

NATHAN E. HULTMAN

Director, Center for Global Sustainability
Professor, School of Public Policy
University of Maryland

2101 Van Munching Hall
College Park MD 20742
Tel: 301.405.3429 | Email: hultman@umd.edu

AREAS OF EXPERTISE

National climate strategies, including climate target setting, assessment, and Nationally Determined Contributions (NDCs) under the Paris Agreement; United States national and subnational climate strategies; U.S. NDCs and Long Term Strategy; International climate policy; Role of subnational actors to support national and global action; National climate strategies in China, India, Brazil, Indonesia, and others.

HISTORY OF EMPLOYMENT

University of Maryland	Founder & Director, Center for Global Sustainability (2016–) Professor, School of Public Policy (2021–) Associate Professor, School of Public Policy (2012–21) Assistant Professor, School of Public Policy (2008–12) Senior Advisor (2021–)
Office of the Special Presidential Envoy for Climate, U.S. Department of State	
White House Council on Env Quality	Dep Assoc Director for Energy & Climate Change (2014–16)
Georgetown University	Assistant Professor, School of Foreign Service (2003–2007)
Lawrence Berkeley National Laboratory	Research Assistant, Env. Energy Tech. Division (2000)
NASA Goddard Space Flight Center	Graduate Research Assistant (1996)
<i>Note: on leave from University of Maryland 2014–16, 2021–</i>	

OTHER APPOINTMENTS

Joint Global Change Research Institute	2008–14, 2016–	Associate Director (<i>JGCRI is a collaboration of University of Maryland and US DOE Pacific Northwest National Laboratory</i>)
The Brookings Institution	2014, 2016–21	Nonresident Senior Fellow
	2008–2013	Nonresident Fellow
University of Oxford	2006–2009	Associate Fellow, Institute for Science, Innovation, & Society
	2006–2007	Visiting Fellow, Environmental Change Institute

EDUCATION

Ph.D.	University of California, Berkeley Energy & Resources (2003)
M.S.	University of California, Berkeley Energy & Resources (1999)
B.A.	Carleton College Physics, <i>magna cum laude</i> , conc. Environment & Technology Studies (1996)

AWARDS

2019	World Citizen Prize. Association for Public Policy Analysis & Management (APPAM). Recognizes research that assesses pathways to achieve measurable but as-yet unrealized gains in overall environmental performance.
2012	Best Comparative International Paper. APPAM, & International Comparative Analysis Forum, for “Factors in Low-Carbon Energy Transformations: Comparing Nuclear and Bioenergy in Brazil, Sweden, & the U.S.”
1996	Lawrence McKinley Gould Prize in Natural Science. Carleton College

GRANTS & FELLOWSHIPS (SELECTED)

CGS fundraising 2016–2021 approx. \$12 million of which \$7.5 million as PI or Co-PI

2021–23	Sloan Foundation. Effects of Corporate Investment in Energy and Climate Innovation, Led by K. Surana and M. Edwards (co-PIs) with N. Hultman (PI).
2020–21	Sequoia Climate Fund. International Engagement.
2018–21	ClimateWorks Foundation. Subnational action and Independent Global Stocktake.
2018–21	Bloomberg Philanthropies. Analysis lead for America’s Pledge Initiative on Climate Change

- 2017–21 **Bloomberg Philanthropies and Energy Foundation.** Global Coal Track Project; Global Coal Policy and Analysis for Decarbonization Project. With R. Cui (co-PI).
- 2018–20 **National Science Foundation.** SBE-RCUK: Co-location of manufacturing and innovation: drivers and impacts of innovation along the wind energy global value chain. Co-PI with K. Surana (PI), L. Diaz Anodon, and C. Dobliger.
- 2018–20 **National Science Foundation.** NRT-INFEWS: UMD Global STEWARDS (STEM Training at the Nexus of Energy, WAter Reuse and FooD Systems). Co-PI with Amy Sapkota (PI), A. Davis, J. Dubois, X.Z. Liang, J. Meng, S. Micallef, M. Pop, Amir Sapkota.
- 2011–16 **National Science Foundation:** Hultman, N.E. (PI) CAREER: “Policy for low-carbon technology investment: A comparative international perspective on emerging economy responses to climate change”
- 2009–12 **National Science Foundation:** Hultman, N.E. (PI) and S. Pulver (PI): “Collaborative Research: Creating Carbon Markets in Brazil and India: A comparative study of firm environmental investment decisions under the Clean Development Mechanism.”
- 2009–11 **National Science Foundation:** Hultman, N.E. (PI), L. Clarke, E. Malone, P. Runci, “Incorporating institutional, political, and other non-economic drivers in models of large-scale energy transformations to address climate change.”
- 2000–03 **NASA Earth Systems Science Graduate Fellowship**
- 1997–2000 **William and Flora Hewlett Foundation Fellowship**
- 1996–97 **Fulbright Fellowship, Stockholm University, Sweden**

PUBLICATIONS IN PEER-REVIEWED JOURNALS (*current & former students and postdocs underlined*)

1. D.J. van de Ven, M. Westphal, M. Gonzalez-Eguino, A. Gambhir, G. Peters, I. Sognaes, H. McJeon, N. Hultman, K. Kennedy, T. Cyr, L. Clarke (2021). The impact of U.S. re-engagement in climate on the Paris targets. *Earth's Future*. <https://doi.org/10.1029/2021EF002077>
2. Lamb, R.L., G. Hurtt, Edmonds, J., R. Dubayah, N. Hultman, et al. (2021). “Geospatial assessment of the economic opportunity for reforestation in Maryland, USA” *Environmental Research Letters*. <https://doi.org/10.1088/1748-9326/ac109a>
3. He, L. and N. Hultman (2021). “Urban agglomerations and cities’ capacity in environmental enforcement and compliance.” *Journal of Cleaner Production*. 313: 127585. <https://doi.org/10.1016/j.jclepro.2021.127585>
4. Edmonds, J., S. Yu, D. Forrister, J. Aldy, N. Hultman, R. Cui, S. Waldhoff, L. Clarke, H. McJeon (2021). “How much could Article 6 enhance Nationally Determined Contribution ambition toward Paris Agreement goals through economic efficiency?” *Climate Change Economics* 2150007. DOI 10.1142/S201000782150007X
5. Lamb, R.L., G. Hurtt, T.J. Boudreau, E. Campbell, E. Sepúlveda Carlo, H.-H. Chu, J. de Mooy, R.O. Dubayah, D. Gonsalves, M. Guy, N. Hultman, S. Lehman, B. Leon, A. Lister, C. Lynch, L. Ma, C.R. Martin, N.P. Robbins, A. Rudee, C. E Silva, C. Skoglund, H. Tang (2021). “Context and future directions for integrating forest carbon into sub-national climate mitigation planning in the RGGI region of the U.S.” *Environmental Research Letters*. 16 063001.
6. Chan, S., I. Boran, H. van Asselt, P. Ellinger, M. Garcia, T. Hale, L. Hermwille, K. Liti Mbeva, A. Mert, C. B. Roger, A. Weinfurter, O. Widerberg, P. Bynoe, V. Chengo, A. Cherkaoui, T. Edwards, M. Gütschow, A. Hsu, N. Hultman, D. Levaï, S. Mihnar, S. Posa, M. Roelfsema, B. Rudyk, M. Scobie, M. Kumar Shrivastava (2021). “Climate Ambition and Sustainable Development for a New Decade: A Catalytic Framework.” *Global Policy* <https://doi.org/10.1111/1758-5899.12932>
7. Cui, R.Y., N. Hultman, K. Jiang, D. Cui, H. McJeon, S. Yu, M. Edwards, A. Sen, K. Song, C. Bowman, L. Clarke, J. Kang, F. Yang, J. Yuan, W. Zhang (2021). “A plant-by-plant strategy for high-ambition coal power phaseout in China.” *Nature Communications* 12:1468. <https://doi.org/10.1038/s41467-021-21786-0>
8. Cropper, M., R. Cui, S. Guttikunda, N. Hultman, P. Jawahar, Y. Park, X. Yao, X. Song (2021). “The Mortality Impacts of Current and Planned Coal-Fired Power Plants in India.” *Proceedings of the National Academy of Sciences* 118 (5) e2017936118; <https://doi.org/10.1073/pnas.2017936118>
9. Hultman, N., L. Clarke, C. Frisch, K. Kennedy, H. McJeon, T. Cyr, P. Hansel, P. Bodnar, M. Manion, M.R. Edwards, R. Cui, C. Bowman, J. Lund, M. Westphal, A. Clapper, J. Jaeger, A. Sen, J. Lou, D. Saha, W. Jaglom, K. Calhoun, K. Igusky, J. deWeese, K. Hammoud, J.C. Altimirano, M. Dennis, C. Henderson, G. Zwicker, J.

