



[RHAR2023_BROCHURE_v6_01052023]

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IIT INDIAN
INSTITUTE OF
TECHNOLOGY
BANARAS HINDU UNIVERSITY

3rd International Conference on RIVER HEALTH: ASSESSMENT TO RESTORATION (RHAR 2023)

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



Theme

**Moving Towards Water Positive Regions (WPR) and
Water Smart Cities (WSC)**

Oct. 12-14, 2023

In Physical Mode: IIT (BHU) Varanasi

Organized by

**Department of Civil Engineering
Indian Institute of Technology
(Banaras Hindu University) Varanasi**

With

**National Institute of Urban Affairs (NIUA)
Delhi**



National Institute of Urban Affairs



**Ministry of Housing
and Urban Affairs
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Background:

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 it organized the 1st International Conference on ‘**River Health: Assessment to Restoration (RHAR)**’ during Feb. 14-16, 2019. Five broad themes discussed in greater details in **RHAR 2019** included:

1. **Riverine processes:** hydrological factors, river ecosystem, sediment transport and pollutants transport,
2. **Drivers of river health:** Socioeconomic practices (Chemical fertilizers, pesticides, herbicides in agriculture, open defecation, untreated discharge of domestic/ industrial wastes, and leachates from solid waste dumping); Religious practices; Climate change; Policies and regulations,
3. **River health monitoring:** Data requirement and collection, Erosion and sediment deposition, Water quality including bio monitoring, Advance techniques, Isotopic studies, Geospatial data and information system,
4. **River health indexing:** Qualitative indexing as well as Indicator-based methodologies, River water quality modeling, and
5. **River health restoration:** Best practices and success stories; Industrial and private sector participation, Policies and regulations.

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.

Theme for RHAR 2023

A deeper analysis of river health condition indicates two facts: i. 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, ii. 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 is “*Moving towards Water Positive Regions (WPR) and Water Smart Cities (WSC)*”.

India has assumed the **Presidency of Group of twenty (G20)** intergovernmental forum on December 1, 2022 with 19 countries and European Union as partners. The G20 countries together represent around 90% of global GDP, 80% of global trade and two third of the world’s population. A G20 summit is planned during September 9-10, 2023 in New Delhi. The theme of G20 summit 2023 is “Vaisudhaiva Kutumbakam”, or “One Earth, One Family, One Future”.

With such an exciting global environment centered on India, **RHAR 2023** scheduled during October 12-14, 2023 is planned to be a focused technical follow up in the area of integrated water resource management. The objective is to share the experiences and success examples of hydrological enrichment of catchments of small rivers particularly in water stressed areas, and protection of river water quality in urban environments to have a long term sustainable ground water condition and flowing healthy river.

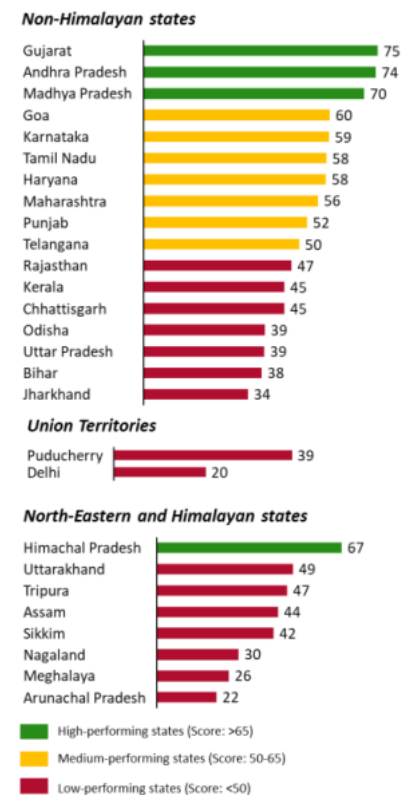
United Nations Sustainable Development Goal 6 (SDG 6) envisages availability and sustainable management of water for all by 2030 and SDG 11 focuses on sustainable cities and communities. The themes of **RHAR 2023** have been selected to work and contribute towards these two SDGs as our global commitment for humanity.

