QUARTERLY NEWSLETTER

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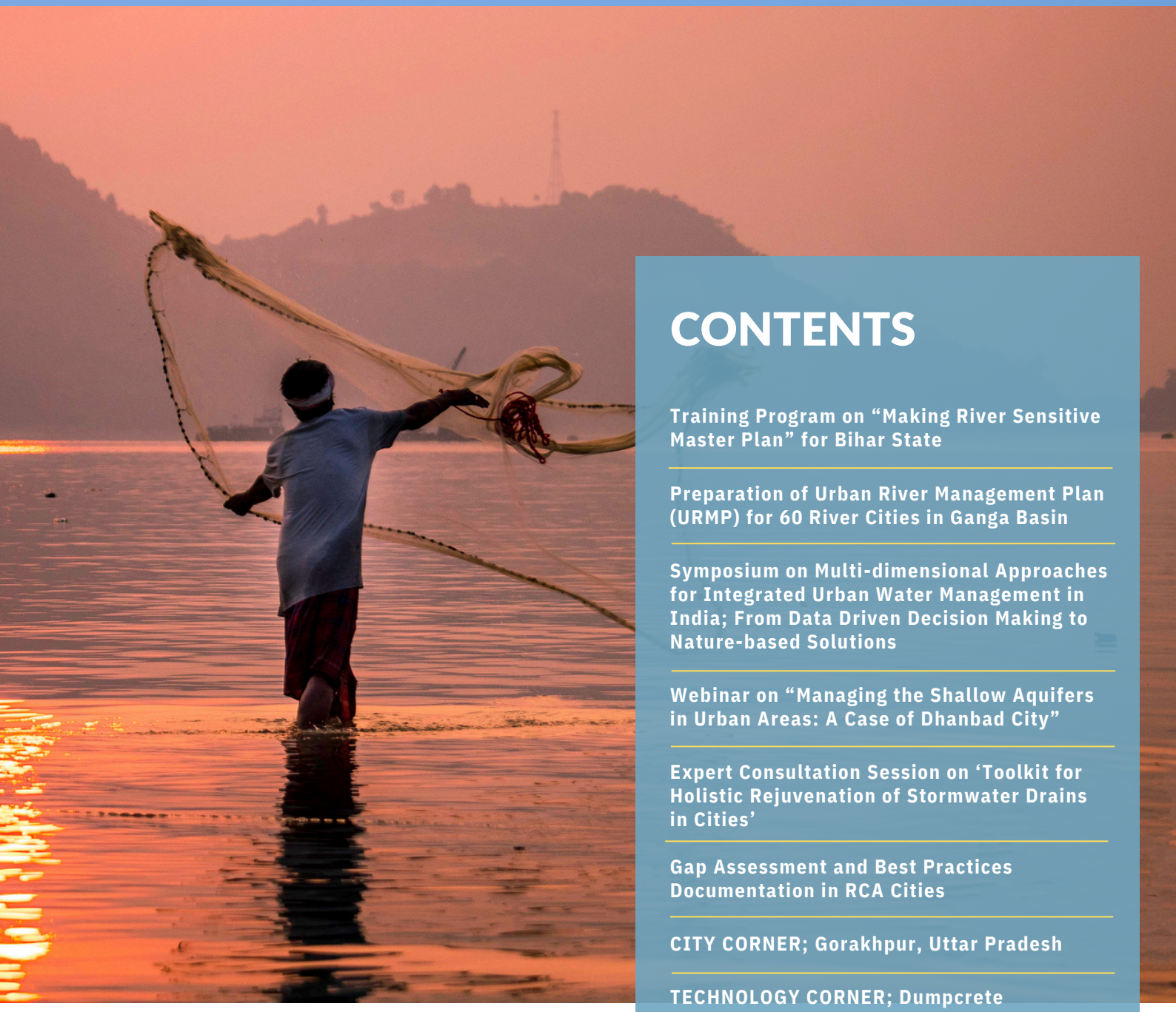
RIVER CITIES ALLIANCE

Updates about the Alliance activities

"Rivers have always occupied a central place in India's heritage and ethos, and have traditionally been sources of spiritual inspiration, cleansing and penance... We are striving to introduce a new thinking on river cities. The establishment of 'River Cities Alliance' (RCA) connecting river cities across the country is one such step in this direction" - Shri Narendra Modi, Hon'ble Prime Minister of India



