retrieved from <http://www.fagro.edu.uy/~agrociencia/index.php/directorio/article/view/1103>
- Zhou, F., Wang, H., Fang, S. e., Zhang, W., & Qiu, R. (2015). Pb(II), Cr(VI) and atrazine sorption behavior on sludge-derived biochar: role of humic acids. *Environmental Science and Pollution Research*, 22(20), 16031-16039. doi:10.1007/s11356-015-4818-7
- Zhou, H., Liu, K., Li, H., Cao, M., Fu, J., Gao, X., . . . Liu, M. (2019). Recent advances in different-dimension electrocatalysts for carbon dioxide reduction. *Journal of Colloid and Interface Science*, 550, 17-47. doi:<https://doi.org/10.1016/j.jcis.2019.04.077>
- Zhou, L., Liu, F., Liu, Q., Fortin, C., Tan, Y., Huang, L., & Campbell, P. G. C. Aluminum increases net carbon fixation by marine diatoms and decreases their decomposition: Evidence for the iron–aluminum hypothesis. *Limnology and Oceanography*, n/a(n/a). doi:<https://doi.org/10.1002/lno.11784>
- Zhou, S., & Flynn, P. C. (2005). Geoengineering Downwelling Ocean Currents: A Cost Assessment. *Climatic Change*, 71(1), 203-220. doi:10.1007/s10584-005-5933-0
- Zhou, W., Chen, P., Min, M., Ma, X., Wang, J., Griffith, R., . . . Ruan, R. (2014). Environment-enhancing algal biofuel production using wastewaters. *Renewable and Sustainable Energy Reviews*, 36, 256-269. doi:<https://doi.org/10.1016/j.rser.2014.04.073>
- Zhou, W., Wang, J., Chen, P., Ji, C., Kang, Q., Lu, B., . . . Ruan, R. (2017). Bio-mitigation of carbon dioxide using microalgal systems: Advances and perspectives. *Renewable and Sustainable Energy Reviews*, 76, 1163-1175. doi:<https://doi.org/10.1016/j.rser.2017.03.065>
- Zhou, X. P., Wang, F., Hu, H. W., Yang, L., Guo, P. H., & Xiao, B. (2011). Assessment of sustainable biomass resource for energy use in China. *Biomass & Bioenergy*, 35(1), 1-11. doi:10.1016/j.biombioe.2010.08.006
- Zhou, Y., Gao, B., Zimmerman, A. R., & Cao, X. (2014). Biochar-supported zerovalent iron reclaims silver from aqueous solution to form antimicrobial nanocomposite. *Chemosphere*, 117, 801 - 805. doi:10.1016/j.chemosphere.2014.10.057
- Zhou, Z., Du, C., Li, T., Shen, Y., Zeng, Y., Du, J., & Zhou, J. (2015). Biodegradation of a biochar-modified waterborne polyacrylate membrane coating for controlled-release fertilizer and its effects on soil bacterial community profiles. *Environmental Science and*

- Pollution Research*, 22(11), 8672-8682. doi:10.1007/s11356-014-4040-z
- Zhou, Z., Xu, X., Bi, Z., Li, L., Li, B., & Xiong, Z. (2016). Soil concentration profiles and diffusion and emission of nitrous oxide influenced by the application of biochar in a rice-wheat annual rotation system. *Environmental Science and Pollution Research*, 23(8), 7949-7961. doi:10.1007/s11356-015-5929-x
- Zhou, Z., Yuan, J., & Hu, M. (2014). Adsorption of ammonium from aqueous solutions on environmentally friendly barbecue bamboo charcoal: Characteristics and kinetic and thermodynamic studies. *Environmental Progress & Sustainable Energy*, 34(3), 655-662. doi:10.1002/ep.12036
- Zhu, K., Zhang, J., Niu, S., Chu, C., & Luo, Y. (2018). Limits to growth of forest biomass carbon sink under climate change. *Nature Communications*, 9(1), 2709. doi:10.1038/s41467-018-05132-5