As per United Nations, when a country or territory withdraws 25 % or more of its renewable freshwater resources, it is called ‘water stressed’. According to the reports of Water Resources Institute (WRI, 2019), 37 countries of the world are found under ‘extremely high stress’ (ratio of annual withdrawal to supply beyond 80%). Saudi Arabia ranks 8th and India is 13th on the list. As a nation, India has a total renewable water resource of 1911 Billion Cubic Meter (BCM) per year (2017) and a total annual withdrawal of 761 BCM (2010). It is one among the ‘high stress’ countries (withdrawal 40-80% of supply) in the world. The deteriorating hydrological conditions of smaller rivers and depleting ground water levels indicate water stressing environment in a region.

The National Institute for Transforming India (NITI) Aayog Report (2018) observed that India is suffering from the worst water crisis in its history and millions of lives and livelihoods are likely to be under threat. In the face of this growing crisis, a Composite Water Management Index (CWMI) has been developed to enable effective water management in Indian states. Starting with the base year of FY 15-16, it compared the performance of Indian states for FY 16-17 and FY17-18. For FY 17-18, the CWMI score vary widely across states ranging from a minimum of 20 to the highest of 75, but most states have achieved a score below 50%, suggesting that there is significant scope for improvements in their water resource management practices. Currently, while Gujarat, closely followed by Andhra Pradesh and Madhya Pradesh are found as High performers (CWMI>65), seven states have scores in the range 50-65 and have been classified as Medium performers. Around 60% of states, however, have achieved scores below 50 and have been classified as Low performers. Jharkhand, Bihar, Uttar Pradesh, Odisha, Chhattisgarh, Kerala and Rajasthan are low performing states. Uttar Pradesh, Rajasthan, Kerala, and Delhi, 4 of the top 10 contributors to India’s economic output, have scores ranging from 20 points to 47 points on the CWMI. Five of the world’s 20 largest cities under water stress are in India, with Delhi being second on the list (McDonald et al., 2014, NITI Ayog, 2019).

This situation must improve.

States scores on Composite Water Management Index (CWMI), Range 0-100 (FY 17-18)



Among low performing states (CWMI below 50), currently there are 29 cities (Uttar Pradesh: 14; Bihar: 4; Rajasthan: 4; Chhattisgarh: 3; Odisha: 2; Jharkhand: 1; and Delhi: 1) in the northern region under Smart Cities Mission (SCM) of India.

For a sustainable urban water management (SUWM), Brown et al. (2008) talked about “Transitioning to Water Sensitive Cities” through detailed historical, contemporary and research perspectives for Australian cities and defined six states of a city transition: ‘Water Supply City’, the ‘Sewered City’, the ‘Drained City’, the ‘Waterways City’, the ‘Water Cycle City’, and the ‘Water Sensitive City’. Parallel to several nations working in this direction, Center for Science and Environment (CSE) in India published a “Practitioner’s Guide” for ‘Water Sensitive Urban Design and Planning (WSUDP)’ in 2017. National Mission for Clean Ganga (NMCG) started capacity building initiatives on making water sensitive cities in Ganga Basin in 2021. In the meantime, Ministry of Urban Development (MoUD), Govt. of India launched Smart Cities Mission (SCM) in June 2015 to develop 100 ‘Smart Cities’ in the country which is likely to complete its first phase by June 2023. As per experts, the notion of a smart city is established from the combination of the knowledge society and digital city. The development of Information and Communication Technology (ICT) has given new ways of addressing urban challenges and problems, which have resulted in an opportunity to rethink the way we plan cities in a new urban form called ‘Smart Cities’.

Hattum et al. (2016) talked about moving ‘Towards Water Smart Cities (WSC)’ for climate adaptation. This is to create green, resilient and circular cities, so called ‘Water Smart Cities’ to improve the quality of life in such areas. The WSC approach integrates urban planning and water management to increase climate resilience with creating value for citizens.

