



Centre for Water Research

ANNUAL REPORT 2021-22

Indian Institute of Science Education and Research, Pune



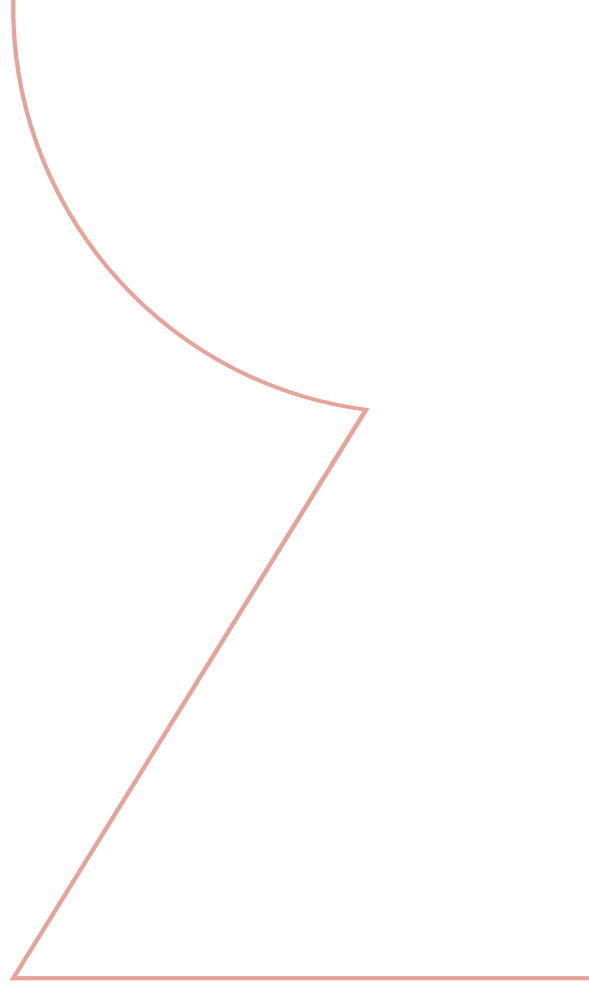


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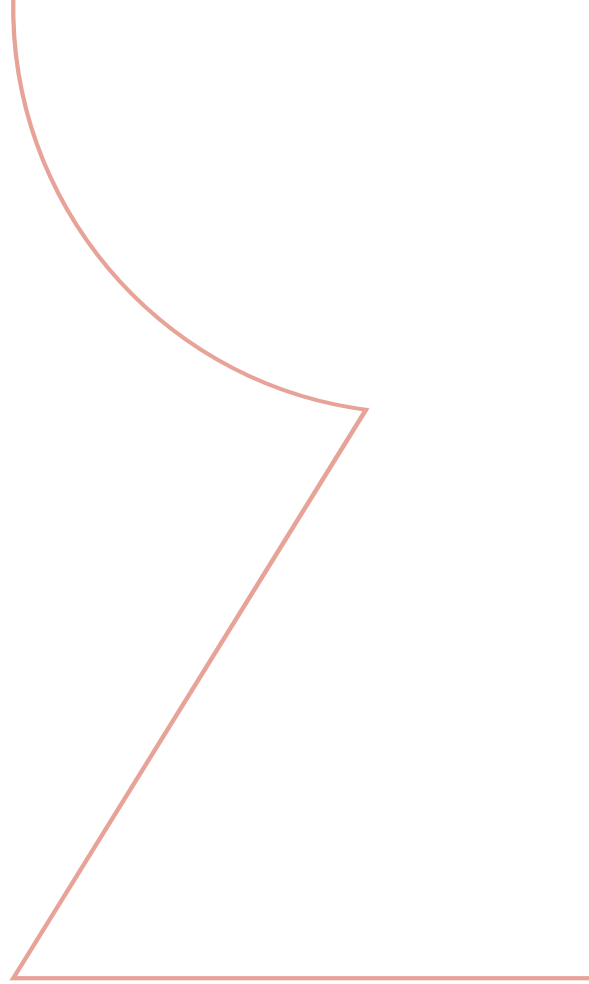
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Foreword

India faces huge challenges in managing its water resources efficiently and in the provisioning of water in an equitable and fair manner. There has been an increase in the number of institutions working on water in the last two decades. However, except for a few, the tendency is still to work in silos: hydrologists and climate scientists on biophysical aspects, engineers and economists on efficiency, and sociologists and historians on cultural attributes.

