SEPTEMBER 2026
VOLUME 01

RIVER CITIES TRIBUNE

A BI-MONTHLY MAGAZINE FOR INDIA'S RIVER CITIES ALLIANCE



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TRAINING PROGRAMME
PRACTICAL
REUSE OF
HABITAT
WORLD
AT INDIA HABITAT CENTRE




People's participation
Research, policy & knowledge management
Uttarakhand: 07
Uttar Pradesh: 27
Bihar: 12
Jharkhand: 01
West Bengal: 10


Symposium on
MULTI-DIMENSIONAL APPROACHES FOR
INTEGRATED URBAN WATER MANAGEMENT IN INDIA
DATA-DRIVEN DECISION MAKING TO NATURE-BASED SOLUTIONS
15-17 MAY, 2025


1ST


Faculty Development Program:
Water and River Sensitive
Urban Development

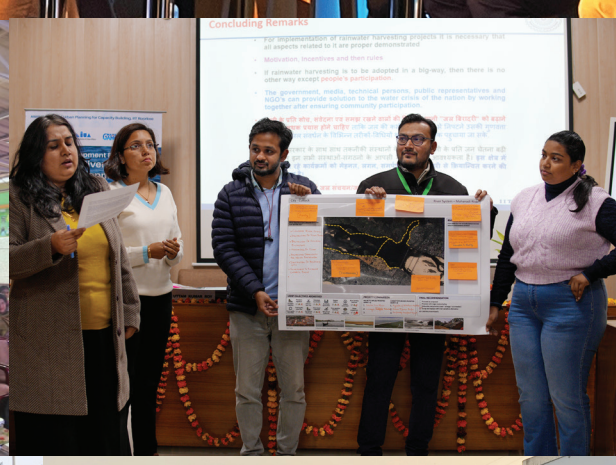





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MANAGING URBAN RIVERS – FROM PLANNING TO
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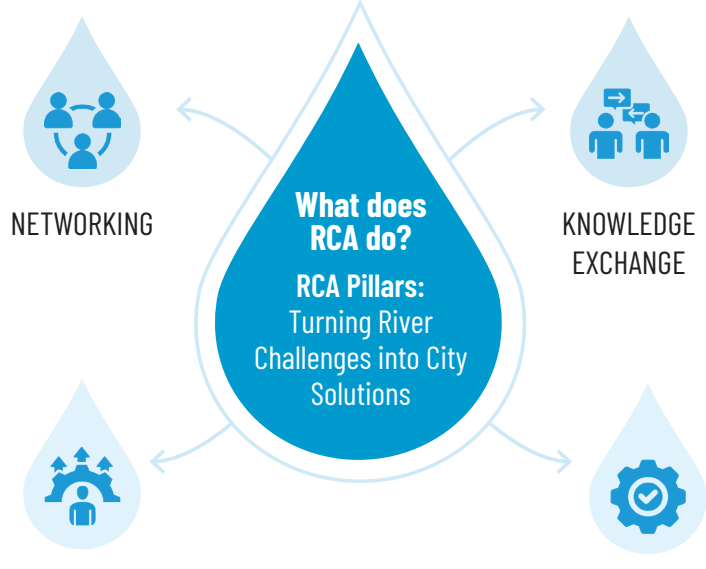
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River Cities Alliance:

Where Rivers Shape Sustainable Cities

The River Cities Alliance (RCA) was launched in 2021 as a joint initiative of the National Mission for Clean Ganga (NMCG), under the Ministry of Jal Shakti, and the National Institute of Urban Affairs (NIUA), under the Ministry of Housing and Urban Affairs. RCA serves as a dedicated platform for river cities to work towards a shared vision of river-sensitive urban development. It equips cities with the knowledge and capacity needed to restore healthy, pollution-free urban rivers, fostering a nationwide movement that places rivers at the heart of urban development



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Published by
National Institute of Urban Affairs (NIUA)
National Mission for Clean Ganga (NMCG)

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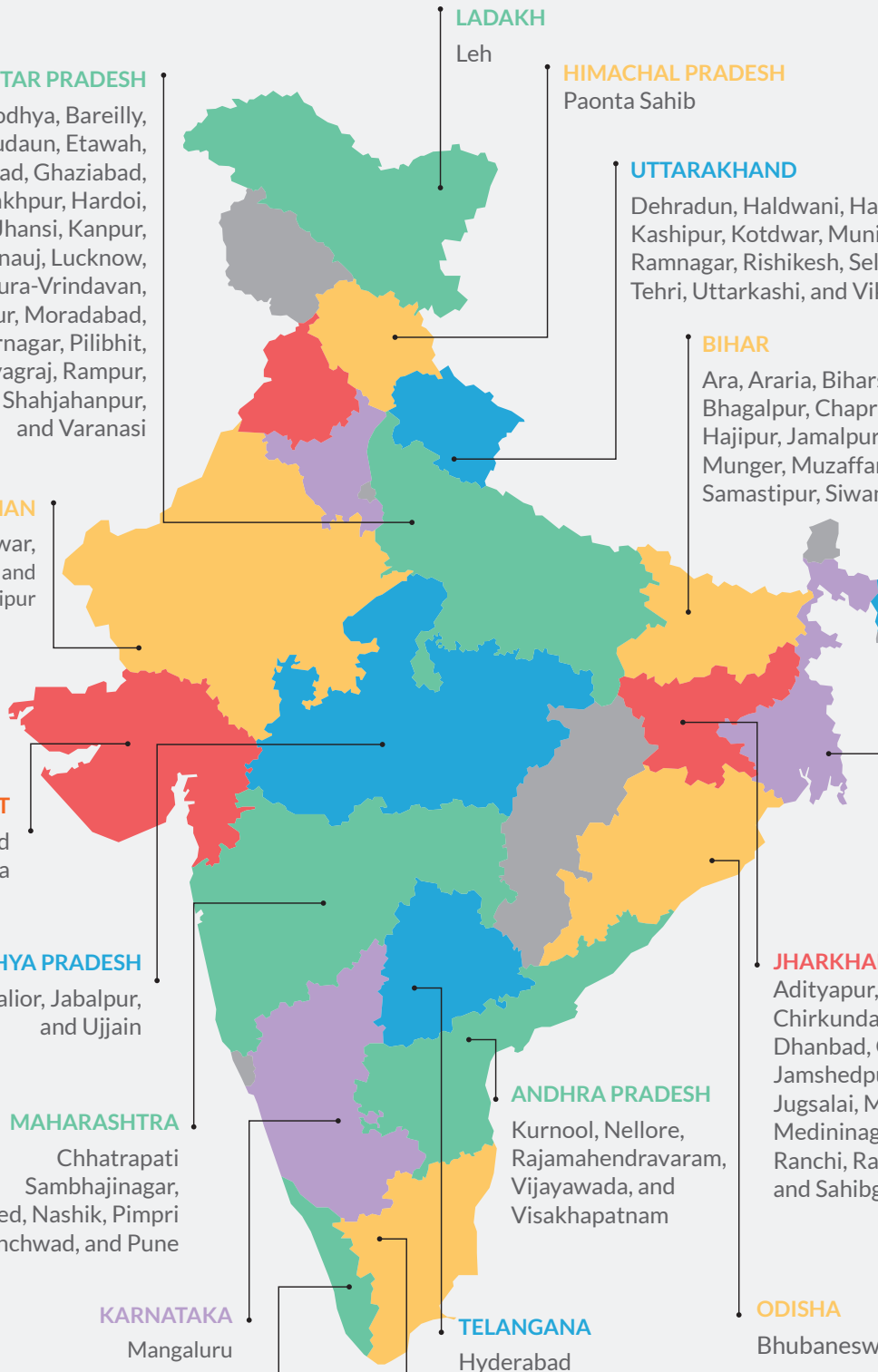
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River Cities Alliance (RCA) Member Cities:

Is Your City A Part of the Alliance?



LADAKH
Leh

HIMACHAL PRADESH
Paonta Sahib

UTTAR PRADESH
Agra, Ayodhya, Bareilly, Bijnor, Budaun, Etawah, Farrukhabad, Ghaziabad, Gorakhpur, Hardoi, Jaunpur, Jhansi, Kanpur, Kannauj, Lucknow, Mathura-Vrindavan, Mirzapur, Moradabad, Muzaffarnagar, Pilibhit, Prayagraj, Rampur, Saharanpur, Shahjahanpur, and Varanasi

UTTARAKHAND
Dehradun, Haldwani, Haridwar, Kashipur, Kotdwar, Muni ki Reti, Nainital, Ramnagar, Rishikesh, Selaqui, Srinagar, Tehri, Uttarkashi, and Vikasnagar

BIHAR
Ara, Araria, Biharsharif, Begusarai, Bettiah, Bhagalpur, Chapra, Darbhanga, Gaya Ji, Hajipur, Jamalpur, Katihar, Kishanganj, Munger, Muzaffarpur, Patna, Purnia, Samastipur, Siwan, and Supaul

ARUNACHAL PRADESH
Itanagar

RAJASTHAN
Jhalawar, Jodhpur, and Udaipur

ASSAM
Guwahati

TRIPURA
Agartala

MIZORAM
Aizawl

GUJARAT
Surat and Vadodara

WEST BENGAL
Asansol, Bally, Balurghat, Baranagar, Barddhaman, Basirghat, Berhampore, Bhatpara, Bidhannagar, Bongaon, Chandannagar, Cooch Behar, Dum Dum, Durgapur, Haldia, Howrah, Hoogly Chinsurah, Jalpaiguri, Jangipur, Kalyani, Kamarhati, Kanchrapara, Madhyamgram, Maheshtala, Midnapore, Nabadwip, Naihati, Panihati, Panskura, Siliguri, Uluberia, and Uttarpara-Kotrung

