Embassy of Denmark,
New Delhi

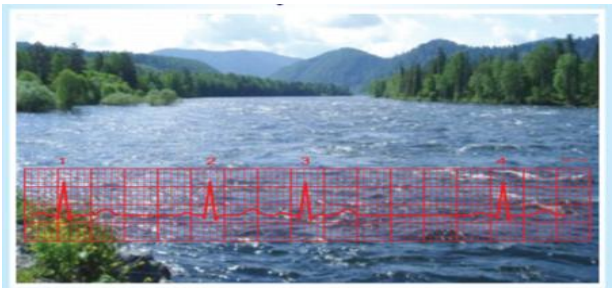
4th International Conference

on

RIVER HEALTH: ASSESSMENT TO RESTORATION

(RHAR 2025)

Website: https://conferences.iitbhu.ac.in/rhar



Theme

Restoration of Small Rivers: Application of Advanced Tools and Technologies, with Convergence of Policies and Programs

October 30 – November 01, 2025

Organized by

Department of Civil Engineering

Indian Institute of Technology (BHU) Varanasi

&

Smart Laboratory of Clean Rivers (SLCR), IIT (BHU)

Under Namami Gange and Embassy of Denmark

Proposed Associate Partners

International Associate Partners

UiT Norway

Academic Partners

MNNIT Allahabad	BBAU Lucknow	NIT Patna	IIT Patna	Aarhus University	University of Copenhagen

A. Background

1st International Conference on 'River Health: Assessment to Restoration' (RHAR 2019)

Taking the scientific spirit and recommendations of Ganga River Basin Management Plan (GRBMP) 2015 forwards, Department of Civil Engineering, IIT (BHU) Varanasi thought of 'making our rivers healthy and happy' as its Centenary Vision in 2019. Accordingly, the 1st International Conference on **'River Health: Assessment to Restoration (RHAR)'** was organized **during Feb. 14-16, 2019.** Five broad themes discussed in greater details in **RHAR 2019** included: **Riverine processes, Drivers of river health, River health monitoring, River health indexing, River health restoration.**

2nd International Conference on 'River Health: Assessment to Restoration' (RHAR 2021)

In order to bring smaller rivers on health restoration agenda, **RHAR 2021** focused on "**Talks of the Tributaries: Rivers Varuna and Assi in the Middle Ganga Basin**". The objective was to collect, compile and comprehend all the facts and figures related with these tributaries which are important and helpful in their health restoration. The post conference effect is that four leading academic institutions of the country in this region, IIT Kanpur, IIT (BHU) Varanasi, IIT Roorkee and BBAU Lucknow have joined hands to help and guide one of the largest working Departments of the **Government of Uttar Pradesh, Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)** engaged in creating jobs and employability close to soil, water and rivers. The Government has embarked upon preparing a roadmap to rejuvenate 75 small rivers of the state in first phase with scope to increase the number subsequently.

3rd International Conference on 'River Health: Assessment to Restoration' (RHAR 2023)

A deeper analysis of river health condition indicates two facts: (1) due to large and unsustainable surface and ground water extractions in many parts of the river basins, there is water stressed conditions, which require source augmentation, and, (2) cities along the course of rivers put high quantitative and qualitative stress on them. For river health restoration programs to be effective and sustainable, the water stressed regions need to be developed as 'water positive', and urban catchments need to be modeled as 'water smart' centers. Hence the theme of **RHAR 2023** was decided as "***Moving towards Water Positive Regions (WPR) and Water Smart Cities (WSC)***". The deliberations and outcomes of the summit are supposed to add substantial values for improvements in the water management of around more than two dozen smart cities spread across four States of India, including Bihar, Uttar Pradesh, Rajasthan and Delhi. Simultaneously, we identified the areas of stresses for our rivers to flow continuously in healthy conditions. We are working on them.

