Patrick Thomson
CURRICULUM VITAE

Education

PhD in Environmental Science (part-time 2013-2021)
School of Archaeology, Geography and Environmental Science, University of Reading.
Dissertation: "Handpump maintenance, water use, and health in rural Kenya."

MSc in Water Science, Policy, and Management (2010-2011)
School of Geography and the Environment, University of Oxford.
Dissertation: "GSM-enabled remote monitoring of rural handpumps."

MEng in Engineering, Economics, and Management (1997-2001)
Department of Engineering Science, University of Oxford.
Dissertation: "Examining cultural factors in a large multi-country engineering project."

Research Employment

Arizona State University, Tempe, USA
Research Scientist, Arizona Water Innovation Initiative (2025-current)

University of Oxford, Oxford, UK
Senior Research Associate[1], School of Geography and the Environment (2021-2025)
Senior Research Associate, Department of Engineering Science (2023-2025)
Lead Researcher[2], Smith School of Enterprise and the Environment (2015-2021)
Researcher[3], School of Geography and the Environment (2011-2015)

US equivalent: [1]Assistant Professor (Research); [2]Postdoctoral Researcher; [3]Research Assistant (Full-time).

Research Summary

Research statistics as of July 2025 (Google Scholar):

Citations:	1,347
h-index:	20
i10-index	27

Publications: 35 journal articles, 4 chapters, 11 policy working papers, 8 conference proceedings.
Grant funding: $34,236,000 total over 16 grants awarded.

Selected Awards

- Oxford Social Sciences Division Innovation Fellow (2020-2022)
- Oxford University Vice-Chancellor's inaugural Innovation Award (2018)
- Stockholm World Water Week Best Poster (2015)
- School of Geography and the Environment Reward and Recognition scheme Award for Excellence (2013)
- Worshipful Company of Water Conservators scholarship for MSc in Water Science, Policy, and Management (2010-2011)

Publications

Peer-reviewed articles

[SA] student/postdoc author; [CA] consortium authorship

35. Wutich, A., Brewis, A., **Thomson, P**., Beresford, M., White, D., & Arizona Water for All Consortium (In Press). Ethical Challenges of Managing Retreat from Centralized Water Systems. Human Organization. 84 (3). Taylor and Francis.
34. [SA] Cropper, C., Wulbrecht, E., **Thomson, P.**, Dotson, A. D., Hamilton, K. A., Wutich, A., Westerhoff, P., & Voth-Gaddert, L. E. (2025). When the Household is the Utility: Ensuring Equitable Water Service for Rural US Communities Served by Decentralized Water Systems. ACS ES&T Water, 5(6). ACS Publications.
33. [SA] Stellbauer, M., Jepson, W., Lefore, N., & **Thomson, P.** (2025). Advancing Multiple-Use Water Services for Development in Low-and Middle-Income Countries. Wiley Interdisciplinary Reviews: Water, 12(1), e70008. John Wiley & Sons, Inc. Hoboken, USA.
32. **Thomson, P.**, Pearson, A. L., Kumpel, E., Guzmán, D. B., Workman, C. L., Fuente, D., Wutich, A., Stoler, J., & Household Water Insecurity Experiences Research Coordination Network (HWISE-RCN) (2024). Water Supply Interruptions Are Associated with More Frequent Stressful Behaviors and Emotions but Mitigated by Predictability: A Multisite Study. Environmental Science & Technology, 58(16), 7010-7019. American Chemical Society.
31. [SA] Ingram, W., Nyaga, C., Mugo, P., Kavata, A., Gannon, K., & **Thomson, P.** (2024). Maintaining groundwater collection over the rainy season with water ATM price reductions: a study in Kitui County, Kenya. Journal of Water, Sanitation and Hygiene for Development, 14(9), 808-818. IWA Publishing.
30. [SA] Wallock, W., Narayan, A. S., & **Thomson, P.** (2024). Exploring the Barriers to Scaling Up Sanitation Enterprises Using Q-Methodology. ACS ES&T Water, 4(9), 3986-3995. American Chemical Society.
29. [CA] Castro-Diaz, L., Roque, A., Wutich, A., Landes, L., Li, W., Larson, R., Westerhoff, P., Marcos-Hernandez, M., Hossain, M. J., & Tsai, Y. (2024). Participatory Convergence: Integrating Convergence and Participatory Action Research. Minerva, , 1-21. Springer.
28. **Thomson, P.**, Stoler, J., Byford, M., & Bradley, D. J. (2024). The Impact of Rapid Handpump Repairs on Diarrhea Morbidity in Children: Cross-Sectional Study in Kwale County, Kenya. JMIR Public Health and Surveillance, 10(1), e42462. JMIR Publications Inc., Toronto, Canada.
27. Nyaga, C., Katuva, J., & **Thomson, P.** (2024). The challenges of implementing modular, adaptive, and decentralised water technologies–The perspective of a rural service provider in Kenya. Water Security, 21, 100160. Elsevier.
26. **Thomson, P.**, Stoler, J., Wutich, A., & Westerhoff, P. (2024). MAD water (modular, adaptive, decentralized) systems: New approaches for overcoming challenges to global water security. Water Security, 21, 100166.
25. Wutich, A., **Thomson, P.**, Jepson, W., Stoler, J., Cooperman, A. D., Doss-Gollin, J., Jantrania, A., Mayer, A., Nelson-Nuñez, J., & Walker, W. S. (2023). MAD water: Integrating modular, adaptive, and decentralized approaches for water security in the climate change era. Wiley Interdisciplinary Reviews: Water, 10(6), e1680. John Wiley & Sons, Inc. Hoboken, USA.
24. [SA] Ingram, W. & **Thomson, P.** (2022). Incentivizing clean water collection during rainfall to reduce disease in rural sub-Saharan Africa with weather dependent pricing. Waterlines, 41(2). Practical Action Publishing.