- O'Neill (2020). "Fusing national and sub-national climate action is central to rapid near-term decarbonization: The case of the United States." *Nature Communications* 11:5255 <https://doi.org/10.1038/s41467-020-18903-w>
10. Surana, K., C. Dobliger, L. Diaz Anodon, **N. Hultman** (2020). "Technology complexity affects the emergence and evolution of wind manufacturing locations along global value chains." *Nature Energy* 5: 811–821. <https://doi.org/10.1038/s41560-020-00685-6>
 11. **Hultman, N.**, J. Lou, and S. Hutton (2020). "A review of community co-benefits of the Clean Development Mechanism (CDM)." *Environmental Research Letters* 15:5. doi: 10.1088/1748-9326/ab6396
 12. Cui, R.Y., **N. Hultman**, M. Edwards, L. He, A. Sen, K. Surana, H. McJeon, G. Iyer, P. Patel, S. Yu, T. Nace, C. Shearer (2019). "Quantifying operational lifetimes for coal power plants under the Paris goals." *Nature Communications* 10: 4759. <https://doi.org/10.1038/s41467-019-12618-3>
 13. Hsu, A., N. Höhne, T. Kuramochi, M. Roelfsema, A. Weinfurter, Y. Xie, K. Lütkehermöller, S. Chan, J. Corfee-Morlot, P. Drost, P. Faria, A. Gardiner, D.J. Gordon, T. Hale, **N. Hultman**, J. Moorhead, S. Reuvers, J. Setzer, N. Singh, C. Weber, O. Widerberg (2018). "A research roadmap for quantifying non-state and subnational climate mitigation action." *Nature Climate Change* 9:11-17.
 14. Iyer, G., K. Calvin, L. Clarke, J. Edmonds, **N. Hultman**, C. Hartin, H. McJeon, J. Aldy, B. Pizer (2018). "Implications of sustainable development considerations for comparability across NDCs." *Nature Climate Change* 8:124–129.
 15. Malone, E.L., **N. Hultman**, K. Anderson, V. Romeiro (2017). "Stories about Ourselves: How national narratives influence the diffusion of large-scale energy technologies." *Energy Research & Social Science* 31:70-76. doi:10.1016/j.erss.2017.05.035
 16. Iyer, G.C., L.E. Clarke, J.A. Edmonds, **N. Hultman**, "Do national-level policies to promote low-carbon technology deployment pay off for the investor countries?" (2016). *Energy Policy* 98:400-411. doi:10.1016/j.enpol.2016.08.017
 17. Dutta, V., P. Dasgupta, **N. Hultman**, G. Gadag (2016). "Evaluating expert opinion on India's climate policy: opportunities and barriers to low-carbon inclusive growth." *Climate and Development* doi: 10.1080/17565529.2015.1067181
 18. Fawcett, A.A., G.C. Iyer, L.E. Clarke, J.A. Edmonds, **N.E. Hultman**, H.C. McJeon, J. Rogelj, R. Schuler, J. Alsalam, G.R. Asrar, J. Creason, M. Jeong, J. McFarland, A. Mundra, W. Shi (2015). "Can Paris Pledges Avert Severe Climate Change?" *Science* 350(6265):1168-1169 doi: 10.1126/science.aad5761
 19. Iyer, G.C., J.A. Edmonds, L.E. Clarke, G.R. Asrar, **N. Hultman**, M. Jeong, A. Mundra, W. Shi, J. Alsalam, J. Creason, A.A. Fawcett, J. McFarland, H.C. McJeon (2015). "The contribution of Paris to limit global warming to 2°C." *Environmental Research Letters*. 10(125002). doi: 10.1088/1748-9326/10/12/125002
 20. Iyer, G.C., L.E. Clarke, J.A. Edmonds, B.P. Flannery, **N. Hultman**, H.C. McJeon, D.G. Victor (2015), "Improved Representation of Investment Decisions in Integrated Assessment Models." *Nature Climate Change*. 5(36-440) doi:10.1038/nclimate2553
 21. Iyer, G.C., **N.E. Hultman**, J. Eom, H. McJeon, P. Patel, L. Clarke (2015). "Diffusion of low-carbon technologies and the feasibility of long-term climate targets." *Technological Forecasting and Social Change*. DOI: 10.1016/j.techfore.2013.08.025
 22. Iyer, G.C., L. E. Clarke, J. A. Edmonds, **N.E. Hultman**, and H.C. McJeon (2015), "Long-term payoffs of near-term low-carbon deployment policies." *Energy Policy*, 86, 493–505, doi:10.1016/j.enpol.2015.08.004.
 23. Iyer, G.C., **N. Hultman**, S. Fetter, S.H. Kim (2014). "Implications of small modular reactors for climate change mitigation." *Energy Economics* 45: 144–154. DOI: 10.1016/j.eneco.2014.06.023
 24. **Hultman, N.**, E.L. Malone, E.L., P. Runci, G. Carlock, K. Anderson (2012). "Factors in low-carbon energy transformations: Comparing nuclear and bioenergy in Brazil, Sweden, and the U.S." *Energy Policy* 40:131–146. doi:10.1016/j.enpol.2011.08.064
 25. **Hultman, N.**, E. Sulle, C. Ramig, S. Sykora-Bodie (2012). "Biofuels Investments in Tanzania: Policy Options for Sustainable Business Models." *Journal of Environment & Development* 21(3) 339–361.
 26. **Hultman, N.**, S. Pulver, R. Deshmukh, L. Guimarães, and J. Kane (2012). "Carbon market risks and rewards: Firm perceptions of CDM investment decisions in Brazil and India." *Energy Policy* 40: 90–102. <https://doi.org/10.1016/j.enpol.2010.06.063>
 27. **Hultman, N.**, D. Rebois, M. Scholten, C. Ramig (2011). "The greenhouse gas footprint of unconventional gas for electricity generation." *Environmental Research Letters* 6(04408): 1–9. doi:10.1088/1748-9326/6/4/044008.