MADHYA PRADESH
Gwalior, Jabalpur, and Ujjain

JHARKHAND
Adityapur, Chas, Chirkunda, Deoghar, Dhanbad, Giridih, Jamshedpur, Jugsalai, Mango, Medininagar, Phusro, Ranchi, Rajmahal, and Sahibganj

MAHARASHTRA
Chhatrapati Sambhajinagar, Nanded, Nashik, Pimpri Chinchwad, and Pune

ANDHRA PRADESH
Kurnool, Nellore, Rajamahendravaram, Vijayawada, and Visakhapatnam

KARNATAKA
Mangaluru

TELANGANA
Hyderabad

ODISHA
Bhubaneswar

KERALA
Thiruvananthapuram

TAMIL NADU
Chennai, Coimbatore, Cuddalore, Kancheepuram, Kumbakonam, Madurai, Salem, Thanjavur, Tiruchirappalli, Tirunelveli, Tiruppur, and Vellore

146* RIVER CITIES

***City Of Aarhus In Denmark**

28 RIVER BASINS | **78** RIVERS | **96** AMRUT CITIES

River Cities Alliance: The Genesis and its Evolution

The genesis of the River Cities Alliance (RCA) can be traced to 10 December 2019 at the National Ganga Council Meeting in Kanpur chaired by the Hon'ble Prime Minister. Reviewing the Namami Gange programme, he called for a fundamentally different approach to how India's cities relate to their rivers—one rooted in facilitation rather than regulation alone.

This shift in emphasis was overdue. The uncomfortable truth is that most of the damage inflicted on India's rivers doesn't originate in remote catchments or industrial zones far from public view. It happens in the heart of our cities. Untreated sewage, encroached floodplains, and unchecked urban runoff have done more to degrade our rivers than perhaps any other single factor. If cities created this crisis, logic demands they also be central to resolving it.

It is with this thought that the National Mission for Clean Ganga (NMCG) and the National Institute of Urban Affairs (NIUA) embarked on a programme to promulgate river-sensitive urban development in



Written by :
Shri Rajeev Kumar Mital
Director General,
National Mission for Clean Ganga

Indian cities. One of the early outputs of this collaboration was the development of a national framework for managing urban river stretches called the Urban River Management Plan (URMP) Framework. In a stark departure from the conventional model of river management—and in line with the fresh thinking on urban rivers championed by the Hon'ble Prime Minister—the URMP Framework takes a multi-dimensional approach to tackle river-related challenges. The approach is anchored in the triple bottom line of sustainability, addressing environmental, social, and economic dimensions of urban river management alike. At the heart of the Framework is a 10-point agenda (Figure 1) that river cities in India are required to follow in order to prepare their river management plans.

The real measure of any framework lies in how effectively it is put into practice. Since the URMP approach represented a novel and untested way of tackling urban river management, it was clear that cities would require guided support to carry out the URMP agenda. This is the gap that RCA was created to fill. Launched in 2021, it serves as a platform to support river cities keen on adopting the URMP approach, offering capacity building, opportunities for cross-learning, and targeted technical assistance.



Figure 1: The 10-point agenda of the URMP framework

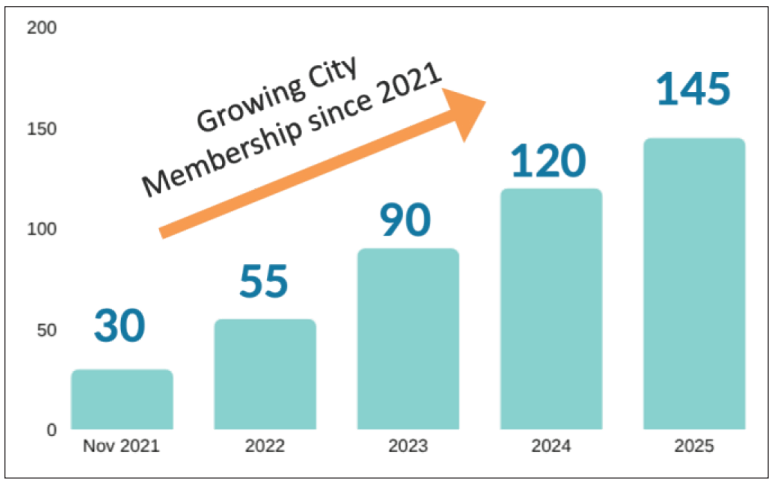


Figure 2: RCA membership

RCA started out with 30 member cities in 2021, but as more cities recognised the benefits of joining, membership expanded quickly and has now reached 145 (Figure 2).

Since its inception, the RCA has grown not only in membership but also in the scope of its work. Although the URMP Framework has remained its foundation throughout, the specific issues RCA addresses have grown increasingly sophisticated. In its early days, for instance, activities were largely confined to generating knowledge, building capacity, and fostering academic collaboration. Today, that scope has broadened considerably to also encompass institutional development, the rollout of demonstration projects, and the benchmarking of member cities' performance in managing urban rivers, among other areas. Figure 3 offers a detailed overview capturing this full trajectory of RCA's growth.

"In what could prove transformative for the long-term stewardship of urban rivers, RCA has plans to establish dedicated "river cells" as a permanent institutional feature within RCA member cities."

In what could prove transformative for the long-term stewardship of urban rivers, RCA has plans to establish dedicated "river cells" as a permanent institutional feature within RCA member cities. At present, this initiative aspires to cover the 25-plus cities currently developing their URMPs. Insights gathered from this first cohort of river cells will inform decisions about expanding the effort further. These cells will be tasked with coordinating and executing the actions laid out in the URMPs, along with any additional responsibilities local stakeholders consider necessary.

In another first for the initiative, RCA is also encouraging member cities to embrace a basin-wide outlook by forming basin clusters. Since cities sharing a basin tend to face similar challenges, the goal is for them to jointly discuss, plan, and carry out solutions that produce a coordinated, collective impact across the entire basin.

RCA represents a distinctive framework designed to translate river management principles into practical action through collaborative learning, all working toward a shared goal of healthier rivers. The success of this effort depends heavily on member cities actively participating and lending their support. Such engagement will help RCA continue to grow, paving the way for a new generation of genuinely river-sensitive cities across India.