23. Stoler, J., Jepson, W., Wutich, A., Velasco, C. A., **Thomson, P.**, Staddon, C., & Westerhoff, P. (2022). Modular, adaptive, and decentralized water infrastructure: promises and perils for water justice. Current Opinion in Environmental Sustainability, 57, 101202. Elsevier.
22. Wutich, A., Jepson, W. E., Stoler, J., **Thomson, P.**, Kooy, M., Brewis, A., Staddon, C., & Meehan, K. (2021). A Global Agenda for Household Water Security: Measurement, Monitoring, and Management. JAWRA Journal of the American Water Resources Association, 1-9.
21. **Thomson, P.** (2021). Remote monitoring of rural water systems: A pathway to improved performance and sustainability? Wiley Interdisciplinary Reviews: Water, 8(2), e1502. John Wiley & Sons, Inc. Hoboken, USA.
20. Koehler, J., **Thomson, P.**, Goodall, S., Katuva, J., & Hope, R. (2021). Institutional pluralism and water user behavior in rural Africa. World Development, 140, 105231. Pergamon.
19. [SA] Katuva, J., Hope, R., Foster, T., Koehler, J., & **Thomson, P.** (2020). Modelling Welfare Transitions to Prioritise Sustainable Development Interventions in Coastal Kenya. Sustainability, 12(17), 6943. Multidisciplinary Digital Publishing Institute.
18. Thomas, E., Jordan, E., Linden, K., Mogesse, B., Hailu, T., Jirma, H., **Thomson, P.**, Koehler, J., & Collins, G. (2020). Reducing drought emergencies in the Horn of Africa. Science of The Total Environment, 727, 138772. Elsevier.
17. [SA] Katuva, J., Hope, R., Foster, T., Koehler, J., & **Thomson, P.** (2020). Groundwater and Welfare: A conceptual framework applied to Coastal Kenya. Groundwater for Sustainable Development, 10, 100314. Elsevier.
16. [SA] Ramos, N. F., Folch, A., Fernàndez-Garcia, D., Lane, M., Thomas, M., Gathenya, J. M., Wara, C., **Thomson, P.**, Custodio, E., & Hope, R. (2020). Evidence of groundwater vulnerability to climate variability and economic growth in coastal Kenya. Journal of Hydrology, 586, 124920. Elsevier.
15. Hope, R., **Thomson, P.**, Koehler, J., & Foster, T. (2020). Rethinking the economics of rural water in Africa. Oxford Review of Economic Policy, 36(1), 171-190. Oxford University Press UK.
14. Manandhar, A., Greeff, H., **Thomson, P.**, Hope, R., & Clifton, D. A. (2020). Shallow aquifer monitoring using handpump vibration data. Journal of Hydrology X, 8, 100057. Elsevier.
13. [SA] Nowicki, S., Lapworth, D. J., Ward, J. S., **Thomson, P.**, & Charles, K. (2019). Tryptophan-like fluorescence as a measure of microbial contamination risk in groundwater. Science of the Total Environment, 646, 782-791. Elsevier.
12. [SA] Ferrer, N., Folch, A., Lane, M., Olago, D., Katuva, J., **Thomson, P.**, Jou, S., Hope, R., & Custodio, E. (2019). How does water-reliant industry affect groundwater systems in coastal Kenya? Science of the Total Environment, 694, 133634. Elsevier.
11. Sharma, P., Manandhar, A., **Thomson, P.**, Katuva, J., Hope, R., & Clifton, D. A. (2019). Combining Multi-Modal Statistics for Welfare Prediction Using Deep Learning. Sustainability, 11(22), 6312. Multidisciplinary Digital Publishing Institute.
10. **Thomson, P.**, Bradley, D., Katilu, A., Katuva, J., Lanzoni, M., Koehler, J., & Hope, R. (2019). Rainfall and groundwater use in rural Kenya. Science of The Total Environment, 649, 722-730. Elsevier.
9. [SA] Greeff, H., Manandhar, A., **Thomson, P.**, Hope, R., & Clifton, D. A. (2018). Distributed Inference Condition Monitoring System for Rural Infrastructure in the Developing World. IEEE Sensors Journal, 19(5), 1820-1828.
8. [SA] Koehler, J., Rayner, S., Katuva, J., **Thomson, P.**, & Hope, R. (2018). A cultural theory of drinking water risks, values and institutional change. Global Environmental Change, 50, 268-277. Elsevier.

