Mingzhou Shen

Pennsylvania State University
308 Armsby Building
University Park, PA 16801

Phone: (814) 996-9103
Email: mjs7919@psu.edu
Homepage: https://mingzhoushen.github.io

Education

Ph.D. Environmental 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, Machine Learning

Teaching Fields

Microeconomics, Econometrics, Energy and Environmental Economics, Urban Economics, Geographic Information Systems, 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. confronts 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 contribution is the use of novel unmet water demand data that, for the first time, integrates the legal dimension of water allocation—water rights—with water availability. The findings reveal that households require significant compensation to move to areas with greater water scarcity. On average, households expect a 0.06% increase in annual wages to tolerate an additional cubic meter of unmet water demand, with those over 40 and homeowners demanding even higher compensation. The welfare impact on households is primarily driven by the direct disutility of water shortages rather than by housing cost shocks. These insights will effectively guide policies that tackle 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. *Food and Agriculture Organization of the United Nations.* (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

o As part of the Program on Coupled Human and Earth Systems, I collaborated with an interdisciplinary team to study the impact of environmental risks and policies on labor and housing markets. Working alongside economists, modelers, policy experts, and lawyers, I drew on diverse perspectives and expertise to address complex economic challenges.

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 (FAO) Feb. 2019-Nov. 2019
Specialist Rome, Italy

o 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.

o 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.

o Supported small-scale farmers in rural Honduras in adopting agronomic practices to enhance their resilience to climate change.

o 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

o Western Economics Association International Annual Conference 2024

Member

o Penn State Energy, Environmental, and Food Economics Graduate Student Association 2022-present

o Penn State Water Council 2023-present

o 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
kaf26@psu.edu

Dr. Qin Fan
Professor of Economics
California State University, Fresno
qfan@csufresno.edu

Dr. Douglas H. Wrenn
Associate Professor of Environmental and
Resource Economics
Pennsylvania State University
dhw121@psu.edu