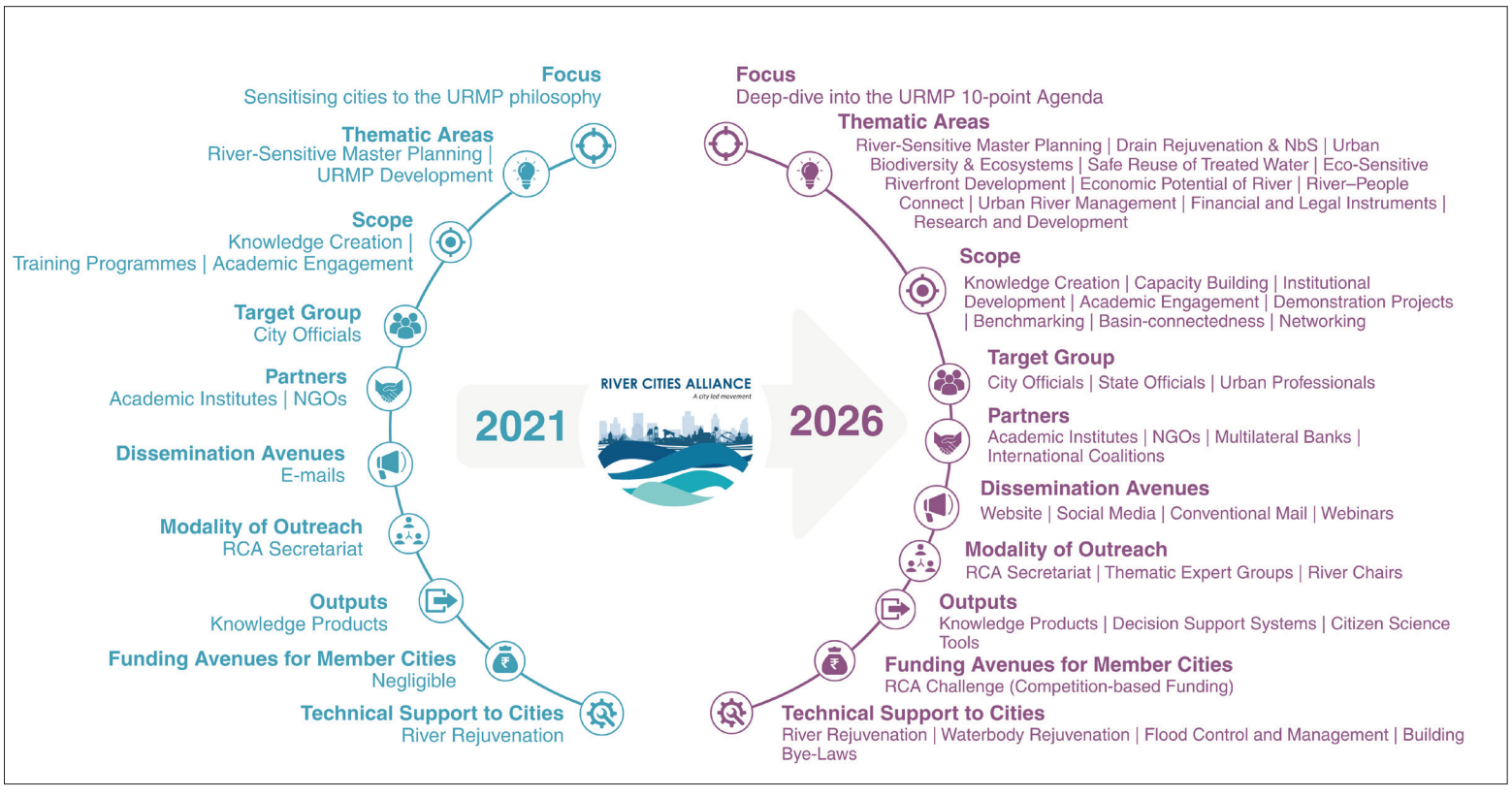


Figure 3: Evolution of the RCA agenda and delivery pathways

12 Rivers Just Got A Front Seat at the Master Plan Table: Here's How

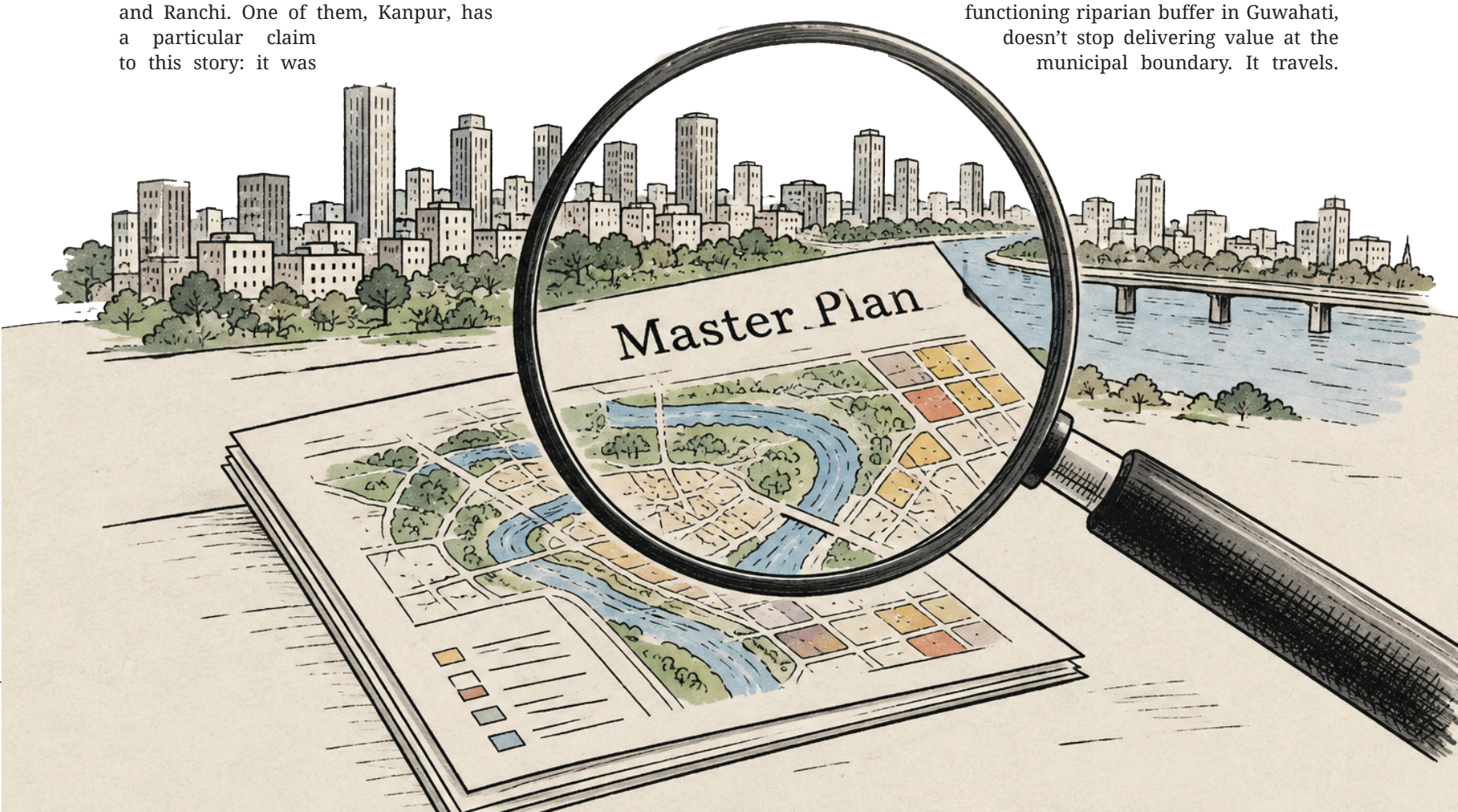
The RCA Secretariat reviewed how well river-sensitive thinking is built into the statutory Master Plans of Patna, Chhapra, Prayagraj, Kanpur, Pune, Dehradun, Haridwar, Surat, Vadodara, Hyderabad, Guwahati and Ranchi and handed each one a specific, ready-to-use set of recommendations.

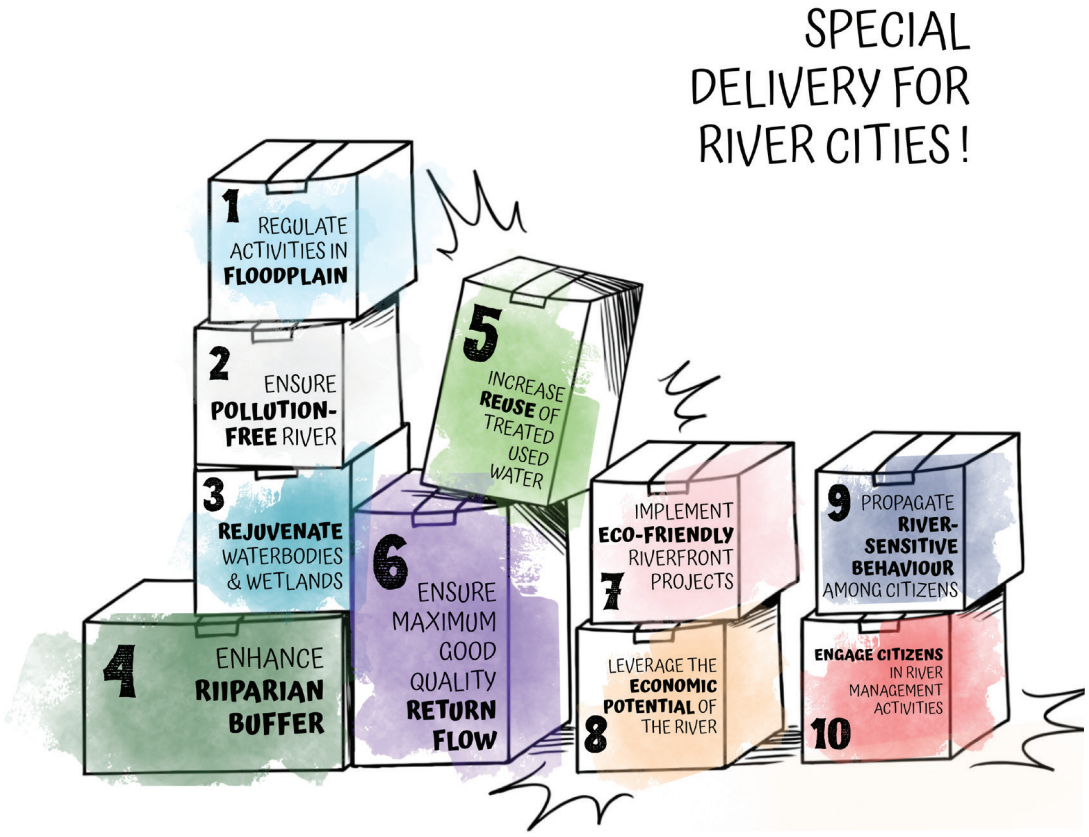
A Master Plan is where a city writes down, in painstaking legal detail, everything it intends to become over the next twenty years: where the roads get laid, where the housing rises, which land stays open, which gets built over. That is precisely why the Urban River Management Plan (URMP) Framework treats the Master Plan as its most valuable foothold: rather than asking cities to draft something new for their rivers, urban river management works by writing river-sensitive thinking straight into the plan every city is already legally bound to follow.

This year, the RCA Secretariat put that foothold to use across 12 of its member cities: Patna, Chhapra, Prayagraj, Kanpur, Pune, Dehradun, Haridwar, Surat, Vadodara, Hyderabad, Guwahati and Ranchi. One of them, Kanpur, has a particular claim to this story: it was the very first city in the country to pilot the URMP Framework back in 2020, and it now finds itself back under review as part of this 12-city cohort. Reviewers focused specifically on the provisions that determine how well a city's rivers are protected and planned around: floodplain regulation, riparian buffer and water body protection, drainage and flood-risk management, treated wastewater reuse, water conservation, river-sensitive development controls, eco-sensitive riverfront development, and the institutional coordination needed to hold all of it together. The review drew on the URMP Framework's own 10-point agenda, alongside MoHUA's *River Centric Urban Planning Guidelines* and NMCG's *Strategic Guidelines for Making River Sensitive Master Plans*.

