Mingzhou Shen

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Education

Ph.D. Energy, Environmental, and Food Economics, Pennsylvania State University — 2025 (Expected)

M.S. Civil Engineering, Zhejiang University — Dec. 2019

B.E. Civil Engineering, Zhejiang University — Jun. 2016

Research Interests

Energy and Environmental Economics, Urban Economics, Labor Economics, Empirical Industrial Organization, Causal Inference

Teaching Fields

Microeconomics, Econometrics, Energy and Environmental Economics, Urban Economics, Geographic Information Systems, Applied Computational Economics, Empirical Industrial Organization, Machine Learning

Job Market Paper

Drought responses in the Western United States: Household location choice and housing market feedback.

Abstract: The Western U.S. faces a paradoxical challenge: rapid population growth amidst increasingly severe droughts, leading to a severe water crisis. This study employs a residential sorting model to analyze household location decisions and the associated welfare implications in response to drought risk from 2000 to 2020. A key innovation is the use of novel unmet water demand data that integrates the legal dimension of water allocation—water rights—with water availability for the first time. The findings reveal that households require significant compensation to move to areas with greater water scarcity. On average, they expect a 0.06% increase in annual wages to tolerate an additional cubic meter of unmet water demand, with households over 40 and homeowners demanding even higher compensation. The welfare impact is primarily driven by the direct disutility of water shortages rather than by housing cost shocks. These insights can inform policies addressing adaptation and equity concerns in the face of climate change.

Publications

Journal Article in Economics

[1] Shen, M., Fisher-Vanden, K. and Wrenn, D.H., 2024. Impacts of Water-Related Building Moratoria on California's Housing Crisis. (forthcoming at *Land Economics*) [link]

Journal Articles in Engineering (published prior to my transition to Economics)

[1] Yi, N., Shen, M., Erdely, D. and Cheng, H., 2020. Stretchable gas sensors for detecting biomarkers from humans and exposed environments. *TrAC Trends in Analytical Chemistry*, *133*, p.116085. [link]

[2] Lü, C., Zhang, Y., Zhang, H., Zhang, Z., Shen, M. and Chen, Y., 2019. Generalized optimization method for energy conversion and storage efficiency of nanoscale flexible piezoelectric energy harvesters. *Energy Conversion and Management*, *182*, pp.34-40. [link]

[3] Zhang, H., Shen, M., Zhang, Y., Chen, Y. and Lü, C., 2018. Identification of static loading conditions using piezoelectric sensor arrays. *Journal of Applied Mechanics*, *85*(1), p.011008. [link]

Book

[1] FAO and CAAS. 2021. Carbon neutral tea production in China – Three pilot case studies. *FAO*. (Contributor). [link]

Working Papers and Work in Progress

[1] Shen, M. "How does drought shape land-use regulations? Evidence from the Wharton regulation survey."

[2] Shen, M. "Evaluating the effect of California statewide lawn watering ban on water conservation using remotely sensed data."

[3] Ma, Z. and Shen, M. "The impact of non-GMO labeling on consumer demand for wine: Evidence from a choice experiment."

Presentations

2024 Association of Environmental and Resource Economists Summer Conference, Western Economic Association International Annual Conference, Agricultural & Applied Economics Association Annual Meeting, CU Environmental and Resource Economics Workshop, Penn State Water Conference, Penn State Energy and Environmental Economics and Policy Initiative Seminar

2023 Association of Environmental and Resource Economists Summer Conference, Western Economic Association International Annual Conference, Cornell Northeast Workshop on Energy Policy and Environmental Economics

2022 Environmental Politics and Governance Conference

Research Experience

Pennsylvania State University, Research Assistant for Karen Fisher-Vanden 2021-present

- Collaborated with an interdisciplinary team of modelers, hydrologists, and lawyer in the Program on Coupled Human and Earth Systems to study the impacts of drought on labor and housing markets in the Western U.S.

Teaching Experience

CED 201: Introductory Environmental and Resource Economics. Douglas H. Wrenn. Spring 2024
Teaching Assistant and Guest Lecturer

EMCH 210: Statics and Strength of Materials. Samia Suliman. Spring 2021
Teaching Assistant

EMCH 212: Dynamics. Christopher Kube. Fall 2020
Teaching Assistant

EMCH 212: Dynamics. Gary Gray. Spring 2020
Teaching Assistant

Professional Experience

Food and Agriculture Organization of the United Nations HQs Feb. 2019-Nov. 2019
Specialist

- Worked with a multidisciplinary team to develop a predictive model for estimating greenhouse gas emissions in tea production, laying the foundation for FAO's carbon-neutral tea certification.
- Collaborated with the German Federal Ministry for Economic Cooperation and Development and the Chinese Academy of Agricultural Sciences to transfer tea planting technology to Kenya.
- Supported small-scale farmers in rural Honduras in adopting agronomic practices to enhance their resilience to climate change.
- Coordinated with national focal points to collect and synthesize statistics related to the Sustainable Development Goals, supporting global sustainability efforts to alleviate poverty and achieve zero hunger.

Scholarships and Awards

Graduate Student Travel Award, Pennsylvania State University 2024

Longenecker Award, Pennsylvania State University 2020

Outstanding Graduates, Zhejiang University 2016

Corporate Scholarships for Outstanding Students, Enterprises 2015/2017/2018

Service

Referee

- Western Economics Association International Annual Conference 2024

Member

- Penn State Energy, Environmental, and Food Economics Graduate Student Association 2022-present
- Penn State Water Council 2023-present
- Penn State Alumni Association-Blue & White Society 2020-2023

Skills

Software: Python, R, MATLAB, Stata, ArcGIS, GAMS, Java

Certifications: Supervised Machine Learning: Regression and Classification (Stanford), Advanced Learning Algorithms (Stanford), Unsupervised Learning, Recommenders, Reinforcement Learning (Stanford), SQL for Data Science (UC Davis)

Languages: English (fluent), Mandarin (native)

References

Dr. Karen Fisher-Vanden (advisor)
Distinguished Professor of Environmental and Resource Economics and Public Policy
Pennsylvania State University
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Dr. Qin Fan
Professor of Economics
California State University, Fresno
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Dr. Douglas H. Wrenn
Associate Professor of Environmental and Resource Economics
Pennsylvania State University
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