28. **Hultman, N.**, S. Pulver, S. Pacca, S. Saran, L. Powell, **V. Romeiro**, T. Benney (2011). "Carbon Markets and Low-carbon Investment in Emerging Economies." *Energy Policy*, 39: 6698–6700. DOI: 10.1016/j.enpol.2011.08.006.
29. **Hultman, N.** (2011). "The Political Economy of Nuclear Energy." (Invited). *Wiley Interdisciplinary Reviews: Climate Change* 2(3) 397-411. DOI 10.1002/wcc.113
30. **Hultman, N.**, Hassenzahl, D.M., and Rayner, S. (2010). "Climate Risk." (Invited). *Annual Reviews of Environment and Resources*, 35: 283-303.
31. Pulver, S., **N. Hultman**, and **L. Guimaraes**. "The CDM, carbon markets, and environmental entrepreneurship in Brazil's sugar sector." (2010). *Climate and Development* 2: 248–262.
32. Bozmoski, A. and **N. Hultman** (2010). "Carbon-forestry in Rural Tanzania: Local & Institutional Perceptions of Risk & Benefit in Pursuit of CDM Approval." *Journal of Environment and Development* 19: 4-27.
33. **Hultman, N.**, Emily Boyd, J. Timmons Roberts, John Cole, Esteve Corbera, Johannes Ebeling, Katrina Brown, and Diana M. Liverman (2009), "How can the Clean Development Mechanism better contribute to sustainable development?" *Ambio* 38(2): 120-122.
34. Boyd, E., **N. Hultman**, J.T. Roberts, E. Corbera, J. Cole, **A. Bozmoski**, J. Ebeling, R. Tippman, K. Brown, D.M. Liverman (2009). "Reforming the Clean Development Mechanism for Sustainable Development: Lessons learned and future prospects." *Environmental Science & Policy* 12(3): 820-831.
35. **Hultman, N.** and J.G. Koomey (2007). "The risk of surprise in energy technology costs." *Env. Research Letters* 2 (034002): 1-6.
36. Koomey, J.G. and **N. Hultman** (2007). "A Reactor-level analysis of busbar costs for U.S. nuclear plants, 1970-2005." *Energy Policy* 35(11): 5630-5642. doi:10.1016/j.enpol.2007.06.005.
37. **Hultman, N.**, J.G. Koomey, and D.M. Kammen (2007). "What history can teach us about the future costs of nuclear power." *Env. Science & Technology*, 41(7): 2088–2093.
38. **Hultman, N.** (2006). "Geographic Diversification of Carbon Risk: A Methodology for Assessing Carbon Investments using Eddy Correlation Measurements." *Global Environmental Change* 16: 58-72.
39. **Hultman, N.** and **A.S. Bozmoski** (2006). "The Changing Face of Normal Disaster: Risk, Resilience, and Natural Security in a Changing Climate." *Journal of International Affairs*, 59 (2): 25-41.
40. **Hultman, N.** (2006). "Worth More than Good Advice: Lessons of Hurricane Katrina for Development in a Changing Climate." *Georgetown Journal of Public Policy* 11(1): 47-56.
41. **Hultman, N.** (2004). "Emerging Carbon Markets and the Future of Climate Policy." *Georgetown Journal of International Affairs*, Winter/Spring, 5(1): 107-113.
42. Law, B.E., A.H. Goldstein, P.M. Anthoni, M.H. Unsworth, J.A. Panek, M.R. Bauer, J.M. Fracheboud, **N. Hultman**. (2001) "CO₂ and water vapor exchange by young and old ponderosa pine ecosystems during a drought year." *Tree Physiology*, 21, 299–308.
43. Baer, P., J. Harte, B. Haya, A.V. Herzog, J. Holdren, **N. Hultman**, D.M. Kammen, R.B. Norgaard, and L. Raymond (2000). "Climate change: Equity and greenhouse gas responsibility." *Science* 289 (5488): 2287.
44. Goldstein, A.H., **N. Hultman**, J.M. Fracheboud, M.R. Bauer, J.A. Panek, M. Xu, Y. Qi, A.B. Guenther, W. Baugh (2000). "Effects of climate variability on the carbon dioxide, water, and sensible heat fluxes above a ponderosa pine plantation in the Sierra Nevada (CA)." *Agricultural and Forest Meteorology* 101(2-3):113–129.
45. Bauer, M.R., J.A. Panek, **N. Hultman**, and A.H. Goldstein (2000) "Ozone deposition to a ponderosa pine plantation in the Sierra Nevada Mountains (CA): a comparison of two different climatic years." *J. Geophys. Res.*, 105(D17): 22123–22136.

REPORTS AND PAPERS (SELECTED)

1. Climate Advisers and Center for Global Sustainability with UK Government (2021). *U.S. Green Economy Report: Analysis of the current and future potential for the US green economy across 25 key states*. By N. McCarthy, M. Piotrowski, C. Langley, K. Surana, L. Clarke, **N. Hultman**, N. Purvis, et al. National Report plus 25 State Reports and Technical Appendix. Available at: <https://usgreeneconomy.com/>
2. **Hultman, N.**, K. Kennedy, L. Clarke, H. McJeon, T. Cyr, J. O'Neill, A. Zhao, J. Behrendt, W. Jaglom, T. McGarvey, J. Feldmann, R. Cui, K. O'Keefe (2021). "An All-In climate strategy can cut U.S. emissions by 50% by 2030." *America Is All In* with University of Maryland Center for Global Sustainability, World Resources Institute, Rocky Mountain Inst., & Bloomberg Philanthropies. (7 pp. plus Technical Appendix). Available at: <https://www.americaisallin.com/wp-content/uploads/2021/04/all-in-climate-strategy-report2021rd3-3.pdf>

3. **Hultman, N.**, L. Clarke, H. McJeon, R. Cui, P. Hansel, E. McGlynn, K. O’Keefe, J. O’Neill, C. Wanner, A. Zhao (2021). “Charting an ambitious U.S. NDC of 51% reductions by 2030.” Center for Global Sustainability Working Paper (7 pp. plus Technical Appendix). Available at: https://cgs.umd.edu/sites/default/files/2021-03/Working%20Paper_ChartNDC_Feb2021.pdf
4. **Hultman, N.**, K. Kennedy, T. Cyr, W. Jaglom, C. Frisch, L. Clarke, A. Light (2021). “An All-In National Climate Strategy to Deliver Ambitious, Robust, and Credible U.S. Action” America Is All In with University of Maryland Center for Global Sustainability, World Resources Institute, Rocky Mountain Institute, & Bloomberg Philanthropies. Available at: <https://www.americaisallin.com/wp-content/uploads/2021/02/all-in-national-climate-strategy.pdf>
5. **Hultman, N.** (2020). “Building an ambitious and robust U.S. climate target: A comprehensive process to catalyze national and subnational climate action for the next NDC.” Brookings & Center for Global Sustainability. Brookings Global Economy & Development Working Paper 146, 30 pp. Available at: <https://www.brookings.edu/research/building-an-ambitious-and-robust-us-climate-target/>
6. Fu, S., X. Du, L. Clarke, S. Yu, Z. Feng, X. Wang, L. Chen, Z. Yang, J. Liu, L. Yang, Forsell, F. Guo, V. Krey, M. Chen, K. Wang, Q. Chai, Q. Zhang, R. Cui, **N. Hultman**, J. Lou, J. Song (2020). “Synthesis Report 2020 on China’s Carbon Neutrality: China’s New Growth Pathway: from the 14th Five Year Plan to Carbon Neutrality.” Energy Foundation China, Beijing, China. Available at: <https://www.efchina.org/Reports-en/report-lceg-20201210-en>.
7. Hale, T. and **N. Hultman** (2020). ‘All in’ climate diplomacy: How a Biden-Harris administration can leverage city, state, business, and community climate action. Brookings Global Economy & Development Working Paper 147, 12 pp. Available at: <https://www.brookings.edu/research/all-in-climate-diplomacy-how-a-biden-harris-administration-can-leverage-city-state-business-and-community-climate-action/>
8. **R. Cui**, J. Song, **N. Hultman**, D. Cui, **M. Edwards**, **H. McJeon** (2020). Implications of Continued Coal Builds in the 14th Five-Year Plan of China. Center for Global Sustainability, 15 pp. <https://cgs.umd.edu/research-impact/publications/implications-continued-coal-builds-14th-five-year-plan-china-eng>
9. Cui, R., **N. Hultman**, K. Jiang, H. McJeon, S. Yu, D. Cui, M. Edwards, A. Sen, K. Song, C. Bowman, L. Clarke, J. Kang, F. Yang, J. Yuan, W. Zhang (2020). “A High Ambition Coal Phaseout in China: Feasible Strategies through a Comprehensive Plant-by-Plant Assessment.” Center for Global Sustainability: College Park, Maryland. 37 pp. Available in English and Chinese at StateOfGlobalCoal.org.
10. Jaglom, W., C. Frisch, K. Kennedy, L. Clarke, **N. Hultman**, T. Cyr, J. Lund, D. Saha, J. Feldmann, **C. Bowman**, **J. O’Neill**, M. Campton, M. Herbert, L. Calle, A. Light, P. Bodnar (2020). *Delivering on America’s Pledge: Achieving Climate Progress in 2020*. The America’s Pledge Initiative on Climate Change. Published by Bloomberg Philanthropies with Rocky Mountain Institute, University of Maryland Center for Global Sustainability, and World Resources Institute. 81 pp. Available at: <https://www.americaisallin.com/reports-news/>
11. **Hultman, N.**, C. Frisch, L. Clarke, K. Kennedy, P. Bodnar, P. Hansel, T. Cyr, M. Manion, M. Edwards, J. Lund, C. Bowman, J. Jaeger, R. Cui, A. Clapper, A. Sen, D. Saha, M. Westphal, W. Jaglom, J.C. Altamirano, H. Hashimoto, M. Dennis, K. Hammoud, C. Henderson, G. Zwicker, M. Ryan, J. O’Neill, E. Goldfield (2019). *Accelerating America’s Pledge: Going All-In to Build a Prosperous, Low-Carbon Economy for the United States*. New York: The America’s Pledge Initiative on Climate Change and Bloomberg Philanthropies, with the University of Maryland Center for Global Sustainability, Rocky Mountain Institute, and World Resources Institute. 156 pp. consisting of 94 pp. Report, 62 pp. Tech Appx. Available at: <https://www.americaisallin.com/reports-news/>
12. **Hultman, N.**, K. Calhoun, P. Bodnar, K. Kennedy, M. Manion, P. Hansel, T. Crys, K. Igusky, C. Bowman, J. DeWeese, A. Sen, J. Lou, K. Chen, J.Y. Akopian, S. Russell, N. Keohane, D. Francis, D. Ribeiro, W. Berg, S. Smarripas, S. Vaidyanathan, P. Kiely, C. Jiang, M. Brownstein, M. Watson, J. Peress, D. Lyon, Mulligan, T. Clevenger, J. Thwaites, H. Hull, A. Benn, E. Franconi, E.J. Klock-McCook, M. Liebman, W. Krawczyk, J. Frech, F. Sanchez, A. Prada, A. Clapper, L. Cervantes Valdivieso, Z. Abdullah, I. van der Vlugt, J. Crowe, E. Waggoner, G. Stevens, M. Gordon, E. Messer, N. Veilleux, J. Koo. (2018). *Fulfilling America’s Pledge: How States, Cities and Businesses are Leading the United States to a Low-Carbon Future*. New York: The America’s Pledge Initiative on Climate Change and Bloomberg Philanthropies, with the University of Maryland Center for Global Sustainability, Rocky Mountain Institute, World Resources Institute, Environmental Defense Fund, American Council on an Energy Efficient Economy, CDP, and the Cadmus Group. 256 pp. consisting of 168 pp. Report, 88 pp. Technical Appendix. Available at: <https://www.americaisallin.com/reports-news/>