Across all 12 cities, the review found broadly the same starting point: floodplains and riparian buffers aren't yet built into core zoning, provisions for reusing treated wastewater are thin, and it isn't always clear which office is responsible for coordinating river-sensitive planning day to day. That is a common starting point, and it is exactly the space the URMP Framework's 10 objectives were built to fill. It means these 12 cities now have a specific, actionable headstart.

There's a reason RCA reviewed these cities together rather than one at a time. Buried in the URMP Framework's own design document is a detail worth sitting with: the wastewater one city discharges into its stretch of river becomes the water supply of the city downstream. A protected floodplain in Dehradun, a functioning riparian buffer in Guwahati, doesn't stop delivering value at the municipal boundary. It travels.





10 Objectives of the Urban River Management Plan (URMP) Framework

12 Master Plans reviewed against the same 10 objectives means 12 cities pulling, even unknowingly, in the same direction — a water secure future.

While URMPs have been strategic for a city's urban river management agenda, Master Plans bring in long term vision, strategies for implementation, an established institutional framework and better scope for integrated urban development. Meaning, that the Master Plan and the URMP Framework complement each other, with the latter helping make each Plan's vision more and more achievable. Cities that have gone further down this road already have something to show for it. In Chhatrapati Sambhaji Nagar, the Kham River Restoration Mission, built on the same URMP thinking, won global recognition through the World Resources Institute's Ross Center Prize for Cities. Kanpur, Ayodhya, Moradabad and Bareilly have already completed their own Urban River Management Plans, and Delhi's is being developed as a model other metros can draw from directly.

For each of the 12 cities reviewed this time, the findings were written up as individual Master Plan Review and Recommendation reports and sent onward through letters to the Principal Secretary (Urban Development), the Department of Town Planning, and the concerned Urban Development Authority. The recommendations are built to strengthen the social and environmental river-society connect. The review and recommendations process is also such that the RCA Secretariat's interventions can be onboarded at any stage, whether that's a Master Plan currently being drafted or is under revision.

The RCA Secretariat plans to work directly with State planning departments and Urban Development Authorities to help carry these recommendations into the Plans now being prepared, and also intends to extend the same review to every other Alliance member over time. For the 12 cities already reviewed, that means a clear, ready-made starting point sitting on the right desks already. For the rest of the Alliance, the same review is on its way.

Scan this QR Code to read the URMP Framework

Quick Glance

- **Cities reviewed this round:**
  12 — Patna, Chhapra, Prayagraj, Kanpur, Pune, Dehradun, Haridwar, Surat, Vadodara, Hyderabad, Guwahati, Ranchi

- **Review framework:**
  URMP's 10-point agenda, plus MoHUA's *River Centric Urban Planning Guidelines* and NMCG's *Strategic Guidelines for Making River Sensitive Master Plans*

- **Provisions assessed:**
  8 — floodplain regulation; riparian buffer and water body protection; drainage and flood-risk management; wastewater treatment and reuse; water conservation; river-sensitive development controls; eco-sensitive riverfront development; institutional mechanisms

- **Recommendations delivered to:**
  Principal Secretary (Urban Development), Department of Town Planning, and Urban Development Authorities in each reviewed state

- **RCA membership:**
  145 cities nationwide, eventually eligible for the same review

Cities and Rivers: Rebuilding an Ancient Relationship

Out of India's 52 metropolitan cities, 42 have a river flowing through or alongside them (Census, 2011). This should not surprise us because if we look back at the story of human civilisation, we find that rivers have been far more than just sources of water. They have been the cradles of civilisation.

The Egyptian civilisation grew along the Nile. The Mesopotamian civilisation flourished along the Tigris and Euphrates. Ancient Chinese civilisation developed along the Yangtze. Likewise, the Indus Valley civilisation flourished along the Indus. There is a reason for this. For early human settlements, rivers meant survival. Agriculture was the primary source of sustenance, and agriculture needed water. Rivers provided that water, but they offered much more. Gradually, they became the centre of economic activity, social life, culture, religion, and everyday living. In other words, cities did not simply happen to grow around rivers. Rivers helped make human habitation possible, and over time, these settlements evolved into cities.

However, something changed over time. As technology advanced, we became increasingly capable of taking water away from the river. Canals and aqueducts allowed water to travel great distances. The Romans, for instance, developed aqueduct systems capable of transporting water over distances of up to 100 kilometers—as early as 312 BC. Furthermore, as technology evolved, so did our livelihoods. With the emergence of the Bronze Age and the Iron Age, economies became increasingly diversified, and dependence on river-based livelihoods gradually diminished.

Little by little, the relationship between rivers and cities began to change. And perhaps, somewhere along the way, we stopped seeing rivers as partners and started seeing them as infrastructure. That estrangement is visible in cities across the world today. Rivers are drying up. Water is becoming polluted. Floodplains are being encroached upon. Riverine biodiversity is declining.

Fortunately, we are beginning to rediscover something that our ancestors understood instinctively: Healthy cities need healthy rivers. There is a growing recognition across the world that healthy river systems are fundamental to human well-being and long-term sustainability. This has become even more important in an era defined by climate change, increasing competition for resources, and geopolitical uncertainty.



Written by :

Dr. Debolina Kundu

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However, recognising the problem is only the beginning. Restoring a river in an urban environment is not simply an environmental exercise. It is a multi-sectoral, multidisciplinary, and multi-stakeholder endeavour. It involves ecology, hydrology, engineering, urban design, governance, economics, communities—and, above all, planning. This is where I believe we need to make an important shift. Far too often, our approach to river restoration is reactive. We wait for the river to become polluted before we act. We wait for flooding before we reconsider the floodplain. We wait for biodiversity to disappear before we think about ecological restoration. But by then, the problem is already deeply embedded. What we need is a proactive approach. An approach that does not simply repair damage, but prevents it. An approach that does not treat symptoms, but addresses the underlying causes. An approach built around transformational solutions. And when we talk about transformational solutions in an urban context, there is perhaps no better place to begin than with planning.

"Rivers helped make human habitation possible, and over time, these settlements evolved into cities."

Urban planning has long been recognised as a powerful tool for addressing some of the most complex challenges that cities face. So, if our objective is to rebuild the relationship between rivers and cities, river-sensitive urban planning must be an integral part of how we imagine, design, and manage our cities. India has something particularly valuable to contribute to this conversation: a rich and ancient tradition of urban planning. Let us return, for a moment, to the Indus Valley civilisation. More than four thousand years ago, people were already living in remarkably well-planned cities. Streets were organised. Drainage systems were carefully designed. Public spaces and buildings were strategically located. What is remarkable is not simply that these cities were so well planned for their time, but that planning was deeply embedded in the everyday organisation of their lives.

The Indus Valley civilisation reminds us that planning is not merely about drawing lines on a map. It is about understanding the relationship between people, infrastructure, resources, and the natural environment—and then designing settlements around those relationships. Perhaps that is the lesson we need to revisit today. Because our challenge is no longer simply to build cities near rivers.

It is to build cities with rivers.

The question, therefore, is not whether our cities and rivers can coexist. They have done so for thousands of years. The real question is: Can we plan our cities in a way that allows both the city and the river to thrive?

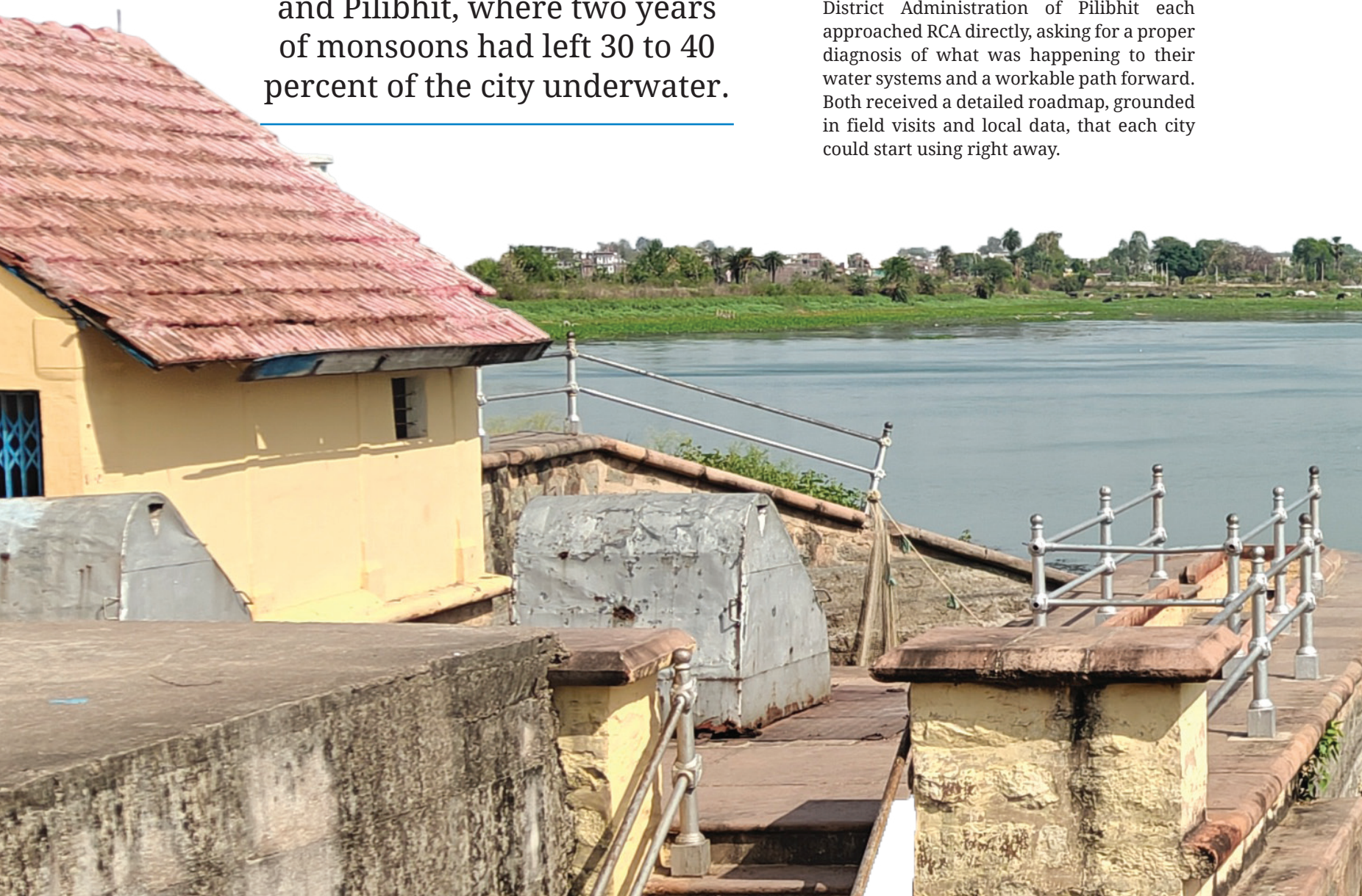
That is the opportunity before us—and, increasingly, the responsibility.

