

MICHAEL R. DAVIDSON

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RESEARCH POSITIONS

- Belfer Center for Science and International Affairs**, Harvard Kennedy School, Cambridge, MA
Post-Doctoral Research Fellow, Environment and Natural Resources Program FEB 2018-PRESENT
- Joint Program on the Science and Policy of Global Change**, MIT, Cambridge, MA
Research Assistant, China Energy and Climate Project AUG 2012-JAN 2018
- Fulbright Program, U.S. State Department**, China
Fellowship, Tsinghua-BP Clean Energy Research and Education Centre, Beijing DEC 2008-OCT 2009
Critical Language Enhancement Award, CET Academic Programs, Harbin AUG 2008-DEC 2008

EDUCATION

- Massachusetts Institute of Technology**, Cambridge, MA
Ph.D., *Engineering Systems*, Institute for Data, Systems, and Society 2014-2018
Committee: Ignacio Pérez-Arriaga (chair), Valerie J. Karplus, Margaret Pearson
Dissertation: Creating Markets for Wind Electricity in China: Case Studies in Energy Policy and Regulation
- Massachusetts Institute of Technology**, Cambridge, MA
M.S., *Technology and Policy* 2012-2014
Thesis Advisors: Valerie J. Karplus, Ignacio Pérez-Arriaga
Thesis: Regulatory and Technical Barriers to Wind Energy Integration in Northeast China (*Best Technology and Policy Thesis Nominee*)
- Case Western Reserve University**, Cleveland, OH
B.S., *Mathematics and Physics*, *summa cum laude* 2003-2008
B.A., *Japanese Studies*
Thesis Advisor: Harsh Mathur
Thesis: Auger Processes in Semiconductor Quantum Dots (*Dayton C. Miller Prize for Best Thesis in Physics*)

HONORS AND AWARDS

- Initiative for Sustainable Energy Policy Fellow, Johns Hopkins SAIS 2017-PRESENT
- Winner, Social Sciences Category, AAAS Student Poster Competition 2017
- Martin Family Society Fellow for Sustainability 2015-2016
- UNU-WIDER Research Grant 2015
- MIT Energy Initiative Energy Fellow 2012-2015
- Technology, Management and Policy Graduate Consortium, Best Paper, M.S. Level 2014
- 1st Place, US Association for Energy Economics Student Case Competition 2013
- Phi Beta Kappa, Alpha of Ohio Chapter 2008
- Outstanding Senior in Mathematics Case Alumni Award 2008
- National Merit Scholar 2003-2008

REFEREED PUBLICATIONS

- Davidson, M. R.**, Pérez-Arriaga, J. I. Avoiding Pitfalls in China's Electricity Sector Reforms. *The Energy Journal*, *revise and resubmit*.
- Davidson, M. R.**, Pérez-Arriaga, J. I. (2018). Modeling Unit Commitment in Political Context: Case of China's Partially Restructured Electricity Sector. *IEEE Transactions on Power Systems*, 33(5), 4889-4901. [[link](#)]
- Davidson, M. R.**, Zhang, D., Xiong, W., Zhang, X., and Karplus, V. J. (2016). Modelling the potential for wind energy integration on China's coal-heavy electricity grid. *Nature Energy*, 1, 16086. [[link](#)]

OTHER PUBLICATIONS

- Davidson, M. R.** Technology Integration in China's Electricity System: Central Targets and Local Challenges. In T. G. Rawski & L. Brandt (Eds.), *Policy, Regulation and Innovation in China's Electricity and Telecom Industries*. Cambridge University Press, *forthcoming*. [[link](#)]