13. Cui, R.Y., **N. Hultman**, H. McJeon, L. He, A. Sen, K. Surana, X. Tan, S. Kennedy. The State of Global Coal Power: Proposed New Capacity and Power Sector Decarbonization (2018). Technical report (48 pp.) available at StateOfGlobalCoal.org.
14. Binsted, M., **N. Hultman**, W. Hanson, A. Miller, T. St. Clair (2017). "Climate Change Risk and the Maryland State Retirement and Pension System." College Park, MD: Center for Global Sustainability Report, 49 pp. Available at cgs.umd.edu.
15. **Hultman, N.E.**, Jacobson, A., N. Lam, T. Bond, N. Hultman. (2013). "Black Carbon and Kerosene Lighting: An Opportunity for Rapid Action on Climate Change and Clean Energy for Development." Washington DC: The Brookings Institution, Global Economy and Development, *Global Views* 2013-03, 13 pp.
16. **Hultman, N.**, K. Sierra, J. Eis, and A. Shapiro (2012). "Green Growth Innovation: New Pathways for International Cooperation" Washington DC: The Brookings Institution, 65 pp.
17. Ebinger, C., **N.E. Hultman**, K. Massy, G. Avasarala, D. Rebois (2011). "Options for low-carbon development in the countries of the Gulf Cooperation Council." Energy Security Initiative Policy Brief 11-02, The Brookings Institution, Washington D.C., 29 pp.
18. Ruth, M., K. Ross, **N. Hultman**, K. Palmer, A. Paul, B. Hobbs, J. Mauer, I.D. Valencia, N. Herrmann, E. Myers, D. Irani, J. Michael, Y. Chen (2008). "The Role of Energy Efficiency Spending in Maryland's Implementation of the Regional Greenhouse Gas Initiative." College Park, MD: Center for Integrative Env Research. 98pp.
19. Boyd, E., **N. Hultman**, J.T. Roberts, E. Corbera, J. Ebeling, D.M. Liverman, K. Brown, R. Tippmann, J. Cole, P. Mann, M. Kaiser, M. Robbins, A. Bumpus, A. Shaw, E. Ferreira, A. Bozmoski, C. Villiers, J. Avis (2007). "The future of the Clean Development Mechanism: An assessment of current practice and approaches for policy." Tyndall Centre on Climate Change (UK), 46 pp.

WORKING PAPERS

1. Cui, R., **N. Hultman**, W. Cai, H. McJeon, L. Clarke, J. Yuan. A U.S.-China Coal Phaseout and the Global 1.5-degree Pathway. 15 pp. Submitted.
2. Zhu, M., Y. Qi, **N. Hultman**. Low-carbon energy transition from the commanding heights: how state-owned enterprises have driven China's wind power "miracle." 33 pp. Submitted.
3. Ou, Y., G. Iyer, M. Binsted, L. Clarke, J. Edmonds, A.A. Fawcett, A. Geiges, S. Gonzales-Zuñiga, M. Gridden, **N. Hultman**, N. Höhne, L. Jeffery, T. Kuramochi, J. McFarland, M. Meinshausen, Z. Nicholls, P. Patel, S. Ragnauth, J. Rogelj, S. Waldhoff, H. McJeon. Updates to Paris climate pledges improve chances of limiting global warming. 9 pp. Submitted.
4. J. Lou, J., **N. Hultman**, A. Patwardhan, Y. Qiu, (2021). Integrating Sustainable Development Goals into Climate Finance Projects: Quantifying Co-Benefits of Carbon Projects and Their Market Impact. Submitted.
5. Surana, K., C. Doblinger, D. Lic, **N. Hultman**, L. Diaz Anadon. The nature and direction of innovation in global value chains for wind energy technologies. 30 pp.
6. Zhu, M., V. Chaturvedi, L. Clarke, **N. Hultman**. The Independent Global Stocktake: a political economy perspective. 22 pp.
7. Kennedy, K., T. Cyr, W. Jaglom, H. McJeon, L. Clarke, **N. Hultman**, et al. America Is All In for 2030. 20 pp.

POLICY BRIEFS (SELECTED)

1. S. Yu, R. Cui, H. McJeon, **N. Hultman**, L. Clarke, B. Yarlagadda (2020). Five Strategies to Achieve China's 2060 Carbon Neutrality Goal. Center for Global Sustainability & Energy Foundation-China Policy Brief, 3 pp. Available at: go.umd.edu/china2060
2. Cui, R.Y., **N. Hultman**, H. McJeon, L. He, A. Sen, K. Surana, X. Tan, S. Kennedy. The State of Global Coal Power: Proposed New Capacity and Power Sector Decarbonization (2018). Summary for Policy Makers (19 pp.), and Fact Sheet available at StateOfGlobalCoal.org.
3. **Hultman, N.** (2019). Building an ambitious US climate policy from the bottom up. Washington, DC: The Brookings Institution.
4. Victor, D.G., T. Stern, S. Ali, J. Ball, R. Duke, S. Gross, C. Kwauk, **N. Hultman**, J. Schuetz, and R. Tongia (2019). Around the halls: Brookings experts on what to watch for at the UN Climate Action Summit. Washington, DC: The Brookings Institution.