How RCA Turned Two City Requests Into Two Action Plans

Technical support is one of the concrete things the River Cities Alliance offers its member cities. Two recent examples show what that looks like in practice: Jhansi, where a stretch of the Pahuj River near the Dhobhi ghat had turned green with water hyacinth, and Pilibhit, where two years of monsoons had left 30 to 40 percent of the city underwater.

Technical support is one of the concrete things the River Cities Alliance offers its member cities. A city or district administration can approach the RCA Secretariat directly with a specific, on-ground problem and get back a field team, real data, and a phased plan built around its own circumstances. Two recent cases show what that looks like in practice.

Near Jhansi's Dhobhi ghat, a stretch of the Pahuj River had turned visibly green, water hyacinth thriving on nutrients that had been building for kilometres upstream. Across the state in Pilibhit, the last two monsoons had left 30 to 40 percent of the city underwater. The Jhansi Municipal Corporation and the District Administration of Pilibhit each approached RCA directly, asking for a proper diagnosis of what was happening to their water systems and a workable path forward. Both received a detailed roadmap, grounded in field visits and local data, that each city could start using right away.



JHANSI

A CLEARER PICTURE OF THE PAHUJ RIVER

The Pahuj runs for about 7.5 kilometres through Jhansi's municipal boundary, linked along the way to urban drains, peri-urban catchments, reservoirs and wastewater pathways. Understanding it well meant looking at the whole system rather than any single stretch, so RCA sent a two-member team to do exactly that. Over a rapid technical perception visit, the team combined field observations with existing water quality data, secondary information and spatial analysis, alongside conversations with the departments and agencies already working along the river.

Water quality readings from five locations along the Pahuj traced how conditions changed along its length, from upstream areas through the urban stretch to the downstream reservoir. The picture that emerged showed nutrient levels building cumulatively along the way, visible most clearly near the Dhobhi ghat and the stretch beyond it, where extensive water hyacinth growth had taken hold.

JMC already had real groundwork in place, drain tapping, pumping stations and sewage diversion infrastructure among it, and RCA's recommendations were built to strengthen that groundwork directly: sharpening its effectiveness, improving monitoring, and exploring treated wastewater reuse for non-potable urban use. The resulting directions were phased for momentum. Immediate actions focused on visible, achievable wins: riverfront cleanliness, solid-waste hotspot management, religious-waste collection, public awareness campaigns. Medium- and long-term directions carried further: water quality and flow monitoring, GIS-based micro-catchment assessment, improved wastewater management, ecological restoration, heritage-sensitive riverfront revitalisation, and a stronger river-sensitive planning framework going forward.

JMC now has a shared, evidence-based picture of the Pahuj system to work from.



RCA Team with officers of the Jhansi Municipal Corporation - Mr. Siddharth, Mr. Sarang Barbarwar, Dr. Pankaj Gupta and Ms. Akanksha Rana, IAS, former Municipal Commissioner, Jhansi

THE PAHUJ RIVER, BY THE NUMBERS

- River stretch within Jhansi's municipal limits: approx. 7.5 km
- Water quality monitoring locations assessed: 5
- Existing city infrastructure the recommendations build on: drain tapping, pumping stations, sewage diversion works
- Immediate-action focus areas: riverfront cleanliness, solid-waste hotspots, religious-waste collection, public awareness
- Longer-term directions: water quality and flow monitoring, GIS-based micro-catchment assessment, treated wastewater reuse, ecological restoration, heritage-sensitive riverfront revitalisation





PILIBHIT

A ROADMAP FOR A MORE FLOOD-RESILIENT CITY

Over the past two years, roughly 30 to 40 percent of Pilibhit has flooded during intense rainfall and high river stages, reaching residential areas, roads, public infrastructure and, at times, the Officers' Colony and other government establishments. Sitting in the naturally water-sensitive Terai region, the city's flood risk now called for a holistic understanding of the problem. The District Administration asked RCA to help build that understanding and identify practical directions for improving resilience.

The assessment traced Pilibhit's flood risk to several factors working together. A high groundwater table, discharge from the Duni barrage, a low-lying terrain and saturated soils leave limited room for natural drainage, and the Devha and Khakra rivers, which shape the city's drainage system, can run high enough to push water back through urban drain outfalls rather than let the city drain into them, a mechanism the assessment identified as one of the clearest drivers of flooding. Siltation, solid waste in drains, encroachment along drainage channels, and a lack of connectivity between major and minor drains were identified as additional contributing factors. The assessment also found that Pilibhit once had close to 35 natural water bodies, with around eight still functional or identifiable today, and flagged the remaining ones as a priority for protection and restoration going forward.

RCA's response was a two-day technical perception study built on stakeholder consultations, community perceptions, field reconnaissance and a review of available information, with the District Administration, the Irrigation and Flood Control Department, the Revenue Department, the Jal Board, Nagar Palika Parishad, Town Planning and local representatives all involved. The team visited flood-prone locations, river stretches, drains and water bodies directly.

The roadmap that followed pairs better data with practical infrastructure. A high-resolution LiDAR-based topographic survey and scientific flood modelling sit at its centre, meant to map how water actually moves through the city and where interventions would count most. Alongside that: a mapped drainage network, stronger rainfall and water-level monitoring, and an integrated flood forecasting and early-warning system. Restoring and protecting the city's remaining ponds and wetlands features prominently too, treated as blue-green flood-management infrastructure capable of holding stormwater during heavy rain while supporting groundwater recharge at the same time. The assessment also pointed Pilibhit toward national disaster-management funding mechanisms already available to it, and toward Gorakhpur's Urban Flood Management Cell, with its forecasting tools, sensors, automated pumping and citizen communication systems, as a working model worth learning from directly.







RCA meeting with Dr. Astha Agarwal, Chairperson, Pilibhit Municipal Council



RCA Team Meeting with Shri Gyanendra Singh, IAS, District Magistrate, Pilibhit and key department officials

If your city needs technical assistance or capacity building, please scan the QR Code and submit your interest to us:



HOW RCA's DEMAND-DRIVEN TECHNICAL SUPPORT WORKS

Both Jhansi and Pilibhit followed the same basic model, one any RCA member city can request:

1. A city or district administration reaches out to the RCA Secretariat with a specific, on-ground concern
2. A small RCA team conducts a rapid field visit, combining direct observation with existing data and consultations across relevant departments and agencies
3. Findings are assembled into a shared, evidence-based understanding of the problem, connecting it to the wider systems around it
4. Recommendations are delivered as phased, practical directions: immediate actions, medium-term measures, and longer-term structural work
5. The result becomes a foundation for further technical studies, investment and inter-agency coordination

PILIBHIT'S FLOOD RESILIENCE JOURNEY, BY THE NUMBERS

- Share of the city affected by flooding in recent years: approx. 30–40%
- Natural water bodies historically present: approx. 35
- Natural water bodies still functional today, now a restoration priority: approx. 8
- RCA's on-ground engagement: a 2-day technical perception study
- Departments and agencies consulted: District Administration, Irrigation and Flood Control Department, Revenue Department, Jal Board, Nagar Palika Parishad, Town Planning, local representatives
- Key recommendation: a high-resolution LiDAR-based topographic survey, drainage network mapping, and scientific flood modelling

"With the Right Approach Applied Consistently, the Results Will Come"



In conversation with

Ms. Akanksha Rana

Special Secretary, IT and Electronics Department and Managing Director, UPDESCO (former Municipal Commissioner, Jhansi)

Q. Do you have a personal memory or experience associated with a river or waterbody that has shaped your perspective on urban water management?

When I was posted as CDO, I worked on developing Amrit Sarovars in the gram panchayats. Looking back, that was relatively simple. The land was identified, the villagers were involved, and within a season you could see the pond fill up and the community take ownership of it.

Working on the Pahuj showed me a different picture. A river passing through a city flows past dense old neighbourhoods, newer colonies, ghats used for daily rituals, and stretches that still serve farms. Each of these uses the river in its own way, and each asks something different of it.

