

GANG HE

Office: 1420 Computer Science, Stony Brook, NY 11794

Email: gang.he@stonybrook.edu; Phone: +1-631-632-7689; Web: drganghe.github.io

RESEARCH INTEREST

Energy systems, energy and environment, energy and climate change

CURRENT APPOINTMENT

Stony Brook University

Assistant Professor

Aug. 2015 – current

Department of Technology and Society

AFFILIATION

Lawrence Berkeley National Laboratory

Visiting Faculty Affiliate

Aug. 2015 – current

International Energy Analysis Department

Center for Integrated Electric Energy Systems

Faculty Affiliate

Sep. 2016 – current

Energy Generation and Energy Policy

PREVIOUS APPOINTMENTS

University of California, Berkeley

Graduate Student Researcher

Aug. 2012 – Aug. 2015

Renewable and Appropriate Energy Laboratory

Stanford University

Research Associate

Aug. 2008 – Aug. 2010

Program on Energy and Sustainable Development

EDUCATION

University of California, Berkeley

Ph.D. in Energy and Resources

Aug. 2010 – May. 2015

Advisor: Prof. Daniel Kammen

Dissertation: Decarbonizing China's Power Sector: Potential, Prospect, and Policy

Columbia University

M.A. in Climate and Society

Aug. 2007 – Aug. 2008

Peking University

B.S. and M.S. in Geography

Sep. 1999 – Jul. 2006

CAREER HIGHLIGHTS

- Publications: 40+ peer-reviewed papers, including papers in high-impact interdisciplinary and field journals such as *Nature*, *Nature Communications*, *One Earth*, *Environmental Science & Technology*, *Energy Policy*, *Renewable and Sustainable Energy Reviews*. Research was reported by *Nature*, *Scientific American*, *CarbonBrief*, *National Geographic*, *New York Times*, *E&E News*, among others
- Google Scholar Citation: 2300+, h-index: 27, i-10 index: 43
- Grants: PI or Co-PI of a number of projects support by federal (NSF, LBNL), state (NYDEC), and industrial sources

- 20+ invited talks at universities and conferences, including leading energy institutions such as Energy Information Administration, Asia Pacific Energy Research Centre, and International Association of Energy Economy
- Policy impact: testified for the New York State Climate Leadership and Community Protection Act before it became law, advising New York State Climate Action Council's Scoping Plan, contributing to the U.S.-China collaboration on energy and climate change

RECOGNITION & AWARDS

Integrated Assessment Modeling Consortium (IAMC) Best Poster Award	2022
ITIF Energy Innovation Policy and Management Scholar	2019
Institute for New Economic Thinking Young Scholar	2013
Aspen Environment Forum Scholar	2011
Cynthia Helms Fellow, World Resources Institute	2008
Asia 21 Young Leaders, Asia Society	2007
Youth Delegate to UNFCCC CoP11/MoP1	2005
Excellent Graduated Student of Peking University	2006
Excellent Student Leader of Beijing, Lin Chao Geography Scholarship	2005
Merit Student of Beijing, Samsung Scholarship, Merit Student of Peking University	2004
Excellent Fieldwork Team and Advanced Individual of Social Work	2003
May 4th Scholarship	2002

PUBLICATIONS

* denotes corresponding author, __ denotes student advisee, ~ denotes visiting scholar

Complete list of publications is available at:

 orcid.org/0000-0002-8416-1965  [Google Scholar](#)  [Research Gate](#)

SELECTED WORK

9. Helveston, John, **Gang He***, Michael Davidson. 2022. [Quantifying the cost savings of global photovoltaic supply chains](#). *Nature*. 612: 83–87.
Award: [IAMC 2022 Best Poster Award](#)
Coverage: [SBU News](#), [GWU News](#), [UCSD News](#), [Nature Research Highlights](#), [E&E News](#), [PV Magazine](#), [dot.LA](#), [pvbuzz](#), [Innovate Long Island](#), [Mercom India](#), [China News](#)
Invited presentation: [Tsinghua University](#), [Harvard University](#) (M.D.), ITIF (J.H.), Wuhan University, Climate Change Economics Forum
8. **He, Gang***, Jiang Lin*, Froylan Sifuentes, Xu Liu, Nikit Abhyankar, and Amol Phadke*. 2020. [Rapid Cost Decrease of Renewables and Storage Accelerates the Decarbonization of China's Power System](#). *Nature Communications*. 11(1):2486.
Coverage: [Nature](#), [CarbonBrief](#) [Headline](#), [Inside Climate News](#), [Forbes](#), [SBU News](#), [LBL News](#)
Invited presentation: [Asia Pacific Energy Research Centre \(APERC\) Annual Conference 2020](#), [Beijing Institute of Technology](#), [Dartmouth College](#), [Harvard Kennedy School Growth Lab](#).
7. **He, Gang***, Jiang Lin, Ying Zhang, Wenhua Zhang, Guilherme Larangeira, Chao Zhang, Wei Peng, Manzhi