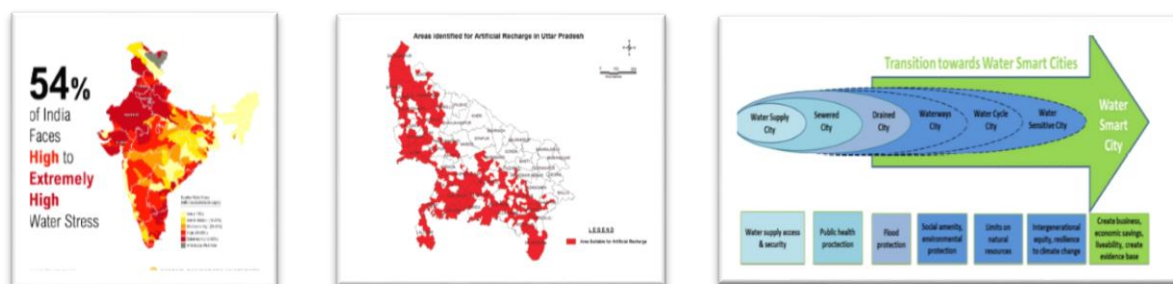
Accordingly the focus of **RHAR 2023** is to look on the conditions of our rivers through two lenses: the first being water conservation, and adoption of efficient practices to make the entire region ‘water positive’ and the second to create suitable infrastructures and systems for used water treatment, recycling and reuse around the cities to make them ‘water smart’, green, climate resilient and supporting circular economy. The objective is to collate and compile useful information, tools and techniques as well as national and international experiences to ensure ‘Water Positive Regions’ and ‘Water Smart Cities’ (WSC) so that our rivers flow in healthy conditions.

Our institutional partner, **National Institute of Urban Affairs (NIUA) Delhi** in association with the **National Mission for Clean Ganga (NMCG)** have established a ‘River Cities Alliance (RCA)’ of more than 100 river cities across India. RCA provides a platform for the Executive Officers, and senior officials of member cities to discuss and co-learn good practices for managing urban rivers.

Dimensions of RHAR 2023

For healthy rivers in a basin, the area must be 'water positive' and the cities in the catchment must be 'water smart'. Accordingly, there are two dimensions of discussion in RHAR 2023:

- a. Working towards making Water Positive Regions (WPR), particularly focusing on Low Performing States (such as Rajasthan, Uttar Pradesh, Bihar and Delhi) of India,
- b. In the backdrop of Smart Cities Mission (SCM) in India and similar initiatives world across, discussing and developing models of 'Water Smart Cities (WSC)' to guide practices around urban centers to keep the neighboring rivers healthy.



Topics in RHAR 2023

1. Techniques and tools for identification of 'water stressed' and 'water positive' regions,
2. Methods of hydrological enrichment on catchment scales through rain water harvesting, checking ground water table depletion through groundwater recharge,
3. Water Balance Status in Urban Centers under Smart Cities Mission of India
4. Visions of Water Smart Cities in India
5. Case Studies of Storm Water Management, Reclaimed Water Reuse, Managed Aquifer Recharge (MAR)
6. Initiatives and Success examples towards Water Smart Cities
7. Integrated Water Resource Management (IWRM) and Circular Economy

Invitation for Participation

National and International experiences and case studies of successful implementation of schemes leading to improvements and development of 'water positive regions' and 'water smart cities' are welcome. Stakeholders and experts are cordially invited to submit the proposal of participation with an outline in the form of Abstract (max. 500 words), along with full address/affiliation) briefing the content of works on any of the topics related to thematic areas of RHAR 2023 through e-mail: rhara@iitbhu.ac.in

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.

Important Dates (Deadlines)

Invitation for joining RHAR 2023	: Feb, 28, 2023
Last date of submitting the proposal to present work in RHAR 2023	: May 31, 2023
Notification for finalised speakers in the Conference	: Sept. 15, 2023
Last date of registration for participation	: Sept. 30, 2023
Final schedule notification	: Oct. 10, 2023
Date of conference	: Oct.12-14, 2023

Registration

Authors of accepted abstracts and participants need to register through the official website of RHAR 2023 (<https://conferences.iitbhu.ac.in/rhar>). The participation fee is as follows:

	Early Bird (Till 30.06.2023)*	After 30.06.2023**
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\$ 330+ 18% GST
International Students	US\$ 150 + 18% GST	US\$ 165+ 18% GST

*Registration fee includes access to all sessions of the conference, digital copy of conference proceedings and lunch. The charges. ** Including GST.

Financial Grants and Sponsorships

All financial grants and sponsorship for the purpose of the Conference will be in favour of:

Registrar, IIT (BHU) Varanasi

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INWF designated account

(For Embassies/ Foreign Partners/ External Business Firms and Organizations)

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).
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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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The River Ganga at Varanasi



Banaras Hindu University (BHU) Varanasi

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: www.iitbhu.ac.in

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