B. Way Forward:

4th International Conference on 'River Health: Assessment to Restoration' (RHAR 2025)

In order to focus on small rivers, Government of India has established a dedicated center for small river rejuvenation, named as **'Smart Laboratory of Clean Rivers (SLCR)'** under the Indo-Danish collaboration initiatives. The SLCR is located at Indian Institute of Technology (BHU) Varanasi, and provides a platform for knowledge creation and exchange, management and transfer/cocreation, training, research and innovation. SLCR is developed to design, test and learn from social and technical innovation in real-time, bringing global and local sustainable solutions for rejuvenation of small rivers. The collaboration is a mutual sharing of technical knowledge and expertise between both the countries.

Rivers are inherently multidimensional systems, encompassing a wide range of interrelated components that span hydrology, water quality, wastewater management, water supply, river morphology, aquifer interactions, riparian ecosystems, biodiversity, and socio-economic dynamics. A river is not just a channel that carries water—it is a dynamic, living system that reflects the health of the entire watershed. For any holistic river rejuvenation initiative to succeed, it is crucial to address each of these dimensions in an integrated and coordinated manner. Small rivers constitute a substantial portion of river networks. Despite their relatively modest size, these small streams wield a considerable influence downstream. They act as ecological lifelines that sustain biodiversity, regulate hydrological cycles, and support local communities by replenishing groundwater and ensuring the availability of clean water. However, their significance is often underestimated in policy and planning frameworks, leading to inadequate legal protections and a heightened vulnerability to alteration or obliteration due to land use pressures (Palt et al., 2022). The degradation of small rivers disrupts not only local ecosystems but also impairs the functioning of larger river systems they feed into.

The role of unregulated contaminants such as microplastics, persistent organic pollutants and heavy metals in aggravating the health of rivers is often less known and rarely talked about. Small rivers have been potentially burdened with severe emerging contaminant loads. However, due to the lack of regulations, the emerging contaminants are seldom monitored or managed and hence, their impact on humans and the river environment is never well understood. Advancements in detection and technologies and evolution of the policy landscape will likely change this scenario in the near future. A meticulous inquiry of these challenges is warranted to understand the emerging trends in the holistic health assessment of small rivers.

Rivers are multidimensional systems influenced by diverse stakeholders—governments, communities, researchers, and industries. Sustainable and resilient river rejuvenation requires transparent communication, shared responsibilities, and long-term collaboration. The theme of the 4th International Conference on 'River Health: Assessment to Restoration' (RHAR 2025) is **"Restoration of Small Rivers: Application of Advanced Tools and Technologies with Convergence of Policies and Programs,"** emphasizing the integration of science, technology, and governance to maximize impact. This convergence is vital for restoring small rivers, which are often overlooked but essential to watershed health and ecological balance.

C. List of Domains in RHAR 2025

Nine broad domains of discussion include:

D1. Application of Advanced Technologies for Wastewater Treatment

D2. Application of Advance Tool and Techniques for Data Collection & Monitoring

D3. Groundwater Management for Small River Rejuvenation

D4. Holistic Approaches for Small River Rejuvenation

D5. Decision Support System & Models

D6. Monitoring of Emerging Contaminants in Small Rivers and Challenges for their Remediation

D7. Documentation and Convergence of Policy, Programs, Community participation & Capacity building

D8. Other Contemporary Research Domains

D9. Workshop of BRIDGE Project: Technologies in Water Safety

D. Topics under domains may include (but not limited to)

D1. Application of Advanced Technologies & Techniques for wastewater treatment & management

- Restoring Urban Streams through Wastewater Interventions
- Decentralized Wastewater Treatment Systems
- Nature based Solutions for Wastewater Treatment
- Blue-Green Infrastructure for Resilient Water Systems
- Reuse of STP Effluent
- Pollution Load Reduction Strategies and Point vs. Non-point Source Control

D2. Application of Advance tool and techniques for data collection & monitoring

- Real-time Tracking of Water Quality Parameters
- Early Warning Systems for Pollution or Habitat Degradation
- Smart IoT based Monitoring Systems for Urban Drainage and Pollution Control
- Application of Advanced Instruments for Water Quality Parameters, ex ICP-MS
- Non-Targeted Analysis
- Biological Indicators and Biomonitoring of River
- 3D Modelling and UAV based Techniques
- Non-invasive tracking of aquatic species