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TRAINING PROGRAM ON "MAKING RIVER SENSITIVE MASTER PLAN" FOR BIHAR STATE

In 2021, the National Institute of Urban Affairs (NIUA), in collaboration with the National Mission for Clean Ganga (NMCG), developed guidelines for "Making River-sensitive Master Plans" as a decision-support tool for cities. As part of the ongoing capacity-building efforts, NIUA, in collaboration with NMCG and the Department of Urban Development and Housing (UDHD), Bihar, conducted a two-day training workshop on 8-9 May 2025 in Patna, Bihar. The workshop commenced with keynote addresses by Shri Nalin Srivastava, Deputy Director General, NMCG, and Shri Rajeev Kumar Srivastava, IAS, Additional Secretary, UDHD, Bihar.

The workshop convened over 50 urban planning professionals from key state and city-level planning agencies, including the Patna Development Authority, development authorities of 20+ ULBs, and the Town and Country Planning Organisation (TCPO).

Anchored in the document on strategic guidelines, the training aimed to provide officials with conceptual clarity on integrating river-related considerations into Master Plans. It also sought to explore the application of the guidance document in the river cities of Bihar, using real-world planning instruments and sectoral strategies. Sessions featured interactive group exercises and critical discussions on topics such as preparing river baselines for cities and success stories of integrating rivers into urban planning. These discussions were contextualised specifically to cities in Bihar, where participants actively translated theoretical principles into actionable planning insights.

The workshop concluded with reflections by Shri Rajeev Kumar Srivastava, IAS, Additional Secretary, UDHD, Bihar, who highlighted the importance of the training, especially as Bihar prepares to launch master plans for 40+ cities in the coming months. The training is part of a broader knowledge initiative under the River Cities Alliance, underscoring the commitment to equip cities with future-ready and river-sensitive planning capabilities.

Glimpses of the workshop

PREPARATION OF URBAN RIVER MANAGEMENT PLAN (URMP) FOR 60 RIVER CITIES IN GANGA BASIN

National Mission for Clean Ganga (NMCG) and the National Institute of Urban Affairs have embarked on an ambitious journey of developing Urban River Management Plan (URMP) for Sixty river cities across the five Ganga basin states. In the first phase, URMPs are being prepared for 27 cities, spanning five states:

- **Uttarakhand**: Gangotri-Yamunotri, Haldwani-Kathgodam, Rishikesh, Haridwar, Ramnagar
- **Uttar Pradesh**: Mathura-Vrindavan, Gorakhpur, Mirzapur, Shahjahanpur, Bijnor
- **Bihar**: Chhapra, Buxar, Muzaffarpur, Gaya, Bhagalpur, Munger
- **Jharkhand**: Ranchi, Chas, Sahibganj-Rajmahal, Dhanbad, Adityapur
- **West Bengal**: Howrah, Asansol, Durgapur, Haldia, Siliguri

These cities have been selected for their ecological, cultural, and hydrological significance along the Ganga and its tributaries. The task of preparing the URMPs has been tasked to consulting firms and academic institutions of repute through a competitive bidding process.

To guide the planning and implementation of URMPs, a three-tier governance structure has been established:

- **National Level**: A URMP Steering Committee (USC) chaired by the Director General, NMCG, oversees the initiative across all five states
- **State Level**: State Monitoring Committees, chaired by the Principal Secretary of the Urban Development Department, provide strategic oversight within each state
- **City Level**: Multi-Stakeholder Working Groups (MSWGs) have been constituted to steer and support URMP preparation at the local level

The URMP preparation process has significantly advanced in the three states of Uttarakhand, Uttar Pradesh and Bihar. The national level USC meetings as well as state specific monitoring meetings have been conducted for all the three states whereas the city level MSWG meetings have been conducted for majority of the cities as mentioned above. Currently the onboarded agencies are in the process of conducting baseline assessments in line with the 10 Objectives of the URMP framework that was jointly developed by NIUA & NMCG and serves as a guidance document for the river cities to prepare their URMPs

