

# SARAH FREEMAN RACINE

*Climate Strategy & Systems Decision Making | PhD, Water Resources Engineering*

## PROFESSIONAL SUMMARY

Climate and resilience strategist with over 15 years of global experience advising governments, development institutions, and cross-sector partnerships on decision-making under deep uncertainty. Combines technical expertise in water and climate systems with strategic leadership in investment planning, institutional design, and multi-stakeholder governance. Recognized for translating climate and nature risk into actionable, feasible, and durable pathways across infrastructure, policy, and finance contexts.

## CORE COMPETENCIES

- Climate & Nature Risk Strategy
- Systems Analysis & Uncertainty-Informed Decision-Making
- Investment Planning & Resilient Infrastructure Pathways
- Cross-Sector & Transboundary Coordination
- Institutional & Governance Strategy
- Stakeholder Engagement & Participatory Process Design
- Decision Support Tools & Technical Communication
- Hydroclimatic & Hydroeconomic Modeling
- Geospatial & Analytical Tools (GIS, R, MATLAB, WEAP)
- Spanish Fluency

## PROFESSIONAL EXPERIENCE

### **World Bank Group — Senior Water Resources Management Consultant**

2022 – Present

- Serve as a senior technical advisor supporting the integration of climate resilience and uncertainty-informed approaches across the World Bank Water Global Practice lending portfolio.
- Advise regional and global teams on climate-resilient investment planning across Latin America, Central Asia, and Sub-Saharan Africa, aligning technical analysis with operational, financing, and institutional constraints.
- Direct analytical workstreams on hydroclimatic risk assessment and hydroeconomic modeling to strengthen cross-sectoral (agriculture, hydropower) and transboundary water resilience in the Amu and Syr Darya basins.
- Lead return-on-investment analyses of hydrometeorological and forecasting systems, informing regional water management strategies and communicating the economic case for climate-informed decision-making.

**University of Massachusetts Amherst** — *Graduate Researcher & Project Lead*

2016 – 2022

- Directed the “Resilience by Design” initiative for the Valley of Mexico, guiding a stakeholder-driven, systems-based investment strategy that informed a \$120M World Bank lending program.
- Designed and facilitated participatory modeling and stress-testing processes to evaluate infrastructure and policy options under multiple future scenarios.
- Led cross-institutional collaboration and managed client engagement with the World Bank and Rockefeller Foundation.

**World Wildlife Fund (WWF), US HQ** — *Senior Water Resources Engineer*

2010 – 2016

- Led global initiatives at the intersection of water, climate adaptation, conservation, and sustainable development across Latin America, Africa, and Southeast Asia.
- Directed multi-country implementation of WWF’s Basin Report Card Initiative in Colombia and the Mekong, developing stakeholder-informed metrics and governance tools.
- Authored climate-resilient sector strategies for multilateral development banks and private-sector clients, integrating water risk into broader investment and governance frameworks.
- Provided in-region technical leadership for climate vulnerability assessments and institutional adaptation planning in East and Southern Africa.

**The Louis Berger Group (now WSP)** — *Water Resources Engineer*

2008 – 2010

- Delivered hydrologic modeling and environmental risk analyses for large-scale agricultural, real estate, and transportation investments across Latin America, the Middle East, and South Asia, supporting climate-informed design and mitigation planning.
- Conducted environmental and social impact assessments (ESIAs) for major energy and transport projects, advising clients on sustainability strategy, regulatory compliance, and risk mitigation in complex operating environments.
- Led water systems planning and environmental impact mitigation for Navi Mumbai International Airport (CIDCO), including emissions modeling and sustainability systems integration; supported environmental due diligence for USAID-funded programs in conflict-affected regions.
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**Tufts University / SEDAPAL (Peru)** — *Research Fellow*

2007 – 2008

- Co-developed a water supply planning model with Lima’s water utility to better understand climate risks and inform investment and access strategies in informal settlements

## EDUCATION

**PhD**, Water Resources Engineering – *University of Massachusetts Amherst*

Dissertation: *Resilience Planning in Complex Urban Supply Systems* (2022)

**MSc**, Water Resources Engineering – *Tufts University* (2008)

**BSc**, Mechanical Engineering – *Tufts University* (2005)

## RECOGNITION & SERVICE

- Vice Chair, Charlestown RI Climate Resiliency Commission (2022- present)
- Ad Hoc Reviewer, Journal of Hydrology (ongoing)
- Steering Committee, City Water Resilience Framework, Rockefeller Foundation (2017-2018)
- Edwin V. Sisson Doctoral Fellow, UMass Amherst (2016-2017)
- ACEC National Young Professional of the Year (2009)
- Founding President, Engineers Without Borders (Tufts)

## SELECTED PUBLICATIONS & INVITED TALKS

### Peer-Reviewed Publications

**St. George Freeman, S.**, Ray, P., Wi, S., Brown, C., 2023. When threshold and metric selection matter for resilience planning in an uncertain and changing world. *Journal of Water Resources Planning and Management*, 149(11).

Rodríguez, D.J., Paltán, H.A., García, L.E., Ray, P. and **St. George Freeman, S.**, 2021. Water-related infrastructure investments in a changing environment: a perspective from the World Bank. *Water Policy*, 23(S1), pp.31-53.

Gallagher, L., Kopainsky, B., Bassi, A.M., Betancourt, A., Buth, C., Chan, P., Costanzo, S., **St George Freeman, S.**, Horm, C., Khim, S. and Neang, M., 2020. Supporting stakeholders to anticipate and respond to risks in a Mekong River water-energy-food nexus. *Ecology and Society*, 25(4), p.29.

**Freeman, S.S.G.**, Brown, C., Cañada, H., Martinez, V., Nava, A.P., Ray, P., Rodriguez, D., Romo, A., Tracy, J., Vázquez, E. and Wi, S., Boltz, F., 2020. Resilience by design in Mexico City: A participatory human-hydrologic systems approach. *Water Security*, 9, p.100053.

Boltz, F., Poff, N.L., Folke, C., Kete, N., Brown, C.M., **Freeman, S.S.G.**, Matthews, J.H., Martinez, A. and Rockström, J., 2019. Water is a master variable: solving for resilience in the modern era. *Water Security*, 8, p.100048.

### Practitioner & Policy Publications

Bertule, M., Bjørnsen, P.K., Costanzo, S.D., Escurra, J., **Freeman, S.**, Gallagher, L., Kelsey, R.H. and Vollmer, D., 2017. Using indicators for improved water resources management - guide for basin managers and practitioners. 82 pp. ISBN 978-87-90634-05-6.

Cook, J., **Freeman, S.**, Hill, M., & Levine, E., 2011. Shifting Course: Climate Adaptation for Water Management Institutions. Washington, D.C.: WWF.

### Selected Invited Talks

Invited Panelist, AGU Frontiers in Hydrology (2022) – *Taking Hydrologic Sciences from Usable to Used.*

Invited Speaker, Decision Making Under Deep Uncertainty (DMDU) Annual Meeting (2020) – *Managing Water Risk in a Megacity: The Case of Mexico City.*

Invited Remarks, UNFCCC Race to Zero Water Day (2020).

Invited Speaker, UNESCO (2020) – *Climate-Resilient Water Management in an Age of Uncertainty.*

Invited Speaker, AGU Fall Meeting Centennial Session (2019)- *The Future of Water.*