D3. Groundwater dynamics & management for small river rejuvenation

- Groundwater Modelling for Scenario Planning and Risk Assessment

- Integrated Ground Water Management for River Rejuvenation
- Tools like MODFLOW, HEC-RAS and SWAT to assess Restoration Scenarios
- River-Aquifer Exchanges and Tools
- Simulation of Natural Flow Regimes and Flood Dynamics
- Sustaining Baseflow: Groundwater's Role in River Systems
- Recharge Strategies under Changing Climate and Land Use
- Community-Based Groundwater Stewardship and Monitoring
- Addressing Groundwater Contamination at Source and Scale

D4. Holistic approaches and real field cases for small river rejuvenation:

- Nature-based Solutions for Soil and Water Conservation
- Land Use Planning and Sustainable Agriculture Practices in Catchments
- Erosion Control and Sediment Management Strategies
- Ecological Flow Assessment and Maintenance
- Restoration of Riparian Zones and Aquatic Habitats
- Linking Water Quality Improvements with Biodiversity Enhancement
- Assessment of Ecological Health and Recovery Post-Restoration
- Case Studies demonstrating convergence in action: Real-world success stories of coordinated efforts in river rejuvenation, showcasing collaborative efforts

D5. Decision Support System and Models:

- Integration of Multidisciplinary Data for Planning and Stakeholder Engagement
- Scenario Analysis for Sustainable Management Strategies
- Scenario Modeling and Multi-Criteria Decision Analysis
- Stakeholder-driven Decision-Making Frameworks using DSS Tools
- Predictive Modeling for Erosion, Pollution Load, and Flow Patterns
- Decision-Making Support for Site Prioritization and Intervention Design

D6. Monitoring of Emerging Contaminants in Small Rivers and Challenges for their Remediation

- Monitoring of Emerging contaminants, like Microplastics, Persistent Organic Pollutants, Heavy Metals in small rivers
- Advanced Technological Tools for Detection and Analysis of Emerging Contaminants
- Policy Landscape for Regulation of Emerging Contaminants in India
- Remediation Techniques and Strategies for Emerging Contaminants in the Context of Small River Systems
- Fate and Transport of Emerging Contaminants in Small Rivers, Role of Riparian Ecosystems and their Degradation Mechanisms
- Bioaccumulation of Emerging Contaminants and their Effect on Riverine Ecosystems

D7. Documentation and Convergence of Policy, Programs, Community Participation & Capacity Building

- Integrated Water Resources Management (IWRM) for Small Rivers: Planning catchment-wide actions with community-based and ecosystem-centered approaches
- National Missions and Flagship Programs: Finding opportunities in national initiatives like Jal Shakti Abhiyan, MGNREGS, Atal Bhujal Yojana, Catch the Rain, PMKSY, and Namami Gange for small rivers restoration
- Roles of Panchayati Raj Institutions and Urban Local Bodies: For planning, executing, and monitoring restoration work with accountability for small rivers and water bodies
- Financing Models for Small River Restoration: Exploring models for pooling financial resources from government schemes, CSR, PPPs, and climate finance for sustainable river rejuvenation
- Institutional Mechanisms for Multi-sectoral Coordination: Establishing formal structures for inter-departmental and inter-institutional collaboration across sectors impacting river ecosystems
- Policy Innovations and Regulatory Frameworks: Developing enabling laws, norms, and guidelines to support river-friendly land use, ecological flows, and integrated water governance
- Community Participation and Social Accountability: Engaging communities through participatory processes, traditional knowledge, citizen science, and local monitoring systems

D8. Other Contemporary Research Domains

- Water Balance Status in Urban Centres under Smart Cities Mission of India
- Visions, Initiatives, and Success examples towards Water Smart Cities
- Case Studies of Storm Water Management, Reclaimed Water Reuse, Managed Aquifer Recharge (MAR)
- Integrated Water Resource Management (IWRM) and Circular Economy
- Drinking water contaminants, Evaluation of sorbents or catalysts for removal of common contaminants
- Valorization, bioremediation, disinfection, and reuse
- Ecological Risk Assessment of Rivers, Lakes, etc.
- Ecological indices of river health and conceptual frameworks on world rivers
- Exemplary initiatives and success examples of river restoration studies
- Groundwater monitoring and modelling, R-A exchanges, landfill leachate effects etc.