The Centre of Water Research (CWR) was established at IISER Pune in November 2020 to bring together expertise in fundamental sciences, social sciences and humanities to the study of water. CWR aims to generate interdisciplinary knowledge about water systems, including their history and heritage, resource management and sustainable use, and to train the next generation of scholars to look at water from an integrated/multi-dimensional lens. CWR provides a platform for IISER Pune to engage in socially relevant research that will have impact on public policy and action.

CWR received an endowment to kickstart its work from Dr. Sara Ahmed, a scholar-practitioner with more than three decades of engagement with the water sector, spanning academia, policy advocacy and practice.

The centre was formally launched in March 2021 with an inaugural lecture by Dr. Himanshu Kulkarni, Founder Trustee and Executive Director, Advanced Centre for Water Resources Development and Management (ACWADAM), Pune.

CWR draws upon expertise from faculty across different departments at the institute including Chemistry, Biology, Earth and Climate Science and Humanities and Social Sciences. The centre began its activities with six faculty members and currently 13 faculty members are affiliated to CWR. An advisory group comprising of water scholars and practitioners based in Pune and elsewhere provides inputs to CWR in its research and outreach. The advisory group members include Dr. Himanshu Kulkarni, Dr. Jagdish Krishnaswamy, Prof. James Wescoat, Mr.K.J.Joy, Prof. Margreet Zwarteveen and Ms. Shailaja Deshpande. CWR appointed a full time Project Associate, Radhika Mulay, during this year.

The Living Waters Museum (LWM), a special initiative at CWR, leads the outreach activities, in partnership with other initiatives at IISER Pune, such as the Science Activity Centre (SAC). Launched in 2017, LWM is a virtual repository curating visual narratives on water heritage: natural, built and cultural. Engaging youth through storytelling, the creative arts and interactive digital media, the Museum is a member of the Global Network of Water Museums, endorsed by UNESCO's Intergovernmental Hydrology Program as a special initiative towards SDG 6.

During the first year of its operation, several BS-MS students worked with CWR faculty on various research projects. Two MS dissertations were completed, including one speaking to the problem of floods in Pune city using a climate science and governance lens; several semester projects were undertaken on topics such as wastewater reuse, water supply, water poverty and integrated water resources management. Research at CWR speaks to several of the United Nations Sustainable Development Goals (SDGs), particularly SDG 2 (Food security), SDG 6 (Water) and SDG 13 (climate action).

CWR faculty organized meetings and held consultations with key stakeholders, including academic institutions and civil society organizations. Faculty members were invited for talks and meetings in academic and policy forums and to serve on government committees. CWR organized an online Water Talks series with six talks and panels featuring some of the leading names internationally in the water sector. The series saw active participation from academics, civil society groups and students, from around the world. The LWM is documenting changing urban waterscapes in Pune, working in collaborative partnerships to visualize the growing socio-ecological challenges facing our everyday lives around water.

Moving forward, CWR aims to build upon and strengthen the various research themes that the team has identified in the first year. CWR also hopes to engage more closely with policy actors and forge partnerships. An interdisciplinary elective course on water resources in the BS-MS programme is being planned in the meantime. In March, Living Waters Museum will launch the first virtual exhibition in Pune, Punyache Paani, tracing Pune's water heritage, involving a week of cultural activities, panel discussions and other events.