5. Stern, T., D. G. Victor, S. Gross, S. Ali, R. Tongia, **N. Hultman**, T. Roberts, J. Ball, C.D. Honorable, and A. Bhattacharya (2018). *Around the halls: Brookings experts on what to watch at the COP 24 climate summit*. Washington, DC: The Brookings Institution.
6. **Hultman, N.** (2018). *We're almost out of time: The alarming IPCC climate report and what to do next*. Washington, DC: The Brookings Institution.
7. **Hultman, N.** and Edmonds, J. (2018). Scenarios to model long term climate strategies can help focus action today. *UN Development Programme and WRI Long-Term Climate Strategies Expert Perspectives*; pp. 100-105.
8. Stern, T., D.G. Victor, S. Gross, J. Ball, Y. Qi, **N. Hultman**, and T. Roberts (2018). *Around the halls: Climate experts explain what to watch at this week's Global Climate Action Summit*. Washington, DC: The Brookings Institution.
9. Galston, W.A., S. Gross, M. Muro, T. Roberts, R. Tongia, D.G. Victor, P.A. Wallach, R. Winthrop, C. Kwauk, **N. Hultman**, T. Stern, and V. Thomas (2017). *Trump's Paris Agreement withdrawal: What it means and what comes next*. Washington, DC: The Brookings Institution.
10. **Hultman, N.** (2016). *Climate change and the Trump administration*. Brookings Big Ideas Series. Washington, DC: The Brookings Institution.
11. **Hultman, N.** (2016). *The Pivotal Role of the Next U.S. Administration in Delivering Global Climate Action*. Advice to the Next Administration Series. Washington DC: The Brookings Institution. 3 pp.
12. Meltzer, J.P., **N. Hultman**, and C. Langley (2014). *Low-Carbon Energy Transitions in Qatar and the Gulf Cooperation Council Region*. Washington, DC: The Brookings Institution.
13. Jacobson, A., N. Lam, T. Bond, **N. Hultman**. (2013). *Black Carbon and Kerosene Lighting: An Opportunity for Rapid Action on Climate Change and Clean Energy for Development*. Washington DC: The Brookings Institution, *Global Economy and Development, Global Views 2013-03*, 13 pp.
14. **Hultman, N.** (2013). *President Obama's Climate Address: What to Watch For*. Washington, DC: The Brookings Institution.
15. Sierra, K., **N. Hultman**, and A. Shapiro (2012). *Green Growth Innovation: Toward A New architecture for developing countries*. Washington, DC: Brookings Institution, *Global Economy & Development Policy Paper 2012-02*, 10 pp.
16. **Hultman, N.**, K. Sierra, and A. Shapiro (2012). *Innovation and Technology for Green Growth*. Washington, DC: The Brookings Institution, *Global Economy & Development Blum Roundtable Brief*, 10 pp.
17. Ebinger, C., **N. Hultman**, K. Massy, G. Avasarala, D. Rebois (2011). "Options for low-carbon development in the countries of the Gulf Cooperation Council." *Energy Security Initiative Policy Brief 11-02*, The Brookings Institution, Washington D.C., 29 pp.
18. **Hultman, N.**, K. Sierra, G. Carlock (2011). "Energy and Green Growth: Recasting the Options, Re-envisioning Sustainability" Washington, DC: The Brookings Institution for Club of Madrid, Washington D.C., Aug, 9 pp.
19. Koomey, J.G., and **N. Hultman** (2009). *The Real Risk of Nuclear Power*. Washington, DC: The Brookings Institution

COMMENTARY, OP-EDS, AND PERSPECTIVES (SELECTED)

1. **Hultman, N.** "Slash emissions by 2030? How big goals will help tackle climate change." *The Hill*, 14 Apr 2021.
2. **Hultman, N.**, with others (2009-2021), Over 50 essays, commentaries, podcasts, and videos on climate and energy published by The Brookings Institution, Washington, DC. *Recent highlights*:
 - How the United States can return to credible climate leadership. With S. Gross (2021).
 - Building an ambitious U.S. climate policy from the bottom up. (2019).
 - Success from the UN climate summit will hinge on new ways to build national action. (2019).
 - Trump tried to kill the Paris agreement, but the effect has been the opposite. With P. Bodnar (2018).
 - What past experience tells us about the impact of new American solar tariffs. With M. Jeong (2018).
3. **Hultman, N.** (2019). "Maryland is poised to lead in the new clean energy economy." *The Capital Gazette*. Annapolis, MD. 2 Jun 2019.
4. **Hultman, N.** and P. Bodnar. "U.S. government is refusing to disclose climate information." *The Hill*, 28 Oct 2018.
5. **Hultman, N.** and P. Bodnar. "Trump isn't reporting CO₂ emissions, ending an era of global transparency." *The Hill*, 18 Jan 2018.

6. Hultman, N. and A. Miller, “Climate Change A Risk to Maryland’s Pension System.” Op-Ed, *Annapolis Daily Record*, 30 Nov 2017.
7. Koomey, J.G., N. Hultman, and A. Grübler (2017). A reply to “Historical construction costs of global nuclear power reactors”. *Energy Policy* 102:640-643. doi:10.1016/j.enpol.2016.03.052
8. Hultman, N. and Koomey, J.G. (2013). “Three Mile Island: The driver of US nuclear power’s decline?” *Bulletin of the Atomic Scientists*. 69(3) 63–70. doi: 10.1177/0096340213485949.
9. Hultman, N. (2008) “Risk, benefit, and choice: Is nuclear power the answer to future energy constraints?” *Environmental Practice* 10(2):41.
10. Hultman, N. (2007). “Science and society: To advocate or arbitrate? A review of *The Honest Broker: Making Sense of Science in Policy and Politics*.” *Science* 317: 900-901.
11. Baer, P., Harte, J., Haya, B., Herzog, A., Hultman, N., Kammen, D. M., Norgaard, R. B., Holdren, J. and Raymond, L. S. (2001). “Atmospheric Ethics – Response.” *Science*, 291:827-828.

CONTRIBUTIONS TO SCIENTIFIC ASSESSMENTS

1. West, T. O., N. P. Gurwick, M. E. Brown, R. Duren, S. Mooney, K. Paustian, E. McGlynn, E. L. Malone, A. Rosenblatt, N. Hultman, and I. B. Ocko, 2018: Chapter 18: Carbon cycle science in support of decision making. In *Second State of the Carbon Cycle Report (SOCCR2): A Sustained Assessment Report* [Cavallaro, N., G. Shrestha, R. Birdsey, M. A. Mayes, R. G. Najjar, S. C. Reed, P. Romero-Lankao, and Z. Zhu (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 728-759, <https://doi.org/10.7930/SOCCR2.2018.Ch18>.
2. Clarke L., K. Jiang, K. Akimoto, M. Babiker, G. Blanford, K. Fisher-Vanden, J.-C. Hourcade, V. Krey, E. Kriegler, A. Löschel, D. McCollum, S. Paltsev, S. Rose, P.R. Shukla, M. Tavoni, B.C.C. van der Zwaan, and D.P. van Vuuren, with H. Böttcher, K. Calvin, K. Daenzer, M. den Elzen, S. Dhar, J. Eom, S. Hoeller, N. Höhne, N. Hultman, P. Irvine, J. Jewell, N. Johnson, A. Kanudia, A. Kelemen, K. Keller, P. Kolp, M. Lawrence, M. Longden, J. Lowe, A. Frossard, P. de Lucena, G. Luderer, G. Marangoni, N. Moore, I. Mouratiadou, N. Petermann, P. Rasch, K. Riahi, J. Rogelj, M. Schaeffer, S. Schäfer, J. Sedlacek, L. Sokka, C. von Stechow, I. Sue Wing, N. Vaughan, T. Wieritz, T. Zwickel. (2014) Chapter 6: Assessing Transformation Pathways. In: *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. pp. 413–510.
3. Sathaye, J., O. Lucon, A. Rahman, J. Christensen, F. Denton, J. Fujino, G. Heath, S. Kadner, M. Mirza, H. Rudnick, A. Schlaepfer, A. Shmakin, with G. Angerer, C. Bauer, M. Bazilian, R. Brecha, P. Burgherr, L. Clarke, F. Creutzig, J. Edmonds, C. Hagelüken, G. Hansen, N. Hultman, M. Jakob, S. Kadner, M. Lenzen, J. Macknick, E. Masanet, Y. Nagai, A. Olhoff, K. Olsen, M. Pahle, A. Rabl, R. Richels, J. Roy, T. Schei, C. von Stechow, J. Steckel, E. Warner, T. Wilbanks, Y. Zhang (2011). Chapter 9: Renewable Energy in the Context of Sustainable Development. In: *IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation* [O. Edenhofer, R. Pichs-Madruga, Y. Sokona, K. Seyboth, P. Matschoss, S. Kadner, T. Zwickel, P. Eickemeier, G. Hansen, S. Schlömer, C. von Stechow (eds)], Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. pp. 707-790. <https://www.ipcc.ch/site/assets/uploads/2018/03/Chapter-9-Renewable-Energy-in-the-Context-of-Sustainable-Development-1.pdf>

INVITED LECTURES (SELECTED)

1. Discussant, “Korea’s 2030 and 2050 Pathways” Inclusive Korea 2021 Conference. High-level Track 1.5 Conference, Korea Development Institute (2021).
2. Keynote, “Transatlantic Leadership for Climate Neutrality?” High-level Transatlantic Lectures. Leuven Centre for Global Governance Studies and America Europe Fund, Brussels. With Jos Debelke. (2021)
3. Keynote, China Energy Modeling Forum. “Accelerating America’s Pledge: Scenarios for Decarbonization to 2030 and Beyond.” Beijing, China (2020).
4. Tsinghua University, School of Public Policy. “Accelerating America’s Pledge: Subnational Action to Drive Global Climate Ambition.” Beijing, China (2020).

