

SHANGWEI LIU

Email: shangwei_liu@hks.harvard.edu

Harvard Kennedy School, MA, USA

EMPLOYMENT

Postdoctoral Research Fellow in the Environment and Natural Resources Program (ENRP) and the Science, Technology, and Public Policy (STPP) Program, Belfer Center for Science and International Affairs, Harvard Kennedy School, Harvard University *Sept 2024 - present*
Postgraduate Research Associate (PGRA) Program, Princeton University *Feb 2024 - July 2024*

EDUCATION

Princeton University *Aug 2018 - Jan 2024*
Ph.D., Science, Technology and Environmental Policy (STEP) Program, Princeton School of Public and International Affairs
Thesis Committee: Denise L. Mauzerall (advisor), Valerie J. Karplus, Fabian Wagner, Jesse Jenkins
Thesis Title: Accelerating Decarbonization of China's Building Sector through Supply-Side Low-Carbon Technology Deployment and Demand-Side Efficiency Improvement
Beijing Normal University, Sc.B., with honors, Environmental Science *Sep 2014 - Jun 2018*
Duke Kunshan University, Global Learning Semester *Feb 2016 - Jun 2016*

RESEARCH INTEREST

Energy technology innovation and deployment; Climate and energy policy design; Macro-energy system modeling

PUBLICATIONS

Peer Reviewed

9. Bo Li, Ruotao Yu, Kaiye Gan, Guangchun Ruan, Wei Dai, **Shangwei Liu**, Mingxia Yang, Haiwang Zhong. (2025). A Large-Scale Residential Load Dataset in Extreme Weather Events: A Case in Southern China. *Scientific Data*, 12, 450. [\[Link\]](#)
8. Jing Liang, Yueming (Lucy) Qiu, Bo Wang, Xingchi Shen, **Shangwei Liu**. (2025). Impacts of heatwaves on electricity reliability: Evidence from power outage data in China. *iScience*, 111855. [\[Link\]](#)
7. **Shangwei Liu**, Yang Guo, Fabian Wagner, Hongxun Liu, Ryna Yiyun Cui, Denise L. Mauzerall. (2024) Diversifying heat sources in China's urban district heating systems will reduce risk of carbon lock-in. *Nature Energy*, 9, 1021–1031 [\[Link\]](#) [\[Princeton reports\]](#); Policy brief submitted to China's State Council
6. **Shangwei Liu**, Hongxun Liu, Denise L. Mauzerall. (2023). Improving building envelope efficiency lowers costs and emissions from rural residential heating in China. *Environmental Science & Technology*, 57, 595-605. [\[Link\]](#)
5. Liqun Peng, Yang Guo, **Shangwei Liu**, Gang He, Denise L. Mauzerall. (2024) Subsidizing grid-based electrolytic hydrogen could increase GHG emissions in coal dominated power systems. *Environmental Science & Technology*, 58(12), 5187-5195. [\[Link\]](#)

4. **Shangwei Liu**, Xin Tian, Yiling Xiong, Yan Zhang, Hiroki Tanikawa. (2020). Challenges towards carbon dioxide emissions peak under in-depth socioeconomic transition in China: Insights from Shanghai. *Journal of Cleaner Production*, 247, 119083. [\[Link\]](#)
3. Yiling Xiong, Xin Tian, **Shangwei Liu**, Zhipeng Tang. (2020). New patterns in China's water footprint: analysis of spatial and structural transitions from a regional perspective. *Journal of Cleaner Production*, 245, 118942. [\[Link\]](#)
2. Jie Wang, Yiling Xiong, Xin Tian, **Shangwei Liu**, Jiashuo Li, Hiroki Tanikawa. (2018). Stagnating CO2 emissions with in-depth socioeconomic transition in Beijing. *Applied Energy*, 228, 1714-1725. [\[Link\]](#)
1. **Shangwei Liu**, Xin Tian, Wenjia Cai, Weiqiang Chen, Yafei Wang. (2018). How the transitions in iron and steel and construction material industries impact China's CO2 emissions: comprehensive analysis from an inter-sector linked perspective. *Applied Energy*, 211, 64-75. [\[Link\]](#)

Under review, submitted, in preparation

Shangwei Liu, Minghao Qiu, Gang He. Breaking the cost escalation curse of nuclear power. (under review)

Shangwei Liu, Liquan Peng, Xiangwen Fu, Jiang Lin, Siyue Guo, Denise L. Mauzerall. Energy system benefits justify the cost-effectiveness of building energy efficiency improvements. (in preparation)

TEACHING EXPERIENCE

Assistant instructor for SPI594S Topics in Policy Analysis (Half-Term): Climate Change: Science, Policy and Mitigation, graduate-level *Spring 2023 and Fall 2021*

Assistant instructor for ENV302 Practical Models for Environmental Systems, undergraduate-level *Spring 2022*

Assistant instructor for CEE334 Global Environmental Issues, undergraduate-level *Fall 2021*

FELLOWSHIP & AWARDS

Energy, Climate, and Technology Policy Postdoctoral Fellowship, Belfer Center for Science and International Affairs, Harvard Kennedy School *2024*

Princeton Dean's Completion Fellowship/Postgraduate Research Associates Program *2023*

Princeton Institute for International and Regional Studies (PIIRS) Graduate Fellows Program *2023*

Fellowship in Princeton School of Public and International Affairs *2018-2023*

Zhou Tingru Scholarship *2018*

Tang Xiaoyan Scholarship *2018*

Nominees Award for Outstanding Students by Beijing Normal University *2017*

National Scholarship by Ministry of Education of China *2015*

CONFERENCES & PRESENTATIONS

2025

Harvard University, Energy Policy Seminar [\[Link\]](#), *invited speaker*

2024

American Geophysical Union (AGU) 2024 Fall Meeting, *poster*
Boston University, Energy and climate Workshop, *invited speaker*
MIT Energy Initiative weekly research seminar, *invited speaker*
The 2024 Macro-Energy Systems Workshop, *oral presentation and poster*
Nature Conference on Air Pollution and Climate Change, *oral presentation*

2018-2023

American Geophysical Union (AGU) 2023 Fall Meeting, *poster*
American Geophysical Union (AGU) 2022 Fall Meeting, *oral & poster*
The 2018 International Conference on Resources Sustainability, *oral presentation*, Best Young Scientist Oral Presentation
The 12th International Congress of Ecology, *oral presentation*

TECHNICAL SKILLS

Energy & environmental analysis: techno-economic assessment, power system model (GridPath), building energy model (EnergyPlus), air pollution model (WRF-Chem), industrial ecology (input-output analysis, LCA), econometrics

Coding skills: R, Python, Matlab, STATA, L^AT_EX

SERVICE

Journal referee: *Energy Economics*, *Energy Policy*, *Nature Reviews Clean Technology*

Co-founder of *Carbon Talk* podcast (in Chinese), [[XiaoYuZhou](#)] [[Ximalaya](#)] [[Apply Podcast](#)], Chinese Podcast of the Year 2023, 10k followers

Author of *Environmental Science and Policy* blog (in Chinese), 12k followers