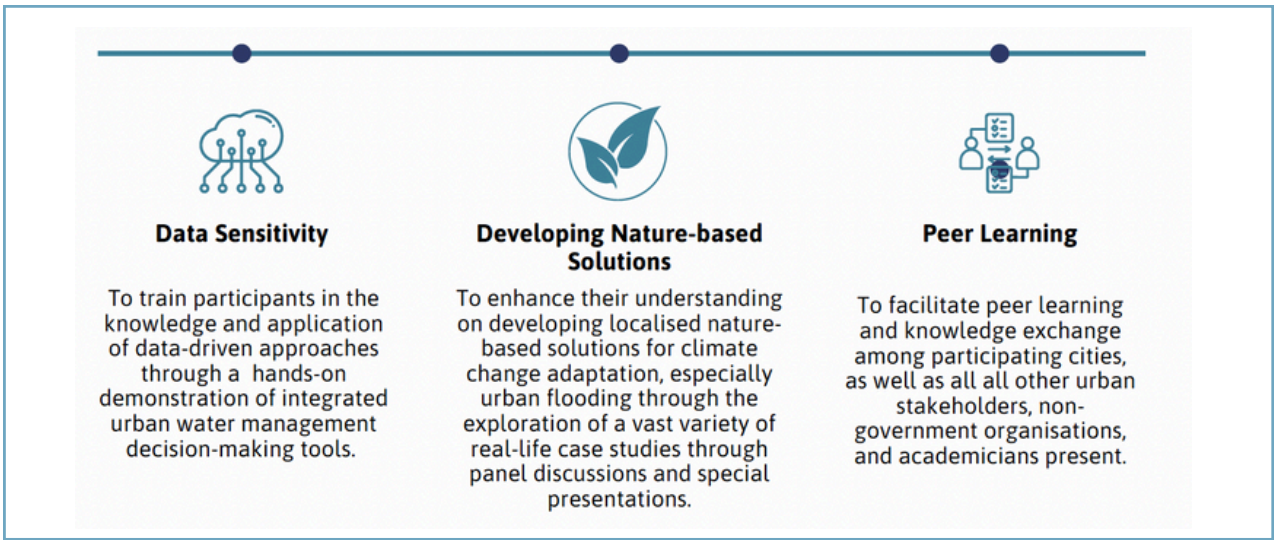
URMP Steering Committee Meeting for Uttarakhand State

MSWG Meeting at Gaya (Bihar)

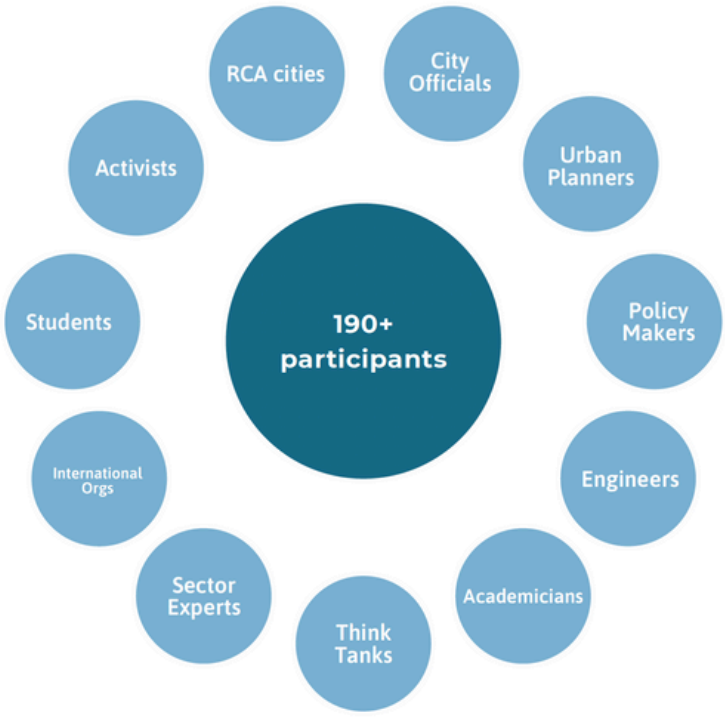
SYMPOSIUM ON MULTI-DIMENSIONAL APPROACHES FOR INTEGRATED URBAN WATER MANAGEMENT IN INDIA; FROM DATA DRIVEN DECISION MAKING TO NATURE-BASED SOLUTIONS

Over the last few years, there has been an increasing focus on urban water management in India. Efforts are being made by different wings of the Indian government to enhance urban water security through diverse interventions. A symposium on "Multi-dimensional Approaches for Integrated Urban Water Management in India; From Data Driven Decision Making to Nature-based Solutions" was organised from 15th to 17th May 2025 in New Delhi.