- Davidson, M. R.,** Pérez-Arriaga, J. I. (2017). *Modeling Unit Commitment in Political Context: Case of China's Partially Restructured Electricity Sector*. MIT Center for Energy and Environmental Policy (CEEPR) Working Paper. [\[link\]](#)
- Davidson, M. R.,** Kahrl, F., and Karplus, V. J. (2017). *Towards a political economy framework for wind power: Does China break the mould?* In D. Arent, C. Arndt, M. Miller, F. Tarp, & O. Zinaman (Eds.), *The Political Economy of Clean Energy Transitions* (pp. 250–270). Oxford University Press. [\[link\]](#)
- Davidson, M. R.,** Kahrl, F., and Karplus, V. J. (2016). *Towards a Political Economy Framework for Wind Integration: Does China Break the Mould?* (Working Paper No. 32). United Nations University World Institute for Development Economics Research. [\[link\]](#)
- Zhang, D., **Davidson, M. R.,** Gunturu, B., Zhang, X., and Karplus, V. J. (2014). *An Integrated Assessment of China's Wind Energy Potential* (Report No. 261). Cambridge, MA: MIT Joint Program on the Science and Policy of Global Change. [\[link\]](#)
- Davidson, M. R.** (2013). Politics of Power in China: Institutional Bottlenecks to Reducing Wind Curtailment Through Improved Transmission. *International Association for Energy Economics Energy Forum*, 4, 40–42. [\[link\]](#)
- Davidson, M.,** Greene, G., and Liu, M. (2013). Untapped Potential: Energy Savings and Climate Benefits from Strengthening Water Use Efficiency in China's Building and Industrial Sectors. *China Environment Series 12*. Woodrow Wilson Center, Washington, DC. [\[pdf\]](#)
- Enoe, M., He, Y., Pohnan, E., and **Davidson, M.** (contributing editor). (2012). *Lessons Learned: A Path Toward Responsible Development of China's Shale Gas Resources*. Natural Resources Defense Council White Paper. [\[pdf\]](#)
- Davidson, M.** (2010). Climate Security in East Asia: New Opportunities for Non-traditional Cooperation. *Center for Strategic and International Studies Pacific Forum*, 25. [\[link\]](#)

TEACHING
EXPERIENCE

- Kaufman Teaching Certificate Program** SPRING 2017
MIT Teaching and Learning Laboratory
Designed syllabi, course assignments, and in-class exercises using latest learning research
- Decision Support Models for Low-Carbon Electric Power Systems (ESD.S23)** SPRING 2016
Teaching Assistant (Part-Time), MIT Institute for Data, Systems, and Society
- Turbines to Tariffs: Technical and Regulatory Issues for Scaling Up Wind Energy** JAN 2016
Lecturer, MIT Joint Program on the Science and Policy of Global Change
- "Climate Change Policy" Seminar** JAN 2013, 2014, 2017
Lecturer, MIT Joint Program on the Science and Policy of Global Change

SELECTED
PRESENTATIONS

- Davidson, M. R.** Creating Markets for Wind Electricity in China: An Analysis of Grid and Institutional Causes of Curtailment. Harvard Kennedy School Energy Policy Seminar. Cambridge, MA. 2018. [\[summary\]](#) [\[slides\]](#)
- Davidson, M. R.** Institutions, Conflicts, and Political Economy in Renewable Energy Integration: Case of China, and Thoughts for India. Brookings India. New Delhi. 2017. [\[video\]](#)
- Davidson, M. R.** Markets for Wind Electricity in China: Case Studies in Energy Policy and Regulation. Duck Family Graduate Workshop in Environmental Politics and Governance. Seattle, WA. 2017.
- Davidson, M. R.** Hidden Costs of Technology Development by the Plan: Case of China's Coal Fleet Upgrading. AAAS Annual Meeting. Boston. 2017. [\[link\]](#) [\[slides\]](#) (**Winner, Social Sciences Category, AAAS Student Poster Competition**)
- Davidson, M. R.** Pitfalls in China's Electricity Sector Reforms: International Lessons. Energy Revolution and Green Low-Carbon Development High Level Roundtable. China Energy Research Society. Beijing. 2016.
- Davidson, M. R.** A Multi-Method Approach to Assess Institutional Design in Electricity Systems. American Political Science Association Annual Meeting. Philadelphia, PA. 2016.