Bejoy Thomas,
Chair,
Centre for Water Research,
IISER, Pune
February 28, 2022



People

Bejoy K. Thomas (Chair, CWR)
Humanities and Social Sciences

Amrita Hazra
Chemistry

Aparna Deshpande
Physics (Science Activity Centre)

Argha Banerjee
Earth and Climate Science

Deepak Barua
Biology

Gyana Ranjan Tripathy
Earth and Climate Science

Joy Merwin Monteiro
Earth and Climate Science

Pushkar Sohoni
Humanities and Social Sciences

Sara Ahmed
Humanities and Social Sciences

Shalini Sharma
Humanities and Social Sciences

Sharachchandra Lele
Humanities and Social Sciences

Sujit Ghosh
Chemistry

Pinaki Talukdar
Chemistry

Radhika Mulay
Project Associate



Advisory Group

Dr. Himanshu Kulkarni, Executive Director, Advanced Centre for Water Resources Development and Management (ACWADAM), Pune, India.

Dr. Jagdish Krishnaswamy, Dean, School of Environment and Sustainability, Indian Institute for Human Settlements (IIHS), Bengaluru, India.

Prof. James Wescoat, Aga Khan Professor Emeritus of Landscape Architecture and Geography, Massachusetts Institute of Technology (MIT), USA.

Mr. K.J.Joy, Senior Fellow, Society for Promoting Participative Ecosystem Management (SOPPECOM), Pune, India.

Prof. Margreet Zwarteveen, Professor of Water Governance, UN-IHE Delft Institute for Water Education, The Netherlands.

Ms. Shailaja Deshpande, Founder-Director, Jeevitnadi, Living Rivers Foundation, Pune, India.



Research and Training

Details of Semester projects supervised during 2021-22 by CWR faculty

NO.	STUDENT	SUPERVISOR	PROJECT TITLE
1	Amitaprajna Mallik	Gyana Tripathy	Dissolved uranium in Aquatic systems of India: Abundances and sources (2021)
2	Arsh Chavan	Bejoy Thomas	Urbanization and Industrial Waste Management (2020)
3	Chirag Gupta	Bejoy Thomas	Understanding and Measuring Water Poverty (2021)
4	Mayur Raj Singh	Bejoy Thomas	Integrated Water Resources Management (2021)
5	Priyasha Negi	Gyana Tripathy	Seasonality in dissolved $^{87}\text{Sr}/^{86}\text{Sr}$ ratio of the Himalayan-Tibetan rivers (2021)
6	Rijyuta Kaabaadee	Bejoy Thomas	Water consumption in Pune city (2021)



Research and Training

Details of MS Theses supervised during 2021-22 by CWR faculty

NO.	STUDENT	SUPERVISOR	PROJECT TITLE
1	Ayushman Singh	Bejoy Thomas	Urban floods vulnerability: A Study of Pune City (2021)
2	Praful Shirsath	Bejoy Thomas	Interactions between SDGs: A systematic literature review focusing on SDG 2 and SDG 6 (2021)

Details of PhD Theses supervised during 2021-22 by CWR faculty

NO.	STUDENT	SUPERVISOR	PROJECT TITLE
1	Jyoti Nair	Bejoy Thomas	Agrarian change, water stress and well-being in the Cauvery delta region, Tamil Nadu, India, (external student at ATREE/Manipal Academy of Higher Education)
2	Mohd Danish	Gyana Tripathy	Biogeochemical cycling of trace elements in a tropical coastal lagoon system (Chilika lagoon, India)
3	Sourav Laha	Argha Banerjee	Studies of glacier mass-balance processes and the climate response of glacier-fed rivers in the Himalaya (submitted)

Publications

The names of authors with CWR affiliation are in all-caps.

