

Nastaran Tebyanian, Ph.D.
 Decision Scientist
 The Water Institute
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EDUCATION

Pennsylvania State University	University Park, PA	Architecture	Ph.D., 2022
Pennsylvania State University	University Park, PA	Applied Statistics	MAS, 2019
Pennsylvania State University	University Park, PA	Sustainable Climate Risk Management	Summer School, 2016
Pennsylvania State University	University Park, PA	Landscape Architecture	MSLA, 2016
Shahid Beheshti University	Tehran, Iran	Landscape Architecture	MLA, 2012
Isfahan University of Art	Isfahan, Iran	Architectural Engineering	BS, 2008

RESEARCH INTERESTS

Decision-making under deep uncertainty, decision sciences, climate risk management, coupled human-natural systems,

PROFESSIONAL EXPERIENCE

The Water Institute	Research (Decision) Scientist	2022–Present
RAND Corporation	Adjunct Researcher/Summer Associate	2021–2022
Penn State Initiative for Resilient Communities, Penn State University	Fellow at LandscapeU, An NSF Research Traineeship in Landscape Science/Researcher	2019–2022
Penn State University	Adjunct Faculty of Landscape Systems	2018–2019
Hamer Center for Community Design, Penn State University	Researcher	2013–2019
Azad University	Faculty member, Architectural Design Studios	2012
Semnan Municipality	Lead Urban Designer	2009–2011

PROFESSIONAL SOCIETY MEMBERSHIPS

- American Planning Association – 2019–2020
- American Geophysical Union, 2019–2020, 2022–2023
- Society for Decision Making Under Deep Uncertainty, 2022–Present
- Registered Architect, Iran, 2013

AWARDS AND HONORS

- Scientific Excellence, The Journal of Digital Landscape Architecture, 2016, 2022
- Scientific Merit, The Journal of Digital Landscape Architecture, 2020
- Travel Award, Mansueto Institute for Urban Innovation, 2019
- Travel Award, Stuckeman Center for Design Computing, 2016, 2020
- Michael Brill Research Award in Urban Communication and Community Design, 2016

TEACHING EXPERIENCE

- Adjunct Faculty, Landscape Systems Studio, Penn State University (2018–2019)
- Adjunct Faculty, Introduction to Design Visualization, Penn State University (2016)
- Faculty member, Environmental Communication Studio, Azad University, Iran (2012)
- Teaching Assistant, Design Implementation, Penn State University (2013–2015).

COMMUNITY SERVICE

Member, Board	Graduate Research and Innovation Design	2019–2020
Member, Board	State College Latino Outdoors	2018-2021
Co-organizer	First virtual Digital Landscape Architecture Conference (DLA)	2022
Peer Reviewer	PLOS One, Environmental Modeling and Software, Journal of Digital Landscape Architecture, Journal of Water Resources Planning and Management	2022-2024
Technical Reviewer	EPA modules on “Integrating Water Planning and Hazard Mitigation Planning	2019-2020

NOTABLE PROJECTS

Decision Scientist/Louisiana Climate Pollution Reduction Grant Program Current

Louisiana Office of the Governor

Lead for the co-pollutant and co-benefit analysis and a core team member for GHG reduction and decision analysis. The project supports the Louisiana Division of Administration (LDOA) in continuing the work of the Louisiana Climate Action Plan. As part of this effort, our team investigates greenhouse gas emission (GHG) modeling capacity and tools including GHG policy modeling for the Comprehensive Climate Action Plan (CCAP) building on the modeling conducted for the Priority Climate Action Plan (PCAP).

Decision Scientist/Facilitating Dynamic Adaptive Pathways for Coastal Decision-Makers through Land Ice and Water Projections Current

Lead for decision support tool integration. The goal of the proposed work is to develop a framework and monitoring protocols based on probabilistic projections that will support the development and implementation of dynamic adaptation plans to enhance the resilience of Gulf communities.

Decision Scientist/Louisiana Barrier Island System Management Project Current

Louisiana Coastal Protection and Restoration Authority

Co-lead for Robust Decision Making (RDM) modeling and analysis. The project focuses on developing a framework for regional sediment management (RSM) in barrier island restoration, including inventorying available data for model development and identifying potential stakeholder concerns.

Decision Scientist/Lower Mississippi River Management Program Current

Louisiana Coastal Protection and Restoration Authority

Co-lead for Decision-making under Deep Uncertainty (DMDU) tool and analytics development. The project focuses on the identification of future scenarios of sediment and water management that provides holistic value across coastal protection, navigation, and ecosystem restoration. Also developing a framework for evaluating the costs and benefits of those scenarios.