Liu, and Fuqiang Yang. 2020. [Enabling a Rapid and Just Transition Away from Coal in China](#). *One Earth*. 3(2):187–194.

Coverage: [Nature](#), [SBU News](#)

Invited presentation: Coal Transition Network, Peking University

6. **He, Gang***, David Victor. 2017. [Experiences and lessons from China's success in providing electricity for all](#). *Resources, Conservation and Recycling*. 122:335–338.

Invited presentation: [2017 EIA Energy Conference](#), [2017 IAEE International Conference](#)

5. **He, Gang***, Anne-Perrine Avrin, James H. Nelson, Josiah Johnston, Ana Mileva, Jianwei Tian, and Daniel M. Kammen*. 2016. [SWITCH-China: A Systems Approach to Decarbonizing China's Power System](#). *Environmental Science & Technology*. 50(11):5467–5473.

Invited presentation: Carnegie Mellon University, Lawrence Berkeley National Laboratory, Michigan State University.

4. **He, Gang***, and Daniel M. Kammen*. 2016. [Where, When and How Much Solar Is Available? A Provincial-Scale Solar Resource Assessment for China](#). *Renewable Energy*. 85:74–82.

3. Zhou, Nan*, **Gang He**, Christopher Williams, and David Fridley. 2015. [ELITE Cities: A Low-Carbon Eco-City Evaluation Tool for China](#). *Ecological Indicators*. 48:448–56.

Coverage: [The Guardian](#)

2. **He, Gang***, and Daniel M. Kammen. 2014. [Where, When and How Much Wind Is Available? A Provincial-Scale Wind Resource Assessment for China](#). *Energy Policy*. 74:116–122.

1. **He, Gang***, and Richard Morse. 2013. [Addressing Carbon Offsetters' Paradox: Lessons from Chinese Wind CDM](#). *Energy Policy*. 63:1051–1055.

Coverage: [Caixin](#)

Invited presentation: UNFCCC CDM Executive Board meeting

SELECTED JOURNAL PAPER BY TOPIC

Power System Modeling and Clean Power Transition

8. Lin, Jiang*, Nikit Abhyankar, **Gang He**, Xu Liu, and Shengfei Yin. 2022. [Large Balancing Areas and Dispersed Renewable Investment Enhances Grid Flexibility in a Renewable-Dominant Power System](#). *iScience*. 25(2):103749.

7. Zhang, Chao, **Gang He***, Josiah Johnston, and Lijin Zhong. 2021. [Long-Term Transition of China's Power Sector under Carbon Neutrality Target and Water Withdrawal Constraint](#). *Journal of Cleaner Production* 329:129765.

6. Li, Bo, Ziming Ma, Patricia Hidalgo-Gonzalez, Alex Lathem, Natalie Fedorova, **Gang He**, Haiwang Zhong, Minyou Chen*, and Daniel M. Kammen*. 2021. [Modeling the Impact of EVs in the Chinese Power System: Pathways for Implementing Emissions Reduction Commitments in the Power and Transportation Sectors](#). *Energy Policy*. 149:111962.

5. Li, Haoran, Xueqin Cui, Jingxuan Hui, **Gang He**, Yuwei Weng, Yaoyu Nie, Can Wang, and Wenjia Cai*. 2021. [Catchment-Level Water Stress Risk of Coal Power Transition in China under 2°C/1.5°C Targets](#). *Applied Energy*. 294: 116986.