PEER-REVIEWED

1. **BANERJEE, ARGHA**. 2022. A weak precipitation sensitivity of glacier runoff. *Geophysical Research Letters*, 49(5), e2021GL096989.
2. Mohd. Danish; **TRIPATHY, GYANA**. 2022. Sources and internal cycling of dissolved barium in a tropical coastal lagoon (Chilika lagoon, India) system. *Marine Chemistry*, 104083.
3. Mohd. Danish; **TRIPATHY, GYANA**; Mitra, S; Rout, R.K; Raskar, S. 2021. Non-conservative removal of dissolved rhenium from a coastal lagoon: Clay adsorption versus biological uptake. *Chemical Geology*, 580, 120378.
4. Das, Satyabrata; **TRIPATHY, GYANA**; Rai, Santosh; Mohd. Danish; Thakur, Divya, Dutt, Som; Sarangi, S. 2021. The Role of Sulfuric Acid in Continental Weathering: Insights from Dissolved major ions and inorganic carbon isotopes of the Teesta River, lower Brahmaputra system. *Geochemistry Geophysics Geosystems*, 22 (4) e2020GC009324.
5. Samanta, Anupam; **TRIPATHY, GYANA**; T. Aswin Pradeep; Mandal, Anirban. 2021. Major ion chemistry of two cratonic rivers in the tropics: Weathering rates and their controlling factors. *Hydrological Processes*, 35, 2, e14035, 10.1002/hyp.14035.

POPULAR

1. **THOMAS, BEJOY**. 2021. Book review, 'The Spirit of Green: The Economics of Collisions and Contagions in a Crowded World' by W.D. Nordhaus, *Current Science*, 121(10): 1361-2.
2. Singh, A.; **MONTEIRO, JOY**; **THOMAS, BEJOY**. 2021. Long term rainfall patterns and flooding in Pune city. *Mongabay India*, July 9.
3. **AHMED, SARA**. 2021. Visualizing Water Narratives. *Restore Our Earth Vol. 1: Rejuvenating Water*, pp. 77-78, Earth Day Network, March 22, 2021.

Ongoing Research Projects

Argha Banerjee

- Observation and modelling of water cycle in Chandra and Upper Alaknanda Basin (funded by NCPOR, Goa, under HiCOM program, 2018-2021).
- Improved description of the water-cycle in the Upper Ganga catchment using isotope, geochemical data, and model simulation (funded by Ministry of Earth Sciences, 2018-2022).

Bejoy Thomas

- fairSTREAM, a project on Bhima basin food water and biodiversity linkages in partnership with IIASA, Austria, and SOPPECOM, Pune (funded by IIASA 2022-2024).

Sara Ahmed

- Launched Confluence at Mumbai Water Narratives on March 22, 2021: (www.confluence.mumbaiwaternarratives.in).

Outreach

CWR Water Talks Series

Centre for Water Research (CWR) organized Water Talks, a series of online talks and panels on various dimensions of water.

Season 1: Water Changemakers

1. Managing groundwater in India through participatory science and community action, Speaker: **Himanshu Kulkarni**, ACWADAM, Pune. Date: 19 March 2021
2. Do not waste water! Water saving: what does it mean and how to measure and do it? (And: to whom does the saved water go?), Speaker: **Margreet Zwarteveen**, Professor of Water Governance at UN-IHE Delft Institute for Water Education and the University of Amsterdam. Date: 21 April 2021
3. Ecological dimensions of India's water security, Speaker: **Jagdish Krishnaswamy**, Senior Fellow, ATREE, Bengaluru. Date: 26 May 2021

