清華大學能源环境经济研究所
Institute of Energy, Environment and Economy, Tsinghua University

Shu Zhang

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Education background

Aug 2019 – now **Institute of Energy, Environment and Economy, Tsinghua University** *Ph.D. in Management*
- Supervisor: Professor Wenying Chen
- Thesis Topic: Uncertainties and Synergies of Energy Transition in China under Carbon Neutral Target

Mar 2022 – Apr 2023 **International Institute for Applied Systems Analysis, Austria** *Visiting Scholar*

Aug 2015 – Jul 2019 **Department of Electrical Engineering, Tsinghua University** *B.S. in Engineering*

Aug 2017 – Jul 2019 **School of Economics & Management, Tsinghua University** *2nd B.S. in Economics*

Aug 2016 – Jul 2018 **PBC School of Finance, Tsinghua University** *2nd B.S. in Finance*

Research experience

Jun 2021 – Jun 2023 **Modelling and Study on Scenarios Towards Cleaner and More Sustainable Growth** *World Bank Group Research Project*
- Identified the position and role of renewables, CCS and CDR technologies in the energy transition
- Designed multiple scenarios to portray the impact of technological policy uncertainty

Sep 2019 – Jun 2023 **Exploring National and Global Actions to reduce Greenhouse gas Emissions (ENGAGE)** *International Cooperative Research Project*
- Updated China energy, climate policy database, and constructed China-TIMES v2.0 model
- Designed, analyzed the stylized emission reduction scenarios in line with the global net-zero target
- Developed reports on the co-benefits and trade-offs of China's energy transition

Sep 2019 – Dec 2021 **Key Management Science Issues and Policy Research in the Transformation of Green and Low Carbon** *Major Program of NSFC*
- Modelled the decarbonization solution for the power, industry, building, and transport sectors
- Proposed energy system mitigation pathways for carbon neutrality in China

Mar 2019 – Jul 2020 **Sustainable Development of Urban Energy Systems: Policy Design, Operational Optimization and Market Coordination** *International Cooperation and Exchanges Project of NSFC*
- Integrated weather data, communication data and smart-meter data related to the load variation
- Built up multi-temporal probabilistic density load forecasting models using deep learning algorithms
- The accuracy of the purposed model is improved by 2.9% compared to the best single model

Publications

- **Zhang, S.** & Chen, W. *Assessing the energy transition in China towards carbon neutrality with a probabilistic framework.* Nature Communications, 2022. (Highly Cited Paper, Hot Cited Paper)
- **Zhang, S.** & Chen, W. *China's energy transition pathway in a carbon neutral vision*. Engineering, 2022. (Highly Cited Paper, Hot Cited Paper)
- **Zhang, S.**, Wang, Y., Zhang, Y., Wang, D. & Zhang, N. *Load probability density forecasting by transforming and combining quantile forecasts.* Applied Energy, 2020.
- **Zhang, S.** & Chen, W. *Modeling the rapid development of electric vehicles and energy storage technology under China carbon neutral scenario based on China-TIMES model*. 12th ICAE. 2020.
- Tang, H., **Zhang, S.** & Chen, W. *Assessing Representative CCUS Layouts for China's Power Sector toward Carbon Neutrality*. Environmental Science & Technology, 2021.
- Tang, H., Chen, W., **Zhang S.** & Zhang, Q. *China's multi-sector-shared CCUS networks in a carbon-neutral vision*, iScience, 2023.

Social activity

Jul 2021 – Aug 2021 **Management committee of fairy mountain resort, Wulong, Chongqing** *Deputy director*
- Managed regular municipal services and recreational activities in the government sector
- Proposed a draft design for the carbon-neutral scenic area and was authorized for construction

Jun 2016 – Aug 2016 **Investigation and practice on distributed PV microgrid in Tibetan areas** *Project initiator*
- Integrated alumni, institute and industrial resources to raise construction funds
- Led the team to build photovoltaic microgrid in the field
- Won the gold medal in the National Student Entrepreneurship Competition

Other information

- Language Skills: Chinese (native), English (fluent, IELTS 7)
- Research Skills: Python, R, Tableau, MATLAB, Mathematical model, Carbon Accounting, Carbon Market, Green Finance
- Honors & Awards: National Scholarship, State Scholarship Fund, Future Scholars Scholarship, First-class Scholarship
- Hobbies & Specialties: Photography (Getty Images contracted photographer), Swimming (Team leader), Piano