5. Peking University, College of Environmental Sciences & Engineering. "Accelerating America's Pledge: Scenarios for Decarbonization to 2030 and Beyond." Beijing, China (2020).
6. Johns Hopkins University, School of Advanced International Studies. "America's Pledge and Beyond: Harnessing State, City, and Businesses Actions to Raise Climate Ambition Globally." Washington, DC (2019).
7. United States Department of Energy. "How cities, states, and businesses are leading the United States to a low-carbon future." Solar Energy Technologies Office Speaker Series. Washington, DC (2019).
8. Harvard University Radcliffe Institute for Advanced Study. "Can we do it? 'The Undiscovered' in Climate Change." Cambridge, Mass. (2018).
9. Princeton University, Andlinger Center for Energy and the Environment. "Fulfilling America's Pledge: How States, Cities, and Businesses Are Leading the United States to a Low-Carbon Future." Princeton, NJ (2018).
10. MIT Energy Initiative. "The Engine of Ambition to Achieve the Paris Climate Goals." Cambridge, MA. (2017).
11. Keynote, World Bank Treasury Annual Meeting. "Technology and Innovative Finance to Deliver on the Paris Goals." Washington, DC (2016).
12. Keynote, EPA Forestry and Agriculture GHG Modeling Forum, "Understanding U.S. Land Sector Carbon: A Key for Delivering on Paris" (2016).
13. World Resources Institute, "Delivering Paris: Accelerating Ambition beyond 2025 through Improved Global NDC Practice." Washington, DC. (2016).
14. London School of Economics. "Paris and Global Climate Goals." London, UK (2016).
15. U.S. Department of Energy & U.S. Environmental Protection Agency. "Global Energy Transitions after Paris." Energy Horizons Series. Washington, DC (2016).
16. Global Green Growth Summit. "Green Growth Innovation in Emerging Economies." At plenary on Technology and Innovation; Global Green Growth Summit 2013: The Future of Green Growth: Finance, Innovation, and Policy. Seoul, Republic of Korea (2013).
17. University of São Paulo, Center on Carbon Policy & Regulation (NUPPREC). "Innovative Policies for a Low-Carbon Economy." São Paulo, Brazil (2013).
18. Georgetown University at Qatar. "Low-Carbon Technologies for Climate and Green Growth." Doha, Qatar (2012).
19. Global Public Policy Institute and the Brookings Institution. "Green Gold? Renewables and Energy Efficiency in Developing Countries." Transatlantic Energy Governance Dialogue, Washington, DC (2013).
20. World Bank, World Bank Institute ECA Climate Change Learning Series. "Innovation for Low-Carbon Development." Washington, DC (2012).
21. Inter-American Development Bank. "The Insufficiency of Sustainable Development: Why a new Innovation Agenda is Needed for Rio+20." Washington, DC (2012).
22. University of Bahrain. "Atmospheric Futures: Climate Change and the Gulf States." East-West Cultural Dialogue with U.S. Department of State. Manama, Bahrain (2010).
23. German Development Bank, "Firm perspectives on CDM in Brazil." German Development Bank KfW & TUV Rheinland capacity building workshop: "Perspectivas para uma Economia de Baixo Carbono no Brasil." São Paulo, Brazil (2010).
24. University of São Paulo, Institute for Energy and the Environment (IEE). "Creating Carbon Markets: The Clean Development Mechanism's effect on carbon market dynamics in the sugar sectors of Brazil and India." São Paulo, Brazil (2009).
25. University of São Paulo, Institute for Energy and Environment (IEE). "Environmental Entrepreneurship and Risk Management in the Developing Country Private Sector: Carbon Market Participation in Brazil's Sugar Industry." São Paulo, Brazil, (2008).
26. The Atlantic Council and The National Intelligence Council. "Climate impacts and security in the US and Europe." At workshop: The Impact of Climate Change on Transatlantic Relations. Washington, DC (2008).
27. British Embassy to the United States of America. "Instrument Choice of Greenhouse gas controls: Carbon taxes vs. Cap-and-trade." Washington, DC (2007).
28. United States Agency for International Development (USAID). "Linking scientific understanding of climate impacts with adaptation finance decisions." Washington, DC (2007).
29. Yale University, School of Forestry and Environmental Sciences. "Climate Risk: Assessing and responding to physical, technological, and financial uncertainties." New Haven, CT (2007).

30. University of Oxford, Martin Institute for Science & Civilization. “Risk, Resilience, and Climate Change: The role of business.” Governance of Science Seminar Series. Oxford, UK (2006).
31. University of Florida. “International carbon prices and the economics of nuclear power.” Public Utility Research Center conference “The Real Climate Change: Planning and Investing Under Uncertainty.” 2008.
32. Johns Hopkins University, “Carbon Capture & Storage in the context of International Climate Policy.” At “Global Warming: Consequences and Futures” Symposium. Baltimore, Maryland (2006).

PANEL PRESENTATIONS AND OTHER ENGAGEMENT (SELECTED)

1. **Hultman, N.** (2021). “U.S. Climate Action to 2030.” Brookings Energy Security Roundtable
2. **Hultman, N.** (2021). ‘Electrification and Economy-Wide Analysis’ Electric Power Research Institute.
3. **Hultman, N.** (2020). “Accelerating America’s Pledge: Going All-In to Build a Prosperous, Low-Carbon Economy for the United States” Energy Transition and Coal Power Decarbonization Workshop, Beijing. Organized by Center for Global Sustainability with the Energy Research Institute (National Development and Reform Commission), North China Electric Power University, and NRDC-China, and hosted by Beijing University of Technology. Beijing, China.
4. **Hultman, N.** (2019). “Accelerating America’s Pledge: Going All-In to Build a Prosperous, Low-Carbon Economy for the United States.” UN Framework Convention on Climate Change, 25th Conference of Parties – COP25. Keynote presentation at America’s Pledge Report Launch Event, U.S. Climate Action Center. High Level event included contributions from UNFCCC Executive Secretary Patricia Espinosa, UN Special Envoy for Climate Action Michael Bloomberg, Harrison Ford, and UK Central Bank President Mark Carney. Co-Organized by Bloomberg Philanthropies, University of Maryland Center for Global Sustainability, Rocky Mountain Institute, World Resources Institute, We Are Still In, and U.S. Climate Action Center. Madrid, Spain.
5. **Hultman, N.** “Needs for Mitigation Information and Mechanisms in the Global Stocktake.” (2019). UN Framework Convention on Climate Change, 25th Conference of Parties – COP25. Presentation at official UNFCCC Side Event, “Building an Inclusive Global Stocktake: Independent and transparent assessments for greater ambition.” Organized by ClimateWorks. Madrid, Spain.
6. **Hultman, N., C. Frisch, and K. Kennedy** (2019). “Accelerating America’s Pledge.” European Union, Country Delegation Head Climate Councillors. Co-Organized by University of Maryland Center for Global Sustainability, America’s Pledge, Rocky Mountain Institute, and World Resources Institute. Washington, DC.
7. L. Clarke and **N. Hultman** (2019). “Mitigation indicators and analytical approaches for the Global Stocktake.” The Independent Global Stocktake. Webinar co-organized with the ClimateWorks Foundation, University of Maryland Center for Global Sustainability, World Resources Institute, Wuppertal Institut, Climate Analytics, ODI, Climate Action Network International, UNEP DTU, IDDRI, Potsdam Institute for Climate Research, PBL Netherlands, Climate Equity Reference Project, and others.
8. **Hultman, N.** (2018). “Contributions of the Independent Global Stocktake to Mitigation in the Global Stocktake.” UN Framework Convention on Climate Change, 24th Conference of Parties – COP24. Presentation at official UNFCCC Side Event, “In Formation: Laying the foundation for an inclusive Global Stocktake.” Organized by ClimateWorks and Wuppertal Institute. Katowice, Poland.
9. **Hultman, N.** (2018). “America’s Pledge and Beyond: Harnessing State, City, and Businesses Actions to Raise Ambition Globally.” UN Framework Convention on Climate Change, 24th Conference of Parties – COP24. At official UNFCCC Side Event, “Raising Ambition by Linking National with Non-Party Action.” Organized by University of Maryland Center for Global Sustainability. Katowice, Poland.
10. **Hultman, N.** (2018). “America’s Pledge and Beyond: Harnessing State, City, and Businesses Actions to Raise Ambition Globally.” Climate Week 2018, Conference organized by the Climate Group. New York, NY (2018).
11. **Hultman, N.** (2018). “Mid-Century Strategy Development and Progress.” US-China Track 2 Dialogue on Long-Term Development Strategies. Workshop in conjunction with Global Climate Action Summit. Organized by University of Maryland Center for Global Sustainability and Energy Foundation China. San Francisco, CA.
12. **Hultman, N.** and K. Calhoun (2018). “Fulfilling America’s Pledge.” Presentation and webinar with in conjunction with Global Climate Action Summit, San Francisco, CA.
13. **Hultman, N.** (2017). “Integrating national SDG, NDC, and LTS processes with enhanced research capacity.” UN Framework Convention on Climate Change, 23rd Conference of Parties – COP23. At official UNFCCC Side Event, “Reframing the Climate Debate: Enhancing the Paris Agreement and SDG linkages.” Co-organized