Season 2: Communicating Water – Advancing a New Water Ethics

1. Reconstructing the Duties of Water in India: On the Prospects for Value Pluralism, Speaker: **James Wescoat**, the Aga Khan Professor Emeritus of Landscape Architecture and Geography at MIT, USA. Date: 25 August 2021
2. Unlearning Museums: Talking with Water, Panelists: **Amy Sharrocks** (artist, Museum of Water), **Sara Ahmed** (founder, Living Waters Museum) moderated by **Philippe Pypaert** (UNESCO). Date: 22 September 2021
3. Water: Memories, Migration, Mapping, Panelists: **Gauri Raje** (storyteller, India/Scotland), **Minket Lepcha** (storyteller, India), moderated by **Sara Ahmed** (IISER Pune). Date: 20 October 2021
4. Re-imagining Rivers, Panelists: **Parineeta Dandekar** (Associate Coordinator, SANDRP), **Shailaja Deshpande** (Founder and Director, Jeevitnadi - Living River Foundation) moderated by **Bejoy Thomas** (IISER Pune). Date: 17 November 2021



Outreach

Invited Talks

Argha Banerjee

- Climate sensitivity of Himalayan glaciers, rivers, and landscape, ICTS Monsoon Seminar, ICTS, Bangalore, December, 2020.

Bejoy Thomas

- Panelist in a session on Drinking water, sanitation, and health improvement in rural areas at the inauguration of IRMA Water Centre, Institute of Rural Management, Anand, Gujarat, 14 December, 2020, online.
- Talk on 'Adapting or chasing water? Understanding farmer responses to water stress', at Department of Earth and Climate Science, IISER Pune, 25 March 2021, online.
- Talk on 'Rethinking Water Management in Urbanising River Basins' at Water Seekers Fellowship 2021 Inception Workshop, 18 October 2021, online.
- Talk on 'Water education as a problem driven, normative enterprise' at Wednesdays for Water panel on Water Education in/for Higher Studies, series, 1 December, 2021, online.

Gyana Tripathy

- Invited to the seminar on "Research opportunities in Aquatic Geochemistry" by the Indian National Young Academy of Sciences, New Delhi on 3rd July 2021.

Sara Ahmed

- Presentation of Living Waters Museum at 'I am Water' – Global Virtual Assembly of Water Artists and Researchers organized by Ecoartspace, Santa Fe, USA, July 22, 2021, online.
- Moderator for panel on Women Celebrating Water through Stories as part of the British Council South Asian Heritage Month, U.K., August 17, 2021, online.
- Guest lecture on Sacred Waters – Purity and Pollution, for Beyond Museums, a training course on tools for promoting our natural and cultural water heritage, organized by the UNESCO Chair of Ca' Foscari University, Venice, Italy, November 5, 2021, online.
- Plenary speaker on Water Museums: From Dystopia to Futures, at 7 th International Water Conference organized by ActionAid Bangladesh on the "Teesta River Basin: Overcoming the Challenges", on January 22, 2022, online.

Outreach

Community Engagement, Memberships and Awards

Gyana Tripathy

- Organized a national Symposium on Recent advances on aquatic geochemistry on 7th August 2021
- Organized a virtual workshop on Trace elements in Aquatic systems on 29th-30th October 2021 (Financially Supported by Geochemical Society, USA)

Sara Ahmed

- Board Member, WaterAid India (since 2013)
- Board Member, Wetlands International South Asia (2021 appointment)
- Board Member/Vice President, Global Network of Water Museums
- Board Member of the following NGOs in Ahmedabad, all working on water, livelihoods, equity: Utthan, Samerth, Development Support Centre Foundation
- General body member, SOPPECOM, Pune



Living Waters Museum



Established in 2017, the Living Waters Museum is a virtual museum which engages young people and children in visualizing water heritage and re-imagining sustainable, inclusive and equitable water futures. Through the power of storytelling and technology we seek to celebrate our water wisdom, inspire youth to look at water from an interdisciplinary perspective and co-build a digital repository as a source of learning for the future.

In March 2021, we 'moved' to the Centre for Water Research after three exciting years at the Centre for Heritage Management, Ahmedabad University (2017-2020) where we actively built our repository, worked with several students, especially NID graduate interns, contributed to the Foundation Studio on Water at the University, and held many public programs as well as pop-up exhibitions (see: www.livingwatersmuseum.org).