That gave me a real sense of the complexity of urban water management. It cannot follow a single template. The urban fabric, the type of settlement and the way people use the river all shape what the right intervention is. What works for a village pond has to be rethought for a city river, and even along one river, the approach has to change from stretch to stretch.

Q. From your experience as an administrator, how has the approach to urban river management evolved over the years?

If you look at rural India, water was managed at a very local scale. Small bunds and check dams made of kachcha material, built as per need, and ponds that the community itself looked after. A lot of that care came from faith. The waterbody had religious significance, so people protected it. Later came canals to divert water, and tube wells.

As the scale grows to a city, the systems change. Dams and barrages come in, treatment plants make river water usable for drinking, and cities start looking at riverfront development and beautification. When an area along the river is developed and people start using it, the river becomes visible again, and it becomes harder to let sewage flow into it or let it deteriorate.

In my own years in service, the biggest change I have seen is that proper frameworks are now in place. The Ministry has worked on making people aware, and on streamlining what happens at the ground level so that the work is more efficient and actually shows results. Today there is a system for managing waterbodies, not just individual projects.

So the scale changes and the context changes, but the importance of the river stays the same. I would say the story is the same, only the systems are different.

Q. How would you describe the evolution of river management in Jhansi, particularly in relation to the Pahuj and Betwa River and the city's waterbodies?

Traditionally, in this stretch, river water was mostly used for drinking, for irrigation, and for religious rituals and festivals. Over time, with the growth in population and migration towards cities, towns that sit along rivers came under a lot of pressure, and the rivers took on that stress.

An important shift came with the District Environment Management Plan, prepared on the directions of the National Green Tribunal. It sets out how each district will reduce the pressure on its rivers, with a time-bound plan that accounts for both the present and the future population. Drains are to be tapped in phases, and the city's wastewater treated, so that it stops reaching the river.

Alongside this, floodplain zones are being demarcated and encroachment on the riverbanks is being reduced. The aim is to keep the river's natural course intact and, at the same time, maintain its water quality.

Q. What thematic areas do you consider the highest priorities for Jhansi's urban river and water management?

For me, two things come first, and together they are the foundation stone of river management. The first is making the community aware. Ultimately, it is the people using the water who decide whether a river survives. If they understand how important this resource is and how much depends on it, they become part of looking after it. The second is building the right infrastructure, like drain tapping and proper treatment of wastewater, so that pollution does not

reach the river and it does not deteriorate further. Awareness without infrastructure doesn't hold, and infrastructure without awareness doesn't last. Both have to go together.

"A river passing through a city flows past dense old neighbourhoods, newer colonies, ghats used for daily rituals, and stretches that still serve farms. Each of these uses the river in its own way, and each asks something different of it."

Q. What are the key challenges you have encountered as an administrator while working on urban rivers, and how have some of these challenges been overcome?
The biggest challenge has been finding the blind spots along the river. It is a long stretch, and some parts are simply not easy to reach. As the population grows, new points keep coming up where wastewater or solid waste enters the river. That is the organic nature of a city. Settlements have grown along rivers for centuries, and they always will.

What really helped was regular monitoring to identify these blind spots and the places where sludge and waste were being dumped. Once we knew where the problem was, the solutions were fairly practical. We put up fencing on bridges so people could not throw waste from them, and gated the ghats so that no one could carry garbage down to the water. Drones were used to survey the banks along the whole stretch. Gram panchayats and local residents helped us locate discharge points we would not have found on our own. For idol immersion, we created an artificial kund, so that visarjan could happen there instead of in the river. This is not a one-time fix. New spots will keep coming up, so regular monitoring is the most important part of the work.

"The Pahuj and our old waterbodies should be seen as part of that heritage, just as much as the fort, our history and our food."

Q. What is your perspective on the potential role of Artificial Intelligence and other emerging technologies in urban river management and governance?
With time, the demand for fresh water will become very intense, and I think AI has a lot of potential in helping us manage it. One application is real-time monitoring. Sensors placed at important nodes and pressure points along the river can track water quality continuously, instead of us relying only on periodic sampling. The other is planning. By combining past climate data with the city's combined water needs, AI can project future rainfall and usage, and tell us how much water needs to be held each year. This matters for Jhansi because the Pahuj is not just a river for us. The Pahuj Dam, which is actually a barrage, supplies both drinking water and irrigation, and it is fed by the Dongri Dam and the Railway Dam upstream. Better projections would help decide how much water should be released from these upstream dams, and when. Drones are another tool with real promise. A drone-based bathymetric survey can map the riverbed and show where silt has built up, so we know where to dredge and when to desilt. That gives a far more accurate and efficient result than a manual survey.

Q. Are there any national or international examples of river management that have particularly inspired you or that you believe could offer useful lessons for Jhansi?
The river that has stayed with me is the Thames. During my fellowship in Oxford, I used to run along it, and I started reading about its history. This was once a river so polluted that London's summer of 1858 came to be called the Great Stink. What turned it around was simple in principle: intercept the sewage before it reaches the river, and keep at it for generations. Today the Thames has fish and even seals back. That is the lesson I take for Jhansi. Intercepting the sources of pollution before they reach the Pahuj is the right foundation, and with the right approach applied consistently, the results will come.

Q. How important do you think youth engagement is for the long-term management of urban rivers, and what role can young people play in this process?
Very important. Ultimately, what we need is a change in behaviour, in how people interact with the world around them, and young people are already leading that. They are far more aware of climate change, and in this social media age, many young influencers are using their reach to organise clean-up drives and encourage others to protect their own natural resources. A recent example is Surendra Singh Choudhary from Biaora in Madhya Pradesh, known online as Bittu Tabahi. He began cleaning the polluted Ajnar River on his own, spending his own money, and when his work went viral it drew national attention and inspired thousands. In Jharkhand too, a group of students has cleaned and restored more than twenty local water bodies. Examples like these do more than any campaign we can run. They set a standard for the next generation and put the importance of our rivers firmly in the public mind. Looking ahead, I think the youth are already doing very well.

Q. What has been your perception of the River Cities Alliance and its role in supporting cities on river-related issues?
The RCA has brought river cities and the concerned stakeholders under one umbrella, which is a useful starting point. It gives a common direction to the effort, keeps river management on the agenda of city administrations, and lets us see what other cities are doing.

The real test now is how much of this translates into support on the ground, and I think that is where the alliance can grow further.

"Awareness without infrastructure doesn't hold, and infrastructure without awareness doesn't last. Both have to go together."

Q. If you could envision Jhansi's rivers and waterbodies 10 years from now, what would you like the city to look like?
I would like to see a Pahuj where no drain carries untreated water into it, even in the dry months, and where the banks are clear of encroachment and the river follows its natural course. Cities like Ahmedabad on the Sabarmati, and Aarhus in Denmark, have shown how a well-planned riverfront can bring a river back into the everyday life of a city. I would like Jhansi to have something similar along the Pahuj, designed for our conditions. In a water-scarce region, a riverfront should be about holding water and keeping it clean, not only about how it looks. Waterbodies should have fixed boundaries, clean water, and monsoon rain held in them instead of running off. With BIDA and the city's growth, demand for water will rise, and I would like Jhansi to be a city that planned for it in time.

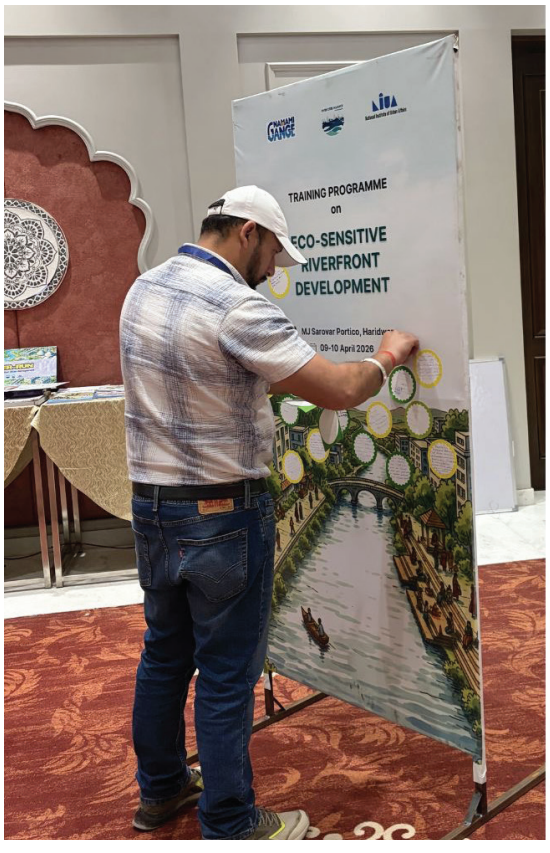
Most of all, I would like the people, and especially the youth, to celebrate the river. Jhansi is known as a heritage city, and the Pahuj and our old waterbodies should be seen as part of that heritage, just as much as the fort, our history and our food. In a water-scarce region like Bundelkhand, a river deserves to be valued and celebrated in that way.