- Zhu, L., Jiang, P., & Fan, J. (2015). Comparison of carbon capture IGCC with chemical-looping combustion and with calcium-looping process driven by coal for power generation. *Chemical Engineering Research and Design*, 104(Supplement C), 110-124. doi:<https://doi.org/10.1016/j.cherd.2015.07.027>
- Zhu, L., Lei, H., Wang, L., Yadavalli, G., Zhang, X., Wei, Y., . . . Ahring, B. (2015). Biochar of corn stover: Microwave-assisted pyrolysis condition induced changes in surface functional groups and characteristics. *Journal of Analytical and Applied Pyrolysis*, 115, 149-156. doi:10.1016/j.jaat.2015.07.012
- Zhu, L. D., Hiltunen, E., Antila, E., Zhong, J. J., Yuan, Z. H., & Wang, Z. M. (2014). Microalgal biofuels: Flexible bioenergies for sustainable development. *Renewable and Sustainable Energy Reviews*, 30, 1035-1046. doi:<https://doi.org/10.1016/j.rser.2013.11.003>
- Zhu, L. J., Yin, S., Yin, Q., Wang, H., & Wang, S. (2015). Biochar: a new promising catalyst support using methanation as a probe reaction. *Energy Science & Engineering*, 3(2), 126-134. doi:10.1002/ese3.58
- Zhu, L.-x., Xiao, Q., Shen, Y.-f., & Li, S.-q. (2017). Effects of biochar and maize straw on the short-term carbon and nitrogen dynamics in a cultivated silty loam in China. *Environmental Science and Pollution Research*, 24(1), 1019-1029. doi:10.1007/s11356-016-7829-0
- Zhu, M., et al. (2015). An Experimental Investigation into the Ignition and Combustion Characteristics of Single Droplets of Biochar Slurry Fuels. *Energy Procedia*, 75, 180 - 185. doi:10.1016/j.egypro.2015.07.286
- Zhu, P., Zhuang, Q., Eva, J., & Bernacchi, C. (2017). Importance of biophysical effects on climate warming mitigation potential of biofuel crops over the conterminous United States. *GCB Bioenergy*, 9(3), 577-590. doi:10.1111/gcbb.12370
- Zhu, Q., Peng, X., & Huang, T. (2015). Contrasted Effects of Biochar on Maize Growth and N Use Efficiency Depending on Soil ConditionsAbstract. *International Agrophysics*, 29(2). doi:10.1515/intag-2015-0023
- Zhu, Q., Wu, J., Wang, L., Yang, G., & Zhang, X. (2015). Effect of Biochar on Heavy Metal Speciation of Paddy Soil. *Water, Air, & Soil Pollution*, 226(12). doi:10.1007/s11270-015-2680-3
- Zhu, Q., Wu, J., Wang, L., Yang, G., & Zhang, X. (2016). Adsorption Characteristics of Pb²⁺ onto Wine Lees-Derived Biochar. *Bulletin of Environmental Contamination and Toxicology*, 97(2), 294-299. doi:10.1007/s00128-016-1760-4
- Zhu, W., Fusseis, F., Lisabeth, H., Xing, T., Xiao, X., De Andrade, V., & Karato, S.-i. (2016). Experimental evidence of reaction-induced fracturing during olivine carbonation. *Geophysical Research Letters*, 43(18), 9535-9543. doi:10.1002/2016gl070834
- Zhu, X., Liu, Y., Li, L., Shi, Q., Hou, J., Zhang, R., . . . Chen, J. (2019). Nonthermal air plasma dehydration of hydrochar improves its carbon sequestration potential and dissolved

- organic matter molecular characteristics. *Science of The Total Environment*, 659, 655-663. doi:<https://doi.org/10.1016/j.scitotenv.2018.12.399>
- Zhuang, Q., & Clements, B. (2017). Synergistic Effect on CO₂ Capture by Binary Solvent System. In Y. Yun (Ed.), *Recent Advances in Carbon Capture and Storage* (pp. Ch. 06). Rijeka: InTech.
- Zhuang, Q., Clements, B., & Li, B. (2017). Emerging New Types of Absorbents for Postcombustion Carbon Capture. In Y. Yun (Ed.), *Recent Advances in Carbon Capture and Storage* (pp. Ch. 04). Rijeka: InTech.