4. Li, Bo, Minyou Chen*, Ziming Ma, **Gang He**, Wei Dai, Dongran Liu, Chi Zhang, and Haiwang Zhong. 2021. [Modelling Integrated Power and Transportation Sectors Decarbonization with Hydrogen Energy Storage](#). *IEEE Transactions on Industry Applications*, 58(2):2677–2693.

3. **He, Gang***, Jiang Lin*, Froylan Sifuentes, Xu Liu, Nikit Abhyankar, and Amol Phadke*. 2020. [Rapid Cost Decrease of Renewables and Storage Accelerates the Decarbonization of China's Power System](#). *Nature Communications*. 11(1):2486.
2. **He, Gang***, Hongliang Zhang*, Yuan Xu*, and Xi Lu*. 2017. [China's Clean Power Transition: Current Status and Future Prospect](#). *Resources, Conservation and Recycling*, Environmental Challenges and Potential Solutions of China's Power Sector, 121:3–10.
1. **He, Gang***, Anne-Perrine Avrin, James H. Nelson, Josiah Johnston, Ana Mileva, Jianwei Tian, and Daniel M. Kammen*. 2016. [SWITCH-China: A Systems Approach to Decarbonizing China's Power System](#). *Environmental Science & Technology*. 50(11):5467–5473.

Renewable Resources Assessment

4. Liu, Laibao*, Yang Wang*, Zheng Wang, Shuangcheng Li*, Jiangtao Li, **Gang He**, Yan Li, et al. 2022. [Potential Contributions of Wind and Solar Power to China's Carbon Neutrality](#). *Resources, Conservation and Recycling*. 180:106155.
3. Liu, Laibao, Zheng Wang*, Yang Wang, Jun Wang, Rui Chang, **Gang He**, Wenjun Tang, Ziqi Gao, Jiangtao Li, Changyi Liu, Lin Zhao, Dahe Qin, Shuangcheng Li*. 2020. [Optimizing Wind/Solar Combinations at Finer Scales to Mitigate Renewable Energy Variability in China](#). *Renewable and Sustainable Energy Reviews*. 132:110151.
2. **He, Gang***, and Daniel M. Kammen*. 2016. [Where, When and How Much Solar Is Available? A Provincial-Scale Solar Resource Assessment for China](#). *Renewable Energy*. 85:74–82.
1. **He, Gang***, and Daniel M. Kammen. 2014. [Where, When and How Much Wind Is Available? A Provincial-Scale Wind Resource Assessment for China](#). *Energy Policy*. 74:116–122.

Low Carbon Development and Climate Policy

7. Helveston, John, **Gang He***, Michael Davidson. 2022. [Quantifying the cost savings of global photovoltaic supply chains](#). *Nature*. 612: 83–87.
6. Liu, Zhu*, Zhu Deng, **Gang He**, Hailin Wang, Xian Zhang, Jiang Lin, Ye Qi, and Xi Liang. 2022. [Challenges and Opportunities for Carbon Neutrality in China](#). *Nature Reviews Earth & Environment*. 3(2):141–155.
5. Lee, Mekyung*, and **Gang He**. 2021. [An Empirical Analysis of Applications of Artificial Intelligence Algorithms in Wind Power Technology Innovation during 1980-2017](#). *Journal of Cleaner Production*. 297:126536.
4. Xu, Jia, Xiujie Tan*, **Gang He**, and Yu Liu. 2019. [Disentangling the Drivers of Carbon Prices in China's ETS Pilots — An EEMD Approach](#). *Technological Forecasting and Social Change*. 139:1–9.
3. Bai, Hongtao, Xiangyu Feng, Huimin Hou, **Gang He***, Yan Dong, and He Xu*. 2018. [Mapping Inter-Industrial CO2 Flows within China](#). *Renewable and Sustainable Energy Reviews*. 93:400–408.
2. Zhou, Nan*, **Gang He**, Christopher Williams, and David Fridley. 2015. [ELITE Cities: A Low-Carbon Eco-City Evaluation Tool for China](#). *Ecological Indicators*. 48:448–56.
1. **He, Gang***, and Richard Morse. 2013. [Addressing Carbon Offsetters' Paradox: Lessons from Chinese Wind CDM](#). *Energy Policy*. 63:1051–1055.

