

CENTRE FOR WATER RESEARCH

ANNUAL REPORT 2023-24

Indian Institute of Science Education and Research Pune



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LIVING WATERS MUSEUM

Foreword

In March 2024, the city of Bengaluru woke up to a water crisis that had been in the making for several years. Several other Indian cities, including Pune, are not far behind. In this context, the Centre for Water Research (CWR) at IISER Pune becomes increasingly relevant. The past year has seen several activities and research projects, community outreach events, and academic outputs from CWR. The coming year promises to be busier, and we hope to have achieved even more.

The academic outreach and community engagement for CWR continued with several of our faculty and staff being invited to give talks, conduct workshops, and organize dialogues. Several books and research articles were also published with support from CWR. The Water Talks series continued with four speakers, and the rubric for this year was Traditional Water System Designs. Accordingly, Abhijit Ghorpade, V. Govindankutty, Ashwin Paranjpe, and Meghal Arya gave talks. The last talk was also part of the new vidcast series sponsored by AQUAMUSE. The Living Waters Museum (LWM) continued with its multiple efforts to bring awareness about water and its cultural significance. Their latest project AQUAMUSE, is supported by the Dutch Water Partnership Programme at IHE Delft, and brings together partners from three river basins: Volta, Blue Nile, and the Ganga.

We renewed our focus for the IISER campus, as several things need to happen at home before we can advocate them elsewhere. With that in mind, we have started a project to audit water usage across campus. The project is now underway, with equipments, volunteers, and staff members in place. The Engineering section at IISER Pune is a partner in facilitating the water audit, reports of which will hopefully improve our own institutional practices of water consumption. With several projects lined up, 2024-25 will be an exciting year, and we hope to report a lot more next year.

Pushkar Sohoni
Chair, Centre for Water Research
IISER Pune,
18 April 2024
World Heritage Day



Assi Ghat, Varanasi, 2024

People

Pushkar Sohoni (Chair, CWR)
Humanities and Social Sciences

Amrita Hazra
Chemistry

Aparna Deshpande (Science Activity Centre)
Physics

Argha Banerjee
Earth and Climate Science

Bejoy Thomas
Humanities and Social Sciences

Deepak Barua
Biology

Gyana Ranjan Tripathy
Earth and Climate Science

Joy Merwin Monteiro
Earth and Climate Science

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



Water Audit Field Visit, IISER Pune, 2024

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 PhD Theses supervised during 2023-24 by CWR faculty at IISER Pune

NO.	STUDENT	SUPERVISOR	PROJECT TITLE
1	Kalyani Thatte	Bejoy Thomas	Inequity in groundwater access: A study of farm households in Marathwada region, India
2	Swapna Joshi	Pushkar Sohoni	Celestial Impact: A Cultural Narrative of Lonar Crater through Architectural Forms

Research Collaborations

- Center for Water Research hosted an M.Sc. student, Pierantonio La Vena from IHE-Delft Institute for Water Education, the Netherlands (guided by Amitangshu Acharya, Lecturer, Department of Water Governance) for his research project on Traditional Water Technologies in India, 2023.
- Dr. Pushkar Sohoni is on the Research Advisory Committee for Minal Sagare from Srishti Manipal Institute of Art, Design and Technology, Bangalore for research project “Land is created by water” : The Architecture of an Aqueous Terrain.



Completed Research Projects

Argha Banerjee

Observation and modelling of the water cycle in Chandra and Upper Alaknanda Basins. Study of water cycle in the Upper Ganga catchment using isotope, geochemical data, and model simulation, funded by HiCOM, NCAOR.

Chhavi Mathur

- Punyache Paani – Stories of Pune's Waters, an exhibition on Pune's urban waterscapes.
- Water Classrooms and Ripples, Reimagining Learning on Water. This project developed curriculum based on pedagogical tools using place-based, visually engaging and interactive content for middle school students that would enable students to reimagine just, resilient and equitable water futures.



Study of water cycle in the Upper Ganga catchment using isotope, geochemical data, and model simulation.



Participants in the Water Classrooms project explored the amount of virtual water required in production of several items we use everyday through a match-the-card exercise.



