

Hassaan Furqan Khan

Department of Urban and Environmental Policy and Planning
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Education/Training

University of Massachusetts Amherst

Ph.D. in Civil Engineering, 2018
M.S. in Environmental Engineering, 2016
Advisor: Dr. Casey Brown

Lafayette College

B.S. in Civil and Environmental Engineering, 2013
Summa Cum Laude, Departmental Honors

Employment

Assistant Professor, Department of Urban and Environmental Policy and Planning, Tufts University	<i>Aug 2023- Present</i>
Assistant Professor, Department of Integrated Sciences and Mathematics, Habib University	<i>Aug 2019- July 2023</i>
International Consultant, International Water Management Institute (IWMI)	<i>Aug 2022- Dec 2022</i>
Lead Instructor, National Faculty Development Program (HEC)	<i>Apr 2020- Oct 2020</i>
Postdoctoral Scholar, Department of Earth System Sciences, Stanford University Supervisor: Dr. Steve Gorelick	<i>May 2018- May 2019</i>

Awards and Honors

- FRAC Summer Fellowship 2023
Tufts University
- FRAC Open Access Grant 2023
Tufts University
- Faculty Research Award 2021
Habib University
- Early Career Research Award 2020
Hashoo Foundation
- Bernard Berger Award 2018
University of Massachusetts Amherst

Grants

Agency: Higher Education Commission, Pakistan
Award Number: NRPU-13659
Title: Smart Urban Infrastructure to Study Water Demand in Karachi
PI: Hassaan Furqan Khan
Total Costs: PKR 18.2 million
Project Period: 03/01/2021-02/28/2023

Publications

Peer-reviewed Publications

- Khan, H.F.**, Arif M.A., Intikhab S., Arshad S.A. (2023). Quantifying Household Water Use and Its Determinants in Low-Income, Water-Scarce Households in Karachi. *Water*, 15(19):3400. <https://doi.org/10.3390/w15193400>
- Khalil, S., Sheikh, S. B., and **Khan, H.F.** (2023) Household water insecurities and willingness to pay in Karachi. *Water Policy*, 25 (12): 1139–1160. <https://doi.org/10.2166/wp.2023.149>
- Khan, H. F.**, & Anwar, A. (2023). Surface water hydrology of the Greater Kabul Basin. In J. Lautze, A. Shah, & A. Meelad (Eds.), *State of the Basin Report: Transboundary Greater Kabul*. pp. 62–80. CABI Books: <https://doi.org/10.1079/9781800622371.0000>
- Khan, H. F.** and Arshad. S.A. (2022) Beyond Water Scarcity: Water (In)Security and Social Justice in Karachi, *Journal of Hydrology: Regional Studies*, 42, <https://doi.org/10.1016/j.ejrh.2022.101140>
- Memon, J. A., **Khan, H. F.**, et al. (2022) Design and Implementation of Smart Flowmeter for Urban Water Metering, *IECON 2022 – 48th Annual Conference of the IEEE Industrial Electronics Society*, pp. 1-6, doi: 10.1109/IECON49645.2022.9968961.
- Anwar, N., **Khan, H. F.**, et al. (2022). Designed to Fail? Heat governance in urban South Asia: The case of Karachi, *Cool Infrastructures: Life with Heat in the Off-grid City*. <http://dx.doi.org/10.7488/era/2180>
- Akhtar, T., **Khan, H. F.**, & Mustafa, D. (2021). Water security in Pakistan: availability, accessibility and utilisation. In M. A. Watto, M. Mitchell, & S. Bashir (Eds.), *Water resources of Pakistan: issues and impacts* (pp. 57-78). Cham: Springer. https://doi.org/10.1007/978-3-030-65679-9_4
- FRANÇOIS, B., **Khan, H.F.**, et al. (2021). Long Term Vulnerability Assessment and Adaptation Plan for the San Francisco Public Utilities Commission Water Enterprise - Phase I. Project 4703. Denver, CO: The Water Research Foundation.
- Khan, H. F.**, Yang, Y. C. E., Wi, S. (2020) Case Study on Hydropolitics in Afghanistan and Pakistan: Energy and Water Impacts of Kunar River Development, *ASCE Journal of Water Resources Planning and Management*, doi: 10.1061/(ASCE)WR.1943-5452.0001262.
- Borgomeo, E., **Khan, H. F.**, Kummu, M., et al. (2020) Sensitivity of global crop productivity to green water shocks, *Environmental Research Letters*, <https://doi.org/10.1088/1748-9326/abc587>
- Khan, H. F.** and Brown, C. (2019) Effect of Hydrogeologic and Climatic Variability on Performance of a Groundwater Market, *Water Resources Research*, 55, doi:10.1029/2018WR024180