- by International Institute of Applied Systems Analysis (IIASA), University of Maryland Center for Global Sustainability, Ca'Foscari University, Venice (UNIVE), and Future Earth International. Bonn, Germany.
14. **Hultman, N.** (2016). "Low emissions development and energy security." At session, "Energy Security, Energy Access & Transparency." International Parliamentary Conference on Sustainability, Energy and Development. UK Parliament. London, UK.
 15. **Hultman, N.** (2016). "Delivering Paris: Accelerating Ambition beyond 2025 through Improved Global NDC Practice." UN Framework Convention on Climate Change, 22nd Conference of Parties - COP22. At official Side Event, "Advancing (I)NDC implementation and ambition: bridging research and practice." Co-organized by NewClimate Institute, Netherland National Institute of Public Health and the Environment (RIVM), and University of Maryland Center for Global Sustainability. Marrakesh, Morocco.
 16. **Hultman, N.** (2012). "Green Growth and Innovation in Developing Countries." Center for Global Development, panel on "Rio+20 Outcomes and Sustainable Development." Washington, DC.
 17. **Hultman, N.** (2012). "The Green Growth Agenda for Innovation and Sustainable Development." At official side event, "Innovation and green growth for Developing Countries." UN Conference on Sustainable Development (Rio+20). Organized by The Brookings Institution. Rio de Janeiro, Brazil.
 18. **Hultman, N.** (2010). "Making Implementation Happen." UN Framework Convention on Climate Change, 16th Conference of Parties - COP16. At official Side Event organized by World Business Council on Sustainable Development. Cancun, Mexico.
 19. **Hultman, N.** (2010). "True benefits or hidden costs in nuclear power" At: 7th Transatlantic Energy Governance Dialogue, "Towards a Nuclear Power Renaissance? Challenges for Global Energy Governance." Sponsored by European Commission and organized by Global Public Policy Institute and The Brookings Institution. Berlin, Germany.
 20. **Hultman, N.** (2010). "Alternative Energy for the MENA Region" Plenary panelist. Doha Carbon and Energy Forum. Doha, Qatar.
 21. **Hultman, N.** and Pulver, S. (2009). "Carbon Markets and CDM Experience in Brazil." UN Framework Convention on Climate Change, 15th Conference of Parties - COP15. At official UNFCCC Side Event, held at IETA venue: "Improving Carbon Markets: Environmental Integrity and Participant Perspectives." Co-Organized by University of Maryland; Watson Institute of International Studies, Brown University; Environmental Defense Fund. Copenhagen, Denmark.
 22. **Hultman, N.** (2009). "US Climate and Energy Policy under the Obama Administration." Panel Presentation for plenary session "Green Development." Korea Development Institute & Association for Public Policy Analysis and Management (APPAM) International Conference on Environmental Policy, Seoul, Korea.
 23. **Hultman, N.** (2008). "Can nuclear technology meet climate policy challenges?" At conference: "The Real Climate Change: Planning and Investing Under Uncertainty." Public Utilities Research Center, Warrington College of Business, University of Florida. Gainesville, Florida.
 24. **Hultman, N.** (2008). "Climate impacts and security in the U.S. and Europe." Panel event, The Atlantic Council. Washington DC.
 25. **Hultman, N.** (2008). "Beyond the nuclear power stalemate" Panel presentation at National Council for Science and the Environment (NCSE) Annual Conference, "Climate Change: Science and Solutions." Washington, DC.
 26. **Hultman, N.** (2007). "Opportunities for Climate Action: International cooperation in the near-term." U.S.-Norway Climate Conference. Embassy of Norway and Carnegie Institution. Washington, DC (2007).

PANELS, WORKSHOPS, AND CONFERENCES ORGANIZED (SELECTED)

1. Energy Transition and Coal Power Decarbonization Workshop, Beijing (2020). Organized by Center for Global Sustainability with the Energy Research Institute, National Development and Reform Commission; North China Electric Power University; and NRDC-China; and hosted by Beijing University of Technology. Keynote by Minister Xie Zhenhua. Beijing, China.
2. UN Framework Convention on Climate Change, 25th Conference of Parties - COP25 (2019). Lead Organizer, "Collaborative Action for Higher Ambition: Linking Government, Non-Party Actors, & Analysis." Official UNFCCC Side Event Co-organized by University of Maryland Center for Global Sustainability, Union of Concerned Scientists, and Washington University. Madrid, Spain.

3. UN Framework Convention on Climate Change, 24th Conference of Parties – COP24. (2018). Lead Organizer and Moderator for session: “Raising Ambition by Linking National with Non-Party Action.” Official UNFCCC Side Event organized by University of Maryland Center for Global Sustainability. Katowice, Poland.
4. Global Climate Action Summit (2018). Co-Organizer and Moderator for panel, “Delivering Climate Action across All Actors.” Co-Organized with The Brookings Institution and the University of California, Berkeley. San Francisco, CA.
5. UN Framework Convention on Climate Change, 23rd Conference of Parties – COP23. (2017). Co-Organizer for session, “Reframing the Climate Debate: Enhancing the Paris Agreement and SDG linkages.” Official UNFCCC Side Event co-organized by International Institute of Applied Systems Analysis (IIASA), University of Maryland Center for Global Sustainability, Ca’Foscari University, Venice (UNIVE), and Future Earth International. Bonn, Germany.
6. UN Framework Convention on Climate Change, 23rd Conference of Parties – COP23 (2017). Lead Organizer and Moderator for session: “The Engine of Ambition: University Research and Engagement to Support Climate Action.” Co-organized by University of Maryland Center for Global Sustainability, America’s Pledge, We Are Still In, and the U.S. Climate Action Center. Bonn, Germany.
7. UN Framework Convention on Climate Change, 22nd Conference of Parties – COP22 (2016). Co-Organizer for session, “Advancing (I)NDC implementation and ambition: bridging research and practice.” Official UNFCCC Side Event co-organized by NewClimate Institute, Netherland National Institute of Public Health and the Environment (RIVM), and University of Maryland Center for Global Sustainability. Marrakesh, Morocco.
8. UN Framework Convention on Climate Change, 22nd Conference of Parties – COP22 (2016). Organizer and Moderator for session, “The Research for Climate Action Network: Advancing the Role of Universities and Research Organizations in Raising Climate Ambition.” Keynote: Lord N. Stern, Grantham Institute, London School of Economics. Organized by University of Maryland Center for Global Sustainability with Government of United Arab Emirates. Marrakesh, Morocco.
9. Climate Action 2016 Summit (2016). CGS co-organized the first high-level conference after the Paris Agreement, co-hosting with a broad coalition of partners including the UN Secretary General, The World Bank, the GEF, The World Business Council for Sustainable Development, the Rockefeller Foundation.
10. The Implications of Paris Workshop (2016). Co-Organized by the University of Maryland Center for Global Sustainability and the Joint Global Change Research Institute. Contributions by Dr. Hoesung Lee (IPCC Chair), Jim Skea (IPCC Working Group 3 co-chair), and others from finance, government, private sector, research community, and other NGOs.
11. UN Conference on Sustainable Development (Rio+20). Moderator and Organizer for session, “Innovation and green growth for Developing Countries.” Session organized by Brookings Institution. Rio de Janeiro, Brazil.
12. International Workshop on the Private Sector and Climate Change: Opportunities and Challenges in Emerging Economies (2011). Co-organized by: University of California, Santa Barbara, and the University of Maryland, and the Observer Research Foundation. New Delhi, India.
13. International Conference on Carbon Markets in Emerging Economies (2010). “The CDM and International Carbon Markets: Within and Beyond the UNFCCC.” Co-organized by University of Maryland, University of California Santa Barbara, & University of São Paulo Institute for Advanced Studies. São Paulo, Brazil.
14. UN Framework Convention on Climate Change, 15th Conference of Parties – COP15 (2009). Lead Organizer for official UNFCCC Side Event, and held at IETA venue: “Improving Carbon Markets: Environmental Integrity and Participant Perspectives.” Co-Organized by University of Maryland; Watson Institute of International Studies, Brown University; Environmental Defense Fund. Copenhagen, Denmark.