Decision Scientist/Evaluating and Communicating Stormwater Risk in New Orleans Current

Shell Foundation

Co-lead for vulnerability and scenario discovery analysis. This study examined stormwater flooding in the City of New Orleans to help decision makers and residents understand how to better manage stormwater under stressors such as climate change and inconsistent maintenance of outdated infrastructure.

PUBLISHED WORKS

Peer-Reviewed Publications

- Kane, P. B., **Tebyanian, N.**, Gilles, D., Mcmann, B., & Fischbach, J. (2024). Key Drivers of Vulnerability to Rainfall Flooding in New Orleans. *Frontiers in Climate*, 6.
- Tebyanian, N.**, Fischbach, J., Lempert, R., Knopman, D., Wu, H., Iulo, L., & Keller, K. (2023). Rhodium-SWMM: An open-source tool for green infrastructure placement under deep uncertainty. *Environmental Modelling & Software*, 163, 105671.
- Tebyanian, N.**, Wu, H., & Iulo, L. (2022). Uncertainty Considerations in Green Infrastructure Optimization: A Review. *Journal of Digital Landscape Architecture (JoDLA)*, 7.
- Tebyanian, N.** (2020). Application of Machine Learning for Urban Landscape Design: A Primer for Landscape Architects. *Journal of Digital Landscape Architecture (JoDLA)*, 5, 217–226.
- Flohr, T., Wu, H., & **Tebyanian, N.** (2020). A Web App For Urban Pollinator Site Assessment. *Landscape Research Record*, 9, 177–191.
- Tebyanian, N.** (2016). Reflecting Time in Computer-aided Landscape Design and Analysis: Developing an Application for Modelling Seasonality and Resiliency in Small Scale Landscapes. *Journal of Digital Landscape Architecture (JoDLA)*, 1, 214–221.

Technical Reports

- DeJong, A., Kane, P., & **Tebyanian, N.** (2024). *Priority Climate Action Plan: Quantitative Assessments, Methodologies, Data, and Sources (Technical Appendix)*. State of Louisiana.
- Tebyanian, N.**, Bienn, H., & Fischbach, J. (2024). *Resilient Florida Flood Scenarios: Bathtub Modeling Technical Documentation* [Technical Memorandum]. The Water Institute.
- Tebyanian, N.** (2024). *Houston Pocket Prairies: Site and Benefit Evaluation Methodology*. The Water Institute.
- Dalyander, P. S., **Tebyanian, N.**, & Henkel, J. (2023). *Resilient Jacksonville: Analysis of Spatial Planning Alternate Future Scenario*. The City of Jacksonville.
- Iulo, L., Arora, A., Fowler, L., Goldberg, L., Helgeson, C., Keller, K., Nicholas, R., Sharma, S., **Tebyanian, N.**, Tuana, N., & Mahkemeh, Z. (2020). *Establishing priorities for pennsylvania community flood resilience* [White paper].

Conference Proceedings and Presentations

- Collini, R., & Tebyanian, N. (2024, February 12). *Equity in Resilience: Lessons Learned on Closing the Gap Between Intention & Reality* [Oral Presentation]. Social Coast Forum, Charleston, South Carolina.
- Swanson, T., Dalyander, S., Di Leonardo, D., Tebyanian, N., Kane, P., Burgos, M. B., Felterman, M., & Vincent, M. (2024). *Deep uncertainty in shallow water: Reduced complexity simulation of Louisiana's coastal barrier system* [Oral Presentation]. 2024 Ocean Sciences Meeting.
- Collini, R., Tebyanian, N., Fischbach, J. R., DeJong, A., Georgiou, I., Rounce, D., & Rellinger, A. (2023, November 30). *Navigating Sea-Level Rise Adaptively in the U.S. Gulf Coast: A Local Perspective* [Oral Presentation]. the 10th Annual Conference of the Society for Decision Making Under Deep Uncertainty (DMDU), Delft, The Netherlands.
- DeJong, A., Tebyanian, N., McHugh, C., Collini, R., Fischbach, J. R., Georgiou, I., Rounce, D., & Rellinger, A. (2023, November 30). *Lessons Learned in Application of DMDU Methods to Urban Planning Projects in the US* [Oral Presentation]. The 10th Annual Conference of the Society for Decision Making Under Deep Uncertainty (DMDU), Delft, the Netherlands.
- Kane, P., Tebyanian, N., Dalyander, S., Swanson, T., Di Leonardo, D., & Burgos, M. B. (2023, November 30). *Barrier Island System Management (BISM)* [Oral Presentation]. The 10th Annual Conference of the Society for Decision Making Under Deep Uncertainty (DMDU), Delft, the Netherlands.
- Tebyanian, N. (2023, November 30). *Spatial Decision Making Under Deep Uncertainty (Spatial DMDU)* [Oral Presentation]. The 10th Annual Conference of the Society for Decision Making Under Deep Uncertainty (DMDU), Delft, the Netherlands.