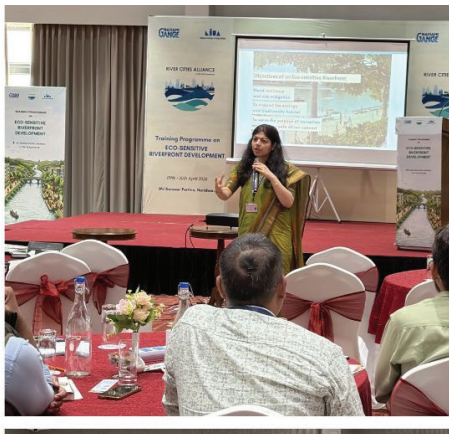
Fifteen Hill Cities, One Riverfront Training

On 9–10 April 2026, RCA brought officials from 15 hill cities in Uttarakhand and Himachal Pradesh to Haridwar for two days built around one idea: a riverfront can be beautiful and ecologically alive at once, if the hills it runs through are taken seriously.

By the end of day two, every group had 50 minutes to plan one kilometre of a real hill river, one stretch upstream, one mid-stream, one past a culturally significant foothill city, each working through the questions a city engineer normally tackles: where floods hit, where slopes erode, how people reach the water safely. It was the closing exercise of a two-day training on eco-sensitive riverfront development, held in Haridwar on 9–10 April 2026.

Riverfront development is one of the fastest-growing tools Indian cities are using to reconnect with their rivers, and the potential is real: restored ecology, better public access, a revived cultural life along the water. However, hill cities bring their own challenges and requirements because of their steep slopes, fragile ecosystems, and distinctly different river hydrology/hydrogeomorphology than the plains. That's why Uttarakhand and Himachal Pradesh needed training built specifically for hill terrain, rather than one borrowed wholesale from flatland practice.







36 participants attended, spanning Dehradun, Rishikesh, Haridwar, Srinagar, Kashipur, Nainital, Haldwani, Uttarkashi, Selaqui, Vikasnagar, Muni Ki Reti, Kotdwar, Ramnagar, Tehri, and Poanta Sahib. Shri Nalin Kumar Srivastava, Deputy Director General of NMCG, opened proceedings online, emphasising the importance of shifting riverfronts away from mere beautification and towards ecosystem revival. Shri Rohit Meena of SMCG Uttarakhand and Smt Sonika Singh, Mela Adhikari of Haridwar, spoke alongside him, turning attention to Haridwar's upcoming 2027 Kumbh and its associated challenges.

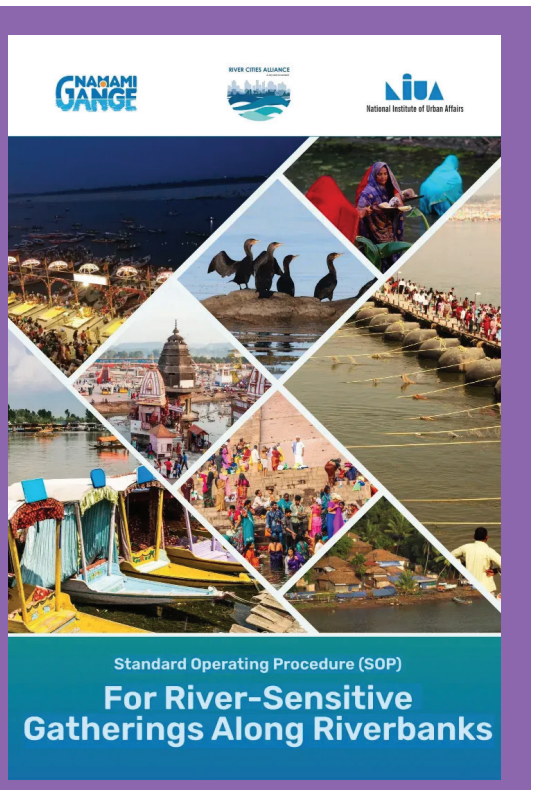
From there, sessions moved from principle to practice. First: how hill rivers actually behave, and why flatland engineering models miss the point. Then five guiding principles: protect natural riverine features, use sustainable materials, climate-proof for extreme weather, conserve biodiversity, and build in socio-economic and cultural context from the start. Later sessions covered baseline surveys and regulation, with examples from Delhi, Chennai and Srinagar, before moving into design itself: reading a river's edges, banks, floodplains and wildlife, and building safe public access into steep terrain through natural bank stabilisation, bio-engineering and the use of permeable materials (not concrete).

Day two turned to the question of large gatherings near rivers and how to tackle them, with Haridwar's own Kumbh just a year away. Experts from Hokkaido University joined the NIUA team to unpack lessons from the Maha Kumbh in Prayagraj. They reviewed temporary infrastructure, waste management, and crowd dynamics, then offered a detailed look at the SOP NIUA has built for staging large river gatherings. A related project, IPSA-Kumbh, mapped how the Maha Kumbh's floating population strained

sewerage, drawing on inputs from IIT-BHU, IIT Roorkee, and TERI School of Advanced Studies alongside the Hokkaido team. A final session walked through Urban River Management Plan (URMP)-related work already underway in six Uttarakhand cities, where real governance models and projects are reconciling urban space with river rejuvenation.

Shri Bijendra Swaroop, Executive Director (Projects) at NMCG, closed the session with an overview of the Mission's work in Uttarakhand and how participants could carry it forward in their own cities. Shri Dheeraj Joshi, Director (Urban), NMCG emphasised the importance of protecting natural features, biodiversity, and citizen engagement. Dr Debolina Kundu, Director of NIUA, closed on the theme the training opened with: Indian riverfronts are now moving from beautification to ecosystem revival, shedding mere spectacle to adopt real resilience.

Participants left with certificates and, per the closing feedback, a real appetite for more city-specific trainings. The programme also made local news, picked up by Hindi dailies in Haridwar, reaching well beyond the 36 people in the room.



Read NIUA's SOP on River-sensitive Gatherings on Riverbanks here:



THE FIVE GUIDING PRINCIPLES FOR ECO-SENSITIVE RIVERFRONTS

1. Protection of natural riverine features
2. Use of sustainable design and materials
3. Climate-proofing for resilience to extreme weather events
4. Biodiversity conservation
5. Integration of socio-economic and cultural dimensions into riverfront and river corridor planning

THE TRAINING BY THE NUMBERS

- Dates: 9–10 April 2026, MJ Sarovar Portico, Haridwar
- Participating cities (15): Dehradun, Rishikesh, Haridwar, Srinagar, Kashipur, Nainital, Haldwani, Uttarkashi, Selaqui, Vikasnagar, Muni Ki Reti, Kotdwar, Ramnagar, Tehri, Poanta Sahib
- Sessions: 7 technical sessions plus a closing group exercise and presentations, across 2 days
- Format: technical sessions, expert lectures, hands-on exercises, group discussions



Every City Has a Water Balance Sheet

How river basin-connected planning can turn hidden water risks into shared urban value

Every city has two balance sheets. The first records land, infrastructure, revenues and investment. The second is rarely assembled, yet it can determine how long the first retains its value. It records how much water a city can depend on, what its growth consumes, how much rainfall it can absorb, what wastewater it can reuse and what risks it passes to neighbouring and downstream areas. Every township, highway, factory, data centre – or restored wetland – makes an entry. When this second balance sheet is ignored, the first eventually pays through interrupted water supplies, flooded assets, emergency public works, business losses and public-health costs. A city may import water, but it cannot outsource its water risk.

Looking beyond the municipal map

Water is present in urban planning, but often in separate compartments. Water supply, sewerage, stormwater drainage and land-use planning may be handled by different institutions. Groundwater, wetlands, tributaries and upstream catchments may fall outside the city's jurisdiction altogether. Each institution may perform its assigned function while the connections between these functions remain weak.

A project can therefore be technically viable within its boundary and still be vulnerable within its catchment. A housing development may have a water connection, but its larger source may already be stressed. An airport or commercial complex may have adequate internal drainage, but that system will perform only if the downstream channel and river can receive the flow. An industrial estate may have treatment capacity, but no viable arrangement to reuse the treated water.

A basin-connected city does not attempt to administer the entire river basin. It understands where its water comes from, where its wastewater and stormwater go, how surrounding land-use decisions affect it, and how its own decisions affect others sharing the same water system.

The numbers make this an economic issue

The scale of India's urban investment challenge makes this connection financially significant. The 2025 World Bank report[1] Towards Resilient and Prosperous Cities in India, prepared in collaboration with the Ministry of Housing and Urban Affairs, estimates that India will require more than **US$2.4 trillion by 2050** for resilient and low-carbon urban infrastructure.

The same assessment estimates that urban flooding already causes approximately **US$4 billion in annual losses** in India. Without adequate action, this could rise to nearly **US$30 billion annually by 2070.** These are not only disaster-management costs. They represent damaged homes and infrastructure, disrupted transport and production, lost working days and repeated public expenditure on repairs.

Mobilising the required capital will also demand a broader financing base. A World Bank assessment[2] of India's urban-infrastructure financing found that private sources accounted for only about **5% of total urban-infrastructure investment over the preceding decade.**[3] Attracting more private and commercial finance will require well-prepared projects with credible information on water availability, climate exposure, operating responsibilities and long-term performance.

Water security is therefore not an environmental addition to an investment proposal. It is part of protecting the investment itself.

Relevant to old cities and new growth

For new townships, industrial corridors and peri-urban development, catchment information can influence location and design before construction begins. It can protect drainage paths, retain recharge



areas, assess dependable water availability and incorporate reuse from the start.

Existing cities face a different challenge. They have inherited dense development, ageing infrastructure, altered drainage, stressed aquifers and fragmented water bodies. They cannot begin again with a blank map. But every road renewal, sewer upgrade, redevelopment project, lake restoration or expansion of treatment capacity offers an opportunity to improve the water balance.