D9. Workshop of BRIDGE Project: Technologies in Water Safety

UiT and the participating organizations in BRIDGE Project will share the experiences gained in their collaborative research work and highlight the concerns and socio-economic challenges of implementing emerging technology such as microbial fuel cell (MFC) in Water Safety.

E. Call for Abstracts

All abstracts and papers must be original and not simultaneously submitted to another journal or conference. Following paper categories are welcome:

- **Abstract**
- **Full Paper with Abstract**
- **Abstract for Posters**

Submission Guidelines

Authors are cordially invited to submit the Abstract (max. 300 words, Font: Times New Roman 12pt, 1.5 spacing, along with full address/affiliation) briefing the content of works on any of the topics related to thematic areas of RHAR 2025. Information about the submission portal will be shared soon.

All accepted abstracts and papers will be compiled for publication to provide a database for policy directions, future planning and programs for ensuring better river health in India, G20 nations and other countries with similar socioeconomic and climatic conditions.

The Proceedings of the Conference is planned to be published with Scopus Indexed Publication Houses.

F. Important Dates

Opening of RHAR 2025 Abstract Submission Portal	July 01, 2025
Acceptance of Abstracts and Start of Early Bird Registration	Aug. 01, 2025
Abstract Submission Deadline for Oral and Poster Presentations	Aug. 31, 2025
Deadline for Submission of Full Papers	Sept. 30, 2025
End of Early Bird Registration	Sept. 30, 2025
Notification for finalized speakers in the Conference	Oct. 15, 2025
Final Schedule Notification	Oct. 25, 2023
Dates of the Conference	Oct. 30-Nov. 01, 2025

G. Registration & Fee Payment

Authors of accepted abstracts and participants need to register through the official website of RHAR 2025 (https://conferences.iitbhu.ac.in/rhar). The participation fee is as follows:

Registration Category	Early Bird Registration (Till Sep. 30, 2025)*	Registration after Oct.01, 2025**
Indian Industry Partners/ Research Organizations	INR 10000 +18% GST = INR 11800	INR 12900
Indian Academicians	INR 6000 +18% GST = INR 7080	INR 7800
Indian Students	INR 2500 +18% GST = INR 2950	INR 3250
International Industry Partners/ Research Organizations/ Academicians	US$ 300 + 18% GST = US$ 354	US$ 390
International Students	US$ 150 + 18% GST = US$ 177	US$ 195

**Registration fee includes access to all sessions of the conference, a digital copy of conference proceedings and lunch.*
**Registration Fee is exclusive of bank charges, if any. Such additional charges will be paid by the participant.*
** Inclusive of GST/VAT.
All the registration fees, financial grants and sponsorships for the purpose of the Conference will be accepted only through Bank/Electronic/Wire Transfer.

Name of the Account Holder -**Registrar, IIT (BHU) Varanasi**

Complete Address - Indian Institute of Technology (Banaras Hindu University), Varanasi, India – 221005, Ph: +91 542 2307002, 2367780

Name of the Bank -**State Bank of India**

Account Number –**32778803937**

A/C name – **IIT (BHU)-Main Account (Institute Development Fund)**

Type of Account – Current

IFSC CODE: **SBIN0011445** (Domestic delegates may use this code for NEFT Transfer)

MICR Code: 221002036, SWIFT Code: **SBININBB125** (for International delegates)

Bank Address - State Bank of India, IT-BHU Branch, Branch code-11445, IIT (BHU) Varanasi-221005, UP, India, Ph-0542-2369181

Note: *Once the payment is confirmed, we request you to kindly send us soft copy of your payment receipt through the email: rhar@iitbhu.ac.in*

Refund Policy: *Request for Registration Fee Refund in case of cancellation may not be possible under Institute Regulations.*

H. Sponsorship

The Conference provides an excellent opportunity for sponsoring agencies and organizations to promote their products/services to the focused international and national audience's/stake holders. This will also give an excellent opportunity to interact with engineers/scientists/academicians/managers working in the area of water conservation, wastewater treatment and reuse, smart cities mission, waste to wealth and circular economy.