- Tebyanian, N., Kane, P., Dalyander, S., Esposito, C., & Miner, M. (2023, June 31). *The Lowermost Mississippi River Management Program: Modeling and Strategic Management* [Oral Presentation]. State of the Coast Conference, New Orleans, LA.
- Tebyanian, N., Kane, P., & Fischbach, J. R. (2023, June 31). *Understanding Stormwater Flood Risk in New Orleans* [Oral Presentation]. State of the Coast Conference, New Orleans, LA.
- Webber, M., Tebyanian, N., Rounce, D., Fischbach, J., & Samaras, C. (2022). *Modeling Urban Flood Impacts and Potential Solutions at Community Scales in Pittsburgh*. AGU Fall Meeting Abstracts.
- Tebyanian, N., Iulo, L., & Wu, H. (2021). *Green infrastructure placement under deep uncertainty* [Virtual]. Computational Urban Planning and Urban Management Conference, Helsinki, Finland.
- Tebyanian, N., Iulo, L., & Wu, H. (2021). *Application of many objective robust decision making (MORDM) for green infrastructure planning* [Virtual]. Council of Educators in Landscape Architecture Conference.
- Turner, S., Lempert, R., & Tebyanian, N. (2021). *Opportunities for machine learning to advance interpretable DMDU visualizations* [Invited talk]. Center for Scalable Computing and Analysis. RAND Corporation, Virtual.
- Tebyanian, N. (2021). *Distributed green infrastructure planning in Pittsburgh's Negley Run watershed: A case study of spatial multi-objective robust decision making* [Invited talk]. Mid-Atlantic Regional Integrated Sciences and Assessments (MARISA) meeting, Virtual.
- Fowler, L., Iulo, L., Helgeson, C., Tebyanian, N., Keller, K., Sharma, S., & Leininger, S. (2020). *Flood resilience in riverine communities: Understanding risk and facilitating values-informed decision making* [Invited talk]. Susquehanna River Basin Commission Meeting, Virtual.
- Tebyanian, N. (2020). *Application of machine learning for urban landscape design: A primer for landscape architects* [Virtual]. Digital Landscape Architecture Conference, Harvard University.
- Flohr, T., Hong, W., & Tebyanian, N. (2019). *Addressing "the challenge of place in time" with geodesign: Example of pollinator habitat resiliency* [Invited talk]. Pennsylvania/Delaware Chapter of the American Society of Landscape Architects Annual Conference, Cranberry Township, PA.
- Tebyanian, N., & Iulo, L. (2019). Food-energy-water nexus and green infrastructure: A theoretical connection. *International Conference on Sustainable Development*. ICSD 2019, Columbia University, New York.
- Tebyanian, N. (2019). *National Flood Insurance Program (NFIP) dataset: Insights for PA*. 14th Susquehanna River Symposium: Healthy Rivers, Healthy Communities, Bucknell University, Lewisburg, PA.
- Flohr, T., Wu, H., Miller, D., & Tebyanian, N. (2019). *Computationally assessing pollinator habitat resiliency*. SCDC VR/AR Flash Symposium, Pennsylvania State University.
- Tebyanian, N. (2016). *Reflecting time in computer-aided landscape analysis and design: Developing an application for modeling seasonality and resilience in small-scale landscapes*. Digital Landscape Architecture Conference, Istanbul, Turkey.
- Tebyanian, N. (2015). *A geodesign experience for development of vacant properties in Philadelphia* [Poster]. Environmental Design Research Association Conference, Los Angeles, CA.
- Tebyanian, N., Memar, M., & Henderson, R. (2015). *The historical water division network of Semnan, Iran*. Water History 2015 Conference, Delft, Netherlands.
- Tebyanian, N. (2015). *Collaborative modelling in urban design: Parametric design games*. Innovations in Collaborative Modeling Conference, East Lansing, MI.
- Tebyanian, N., & Memar, M. (2014). *Implementing traditional and modern potentials in participatory urban landscape design*. Council of Educators in Landscape Architecture Conference, Baltimore, MD.
- Tebyanian, N., & Memar, M. (2012). *Green infrastructure as a basis for social cohesion: A case study from Iran*. European Foundation for Landscape Architecture Conference, Uppsala, Sweden.