Coal and Just Transition

3. **He, Gang***, Jiang Lin, Ying Zhang, Wenhua Zhang, Guilherme Larangeira, Chao Zhang, Wei Peng, Manzhi Liu, and Fuqiang Yang. 2020. [Enabling a Rapid and Just Transition Away from Coal in China](#). *One Earth*. 3(2):187–194.

2. Liu, Manzhi*, Meng Chen, and **Gang He***. 2017. [The Origin and Prospect of Billion-Ton Coal Production Capacity in China](#). *Resources, Conservation and Recycling*. 125:70–85.
1. **He, Gang***, Richard Morse. [China's Coal Import Behavior and Its Impacts to Global Energy Market](#), in: *Globalization, Development and Security in Asia Volume 3: The Political Economy of Energy*. Singapore: World Scientific Publishing. 2014. 69–85.

GRANTS

9. “Analysis of the role of pumped storage in future power system in China”, Sponsor: Lawrence Berkeley National Laboratory, PI: Gang He, Period: 1/2023–12/2024, Amount: \$50,000.
8. “Modeling training for the open decarbonization pilot project”, Sponsor: Environmental Defense Fund, PI: Gang He, Period: 10/2022–9/2024, Amount: \$15,000.
7. “Power system scenario model testing and analysis”, Sponsor: Lawrence Berkeley National Laboratory, PI: Gang He, Period: 07/2020–12/2021, Amount: \$50,000.
6. “New York State Solid Waste Characterization”, Sponsor: New York State Department of Environmental Conservation, PI: David Tonjes, Co-PIs: Elizabeth Hewitt, Gang He, Period: 8/2019–8/2024, Amount: \$4,235,776. My budget: \$200,000.
5. “Workshop on Data Science Across the Undergraduate Curriculum: University-Industry Online Case Studies on Applications of Data Science”, Sponsor: National Science Foundation, PI: Gang He (David Ferguson), Co-PIs: Thomas Woodson, Elizabeth Hewitt, Marianna Savoca, Period: 10/2019–9/2020, Amount: \$49,796.
4. “Jobs and economic impact of offshore wind development”, Sponsor: Vineyard Wind LLC, PI: Gang He, Period: 12/2018–12/2019, Amount: \$30,000.
3. “Modeling power systems with aggressive renewable costs decline”, Sponsor: Lawrence Berkeley National Laboratory, PI: Gang He, Period: 07/2018–06/2019, Amount: \$40,000.
2. “China’s super efficient appliances policy review”, Sponsor: Lawrence Berkeley National Laboratory, PI: Gang He, Period: 07/2013–12/2013, Amount: \$5,000.
1. “Clean power pathway to 2030 in China”, Sponsor: Lawrence Berkeley National Laboratory, PI: Gang He, Period: 07/2012–12/2012, Amount: \$5,000.

TEACHING

Instructor (Stony Brook University):

EST625 Advanced Science, Technology, Innovation Systems, and Policy (Spring 2022)
 EST607 Energy and Environmental Markets (Spring 2016)
 EST603 Energy Systems Analysis (Spring 2017/2021; [Fall 2022](#))
 EST601 Grand Challenges in Energy and Environmental Policy (Fall 2015/2016/2017/2022)
 EST592 Sustainable Energy (Fall 2018/2019)
 EST535 Electric Power Systems (Spring 2018/Fall 2021)
 EST441 Interdisciplinary Senior Project (Fall 2021)
 EST440 Interdisciplinary Research Methods (Fall 2018/2019/2020; Spring 2022)
 EST393 Project Management (Spring 2018/2019/2020/2021)

Teaching Assistant:

University of California, Berkeley, ER100/200 Energy and Society (Fall 2011/2013)

Guest Lectures:

Stanford University, CEE276F China Energy Systems (Jan 2010/Feb 2012/Feb 2014)

University of Copenhagen, LNAK10069 Climate Change Impacts, Adaptation and Mitigation (Spring 2010/2012/2014)

ADVISING

PhD Students:

Guilherme Larangeira, 2019 – present (GEM Fellowship; Turner Fellowship; ARPA-E 2022 Summer Intern)