Ray, P. A., Taner, M.U, Schlef, K.E., Wi, S., **Khan, H. F.**, Freeman S.G., Brown, C. (2018). Growth of the Decision Tree: Advances in Bottom-Up Climate Change Risk Management, *Journal of the American Water Resources Association*, 1-18, <https://doi.org/10.1111/1752-1688.12701>

Yang, J., Yang, Y. C. E., **Khan, H. F.**, et al. (2018). Quantifying the sustainability of water availability for the water-food-energy-ecosystem nexus in the Niger River Basin. *Earth's Future*, 6. <https://doi.org/10.1029/2018EF000923>

Khan, H. F., Yang, Y. C. E., Xie, H., Ringler, C. (2017). A Coupled Modeling Framework for Sustainable Watershed Management in Transboundary River Basins, *Hydrology and Earth System Sciences*, 21, 6275-6288, <https://doi.org/10.5194/hess-21-6275-2017>.

Khan, H. F., Morzuch, B. J., Brown, C. (2017). Water and growth: An econometric analysis of climate and policy impacts, *Water Resources Research*, 53, doi:10.1002/2016WR020054

Khan, H. F., Yang, Y. C. E., Ringler, C. (2017). Heterogeneity in riverine ecosystem service perceptions: Insights for water-decision processes in transboundary rivers, *IFPRI Discussion Paper 1668*. Washington, D.C.
<http://ebrary.ifpri.org/cdm/ref/collection/p15738coll2/id/131366>

Khan, H. F., Yang, Y. C. E., Wi, S., Ringler, C., Cheema, M.J.M., Basharat, M. (2016). Guiding Groundwater Policy in the Indus Basin of Pakistan Using a Physically-Based Groundwater Model, *ASCE Journal of Water Resources Planning and Management*, 6, 05016014.

Manuscripts under Review

Khan, H.F. Exploring Determinants of Variability: A Mixed-Methods Analysis of Water and Sanitation Inequities Across Informal Settlements, *Habitat International*

Conference Presentations

Khan, H. F. (2024) Impact of Water and Sanitation Access on Quality-of-life Outcomes in Informal Settlements. In *World Environmental and Water Resources Congress*. Milwaukee, WI: EWRI.

Schlef, K. E. and **Khan, H. F.** (2024) Identifying Teleconnections for the Precipitation of Karachi, Pakistan. In *World Environmental and Water Resources Congress*. Milwaukee, WI: EWRI.

Khan, H. F. (2023) WaSH Access and Trajectories in Karachi's Informal Settlements, *Proceedings of the American Geophysical Union 2023 Fall Meeting*, San Francisco, CA

Memon J. A., **Khan, H. F.** , et al. (2022), Design and Implementation of Smart Flowmeter for Urban Water Metering, *IEEE 48th Annual Conference of the Industrial Electronics Society* Brussels, Belgium