- Zickfeld, K. (2020). Guest post: Why CO₂ removal is not equal and opposite to reducing emissions. *Carbon Brief*. Retrieved from <https://www.carbonbrief.org/guest-post-why-co2-removal-is-not-equal-and-opposite-to-reducing-emissions>
- Zickfeld, K., Azevedo, D., Mathesius, S., & Matthews, H. D. (2021). Asymmetry in the climate–carbon cycle response to positive and negative CO₂ emissions. *Nature Climate Change*. doi:10.1038/s41558-021-01061-2
- Zickfeld, K., MacDougall, A., H. , & Matthews, H. D. (2016). On the proportionality between global temperature change and cumulative CO₂ emissions during periods of net negative CO₂ emissions. *Environmental Research Letters*, 11(5), 055006. Retrieved from <http://stacks.iop.org/1748-9326/11/i=5/a=055006>
- Ziegler, A. D., Phelps, J., Yuen, J. Q. I., Webb, E. L., Lawrence, D., Fox, J. M., . . . Koh, L. P. (2012). Carbon outcomes of major land-cover transitions in SE Asia: great uncertainties and REDD+ policy implications. *Global Change Biology*, 18(10), 3087-3099. doi:10.1111/j.1365-2486.2012.02747.x
- Ziegler, M., Diz, P., Hall, I. R., & Zahn, R. (2013). Millennial-scale changes in atmospheric CO₂ levels linked to the Southern Ocean carbon isotope gradient and dust flux. *Nature Geoscience*, 6, 457. doi:10.1038/ngeo1782
<https://www.nature.com/articles/ngeo1782#supplementary-information>
- Zielińska, A., & Oleszczuk, P. (2015). The conversion of sewage sludge into biochar reduces polycyclic aromatic hydrocarbon content and ecotoxicity but increases trace metal content. *Biomass and Bioenergy*, 75, 235 - 244. doi:10.1016/j.biombioe.2015.02.019
- Zielińska, A., & Oleszczuk, P. (2015). Evaluation of sewage sludge and slow pyrolyzed sewage sludge-derived biochar for adsorption of phenanthrene and pyrene. *Bioresource Technology*, 192, 618 - 626. doi:10.1016/j.biortech.2015.06.032
- Zielińska, A., Oleszczuk, P., Charmas, B., Skubiszewska-Zięba, J., & Pasieczna-Patkowska, S. (2015). Effect of sewage sludge properties on the biochar characteristic. *Journal of Analytical and Applied Pyrolysis*, 112, 201-213. doi:10.1016/j.jaap.2015.01.025
- Zilberman, D., et al. (2012). The Impact of Biofuels on Commodity Food Prices: Assessment of Findings. *American Journal of Agricultural Economics*, 95(2), 275-281. Retrieved from <https://academic.oup.com/ajae/article/95/2/275/69530/The-Impact-of-Biofuels-on-Commodity-Food-Prices>
- Zimmerman, A. R. (2010). Abiotic and Microbial Oxidation of Laboratory-Produced Black Carbon (Biochar). *Environmental Science & Technology*, 44(4), 1295-1301. Retrieved from <http://pubs.acs.org/doi/abs/10.1021/es903140c>
- Zimmerman, A. R., & Gao, B. (2013). The Stability of Biochar in the Environment. In *Biochar and Soil Biota*. Boca Raton, FL.: CRC Press.
- Zimmerman, A. R., Gao, B., & Ahn, M.-Y. (2011). Positive and negative carbon mineralization priming effects among a variety of biochar-amended soils. *Soil Biology and Biochemistry*, 43(6), 1169-1179. doi:doi:10.1016/j.soilbio.2011.02.005
- Zimmermann, M., et al. (2012). Rapid degradation of pyrogenic carbon. *Global Change Biology*, 18(11), 3306-3316. doi:10.1111/j.1365-2486.2012.02796.x
- Zinke, L. (2021). Wearing down olivine. *Nature Reviews Earth & Environment*, 2(1), 8-8.