Md. Nabil Haque (graduated in 2020; co-advising with Dr. Gerald Stokes; Dissertation: Approaching Sustainability Transition through Climate Technology Projects: Theoretical Underpinning to Understand Past Efforts and Future Outlook; Placement: Stockholm Environment Institute (SEI) Asia)

Mekyung Lee (graduated in 2019; Dissertation: A Study on the Effects of Artificial Intelligence (AI) on Energy Technology Innovation and on Evaluation of Innovation Policy: An Empirical Analysis of Wind Power Technology and Electric Vehicle Technology; Placement: Research Professor at Korea University)

Raphael Apeaning (graduated in 2019; Co-advising with Dr. Gerald Stokes; Dissertation: Technological and Socio-economic Feasibility of Climate Mitigation: a Focus on Developing Economies; Placement: Post-doc at American University)

PhD Dissertation Committee:

Mohammed Osman (Graduated in 2021; Role: Chair; Dissertation: States and Carbon: A Look Ahead)

Yiyi Wang (Graduated in 2021; Role: Chair; Dissertation: Encouraging Eco-Driving Behavior: Driver Response to Different Types of In-Vehicle Eco-Driving Feedback)

Xin Yue (Graduated in 2018; Role: Chair; Dissertation: Influences of Government Championship on the Technology Innovation Process at the Project-level; Placement: Lecturer, Hebei University of Science and Technology, China)

Liqun Peng (Graduated in 2022; Role: Committee Member; Princeton University; Dissertation: Evaluating Low-carbon Technology Deployment Policies to Accelerate the Decarbonization of China's Energy System; Placement: Post-doc, Lawrence Berkeley National Laboratory)

Haozhe Yang (PhD candidate, University of California, Santa Barbara)

SERVICE

External:

2021 – present, New York State Climate Action Council Scoping Plan Technical Advisor Group

2019 – present, National Offshore Wind R&D Consortium's R&D Advisory Group

February 15, 2019. Testified in the New York State Senate Hearings On The Climate And Community Protection Act

Department:

2021, Repowering the Ph.D. Program Committee

2017 – 2019, Undergraduate Curriculum Committee

2017, TMP Consortium 2017 Abstract Selection Committee

College:

2018 – 2020, College of Engineering and Applied Sciences Research Advisory Committee

2020 – 2022, College of Engineering and Applied Sciences Scholarship Committee

University:

2021, Instructor, New York State Off-shore Wind Training Program

2021 – 2022, Search Committee Member, SoMAS faculty search

2021, Committee Member, Focus Group for Advanced Energy, Industrial Efficiency Technologies

2019 – present, Core Faculty, Tongji-Stony Brook Joint Institute for Sustainable Energy Policy

2020, Committee Member: Minor on Climate Solution

2021 – present, Advisory Board Member: SBU Center for Remote Internships and Experiential Learning

Community:

2017, 2018, Referee, STEM Advisor, and Judge, Clean Tech Competition 2017, 2018

ACADEMIC SERVICE

Associate Editor:

Energy, Ecology and Environment

Editorial Board:

Resources, Conservation and Recycling

Guest Editor:

Special Issue on Clean Power Transition in China, *Resources, Conservation and Recycling*

Special Issue on Data Analytics for Energy, Water, and Environment, *IEEE-Transactions on Engineering Management*

Proposal Referee:

Sloan Foundation

Journal Referee:

Nature; Science; Nature Climate Change; Nature Sustainability; Nature Communications; Energy Policy; Environmental Science & Technology; Climate Policy; Applied Energy; Energy Research & Social Science; Resources, Conservation and Recycling; Energy Efficiency; Energy Economics; Journal of Cleaner Production; Energy Conversion and Management, among others

Report Referee:

REN21, International Energy Agency, Center on Global Energy Policy at Columbia University, Maryland University Global Policy Center, Energy Innovation LLC.

Conference Referee:

The 9th biennial conference of the International Society for Industrial Ecology (ISIE) 2017

American Society of Mechanical Engineering 2014 Power Conference.