The purpose of this workshop is to sensitise participants about the various practical tools and decision support systems created under these two projects, in order to facilitate the practical implementation of good practices related to integrated urban water management.



The symposium was designed primarily for city officials from RCA cities working in water management, urban planning, and related departments across India, to answer their questions and introduce the current best practices operational in integrated urban water management interventions pan-India. Additionally, the workshop engaged think tanks, sector experts, and representatives from international organisations to enrich discussions and forge potential collaborations. Additionally, the workshop engaged think tanks, sector experts, and representatives from international organisations to enrich discussions and forge potential collaborations.



Key tools and knowledge products were unveiled at the event are;

- **City Water Information Network (CWIN) Dashboard and the Manual on Developing a GIS-Based Database and Dashboard for IUWM Decision Making**

CWIN is a pioneering data-driven platform that integrates Gwalior's entire urban water ecosystem — including water resources, supply networks, wastewater, stormwater systems, the city's Master Plan, and spatial data — into one dynamic, real-time dashboard. This innovative platform offers real-time visualisation of water-related data, identifies flood-prone zones and recharge hotspots, maps optimal areas for the reuse of treated wastewater, and provides deep insights into urban water resilience. It also highlights marginalised communities vulnerable to flooding, pinpoints areas suitable for afforestation or reforestation, and streamlines decision-making for municipal officers and planners. CWIN transforms weeks of manual analysis into instant, actionable insights, serving as a powerful tool for building sustainable, resilient, and inclusive urban water systems.

- **Strategy for Flood Management in Bhubaneswar City Using Nature-based Solutions**

To address the urban flooding situation in the city of Bhubaneswar, the integration of bluegreen for managing flooding is recommended to complement conventional approaches. Five key strategies recommended in this document are:

- The conservation of eco-sensitive zones
- Improving the natural drainage systems
- Creating water sinks
- Low-density development, and
- City-wide rainwater capture

This strategy is developed while executing the EPIC project that is supported by the Global EbA fund.

- **Shallow Aquifer Management in Practice**

Under AMRUT 2.0, the Ministry of Housing and Urban Affairs and NIUA launched a pioneering Shallow Aquifer Management initiative in 10 Indian cities to promote Managed Aquifer Recharge (MAR) through pilot structures. This compendium documents innovative interventions addressing water scarcity and urban flooding across diverse aquifer systems. It also highlights local solutions that enhance water security and resilience, showcasing how urban areas can sustainably manage groundwater in varying hydrogeological and climatic contexts.

Site Visit to Asita East

As part of Day 3 of the symposium, participants visited Asita DDA Park to learn about nature-based solutions in floodplain management. Led by the Director of the Landscape Department and officials from the Horticulture Department, Delhi Development Authority (DDA), the visit showcased the transformation of over 90 hectares of Yamuna floodplains through ecological restoration and thoughtful landscape planning.

Asita is a testament to DDA's commitment to rejuvenating urban ecosystems. Through layered ecological planting, over 4.35 million riverine grasses and 31770 native trees have been introduced, significantly enhancing biodiversity and habitat quality. The revival of the wetland proved especially crucial during the 2023 floods. One of the visit's highlights was a guided birdwatching activity, during which participants engaged in spotting and identifying species—an experience enriched by the remarkable increase in bird diversity from 63 to over 190 species. This site visit brought to life the potential of integrated, nature-led urban water management approaches, reinforcing the value of collaboration, foresight, and sustainable design.