doi:10.1038/s43017-020-00132-w

- Ziolkowska, J. R. (2020). Chapter 1 - Biofuels technologies: An overview of feedstocks, processes, and technologies. In J. Ren, A. Scipioni, A. Manzardo, & H. Liang (Eds.), *Biofuels for a More Sustainable Future* (pp. 1-19): Elsevier.
- Zoback, M. D., & Gorelick, S. M. (2012). Earthquake triggering and large-scale geologic storage of carbon dioxide. *Proceedings of the National Academy of Sciences*, 109(26), 10164-10168. doi:10.1073/pnas.1202473109
- Zolfi-Bavariani, M., Ronaghi, A., Ghasemi-Fasaei, R., & Yasrebi, J. (2016). Influence of poultry manure-derived biochars on nutrients bioavailability and chemical properties of a calcareous soil. *Archives of Agronomy and Soil Science*, 62(11), 1578-1591. doi:10.1080/03650340.2016.1151976
- Zomer, R. J., Bossio, D. A., Sommer, R., & Verchot, L. V. (2017). Global Sequestration Potential of Increased Organic Carbon in Cropland Soils. *Scientific Reports*, 7(1), 15554. doi:10.1038/s41598-017-15794-8
- Zomer, R. J., Neufeldt, H., Xu, J., Ahrends, A., Bossio, D., Trabucco, A., . . . Wang, M. (2016). Global Tree Cover and Biomass Carbon on Agricultural Land: The contribution of agroforestry to global and national carbon budgets. *Nature Scientific Reports*, 6, 1-12. doi:10.1038/srep29987
- <http://dharmastra.live.cf.private.springer.com/articles/srep29987#supplementary-information>
- Zomer, R. J., Trabucco, A., Bossio, D. A., & Verchot, L. V. (2008). Climate change mitigation: A spatial analysis of global land suitability for clean development mechanism afforestation and reforestation. *Agriculture, Ecosystems & Environment*, 126(1), 67-80. doi:<https://doi.org/10.1016/j.agee.2008.01.014>
- Zong, Y., Chen, D., & Lu, S. (2014). Impact of biochars on swell-shrinkage behavior, mechanical strength, and surface cracking of clayey soil. *Journal of Plant Nutrition and Soil Science*, 177(6), 920-926. doi:10.1002/jpln.201300596
- Zong, Y., Xiao, Q., & Lu, S. (2015). Acidity, water retention, and mechanical physical quality of a strongly acidic Ultisol amended with biochars derived from different feedstocks. *Journal of Soils and Sediments*, 16(1), 177-190. doi:10.1007/s11368-015-1187-2
- ZongLu, Y., Min, L., LiXin, Z., HaiBo, M., Hongbin, C., & Shulin, H. (2015). Design and experiment on biochar second-stage cooling system with spiral-flow. *Transactions of the Chinese Society of Agricultural Engineering*, 31(13), 221-228. Retrieved from <http://web.b.ebscohost.com/abstract?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=10026819&AN=108915230&h=gMudaxMPeAyr2R1BMbns87vJyPSJeFeEfjwlJs%2bHgU3VmoSb9ssjDkvP0diSAUVpNMjzfhr2kCQrikQYtg%3d%3d&crl=c&resultNs=AdminWebAuth&resultLocal=E>
- Zou, C.-j., et al. (2015). Regulation of biochar on matrix enzyme activities and microorganisms around cucumber roots under continuous cropping. *Yingyong Shengtai Xuebao*, 26(6), 1772-1778. Retrieved from <http://web.b.ebscohost.com/abstract?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=10019332&AN=103434094&h=FFBRbXc1y4rhrSKAmpJng49LKKYw2pZTjPUDmdWqT8Mt7rJARMvo4eSFd%2bGFvwNhJ2vDD8GGNX9HAdPyYcB7A%3d%3d&crl=c&resultNs=AdminWebAuth&resultLocal=E>
- Zubrik, A., et al. (2015). Synthesis of Magnetic Materials from Natural Carbon Precursors - a Review. *Journal of the Polish Mineral Engineering Society*, 15(2), 127-130. Retrieved from http://www.potopk.republika.pl/Full_text/im%202-2014-a22.pdf