7. [SA] Foster, T., Willetts, J., Lane, M., **Thomson, P.**, Katuva, J., & Hope, R. (2018). Risk factors associated with rural water supply failure: A 30-year retrospective study of handpumps on the south coast of Kenya. Science of The Total Environment, 626, 156-164. Elsevier.
6. [SA] Colchester, F. E., Marais, H. G., **Thomson, P.**, Hope, R., & Clifton, D. A. (2017). Accidental infrastructure for groundwater monitoring in Africa. Environmental Modelling & Software, 91, 241-250. Elsevier.
5. **Thomson, P.** & Koehler, J. (2016). Performance-oriented Monitoring for the Water SDG–Challenges, Tensions and Opportunities. Aquatic Procedia, 6, 87-95. Elsevier.
4. [SA] Koehler, J., **Thomson, P.**, & Hope, R. (2015). Pump-Priming Payments for Sustainable Water Services in Rural Africa. World Development, 74, 397-411. Elsevier.
3. **Thomson, P.**, Hope, R., & Foster, T. (2012). GSM-enabled remote monitoring of rural handpumps: a proof-of-concept study. Journal of Hydroinformatics, 14(4), 829-839. IWA Publishing.
2. Hope, R., Foster, T., & **Thomson, P.** (2012). Reducing Risks to Rural Water Security in Africa. AMBIO: A Journal of the Human Environment, 1-4. Springer.
1. **Thomson, P.**, Hope, R. A., & Foster, T. (2012). Is silence golden? Of mobiles, monitoring, and rural water supplies. Waterlines, 31(4), 280-292. Practical Action Publishing.

Book chapters

4. Hope, R., Foster, T., Koehler, J., & **Thomson, P.** (2019). Rural Water Policy in Africa and Asia. Water Science, Policy, and Management: A Global Challenge, 2016, 159-179. John Wiley & Sons, Ltd Chichester, UK.
3. Dadson, S. J., Hirpa, F., **Thomson, P.**, & Konar, M. (2019). Monitoring and Modelling Hydrological Processes. Water Science, Policy, and Management: A Global Challenge, 2017, 117-137. John Wiley & Sons, Ltd Chichester, UK.
2. Charles, K. J., Nowicki, S., **Thomson, P.**, & Bradley, D. (2019). Water and Health: A Dynamic, Enduring Challenge. Water Science, Policy, and Management: A Global Challenge, 2016, 97-116. John Wiley & Sons, Ltd Chichester, UK.
1. Koehler, J., **Thomson, P.**, & Hope, R. (2016). Mobilizing payments for water service sustainability. Broken Pumps and Promises: Incentivizing Impact in Environmental Health, 2016, 57-76. Springer International Publishing.