Ongoing Research Projects

Argha Banerjee

Understanding and modelling the interactions between Debris and glacier Ice in a changing ClimatE (D-ICE), An Indo-Swiss project funded by Ministry of Earth Sciences, (2023-2027)

Bejoy Thomas

fairSTREAM, a project on Bhima basin in partnership with IIASA, Austria, and SOPPECOM, Pune, (2022-24)

Radhika Mulay, Bejoy Thomas, Argha Banerjee

Water Audit of IISER Pune Campus (Instrumentation and Data Analysis, Behavioural Survey, and Water Quality Tests)

Gyana Tripathy

Establishment of a Water Testing Lab

Pushkar Sohoni, Radhika Mulay

Historical and Cultural Survey of Mula-Mutha River

Sara Ahmed, Shalini Sharma

AQUAMUSE: Facilitating just and sustainable water futures through water museums, digital media and the arts (2024-2026)

Sujit Ghosh

Development of Metal-organic Frameworks (MOFs) based Sensory Materials for Detection of Environmental Pollutants in Water (Ongoing SERB funded project)

Publications

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

PEER-REVIEWED

1. **BANERJEE, ARGHA**; Sarangi, C; Rashid, I; Vijay, S; Najar, N; Chandel, A. 2023. A scaling relation for cryoconite holes. *Geophysical Research Letters*, 50, e2023GL104942.
2. Laha, S; Majeed, U; **BANERJEE, ARGHA**; et. al. 2024. Assessing potential risk of glacier avalanches to hydropower infrastructure in the Himalayan region. *Natural Hazards*. <https://doi.org/10.1007/s11069-023-06389-w>
3. Kanade, R; Lohakare, K; Bhadbhade, N; Joy, K; **THOMAS, BEJOY**; Martin. J; Willaarts, B. 2023. Situational Analysis of the Upper Bhima sub-basin in the context of the Water-Food-Biodiversity Nexus, IIASA Reports, Zenodo. (also translated into Marathi)

POPULAR

1. **THOMAS, BEJOY & MULAY, RADHIKA**. 2023. Why NEP 2020 provides an opportunity to include water in higher education curricula. *The Indian Express*. May 16.
2. **MULAY, RADHIKA**. 2023. Cryosphere: A Freshwater Ecosystem. *Ecology and Nature*. Living Waters Museum.

BOOKS AND REPORTS

1. Paranjpye, V; **MULAY, RADHIKA**; Kulkarni, C. 2023. *The Heads and Tails of Ganga: the Cryosphere and the Delta*. Indian National Trust for Art and Cultural Heritage (INTACH). Delhi. ISBN NO. 978-81-963979-6-8.
2. Mathur, C; **AHMED, SARA**; Parashar, A; Nagarwalla, D; Menon, S; **MONTEIRO, JOY**; Joshi, A; Kaabaadee, R; Lepcha, M; **MULAY, RADHIKA**; Sen, S; Tandon, A; **THATTE, KALYANI**; Swaraj, B; Talele, R; Karampuri, Y; Sivaram, M; Durge, S; Meddopil, R. 2023. *Development of water classrooms for middle school students*. TESF India, IIHS. <https://doi.org/10.24943/TESF1206.2023>



'The Heads and Tails of Ganga', Book Launch at India Rivers Week, 2023

Outreach

CWR Season 4: Traditional Water System Designs

Centre for Water Research organized Water Talks on various dimensions of traditional water system designs by guest speakers at IISER-Pune. The recordings of the talks are available on the [CWR youtube channel](#).

1. From Wisdom to Lost Waters: A Journey of Traditional Water Systems in Maharashtra.

Speaker: Abhijit Ghorpade, Founder of Bhavatal, Pune. Date: 16 October 2023

2. Unearthing the Untold Story of Indian Karez Systems. Speaker: V Govindankutty, Assistant Professor of Geography, Government Arts and Science College, Kerala. Date: 30 January 2024

3. Traditional Water Wisdom in Kalyug! Ecological treatment of Wastewater, Restoration of Rivers & Lakes, and Gravity-based Drinking Water Systems in Western Ghats. Speaker: Ashwin Paranjpe, Founder Director, Gorus Organic Farming Association (Pune). Date: 20 February 2024

CWR and AQUAMUSE: Water Vidcasts

1. Spatial Ecology of Water. Speaker: Meghal Arya, Professor at the Faculty of Architecture, CEPT University, Ahmedabad. Date: 19 March 2024



CWR Water Talks, Season 4, 2023

Outreach

Invited Talks

Argha Banerjee

1. Himalayan Cryosphere under warming, and feedback processes. National conference on Himalayan Cryosphere, IISc, Bangalore, 2023