- Zuidema, L. (2020). *State aid for solid biomass: The case for improved scrutiny*. Retrieved from https://cadmus.eui.eu/handle/1814/68737?utm_source=Fern+Global+List&utm_campaign=e9d77d75c5-EMAIL_CAMPAIGN_4_10_2019_9_12_COPY_04&utm_medium=email&utm_term=0_a

3733965c2-e9d77d75c5-328541189

- Zukowski, D. (2017). Carbon Capture Breakthrough in India Converts CO₂ Into Baking Powder. Retrieved from <http://www.ecowatch.com/carbon-capture-india-baking-soda-2177070984.html>
- Zumbach, L. (2020). United Airlines making investments to be carbon neutral by 2050. 'It's just not realistic to think we can plant enough trees.'. *Chicago Tribune*. Retrieved from <https://www.chicagotribune.com/business/ct-biz-united-airlines-cut-emissions-carbon-capture-20201210-zrxpwseytbd5fakmjj7pi544y-story.html>
- Zunsheng, J., Lifa, Z., Runmin, G., Tingting, L., Hong, W., Wang, H., . . . Quillinan, S. (2014). Opportunity and Challenges of Integrated Enhanced Oil Recovery Using CO₂ Flooding with Geological CO₂ Storage in the Ordos Basin, China. *Energy Procedia*, 63, 7761-7771. doi:<https://doi.org/10.1016/j.egypro.2014.11.810>
- Zuo, X., Chen, M., Fu, D., & Li, H. (2016). The formation of alpha-FeOOH onto hydrothermal biochar through H₂O₂ and its photocatalytic disinfection. *Chemical Engineering Journal*, 294, 202 - 209. doi:[10.1016/j.cej.2016.02.116](https://doi.org/10.1016/j.cej.2016.02.116)
- Zuo, X., Liu, Z., & Chen, M. (2016). Effect of H₂O₂ concentrations on copper removal using the modified hydrothermal biochar. *Bioresource Technology*, 207, 262 - 267. doi:[10.1016/j.biortech.2016.02.032](https://doi.org/10.1016/j.biortech.2016.02.032)
- Zurich, E. (2019). How trees could help to save the climate* [Press release]. Retrieved from <https://ethz.ch/en/news-and-events/eth-news/news/2019/07/how-trees-could-save-the-climate.html>
- Zurich, E. (2021). Climate action potential in waste incineration plants [Press release]. Retrieved from https://www.eurekalert.org/pub_releases/2021-05/ez-ca050321.php
- Zvomuya, F., & Laskosky, J. (2014). Organic Amendment Effects on Greenhouse Gas Emissions from Long-Term Stockpiled Soils. *American Geophysical Union, Fall Meeting*. Retrieved from <http://adsabs.harvard.edu/abs/2014AGUFM.B41A003Z>
- Zwart, D. C., & Kim, S.-H. (2012). Biochar Amendment Increases Resistance to Stem Lesions Caused by Phytophthora spp. in Tree Seedlings. *Hort Science*, 47(12), 1736-1740. Retrieved from <http://hortsci.ashspublications.org/content/47/12/1736.full>
- Zwetsloot, M. (2013). *Plant Available Phosphorus From Bone Char And Biochar Additions In A Phosphorus-Fixing Soil*. (Master of Science). Cornell University, Retrieved from <http://ecommons.library.cornell.edu/handle/1813/34315>
- Zwetsloot, M. J., Lehmann, J., & Dawit, S. (2014). Recycling slaughterhouse waste into fertilizer: how do pyrolysis temperature and biomass additions affect phosphorus availability and chemistry? *Journal of the Science of Food and Agriculture*, 95(2), 281-288. doi:[10.1002/jsfa.6716](https://doi.org/10.1002/jsfa.6716)
- Zyga, L. (2016). Carbon dioxide captured from air can be directly converted into methanol fuel. *Phys.org*. Retrieved from <https://phys.org/news/2016-01-carbon-dioxide-captured-air-methanol.html>