Conference proceedings

8. [SA] Ingram, W. & **Thomson, P.** (2022). Reducing Rainfall-Related Disease in Rural Sub-Saharan Africa by Adjusting Water Price with 'Water ATMs' During Periods of Rainfall, Providing a Dynamic Health Intervention to Climate Variability. AGU Fall Meeting, 2022, GH11C-01.
7. **Thomson, P.**, Greeff, H., Nyaga, C., Katuva, J., & Ingram, W. (2022). Predicting Pump Failures to Reduce Water-Related Diseases and Improve Household Water Security. AGU Fall Meeting, 2022, GH15D-0476.
6. Thomas, E. & **Thomson, P.** (2019). Groundwater use and weather extremes-implications for the future? AGU Fall Meeting, 2019, IN41A-03.
5. [SA] Ferrer Ramos, N., Folch, A., Lane, M., Olago, D., Odida, J., Custodio, E., **Thomson, P.**, Katuva, J., & Hope, R. (2019). The effect of La Niña 2016-2017 and the current abstraction regime on diverse water-reliant companies in Kwale groundwater resources (Coastal Kenya). 46th Annual Congress of the International Association of Hydrogeologists, 2019, 275-275.
4. [SA] Ferrer, N., Folch, A., Lane, M., Thomas, M., Sasaka, W., Wara, C., Banje, S., Olago, D., Katuva, J., & **Thomson, P.** (2016). First step to understand the importance of new deep aquifer

pumping regime in groundwater system in a developing country, Kwale, Kenya. EGU General Assembly Conference Abstracts, 2016, EPSC2016-16969.

3. [SA] Papastylianou, T., Behar, J., Guazzi, A., Jorge, J., Laranjeira, S., Maraci, M., Clifford, G., Hope, R., & **Thomson, P.** (2014). Smart handpumps: technical aspects of a one-year field trial in rural Kenya. Appropriate Healthcare Technologies for Low Resource Settings (AHT 2014), 9. IET Stevenage UK.
2. [SA] Colchester, F. E., Greeff, H., **Thomson, P.**, Hope, R., & Clifton, D. A. (2014). Smart handpumps: A preliminary data analysis. Appropriate Healthcare Technologies for Low Resource Settings (AHT 2014), 2014, 1-4. IET.
1. [SA] Behar, J., Guazzi, A., Jorge, J., Laranjeira, S., Maraci, M., Papastylianou, T., **Thomson, P.**, Clifford, G., & Hope, R. (2013). Software architecture to monitor handpump performance in rural Kenya. Proceedings of the 12th International Conference on Social Implications of Computers in Developing Countries, Ocho Rios, Jamaica, 991, 978-991.

