

Qi Ding

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Research Profile

I study how low-carbon transitions move from end-use demand and technology pathways, through spatial infrastructure and supply chains, to hourly power-system operation and resilience. My work combines integrated assessment, optimization, GIS, and data-driven analysis to connect long-term pathways with operational and infrastructure decisions.

Education

Tsinghua University Ph.D. in Management Science and Engineering, Institute of Energy, Environment, and Economy	2023–present
Tongji University B.Eng. in Vehicle Engineering, School of Automotive Studies	2018–2023

Peer-Reviewed Publications

- **Ding, Q.**, Ren, J., Zhang, S., & Chen, W. (2026). The role of shared autonomous electric vehicles in decarbonizing China's passenger transport sector. *Applied Energy*, 422, 128259. [DOI]
- **Ding, Q.**, & Chen, W. (2026). Retired Battery Supply and Energy Storage Demand in China: A Provincial-Scale Assessment. *Energy Proceedings*, 65. [DOI]
- Chen, W., Zhang, S., Zhang, Q., Ren, J., & **Ding, Q.** (2025). Assessing China's Province-Coordinated Power System Carbon-Neutral Transition Pathway. *Journal of Energy and Climate Change*, 1(1), 1–15. [DOI]

Preprint and Manuscript

- Pathak, A., Vishwanathan, S. S., Fujimori, S., et al. (including **Qi Ding**). Commonalities and differences in national pathways toward net-zero emissions. *Research Square* preprint; revision in progress. [DOI]
- **Ding, Q.**, & Chen, W. Aligning Retired EV-Battery Supply with Grid-Storage Demand through Interprovincial Coordination in China. Manuscript under review.

Selected Research Projects

- **National Key R&D Program of China — CO₂-EOR and Long-term Sequestration** Nov 2024–present
Core member. *Techno-economic assessment of CCUS pathways, sequestration benefits, and cost curves.*
- **European Commission, DG CLIMA — COMMITTED Project** Sep 2024–present
Research contributor. *Multi-model comparison of climate-policy portfolios and transition pathways.*
- **Energy Foundation China — China Energy System Model Comparison** Sep 2023–present
Research member. *Comparison of model assumptions and decarbonization pathways across energy-system models.*
- **The World Bank Group — Green China** Sep 2023–Jun 2024
Researcher. *China TIMES 2.0 analysis of low-carbon power and industry transition pathways.*
- **CNPC Economics & Technology Research Institute — Transportation-Energy Infrastructure Upgrade** Jul–Dec 2023
Research member. *Assessment of multi-energy hubs spanning charging, battery swapping, and hydrogen.*
- **CATARC — Commercial-Vehicle Carbon-Neutrality Roadmap 1.0** Oct 2022–Jul 2023
Core member at the China Automotive Technology and Research Center. *Assessed electrification, hydrogen, and biofuels for the clean-energy-supply workstream.*

Current Research

- **EV flexibility and power-system resilience under climate stress** Working paper
Historically grounded climate-stress events, fixed-capacity power-system replay, smart charging, and vehicle-to-grid operation.
- **Spatial supply chains for hydrogen-derived fuels** Research in progress
GIS-informed multi-period optimization of H₂, NH₃, methanol, and sustainable-aviation-fuel-equivalent production and transport.
- **Charging-infrastructure retrofit planning** Model development
Station-adaptive photovoltaic and battery sizing under economic and lifecycle-emissions objectives.
- **Coupling long-term pathways with hourly power-system analysis** Method development
Traceable scenario interfaces between China TIMES outputs and spatially and temporally explicit PyPSA-China inputs.

Selected Professional Experience

- Mianyang Municipal SASAC** — Summer Research Intern Jul–Aug 2025
Contributed to preliminary research for the municipal state-owned-enterprise development plan and to analysis of industrial investment and coordination mechanisms.
- IM Motors** — Innovation Strategy Intern Sep 2022–Apr 2023
Researched electric-vehicle value chains, technology pathways, and company strategies; synthesized evidence for internal discussions on supply chains and technology investment.
- NIO** — Project Management Intern, Software Delivery Sep–Dec 2022
Supported production-vehicle software releases by tracking issues, coordinating development and testing interfaces, and contributing to version-review workflows.

Selected Presentations

- **Ding, Q.**, et al. Integrating End-Use Flexibility and Climate-Stress Analysis into Sector-Coupled Energy Transition Pathways. Oral presentation, 19th Annual Meeting of the Integrated Assessment Modeling Consortium, 2026.
- **Ding, Q.**, et al. Operational Resilience Value of EV Flexibility under Historically Grounded Climate Stress. Oral presentation, Tsinghua Heli Anbang Joint Doctoral Academic Forum, 2025.
- **Ding, Q.**, et al. Economic-Carbon Misalignment in Photovoltaic-Storage Retrofits for 1,000 Public Charging Stations in Beijing. Oral presentation, 20th National Environmental Doctoral Academic Conference, 2025.

Report Contribution

- **Ding, Q.**, et al. China's Fifth National Climate Change Assessment Report: GHG Mitigation Policy Actions and Outcomes. Supporting analysis for the chapter on mitigation-policy actions, sectoral progress, and carbon-neutral transition pathways, 2025.

Models, Methods, and Skills

- **Transition and power-system models:** China TIMES 2.0, China TIMES-30PE, and PyPSA-China.
- **Decision analysis:** linear and mixed-integer optimization, scenario analysis, and techno-economic assessment.
- **Spatial and data methods:** GIS, network analysis, lifecycle assessment, and data-driven modeling.
- **Research computing:** Python, GAMS, MATLAB, Git, and reproducible model and data workflows.
- **Languages:** English (CET-6: 641) and German (Band 6: Excellent).

Selected Honors

National Scholarship (2021, 2022); Shanghai Outstanding Graduate (2023).