Glimpses of the symposium

WEBINAR ON "MANAGING THE SHALLOW AQUIFERS IN URBAN AREAS: A CASE OF DHANBAD CITY"

Shallow aquifer management is becoming increasingly vital for Indian cities grappling with water stress driven by rapid urbanisation, unplanned development, and erratic rainfall patterns. These near-surface groundwater sources, accessed through wells, hand-pumps, and borewells, are critical for meeting the water needs of peri-urban and underserved communities. However, growing over-dependence, pollution, and a lack of systematic recharge mechanisms have led to their alarming depletion, calling for urgent and sustainable interventions.

To explore this challenge, a webinar was organised on 6 June 2025 for River Cities Alliance (RCA) member cities, focusing on a case study from Dhanbad, Jharkhand. Known as the coal capital of India, Dhanbad exemplifies the complex pressures on groundwater, where mining and industrial activities have severely impacted aquifer quality and availability. With only 52% of households connected to piped water, nearly half of the city's population depends on shallow aquifers through over 2,100 extraction points, making their sustainable management critical for water security.

Recognising this urgency, the Dhanbad Municipal Corporation (DMC) conducted a comprehensive assessment of shallow aquifer usage across 108 sites in 35 of the city's 55 wards. The study identified key recharge zones, enabling targeted interventions such as rainwater harvesting, revival of drying wells, and desilting of ponds to improve groundwater retention and recharge capacity. These efforts represent a significant step toward decentralised and community-responsive water management in a high-stress urban context.

The session began with a context-setting presentation by Dr. Uday Bhonde (NIUA), who emphasised the importance of shallow aquifer systems and introduced the goals of the Shallow Aquifer Management (SAM) project, which aims to translate research into action through on-ground pilots. This was followed by insights from Mr. Raviraj Sharma, Municipal Commissioner, and Mr. Eklavya Prasad, who shared Dhanbad's experiences in implementing SAM and the lessons learned so far. The webinar saw enthusiastic participation from representatives of over 30 cities across states such as Uttar Pradesh, Bihar, West Bengal, Jharkhand, Uttarakhand, Andhra Pradesh, and Maharashtra, reflecting the growing national relevance of sustainable groundwater management strategies.

EXPERT CONSULTATION SESSION ON 'TOOLKIT FOR HOLISTIC REJUVENATION OF STORMWATER DRAINS IN CITIES'

As part of its ongoing work under the River Cities Alliance (RCA), NIUA hosted an Expert Consultation on 30 June 2025 at the India Habitat Centre, New Delhi. The consultation focused on the development of a 'Toolkit for Holistic Rejuvenation of Stormwater Drains in Cities', a forthcoming resource aimed at helping cities transform urban stormwater drains into resilient, multifunctional assets.

The consultation brought together experts and practitioners from across the country, including Mr. Ankit Srivastava (Biosphere Environment Engineering Solutions), Ms. Sayali Joshi (Shrishti Eco Research Institute), Ms. Bhagyashri Kulkarni (Mod Foundation), and Mr. Manu Bhatnagar (INTACH). It explored sustainable approaches to stormwater drain rejuvenation that go beyond grey infrastructure and underscored the importance of a combination of solutions ranging from nature-based solutions, in-situ wastewater treatment approaches, and community engagement. The experts shared technical insights and real-world experiences related to water quality management, cost implications, and long-term operations and maintenance strategies.

The Toolkit aims to shift cities away from fragmented efforts towards city-scale, system-based interventions that align with urban water security, climate resilience, and ecological health goals.

Glimpses of the expert consultation

GAP ASSESSMENT AND BEST PRACTICES DOCUMENTATION IN RCA CITIES

Takiya Ghat, Gorakhpur

A team from NIUA visited the Takiya Ghat drain in Gorakhpur city of eastern Uttar Pradesh on 20th May. This drain serves as a pioneering example of nature-based sewage treatment through phytoremediation. Faced with the challenge of untreated sewage polluting the Rapti River, the Gorakhpur Municipal Corporation, under the leadership of Commissioner Shri Gaurav Singh Sogarwal and guided by Prof. (Dr.) C.R. Babu adopted a sustainable, low-cost approach using constructed wetlands and aquatic vegetation. The intervention included the installation of pre-filters, gabion walls, and the planting of species like Typha, Phragmites, and Acorus, which effectively reduced Biochemical Oxygen Demand (BOD) levels from 150 to 20 before discharge into the river. This eco-friendly method, which requires no electricity and minimal maintenance, not only restored the drain's ecological function but also improved water quality to a level suitable for irrigation, offering a replicable model for urban water management across India. Further, on the suggestions of the NIUA team, they are now planning to install a continuous monitoring mechanism to track the systemic improvement in water quality.