Conference session chair:

American Association of Geographers Annual Meeting at Tampa 2014

Energy Management, Policy, Economics and Sustainability - energy for developing countries, International Conference on Applied Energy 2017, 2019

SELECTED MEDIA

22. [The U.S. is reducing its reliance on China for green technology. Could that slow progress on climate change?](#), by Lili Pike, *Grid News*, November 12, 2022.
21. [How Biden's made-in-America solar strategy may backfire](#), by David Iaconangelo, *E&E News*, October 27, 2022.
20. [Asia's nuclear power dilemma: Ukraine war drives energy turnarounds](#), by Dominic Faulder, *Nikkei Asia*, April 20, 2022.
19. [China creates vast research infrastructure to support ambitious climate goals](#), by Smriti Mallapaty. *Nature*, November 22, 2021.
18. [How China could be carbon neutral by mid-century](#), by Smriti Mallapaty. *Nature*, October 19, 2020.
17. [China Says It Will Stop Releasing CO2 within 40 Years](#), by Jean Chemnick, Benjamin Storrow. *Scientific American/E&E News*, September 23, 2020.
16. [Study Shows Huge Benefits of Transitioning Away from Coal in China](#), Stony Brook Press Release, August 21, 2020.
15. [Surging coal use in China threatens global CO2 goals](#), by Benjamin Storrow. *E&E News/ClimateWire*, June 9, 2020.
14. [China's Path to Clean Energy May Be Smoother than We Previously Thought](#), by Dan Gearino. *Inside Climate News*, June 4, 2020.
13. [Study Shows Decrease in Renewable Energy Costs May Serve as an Accelerator for Clean Energy Expansion](#), Stony Brook Press Release. June 1, 2020.
12. [Bill Calls For An Emissions-Free NY By 2050](#), by Jay Shah. WSHU Public Radio Group, February 18, 2019.
11. [Global access to electricity has increased over the past two decades](#), by Michelle Bowman. Energy Information Administration, June 8, 2017.
10. [Where is the world's greenest city?](#), by Hayley Birch. *The Guardian*, April 2, 2015.
9. [Western companies gave China power projects a boost](#), by Hal Bernton. *The Seattle Times*, May 5, 2014.
8. [Chinese emission policy spells bad news for US coal exports](#), by Charles West. *China Dialogue*, October 31, 2013.
7. [China's green ministry failing in its mission](#), by Jing Li. South China Morning Post, July 9, 2013.
6. [Beijing's record smog poses health nightmare as China plans 'green' energy futures](#), by Kandy Wong. *E&E News*, February 5, 2013.
5. [Government conflicts could slow shale gas development](#), by Kandy Wong. *E&E News/ClimateWire*, May 9, 2012.
4. [Beijing Emission Cuts May Underestimate Use of Coal](#), by Kandy Wong. *Scientific American/ClimateWire*, May 7, 2012.
3. [Seeking a Pacific Northwest Gateway for U.S. Coal](#), by Stacey Schultz. *National Geographic*, October 20, 2011.

2. [As CDM Stalls, Wind Energy Drifts in China](#), by Ruidan Zhang. *Caixin News/Market Watch*, April 8, 2010.
1. [Drop in CO2 in U.S. and Power Use in China – for Now](#), by Andrew Revkin. *The New York Times/Dot Earth Blog*, May 21, 2009.

INVITED TALKS

2022: Beijing Institute of Technology. Dartmouth College. Harvard Kennedy School Growth Lab. Hunan Normal University. Wuhan University.

2021: Peking University. Nanjing University of Information Science and Technology. Chinese Academy of Science

2020: College of William and Mary. Institute of Energy Economics. Japan (IEEJ)/APERC International Energy Symposium, and the Asia Pacific Energy Research Centre (APERC) Annual Conference. IAEE. Wuhan University. China University of Petroleum

2019: Carnegie Mellon University

2018: Global Forum: Global Engineering. China Power System Modeling Workshop: Enabling Transformation

2017: EIA Energy Conference. IAEE International Energy Conference. U.S.-China Summit on Energy and Environment. Vassar College

2016: Columbia University.

2015: Brookings Institution. Lawrence Berkeley National Laboratory. Energy Information Administration. Michigan State University

2014: The Second Shenzhen International Low-carbon City Forum. Stanford University. Peking University.

Other: Institute for New Economic Thinking. Aspen Environment Forum. U.S. China Climate Change Forum. University of California, Berkeley. Cornell University. Tallberg Forum. National University of Singapore. MIT. Asia Society. University of New Mexico

Last updated: January 2023