Bejoy Thomas

1. Addressing Equity and Sustainability at Different Scales', Keynote, Conference on Sustainability: Assessment and Challenges, M A College, Kothamangalam, January 12, 2024
2. 'Environmental sustainability and human well-being: focusing on the water sector', Policy Roundtable on 'Biodiversity Conservation and Civil Society Organizations', Amrita Vishwa Vidyapeetham, India (online), C20 India 2023 Engagement Group of the G20, April 4, 2023
3. 'Current challenges and ways forward in the water sector', Panel on 'Natural Resources Governance and Regulation: Towards Sustainability and Equity', Tata Institute of Social Sciences, Mumbai, India, Crystal Jubilee Celebration 2023 - 15 years of School of Habitat Studies, March 9, 2023

Radhika Mulay

1. 'Rights of Rivers through the Lens of Bharatnatyam', Invited Speaker, 'The House of Rivers' Symposium as part of the Fluid Interdisciplinary Conference, IHE Delft Institute for Water Education, the Netherlands, March 19-22, 2024
2. 'Linking River Avulsions in Ganga River Basin with Society', Water Connects: Connecting Science and Society, Banaras Hindu University, Varanasi, 2024. February 16, 2024
3. 'The Ganga Delta: Learnings from Data Collection and Verification of Hydrogeological Parameters', Panel on River Basins Deltas Learning Session, Water Development Partnership Programme, IHE Delft Institute of Water Education. October 26, 2023
4. 'Monday Musing with Women for Water' in Conversation with Youth Council of WICCI-WRC, Online, October 2, 2023.



Outreach

Community Engagement

Argha Banerjee

Member, Project Appraisal and Monitoring Committee - Hydrology & Cryosphere, Ministry of Earth Sciences, Govt of India.

Bejoy Thomas

Bejoy Thomas and collaborators from SOPPECOM, Pune and IIASA, Austria organized a stakeholder workshop as part of the ongoing fairSTREAM project focusing on Upper Bhima basin during 6-7 February, 2024. The workshop discussed the preliminary results from the modeling exercise that the project team did at the food-water-biodiversity interface in the basin and made the initial steps towards co-developing sustainability visions and pathways with inputs from a diverse set of stakeholders.



Shalini Sharma

'Social Accountability for Oceans and Coastal Commons' a dialogue organised on 10th and 11th March 2023 at IISER, Pune to explore frameworks for deepening social accountability for Coastal and Ocean Commons. It is jointly organized by the National Centre for Advocacy Studies (NCAS), Mineral Inheritors Rights Association (MIRA), Dakshin Foundation, National Fishworkers Forum (NFF), Foundation for Ecological Security (FES), National Law School Bengaluru, Social Accountability Forum for Action and Research (SAFAR) and Centre for Water Research at IISER-Pune.

Outreach

Community Engagement

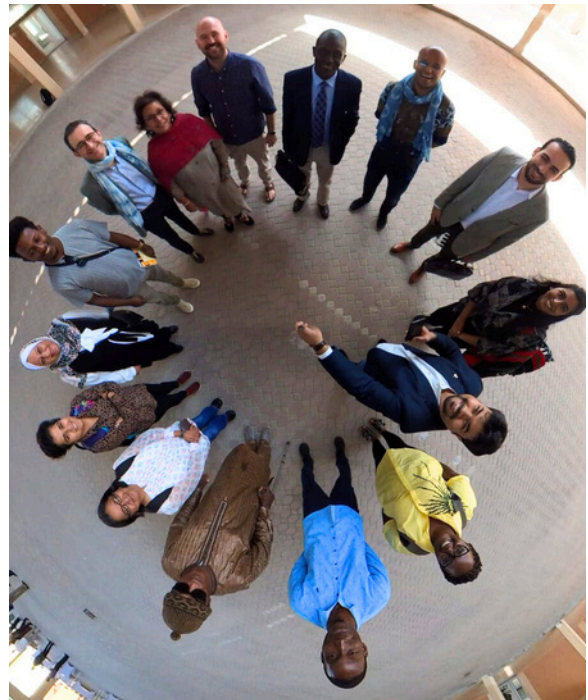
Shared ownership, management, and governance of commons give people in general and affected communities in particular, an opportunity to address the interconnected challenges of environmental degradation, social and economic inequalities, and asserting identities. Given that commons defy the very fundamental element of a capitalist society i.e. ownership, the need for fleshing out practical elements of a democratic governance framework using the lens of social accountability becomes all the more important. A series of year-long dialogues was launched on 2nd Sept 2022 at NLS Bengaluru, subsequently led by a collective of organizations to explore accountability viz a vis specific kinds of commons. Through the course of the dialogues, we hope to build a platform that strengthens the public discourse on the idea of commons and its ever-evolving various facets; and simultaneously arrive at a working framework for social accountability related to the commons, based on lived realities, experiences of a wide network of practitioners, experts, and concerned citizens.