Image showing Takiya Ghat nala restoration

Rajamundry, Andhra Pradesh

In response to the evolving needs of RCA member cities, the NIUA team visited Rajahmundry, one of five RCA cities in Andhra Pradesh. The city is located along the banks of the Godavari River, often referred to as the "Dakshin Ganga." The visit, held from 30th April to 1st May 2025, followed a request from Shri Ketan Garg, IAS, Commissioner of Rajahmundry Municipal Corporation (RMC), to assess the potential for developing an Urban River Management Plan (URMP) tailored to the city's context.

Rajahmundry, celebrated as the Cultural Capital of Andhra Pradesh, is renowned for its floriculture, agriculture, rich history, and religious significance. The Godavari River, the longest in the state, flows through the city and is deeply revered, particularly the local stretch known as "Akhanda Godavari", which holds spiritual significance akin to the Ganga in northern India.

During the two-day visit, the NIUA team conducted field assessments at over 15 key sites, including:

- Pushkar Ghat and a boat ride covering ghats such as Saraswati Ghat and Dhobi Ghat
- The city's Main Drain
- The existing 30 MLD STP and the Faecal Sludge Treatment Plant (FSTP)
- Construction sites for the upcoming 50 MLD STP (under NRCD) and 5 MLD STP (under AMRUT)
- Kambala Cheruvu Park
- Ghats tour from the mainland, covering Gowthami, Padmavathi, Saraswati, VIP, and Dhobi Ghats
- Mahakaleshwar Temple
- A nearby River Island
- The Godavari Nitya Aarti at Pushkar Ghat

These visits highlighted the city's immense potential for structured riverfront development and integrated water ecosystem management. Developing an URMP for Rajahmundry could serve as a strategic roadmap to enhance sustainability, cultural preservation, and resilience in river governance.

Indradhanushya Environment Education and Citizenship Centre, Pune

A section of the Ambil stream runs alongside Pune's Indradhanushya Environment Education and Citizenship Centre, which has hosted an Eco-Filtration Bank (EFB) system since 2016 to treat wastewater from the stream. Funded by the Department of Science and Technology, Government of India, under the NaWaTech project, the system was implemented by the Shrishti Eco-Research Institute.

The EFB uses a natural, eco-friendly, and cost-effective wastewater treatment method that consumes minimal electricity, requires negligible routine maintenance, and produces no hazardous waste. The system consists of an intake well, two Soil Scape Filters, and a storage tank for the treated-water.

pproximately 50 cubic meters of wastewater per day is collected from the Ambil stream into the intake well using gravity. From there, it is sent to the two Soil Scape Filters, one after the other, where it is evenly distributed across the top layer via a network of distribution pipes. Filtration occurs naturally as the water percolates through layers of gravel, sand, and biologically activated soil material. During this process, pollutants are absorbed and broken down by microbial cultures, achieving up to 90-95% pollution reduction. Each Soil Scape Filter is designed to treat up to 1 MLD of wastewater.

The treated water is collected in a storage pond and safely reused for non-potable purposes, such as gardening within the Indradhanushya premises

Image showing treatment system installed along the drain

Muzaffarpur, Bihar

As part of its continued support to member cities under the RCA, NIUA conducted a reconnaissance visit to Muzaffarpur, Bihar, following a formal request from Sh. Vikram Veerkar, IAS, Municipal Commissioner, Muzaffarpur Nagar Nigam, to initiate the development of an Urban River Management Plan (URMP) on 2-3 May 2025. During the visit, the NIUA team attempted to understand the contextual demands of the city related to river-sensitive planning centred on the Budhi Gandak river, which holds immense ecological and cultural significance. Deeply interwoven with Muzaffarpur's identity, the river supports local livelihoods and religious traditions, including Chhath Pooja, and plays a vital role in the city's hydrological system. Additionally, the team assessed the Sikandarpur Lakefront project and the city's water systems to identify opportunities for intervention. Key areas of intervention include sustainable riverfront development, nature-based solutions for lake rejuvenation, shallow aquifer management, and GIS-based mapping of environmental assets. The RCA Secretariat looks forward to supporting Muzaffarpur in translating these opportunities into action.