Policy working papers

11. Jepson, W., Stellbauer, M., & **Thomson, P.** (2023). Revaluing multiple-use water services for food and water security. FAO Land and Water Discussion Paper, 19.
10. Foster, T., Hope, R., Koehler, J., Katuva, J., **Thomson, P.**, & Gladstone, N. (2022). Investing in professionalized maintenance to increase social and economic returns from drinking water infrastructure in rural Kenya. University of Oxford.
9. Fischer, A., Hope, R., **Thomson, P.**, Hoque, S., Alam, M., Charles, K., Achi, N., Nowicki, S., Hakim, S., & Islam, M. (2021). Policy reform to deliver safely managed drinking water services for schools in rural Bangladesh. University of Oxford.
8. Hoque, S., Hope, R., Alam, M. M., Charles, K., Salehin, M., Mahmud, Z. H., Akhter, T., Fischer, A., Johnston, D., **Thomson, P.**, Zakaria, A., Hall, J., Roman, O., El Achi, N. & Jumlad, M.M. (2021). Drinking water services in coastal Bangladesh. University of Oxford.
7. McNicholl, D., Hope, R., Money, A., Lane, A., Armstrong, A., Dupuis, M., Harvey, A., Nyaga, C., Womble, S., Allen, J., Katuva J., Barbotte, T., Lambert, L., Stuab, M., **Thomson, P.**, & Koehler, J. (2021). Delivering global rural water services through results-based contracts. University of Oxford.
6. Hope, R., Fischer, A., **Thomson, P.**, Hoque, S. F., Alam, M. M., Charles, K., El Achi, N., Nowicki, S., Hakin, S, Islam, M., Salehin, M., Bradley, D., Ibrahim, M., Chowdhury, E. H., Salehin, M., Mahmud, Z. H., & Akhter, T. (2021). Policy reform for safe drinking water service delivery in rural Bangladesh. REACH Working Paper, 9. University of Oxford.
5. McNicholl, D., Hope, R., Money, A., Lane, A., Armstrong, A., Van Der Wilk, N., Dupuis, M., Harvey, A., Nyaga, C., Womble, S., Favre, D., Allen, J., Katuva, J, Barbotte, E., **Thomson, P.**, & Koehler, J. (2019). Performance-based funding for reliable rural water services in Africa. University of Oxford.
4. Hope, R., Goodall, S., Katilu, A., Koehler, J., & **Thomson, P.** (2015). Financial Sustainability for Universal Rural Water Services–Evidence from Kyuso, Kenya. University of Oxford.
3. Olago, D., Opondo, M., Mumma, A., Ouma, G., Dulo, S., Trevett, A., Harvey, P., Hope, R., Stallone, A., Koehler, J., Katava J., James, R., Washington, R., Bradely, D., Cheeseman, N., Borgomeo, E., Charles, K., & **Thomson, P.** (2015). Country diagnostic report, Kenya. Dept. for International Development.
2. **Thomson, P.**, Koehler, J., & Hope, R. (2014). Can Mobile Data Improve Rural Water Institutions in Rural Africa? GWF Discussion Paper 1414, Global Water Forum, Canberra, Australia. 2014.
1. Hope, R., **Thomson, P.**, Koehler, J., Foster, T., & Thomas, M. (2014). From rights to results in rural water services–Evidence from Kenya. University of Oxford.

Invited presentations

8. Next Generation Water Summit, Santa Fe, USA (2024).
7. Arizona State University Centre for Global Health, Phoenix, USA (2021).
6. Instituto Para El Dialogo Global y La Cultura Del Encuentro, Argentina/Online (2020).
5. Commonwealth Scientific and Industrial Research Organisation, Canberra, Australia (2020).
4. TEDx Oxford, Oxford, UK (2020) https://www.youtube.com/watch?v=XGQQSA5KooM.
3. Expert panel at the "International Conference on Water Security: New Technologies, Strategies, Policies and Institutions", Chinese Academy of Sciences, Beijing, China (2019).
2. Chair of the "Novel sampling, analysis, and monitoring techniques" session at IAH 2018 Congress, Daejeon, South Korea (2018).
1. Chair of the water session at the Royal Academy of Engineering's "Frontiers of Engineering for Development" conference, Edinburgh, UK (2017).

Research Grants

16. "Ensuring the Impact of Social Science Research into Rural Water Provision" (2023)
    UK Economic and Social Research Council[1] (PI). $24,290
15. "Supporting rural water supply policy innovation in Namibia" (2023)
    University of Oxford (PI). $26,430
14. "Harnessing data from water 'ATMs' to improve community health in rural Kenya" (2023)
    UK Engineering and Physical Sciences Research Council[2] (PI). $29,910
13. "Water Learning Partnership, Cameroon" (2020-2023)
    UK Economic and Social Research Council[1] (PI). $29,960
12. "Smart Handpumps (Failure Prediction)" (2021-2022)
    UK Engineering and Physical Sciences Research Council[2] (PI). $103,990
11. "Digital Africa Water Network" (2020-2021)
    UK Global Challenges Research Fund[4] (Co-I). $195,510
10. "Smart Handpumps (Plug and Play)" (2019-2020)
    UK Global Challenges Research Fund[4] (PI). $62,240
9. "Smart Handpumps" (2018)
    UK Global Challenges Research Fund[4] (PI). $93,770
8. "Engineering innovations to predict handpump failure" (2016-208)
    UNICEF Supply Division (Co-I). $220,000
7. "REACH: Improving Water Security for The Poor" (2015-2023)
    UK Foreign Commonwealth and Development[5] (Lead Researcher) $29,879,100
6. "Groundwater Risk for Growth and Development" (2015-2020)
    UK Natural Environment Research Council (Co-I)[3]. $2,329,420
5. "Rural Water Sustainability in Africa" (2014-2016)
    UNICEF Eastern and Southern Africa Regional Office (Co-I). $325,000
4. "Insuring against Rural Water Risk in Africa" (2013-2016)
    UK Economic and Social Research Council[1] (Lead Researcher). $114,380
3. "Groundwater Risks and Institutional Responses for Poverty Reduction" (2013-2016)
    UK Natural Environment Research Council (Lead Researcher)[3]. $176,900
2. "New Mobile Citizens and Waterpoint Sustainability in Africa" (2012-2015)
    UK Economic and Social Research Council[1] (Lead Researcher). $558,600
1. "Mobile Water Science for Global Development Impacts" (2012-2013)
    University of Oxford (Lead Researcher). $66,500k