This dialogue on Social Accountability of Coastal and Ocean Commons was organized because coastal and oceans are one of the most contested commons. In addition to the lack of clear laws that secure peoples' rights in this space; there are also uncertainties about the nature of accountability and mechanisms to uphold it. Amid these grave challenges, this dialogue was a humble attempt to flesh out some practical elements of an accountability framework for coastal and ocean commons, that addresses these contestations alongside establishing norms of community recognition, access, monitoring and management of these spaces as commons.



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. The following section gives brief updates about the projects undertaken by researchers at LWM during 2023-24.



The Living Waters of Kolkata

After the success of the Mumbai, Pune and Jodhpur chapters launched the Kolkata chapter titled "জলজ্যাস্ত কলকাতা - The lovely waters of Kolkata". The exhibition brought together contributors from ages 6-70 to talk about the many waters of the city and its surrounding attributes. The content in the exhibition also inspired a performance titled "Kulkutta ki Jalkatha" which talks about the city's water heritage and has been performed on various occasions around the city making it a creative tool to not only showcase the exhibition but also include local audiences in the process. After Kolkata, the creative team at LWM in association with the East India Dastangos is all set to develop a Pan India Jalkatha Series to talk about the waters of different cities through music and storytelling. On the invitation of various organisations such as GRRIDCORPS, WforW and Development Alternatives, the team has performed their Jalkathas in Jodhpur, Varanasi and Delhi respectively.



Living Waters Museum

Goa Water Stories

The Centre for Public Policy and Governance at the Goa Institute of Management (CPPG-GIM) and the Living Waters Museum (LWM) collaborating for a fellowship grant which aims to facilitate scholarship for those interested in building dialogue through visual stories around water in Goa, India towards a digital exhibition hosted by the Living Waters Museum in 2024.

Goa and its interconnected system from the Western Ghats, the monsoon water cycle and the resultant watershed, the origin of its rivers and interlinked water bodies of tanks, wells, lakes, springs and khazan lands and the coastal ecosystem encapsulate the hydrology schema in Goa. As the fellows embark on their individual projects that will dive deep into the intricate relationships between our ecosystems, water resources, and the pressing challenges of climate change, the fellows will engage in research, community initiatives, and creative projects that promise to leave a lasting impact. Stay tuned as we share their progress, insights, and discoveries with you.



Living Waters Museum

AQUAMUSE

The Living Waters Museum, SPRF India, and Worl

The Living Waters Museum team is thrilled to announce the launch of its latest collaborative project, AQUAMUSE: Facilitating just and sustainable water futures through water museums, digital media and the arts. Supported by the Dutch Water Partnership Programme at IHE Delft, this two-years project brings together partners from three river basins: the Volta River in Burkina Faso, the Blue Nile flowing through Egypt, Ethiopia and Sudan and the Ganga / Sundarbans in India. Academics and researchers will work together with artists, science media and communication partners to build participatory archives on our water memories, facilitate learning alliances and re-imagine water museums towards resilient hydro-trajectories.

The inception meeting of AQUAMUSE (February 6-8, 2024) at the Africa Institute, Sharjah, an organization for research and scholarship on Africa and the African diaspora, provided the ideal grounds for further investigation on such topics as museum making, decolonization practices, and the role of research backed artistic practice in three deltaic regions across Africa and India. Prior to our meeting, the Africa Institute with the support of SciCommX, hosted a public gathering with academics, researchers and museum professionals in Sharjah, entitled: Reimagining Water Museums: Towards more just and resilient hydro-technologies. The presentations led to extensive discussions on "why museums?", their role in terms of addressing human rights, social justice, and working in conflict prone arenas. Participants recognized that museums can provide alternative and inclusive spaces for discursive encounters, and that bottom-up approaches to museum-making are counter-narratives to the colonial museum project built around art and artifacts, often plundered from colonized nations, with complex issues of representation.



Living Waters Museum

Collaboration at the 2024 Water Fest, Banaras Hindu University, Varanasi



Collaboration at the Fluid Interdisciplinary Conference, IHE Delft Institute for Water Education, the Netherlands, 2024



Contact Us...

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LWM welcomes expressions of interest, please contact:

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livingwatersmuseum@gmail.com

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Dr. Homi Bhabha Road,
Pune 411008, India



Lolark Kund, a stepwell, Varanasi, 2024