INTERNATIONAL POLICY MEETINGS

U.N. Framework Convention on Climate Change

United States Delegation: 21st Conference of Parties (COP), Paris (2015). COP20 Lima (2014).

Non-Governmental Observer: COP25 Madrid (2019), COP24 Katowice (2018), SBSTA Bonn 2018, COP23 Fiji/Bonn (2017), COP22 Marrakesh (2016), SBSTA Bonn 2016, COP19 Warsaw (2013), COP18 Doha (2012), COP17 Durban (2011), COP16 Cancún (2010), COP15 Copenhagen (2009), Subsidiary Body for Scientific and

Technological Advice (SBSTA) Bonn (2007), COP7 Marrakesh (2001), COP6 The Hague (2000), COP4 Buenos Aires (1998), COP3 Kyoto (1997).

U.N. Conference on Sustainable Development: *Non-Governmental*. Rio+20 meeting, Rio de Janeiro (2012)

PROFESSIONAL SERVICE (SELECTED)

Governmental Service: Input to United States of America climate engagements

- Nationally Determined Contribution of the United States of America (2014–15)
- U.S.-China Joint Announcement (2014), U.S.-Brazil Joint Statement (2015), U.S.-China Joint Statement (2015); Other bilateral U.S. consultations (2014–15)
- Paris Agreement (2015)
- Government of the United States of America (2016). *2016 Second Biennial Report of the United States to the United Nations Framework Convention on Climate Change*. Washington, DC: U.S. Dept of State. 75 pp.

Non-governmental service: Legislative Testimony and Other Non-Governmental Input to Policy Discussions

1. **Center for Global Sustainability** (2021). Diverse inputs to U.S. government climate processes: U.S. NDC, U.S. Long Term Strategy, U.S. bilateral engagements with approximately 15 countries
2. **Hultman, N.** (2019). Testimony to United States Congress, House of Representatives, Energy & Commerce Committee, Environment and Climate Change Subcommittee. Hearing on “We’ll always have Paris: Filling the Leadership Void Caused by Federal Inaction on Climate Change.” Feb 28, 8 pp. Available at: <https://energycommerce.house.gov/committee-activity/hearings/hearing-on-we-ll-always-have-paris-filling-the-leadership-void-caused-by>
3. **Hultman, N.** (2018). Testimony to the State of Maryland General Assembly. Hearing on “House Bill 993: Maryland Pension Climate Change Risk Act,” Feb 22, 5 pp.
4. **Hultman, N.** (2018) Testimony to the State of Maryland General Assembly, Appropriations Committee with Office of the Attorney General. Hearing on “Trump Administration's proposed repeal of the Clean Power Plan.” Jan 11, 5 pp.
5. **Hultman, N.** (2012). “Science, Technology, & Innovation for Development” United Nations General Assembly: ECOSOC.
6. **Hultman, N.** (2010). Testimony to the State of Maryland General Assembly, Senate Finance Comm & House Economic Matters Committee. Hearing on “Solar PV and RPS policy in Maryland: Evaluating the Rationale for increased support.” Feb 16.
7. **Hultman, N.** (2010). Testimony to the State of Maryland General Assembly, Senate Finance Committee. Hearing on “SB 1067: Task Force on Solar Hot Water Systems in Prince George’s County.” Mar 23.
8. **Hultman, N.** (2009). Testimony to the State of Maryland General Assembly, Joint Committee on Information Technology & Biotechnology. Hearing on “Clean Energy Innovation: International Experience and Lessons for Maryland.” Oct 7.

Reviewer: Academic Journals: *Science, PNAS, Global Env. Change; Nature Climate Change; Energy Policy; Climate Policy, Env. Sci. & Tech.; Ecol. Econ.; Accounting, Organizations, & Society; J. of Env. & Dev.; J. of Greenhouse Gas Measurement & Mgmt.; Atmosphere; Policy Studies J.; The Geog. J.; Env. Sciences; Rev. of Policy Res.; Envt. & Planning C; Afr. J. of Env. Sci. & Tech.; Georgetown J. of Intl. Affairs.* **Academic Presses:** Cambridge Univ. Press; Routledge Press; Earthscan Press; **Funding Agencies:** National Science Foundation; AAAS India-US Science & Technology Forum. **International Organizations:** IPCC, World Bank.

Media. TV: BBC World Service, PBS NewsHour, CNN, C-SPAN, Bloomberg, Al Jazeera, Fox Business, NHK Japan, German Television News, CGTN. **Radio:** NPR-Morning Edition, NPR-Marketplace, NPR-Here and Now, NPR-Diane Rehm & Kojo Nnamdi, Bloomberg, BBC Radio, Deutsche Welle. **Print:** *New York Times, Wall Street Journal, Washington Post, Politico, The Hill, Forbes, Financial Times, Los Angeles Times, Science, Nature, WIRED, Vox, Grist, Axios, NBC News, ABC News, E&E, Neue Zürcher Zeitung, Xinghua, Exame (Brazil), Correio Braziliense (Brasília), Al-Riyadh (Saudi Arabia), Sankei Shimbun (Japan), Auckland Herald, Sydney Morning Herald, The Australian, roughly 20 other international outlets.*

TEACHING AND MENTORING

Courses Taught

University of Maryland: Climate Science and Policy (PLCY 798); Energy Policy (PLCY 699); Global Environmental Problems (PLCY 741); Practicing Public Policy (PLCY 688); Introduction to Sustainability (PLCY 301); Cross-examining Climate Change

Georgetown University: Climate Science and Policy (STIA 412); The Future of World Energy (STIA 458); Quantitative Methods for Policy (STIA 108); Science and Technology in the Global Arena (STIA 305); Science, Nature, and Environmental Values (INAF 100)

Postdoctoral Fellows

Anna Ebers (2017–19), Morgan Edwards (2018–20), Jiehong Lou (2020–21), Mengye Zhu (2021–)

Ph.D. Dissertations Advised

Chair

Jiehong Lou, 2020. Integrating Sustainable Development Goals into Climate Finance Projects: Assessing the Market Impact of Co-Benefits from Carbon Offsets.

Arijit Sen, 2020. The Decarbonization Transformation: Essays on the role of constituent entities in the U.S. Electricity sector transition to a low-carbon future.

Anjali Sharma, 2020. Analysis of the Labor Impacts of Clean Energy Transitions in the Power Sector in India.

Linlang He, 2019. Do regional integration plans promote joint prevention and control of air pollution? Lessons from China's major city clusters.

Sha Yu, 2017. Heterogeneity and Mitigation Potential of the Chinese Buildings Sector.

Minji Jeong, 2017. National Renewable Energy Policy in a Global World.

Ryna Yiyun Cui, 2016. Risks to Food Availability and Access from Climate Policies.

Gokul Iyer, 2015. Low-carbon Technologies and Climate Change Mitigation Policy in an Imperfect World.

Halley Aelion, 2013. Environmental Stewardship in the Private Sector: Arriving at a Green Hands Theory.

Dissertation Committees: A.J. Bi (U. of Delaware), A. Birky, M. Borowitz, F. de la Chesnaye, C. Delhotal, D. Karetnikov, M. Gillenwater (Princeton), N. Graham, P. Hannam (Princeton), R. Lamb, L. Liu, H. McJeon, R. Munoz Castillo, J. Nurmis, V. Romeiro (U. of Sao Paulo), P. Sapatnekar, J. Wayland, J. Zhu.