Image showing waterfront developed on the lake in Muzaffarpur

Porur Wetland Eco Park, Chennai

The Porur Wetland Eco Park in Chennai is a remarkable example of urban biodiversity conservation and sustainable development. Located amidst the bustling cityscape, this eco park spans across acres of restored wetlands, serving as a crucial habitat for numerous species of flora and fauna.

Originally facing threats from urban encroachment and pollution, the restoration efforts transformed the area into a vibrant green lung for Chennai. The park not only preserves natural biodiversity but also provides recreational space for the city's residents, offering walking trails, birdwatching spots, and educational opportunities about wetland ecosystems.

Managed through a collaborative effort involving local authorities, environmental organizations, and community participation, the Porur Wetland Eco Park stands as a testament to effective conservation practices in urban settings. It serves as a model for sustainable urban development, balancing environmental protection with recreational and educational benefits for the community.

Glimpses of the Porur Wetland Eco Park

CITY CORNER

Gorakhpur, Uttar Pradesh

Gorakhpur is just one of many fast-growing cities across the world where climate change poses an imminent and growing threat. Monsoon season has always brought torrential downpours to Gorakhpur, India, but the city has seen record-breaking rainfall in the last few years. Climate change is already altering precipitation and fueling floods in Gorakhpur, as it is in many cities. But the city's vulnerability isn't only related to warmer temperatures. As the city has grown, new buildings, streets and landfills have overtaken green spaces, farms and lakes, areas that absorb rain and act as natural flood controls.

To adapt to these urban flooding impacts, the city has adopted an innovative approach of real-time monitoring of flooding in the city. An Urban Flood Management Centre (UFMC) has been established to foster a more resilient and flood-safe future for Gorakhpur city. The UFMC was formally inaugurated by Shri Yogi Adityanath, Hon'ble Chief Minister of Uttar Pradesh, on 23rd July at the Gorakhpur Municipal Corporation premises.

With the inauguration of the Urban Flood Management Centre, Gorakhpur has taken a major leap forward in real-time flood response and citywide drainage monitoring. From one location, officials can now track rainfall, water levels in all drains, and even remotely operate pumps. This system also helps ensure that illegal constructions over drains are identified and acted upon.

“As we integrate technology, teamwork, and proactive governance, we move closer to the vision of a clean, healthy, and resilient city - a step toward a truly Viksit Bharat.”

Shri Yogi Adityanath, Hon'ble Chief Minister of Uttar Pradesh

This state-of-the-art facility stands as the central hub for the city's advanced early warning and flood management system, operating on the foundational principle of **"Predict, Prepare, and Protect."**

Spearheaded by visionary leadership, including the Mayor of Gorakhpur and the Commissioner of Gorakhpur Municipal Corporation, this initiative marks a major leap forward in disaster preparedness and smart urban planning. The UFMC will serve as the nerve centre for a real-time, early warning flood management system as well as a decision support system for long-term flood resilience planning of the city.

The UFMC's "Predict, Prepare, and Protect" Approach in Action:

The UFMC's operational framework is meticulously designed around its three crucial pillars:

Predict: This pillar focuses on highly accurate, hyperlocal rainfall forecasting and detailed flood impact analysis. It combines multiple weather models to reduce errors and improve precision. Using 2D simulation software, it maps how rainwater will flow and accumulate across the city. It also classifies areas based on how likely they are to flood and estimates how long water will take to recede in each location.

Prepare: This phase uses a detailed digital map of all city drains, real-time sensor data, and past records of water logging to plan. It helps identify spots where flooding is most likely, suggests ways to divert water if levels rise too high, checks if downstream drains can handle the flow, and decides where to send machines to clear blockages. The system also plans for staff deployment, including who to call, where they're available, and what equipment they'll need.