- Khan, H. F.** and Arshad. S.A. (2022) Dynamic Environmental Justice: The Impact of Changing Seasons on Water Security in Karachi, *Frontiers in Hydrology- Future of Water Meeting*, San Juan, PR
- Khan, H. F.** Akhtar, T., and Schlef, K. E. (2021) Microclimates and Weather Extremes in Karachi: Interactions of Urbanization, Climate change, and Human Health, *Proceedings of the American Geophysical Union 2021 Fall Meeting*, New Orleans, LA
- Khan, H. F.** and Arshad. S.A. (2021) Linking Water (In)security to Social and Ecological Justice: A Case Study from Karachi, *Proceedings of the American Geophysical Union 2021 Fall Meeting*, New Orleans, LA
- Gorelick, S.,.. Khan, H. F.,** et al. (2019). Food-water-energy for Urban Sustainable Environments (FUSE): Integrated Analyses Focused on Pune, India and Amman, Jordan, *Proceedings of the American Geophysical Union 2019 Fall Meeting*, San Francisco, CA
- Khan, H. F.,** & Brown, C. (2018). Evaluating Impact of Differential Climate Change in California through a Spatially and Temporally Disaggregated Weather Generator, *Proceedings of the American Geophysical Union 2018 Fall Meeting*, Washington, DC
- Khan, H. F.,** & Brown, C. (2017). Effect of Climate Change and Transaction Costs on Performance of a Groundwater Market, *Proceedings of the American Geophysical Union 2017 Fall Meeting*, New Orleans, LA
- Khan, H. F.,** Wi, S., & Brown, C. (2017). Evaluating the Effect of Future Climatic and Socioeconomic Changes on Urban Water Supply Performance in San Francisco. In *World Environmental and Water Resources Congress*. Sacramento, CA: EWRI.
- Khan, H. F.,** Yang, Y. E., Xie, H., Cai, X. & Ringler, C. (2017). Coupled Modeling Framework for Watershed Management in Transboundary River Basins. In *World Environmental and Water Resources Congress*. Sacramento, CA: EWRI.
- Khan, H. F.,** Yang, Y. C. E. & Brown, C. (2016). Quantifying Third-Party Impacts and Environmental Externalities from a Cap-And-Trade System for Groundwater Management, *Proceedings of the American Geophysical Union 2016 Fall Meeting*, San Francisco, CA
- Khan, H. F.,** Yang, Y. E., Parr, D., & Ringler, C. (2016). Incorporating Ecosystem Services and Mainstreaming Gender Equality in Watershed Management using a Distributed Hydro-System Modeling Framework. In *World Environmental and Water Resources Congress*. West Palm Beach, FL: EWRI.
- Khan, H. F.,** Yang, Y. E., Wi, S., Ringler, C., Cheema, M.J.M., & Basharat, M. (2015). Guiding Groundwater Policy in the Indus Basin of Pakistan Using a Physically-Based Groundwater Model. *Proceedings of the American Geophysical Union 2015 Fall Meeting*, San Francisco, CA
- Khan, H. F.,** & Brown, C. (2015). Macro-Economic Analysis for Quantifying Water Security. In *World Environmental and Water Resources Congress*. Austin, TX: EWRI.

Khan, H. F., Yang, Y. E., Ringler, C., Zhu, T., & Brown, C. (2014). Impacts of Climate Change on the Water-Energy-Food Nexus in the Indus Basin of Pakistan. In *Nexus 2014: Water, Food, Climate and Energy Conference* (p. 20). Chapel Hill, NC: UNC Water Institute

Invited Talks

Environmental Justice and Equity in a South Asian Megacity, *Center for South Asian and Indian Ocean Studies*, Tufts University. April 2024

Using mixed-methods approaches to estimate household water demands in water-stressed cities, *Building Resilience for Data-scarce Water Systems in Pakistan*, LUMS (Virtual). July 2023

Water Justice and Equity in the Megacity of Karachi, *Global Water Security and Sanitation Partnership*, World Bank Group (Virtual). May 2023.

Extreme Heat and Urban Vulnerability: Intersections of Governance, Health and Urban Planning in Karachi, IBA. September 2022

Water is for fighting over: Transboundary flows in the Indus River Basin, *CUAHSI Fall Cyberseminar Series* (Virtual). September 2018

Teaching

Assistant Professor, Department of Urban and Environmental Policy and Planning, Tufts University

- ENV 1: Intro to Environmental Studies
- UEP/ENV 196: Water- Science, Society and Politics

Assistant Professor, Dhanani School of Science and Engineering, Habib University

- ENVS 102: Intro to Environmental Systems
- ENVS 301: Introduction to Environmental Engineering
- CORE 200: Scientific Methods

Disciplinary Service

Secretary, Water and Science Technical Committee, American Geophysical Union (2023-2025)

Conference Co-Chair, New England Graduate Student Water Symposium (2016)

Conference Proceedings Editor, Hisaar Conference on Securing Sustainable Water for All (2015)

Op-ed contributor, *Dawn* and *The Third Pole*

Refereed manuscripts for

Water Resources Research, Journal of Hydrology, ASCE Journal of Water Resources Planning and Management, npj Clean Water, Water International, Journal of Earth Environmental Sciences

Memberships

American Society of Civil Engineers (ASCE); American Geophysical Union (AGU); New England Water Works Association (NEWWA)