Despite two waves of the pandemic and various lockdowns, we've had a busy year at IISER. Dr. Chhavi Mathur, with a PhD in molecular virology from IISc Bangalore joined us in April 2021 to explore her interests in the role of museums at the intersection of science and the arts. Chhavi has spent the past year coordinating our first online exhibition on Pune's urban waterscapes, drawing on our work in Mumbai to build Pune's water stories around heritage, history, people and livelihoods (www.confluence.mumbaiwaternarratives.in). Launching on March 28, 2022, Punyache Paani is supported by an exciting series of panels, water walks and the performing arts, involving partners from civil society, practice and academia in Pune as well as students and faculty from IISER.

Chhavi has also secured a grant under the Transforming Education for Sustainable Futures Initiative at IIHS, Bangalore, and is leading the development of content and pedagogy for interactive Water Classrooms for secondary schools (to be pilot-tested in Pune). Several IISER students are engaged in this collaborative effort too.

As a virtual museum, we have the flexibility to host other chapters too. In Kolkata, Sukrit Sen (architect and Masters in Heritage Management from Ahmedabad University) leads our work on documenting water heritage, beginning with the renowned ghats and wetlands in the city. We are just in the process of formulating a partnership with the water and heritage group at ICOMOS led by young professionals from India. Sukrit has also secured a small grant from the US Consulate in Kolkata to 'build' a climate wall in the Sundarbans, both physical with local communities using mangrove species of their choice, and virtual with students from schools in the city/region and across the border in Bangladesh, including music, poetry, and prose on their efforts to mitigate climate change.

In Jodhpur, we started working with the Mehrangarh Museum Trust to develop a virtual exhibition, Jal Jharoka, a 'window' on the city's rich water heritage from rulers and patrons to the everyday struggles around water celebrated in music, words and art from this desert kingdom that was once part of the Indian ocean. Bhargav Padhiyar (Masters in Design, NID, Ahmedabad), is the co-curator for our Jodhpur and Ahmedabad chapters as well as the lead designer for our virtual museum. We hope to launch the Jodhpur exhibition on May 18, 2022, International Museums Day with a series of hybrid events.

Finally, as a founder member of the Global Network of Water Museums, endorsed by UNESCO's Intergovernmental Hydrology Program, we are curating a global exhibition on water memories: I Remember Water to launch on Earth Day, April 23, 2022.

Sara Ahmed,
Founder and Lead Curator,
Living Waters Museum, IISER, Pune



Established in 2017, the Living Waters Museum curates visual narratives on our water heritage to inspire water caring futures.

[Enter Virtual Museum](#) ▶



[Terms and Conditions 2021](#)

Latest Projects



Punyache Paani

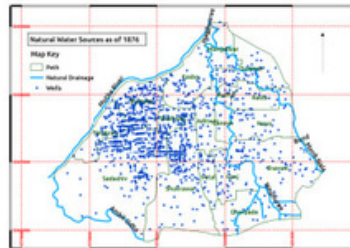
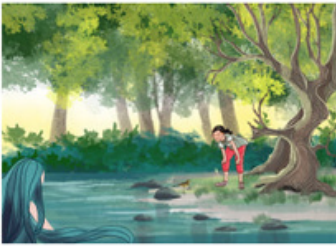
Stories of Pune Waters

27th March '22

ONWARDS



punyachepaani.livingwatersmuseum.org



EXHIBITION
EVENTS
WALKS



Join us in celebrating Pune's Waters at IISER Pune Campus, Pashan.

The collaborative virtual exhibition, 'Punyache Paani' – Stories of Pune's Water can be accessed at: <https://punyachepaani.livingwatersmuseum.org>

Questions? Contact us.

For more information on CWR,
write to CWR Team at info_cwr@iiserpune.ac.in

LWM welcomes expressions of interest to develop new content,
please contact:

Dr. Sara Ahmed at sara.ahmed@iiserpune.ac.in
or livingwatersmuseum@gmail.com