Protect: This final pillar focuses on protecting people and infrastructure during rainfall. Alerts are instantly sent to engineering teams and Safai Karamcharis through multiple channels, including walkie-talkies, to ensure quick action. Real-time sensors track how much rain has fallen and how water levels are rising. If things change, the flood model is updated on the spot to issue fresh alerts. The goal is to stay ahead of the situation, take timely action, and prevent flooding in vulnerable areas.

Advanced Urban Flood Forecasting and Early Warning System (UFFEWS)

At the heart of UFMC's operations is the UFFEWS platform. This robust system integrates real-time data, multi-source inputs, and advanced hydrological and hydraulic models to help urban administrations proactively predict rainfall, prepare for potential flood scenarios, and protect citizens and infrastructure.

Long-Term Resilience Planning through the Decision Support System (DSS)

In addition to real-time forecasting and response, the platform supports long-term strategic planning for the city. It identifies vulnerable hotspots, enables infrastructure improvements, and provides actionable insights for sustainable urban flood management over time.

Strategic Technology Partnership

Canarys Automations Ltd. serves as the technology partner for this transformative initiative, delivering a comprehensive suite of essential hardware, advanced software solutions, and well-defined Standard Operating Procedures (SOPs) to ensure seamless implementation and sustained performance.

TCHNOLOGY CORNER

DUMPCRETE

Dumpcrete represents an innovative approach to address the environmental challenges posed by conventional concrete production. The building industry is a significant contributor to global emmissions, responsible for at least 28% of them. Dumpcrete, through simple yet effective techniques, aims to provide an alternative upcycled solution by stabilizing legacy waste materials using lime and cement-based binders. The resulting product is not only environmentally friendly but also cost effective and robust, making it a compelling option for the construction sector.

KEY FEATURES

- Green Building Material
- Self-sustaining Upcycled Legacy Waste Management
- Versatile Applications: pavers and bricks, benches, drain covers, and planters
- Cost-effective Solution

COSTING

- 1TPD dumpcrete facility requires ₹12,00,000 including all necessary equipment.
- Spatial requirement is 2000sqft minimum.

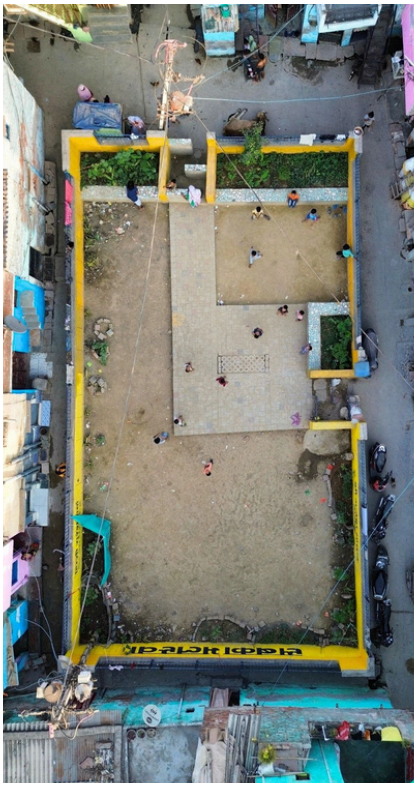
- Operational costs for the same facility are at ₹2,00,000 per month including materials, workmanship, and service charges.

Implemented Projects

Revitalisation of a Unused Park near Bhalswa Landfill, Delhi

The initiative was implemented in Kalander Colony, Bhalswa, addressing the severe lack of public spaces in an area heavily affected by a massive landfill. Through the introduction of Dumpcrete, a cost-effective building material upcycled from legacy waste, the project rejuvenates underutilized green pockets. This intervention includes accessible walkways, raised garden beds, and inclusive seating, enhancing the overall quality of life for over 300 households. 16 tonnes of legacy waste was successfully transformed into 12,000 durable blocks. These blocks were ingeniously utilised to create essential amenities, including an accessible pathway, raised garden beds, comfortable public seating and an efficient stormwater recharge pit.

Community engagement and participatory design practices have been instrumental in achieving holistic solutions tailored to the community's needs. Key outcomes include the development of Dumpcrete as a viable material, the creation of inclusive public spaces, and improved coordination between stakeholders for sustainable infrastructure development.



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RIVER CITIES ALLIANCE
A city led movement

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