US equivalent agencies: [1]NSF (SBE); [2]NSF (ENG/MPS); [3]NSF(GEO); [4]NSF(OISE); [5]USAID.

Teaching, Mentorship, and Supervision

Teaching

School of Geography and the Environment, University of Oxford, UK
Courses in MSc Water Science, Policy, and Management

- Water Management (2020-2023)
- Water and Health (2020-2022)
- Water Quality (2016-2023)

Department of Engineering Science, University of Oxford, UK
Courses in EPSRC Centre for Doctoral Training in Health Data Science

- AI for Healthcare (2023-2024)

PhD students (Committee Co-chair or Member)

- Arif Chowdhury, Environmental Social Sciences, Arizona State University
- Jobayer Hossain, Environmental Social Sciences, Arizona State University
- Faojia Sultana, Nuffield Department of Medicine, University of Oxford
- Heloise Greeff, Department of Engineering Science, University of Oxford
- Farah Colchester, Department of Engineering Science, University of Oxford

PhD students (Research Mentor)

- Alex Fischer, School of Geography and the Environment, University of Oxford
- Johanna Koehler, School of Geography and the Environment, University of Oxford
- Jacob Katuva, School of Geography and the Environment, University of Oxford
- Saskia Nowicki, School of Geography and the Environment, University of Oxford

MSc students (Thesis Advisor)

- William Wallock, School of Geography and the Environment, University of Oxford
- Eloise Charreyron, School of Geography and the Environment, University of Oxford
- Jenny Wells, School of Geography and the Environment, University of Oxford
- Nadia Abdalla, School of Geography and the Environment, University of Oxford
- Saskia Nowicki, School of Geography and the Environment, University of Oxford

Service

- Wiley WIREs Water Associate Editor (2025-current)
- Massachusetts Institute of Technology research external grant reviewer (2023)
- Oxford University Institute of Biomedical Engineering Research Panel (2023-2025)
- University of Oxford Social Science and Humanities Interdepartmental Research Ethics Committee (2023-2025) [Divisional Institutional Review Board]
- University of Oxford School of Geography and the Environment Departmental Research Ethics Committee (2022-2025) [Departmental Institutional Review Board]
- University of Oxford Social Sciences Division grant review committee (2020-2022)
- University of Oxford School of Geography and the Environment Equality and Diversity Committee (2019-2021)
- FundiFix Water Services Trust (2014-current)

Media and science communication

Television Interviews:

- ITV Meridian News (Independent TV regional news).
- BBC South Today (BBC regional news).

Radio interviews:

- BBC R4 Today (Flagship morning news/politics show).
- BBC Naked Scientist (Quirky, buried-in-the-schedule science program).

Print media:

- Economist (UK/Global).
- Daily Nation (Kenya).
- Africa Renewal (UN in-house magazine).

Policy impact:

- FAO Land and Water Discussion Paper.
- UK FCDO Ministerial briefing document.
- WASREB (Kenya) annual report.

Memberships and affiliations

- Chartered Engineer (UK equivalent to Professional Engineer).
- Member of the Institution of Engineering and Technology (UK professional body).
- Member of the American Association of Geographers inc. its Water Insecurity CoP.
- Faculty Associate at the Mortenson Center in Global Engineering at CU Boulder (past).
- Research Affiliate at University of Nairobi Department of Earth and Climate Sciences (past).