- Davidson, M. R.** Decarbonizing China's Power Grid. Woodrow Wilson International Center for Scholars. Washington, DC. 2016. [\[link\]](#)
- Davidson, M. R.** and Qi, T. Re-Analysis Data for Fine Temporal Resolution Wind Power Estimation: A Comparison of Boundary Layer Parameterizations. Graduate Climate Conference, Woods Hole Oceanographic Institution. Woods Hole, MA. 2015. [\[link\]](#) [\[poster\]](#)
- Davidson, M. R.** Regulatory Barriers to Decarbonizing China's Power Sector. Harvard China Project Seminar, Harvard University. Cambridge, MA. 2015.
- Davidson, M. R.** Robust Unit Commitment from Data-Rich Wind Power Forecast Models. Grid Science Winter Conference, Los Alamos National Laboratory (*offsite*). Santa Fe, NM. 2015.
- Davidson, M. R.** China's Power Sector Regulation and Wind Integration Challenges. Instituto de Investigación Tecnológica, Comillas University. Madrid. 2014.
- Davidson, M. R.**, Karplus, V. J., and Pérez-Arriaga, J. I. Technical and Institutional Barriers to Increasing Wind Integration in Northeast China. Technology, Management and Policy Graduate Consortium, Instituto Superior Técnico. Lisbon. 2014. (**Best Paper, M.S. Level**)
- Zhang, D., **Davidson, M. R.**, Gunturu, B., Zhang, X., and Karplus, V. J. An Integrated Assessment of China's Wind Energy Potential. Global Trade Analysis Project 16th Conference on Global Economic Analysis. Shanghai. 2013.
- Davidson, M.** Greening China: Opportunities for International Cooperation and Improved Transparency. Columbia University. New York. 2011.
- Davidson, M.** Greening China through Clean Energy and Rule of Law. Tulane Law School Summit on Environmental Law and Policy. Tulane, LA. 2011.

PROFESSIONAL
EXPERIENCE

- Natural Resources Defense Council**, Washington, DC AUG 2010-AUG 2012
US-China Climate Policy Coordinator
 Briefed US energy and climate policy-makers on Chinese policies and drafted international clean energy section of the annual Green Budget
 Organized reports and workshops for policy-makers in China on shale gas environmental safeguards and renewable energy policy
 Developed seed grant proposal for China coal consumption cap project (\$15 million raised to date)
 Supervised six graduate students and legal fellows on Rio+20 Earth Summit and China-related research projects
- Asia Policy Point**, Washington, DC JAN 2010-AUG 2010
Visiting Fellow
 Monitored domestic political developments in Japan and China for boutique foreign policy think tank
 Researched security aspects of climate change
- PlaNNet Finance** (*now: Positive Planet*), Beijing OCT 2009
Impact Study Consultant
 Provided interpretation and expert input on microfinance-supported biogas project in Gansu, China

PROFESSIONAL
DEVELOPMENT
AND SERVICE

- Reviewer for *Applied Energy*, *Economics of Energy & Environmental Policy*, *Energy Policy*, *Journal of Applied Meteorology and Climatology*, *IEEE Transactions on Sustainable Energy*
- MIT Electricity Students Research Group**, Co-President 2014-2016
- Los Alamos National Laboratory**, Grid Science Winter School JAN 2015
- American Association for the Advancement of Science** SPRING 2013
 MIT Organizer, Science/Engineering Congressional Visits Day
- National Center for Science Education**, Washington, DC 2010-2011
 EnvironMentors, high school environmental science project mentor
- Engineers Without Borders**, Case Western Reserve University Chapter 2006-2007
 Planned water system project in the Dominican Republic

PROFESSIONAL AFFILIATIONS	American Political Science Association IEEE Power & Energy Society International Association for Energy Economics / US Association for Energy Economics Institute for Operations Research and the Management Sciences (INFORMS)	
LANGUAGES & SELECTED TRAINING, AWARDS	Emile B. DeSauze Award for Highest Honors in Modern Languages and Literatures	2008
	<i>Chinese</i> (Speak, Read, Write)	
	Critical Language Enhancement Award, CET Academic Programs, Harbin	FALL 2008
	Language Book Prize for High Achievement in Chinese	2008
	<i>Japanese</i> (Speak, Read, Write)	
	Language Book Prize for High Achievement in Japanese	2007
	Global Engineering Education Exchange, Tohoku University, Sendai	OCT 2005-AUG 2006
	<i>French</i> (Speak, Read)	
SKILLS	Proficient in R, Python, GAMS, MATLAB, ArcGIS, SQL	