Different categories of sponsorships are:

1. **Platinum Sponsor:** (US$ 7000 / INR 5,00,000)

   (Full registration for ten delegates, Company name and logo on conference brochure and web page, a full page advertisement in the Post Session Proceedings, 10 min. time slot for technical presentation in suitable session, Distribution of Literature/Brochures).

2. **Gold Sponsor:** (US$ 5000 / INR 4,00,000)

   (Full registration for seven delegates, Company name and logo on conference brochure and web page, a full page advertisement in the Post Session Proceedings, 10 min. time slot for technical presentation, distribution of literature/brochures).

3. **Silver Sponsor:** (US$ 3750 / INR 3, 00,000).

   (Full registration for five delegates, Company name and logo on conference brochure and web page, a full page advertisement in the Post Session Proceedings, 10 min. time slot for technical presentation).

4. **Supporter:** (US$ 2000 / INR 2,00,000)

   (Full registration for three delegates, Company name and logo on conference brochure and web page, Distribution of Literature/Brochures in Conference, A half page advertisement in the Post Session Proceedings).

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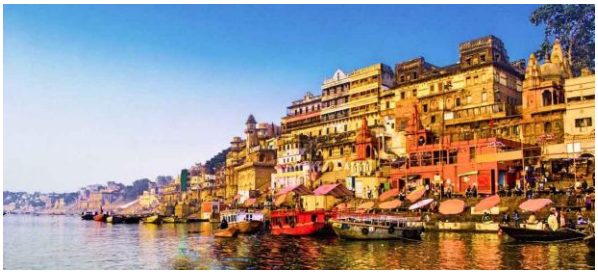
N. Valuable Information

IIT (BHU) Varanasi

The Indian Institute of Technology (BHU) Varanasi is a public engineering institution located in Varanasi, Uttar Pradesh, India. Founded in 1919 as the Banaras Engineering College, it became the Institute of Technology, Banaras Hindu University in 1968. It was designated as Indian Institute of Technology (IIT) in 2012. It is one among the top ranking IITs in the country.

For more details, visit: https://iitbhu.ac.in/



View of The River Ganga at Varanasi

Entrance Gate of Banaras Hindu University Varanasi

Travel Information

Air Connectivity: The nearest airport is Lal Bahadur Shastri International Airport (**VNS**) at Babatpur, 26 km from Varanasi. **Direct flights for Varanasi are available from Ahmedabad, Jaipur, Goa, New Delhi, Chennai, Bengaluru, Hyderabad, Kolkata, Mumbai, Pune, Lucknow, Bhuvaneshwar, Sharjah (Dubai) and Kathmandu (Nepal)**.

Railway Connectivity: Varanasi Cantt (BSB), Banaras (BSBS) and Pandit Deen Dayal Upadhyay (DDU) are the important railway stations that link Varanasi with major cities of India. For booking tickets, visit https://www.irctc.co.in/nget/train-search.

Letter of Invitation for Visa purpose: To be issued to the international participants on request.

Conference Excursion

Site Visits (Tentative)

- Kashi Vishwanath Corridor and Ganga Cruise and Ganga Aarati
- Sarnath Stupa and Museum
- Triveni Sangam, Prayagraj

Venue

The Conference will be held at the Indian Institute of Technology (BHU) Varanasi.

Accommodation

Limited rooms are available in the Guest Houses of IIT (BHU) and BHU Varanasi.

For more information click here.