Delhi, Mumbai and Bengaluru face different hydrological conditions, but share one fundamental challenge: their water security cannot be understood only within municipal boundaries. Their supplies, drainage systems, rivers, aquifers and areas of expansion form larger systems involving several jurisdictions.

For new urban growth, basin connectivity is a design discipline. For existing cities, it is an asset-management and renewal discipline.

From a water budget to a water balance sheet

A practical water budget should examine present and future demand, seasonal availability, groundwater abstraction and recharge, wastewater generation, reuse potential and the cumulative effect of planned development. It should consider normal conditions, dry years and periods of unusually intense rainfall.

India already has useful foundations for this approach. NIUA–NMCG's river-sensitive master-planning guidance[4] brings water systems into urban planning, while the Ramganga River Basin Management Plan[5], prepared by NMCG with GIZ support, demonstrates how priorities can be coordinated across a wider basin.





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India's Youngest and Brightest Minds are Rethinking Its Urban Rivers

Since 2020, RCA's Student Thesis Competition has been betting that honing India's next generation of river-sensitive planners has to start in a classroom. This year's eighteen proposals ranged from cleaning industrial effluent with microbes in Jaipur to community involvement in the restoration of a river bend in Odisha.



Gaurav Rawat's thesis starts from an unusual premise: that the Dravyavati river in Jaipur can help clean itself. Rather than treating industrial effluent with added chemicals, his proposal uses the river's own indigenous microbial communities (an approach he calls nature-based bioaugmentation) paired with a soil-tailoring method to support the same stretch of restoration. It is exactly the kind of blue-sky thinking that the Student Thesis Competition (STC) exists to produce.

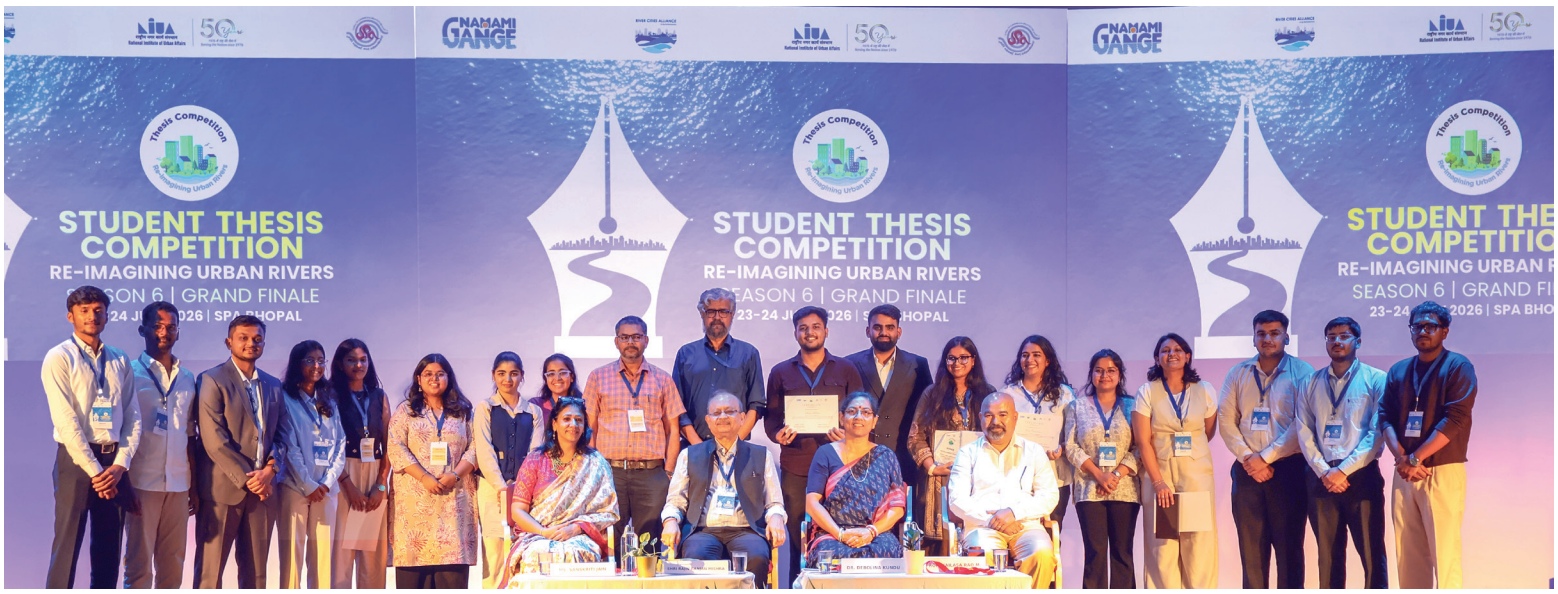
NIUA and NMCG have been working together to push river-sensitive thinking into India's urban planning. The STC launched its first season in 2020, built on a simple premise: moulding a cadre of river-sensitive professionals has to start in a classroom.

The national Competition kickstarted a wave of creative re-imagining, where students were encouraged and guided to shift their perspectives on India's primary waterways and align their research interests to look towards its future. To reimagine urban rivers, students had to contend with the current state of the cities they chose for research, while also projecting future possibilities where urban development and river conservation become synonymous.

Entrants align their theses with six thematic areas — river pollution reduction, rejuvenation of waterbodies, riverfront zoning, riverine biodiversity management, enhancing river economies, and citizen engagement — and are pushed toward the kind of innovative thinking that carries the ambition of revolutionising India's urban river and water sector.

Each year, entries flood in from the IITs and SPAs of the country, who send in their very best. Over time, the profile of students submitting to the STC has diversified tremendously, with those from different fields (Chemistry, Biology, Environmental Economics, Geography, etc.) applying to offer an interdisciplinary lens.

This year STC had its sixth season, where that same premise took eighteen different shapes. Near Puri, Odisha, Mayank Khatri built his restoration framework for a river meander at Chandanpur around the people who live beside it, treating community participation as part of the engineering itself. On Majuli Island, Maaz Multani used the Brahmaputra as the basis for a river zone model built around tribal liveability and climate



STC 6 Student Finalists (UG & PG), with Jury Members and Dignitaries

resilience. In Neyveli, Arunachalam V. approached an industrial urban watershed on the Paravanar as a single problem of ecological restoration and local economy. In Manali, Pankaj Prashar built a planning model for a hill town on the Beas, where the standard urban-river approach, designed for the plains, simply doesn't apply. And in Delhi, Arya K Ajay mapped planning strategies for the economies that have grown up along the Yamuna.

The STC has established a national reputation for empowering young students to push every limit.

In total, 18 proposals were shortlisted this season (eight undergraduate and ten postgraduate), studying fifteen cities: an eco-ghat for the Godavari in Nashik built on rights-of-nature principles, a reimagining of Hyderabad's Musi River through its heritage core, a mangrove-edge study on Mumbai's Mithi, and a national-scale flood inundation database built from satellite radar data.

Getting a thesis this far is a year-long process. Shortlisted students spend the season in expert mentorship, rigorous stage-wise reviews, and structured training on the Urban River Management Plan Framework, with mentors pushing each proposal toward something a city could actually use. Anna Brittas, Senior Research Associate at NIUA, mentored Arya K. Ajay through that process on her way to winning the undergraduate category. "Mentoring students under the Student Thesis Competition is a truly unique experience," Brittas said. "You get to help them refine their research, make their themes more feasible, and weave a story with data and analysis. But somewhere along the way, mentoring becomes much more personal. You see a bit of yourself in them, and when they begin to see themselves and their potential the way you do, that really is the winning moment."

Ajay felt that shift happen at the competition's writeshop. "I had the opportunity to learn from subject experts and professionals, and more importantly, to engage directly with decision-makers," she said. "Being able to share ideas with people who are actively shaping policies and solutions made me feel that the work we were doing could genuinely contribute to meaningful change." She has since become an advocate for widening the pool further. "I strongly believe that more people from diverse backgrounds should participate in this competition," she said. "Each of us brings a different perspective, and learning from one another makes the experience even more valuable."

Kirti Rajendra Najare, of SVNIT Surat, won the postgraduate category with a study of metropolitan water balance and a river-centric circular economy for her own city. For her, the competition's final jury was where the work stopped feeling academic. "Engaging with river professionals and practitioners gave me a deeper understanding of the practical challenges involved in planning and managing rivers," she said.

Urban rivers shaped India's settlements, economies and cultures long before any of these theses were written. It is now time to give back. The youngest minds of India continue to rise to this challenge, and how.



STC BY THE NUMBERS

STC first season launched:
2020

Seasons completed:
6

Student theses sponsored to date:
100+

Season 6 shortlist:
18 theses (8 UG, 10 PG)

Cities represented in Season 6:
15

Thematic areas:
6 — river pollution reduction, rejuvenation of waterbodies, riverfront zoning, riverine biodiversity management, enhancing river economies, citizen engagement



"You see a bit of yourself in them, and when they begin to see themselves and their potential the way you do, that really is the winning moment."

Anna Brittas, Senior Research Associate, NIUA, STC S6 Mentor



"The experience strengthened my confidence, broadened my perspective, and encouraged me to develop more practical and integrated planning solutions. I am deeply grateful to NIUA, NMCG, the mentors, jury members, river professionals, and everyone involved for creating such a meaningful platform for young researchers."

Kirti Rajendra Najare, STC 6 postgraduate winner



"My journey with STC has been truly humbling. From being an audience member in 2025 to winning Season 6 of the competition, the experience has given me a completely new perspective on the importance of conversations around our rivers."

Arya K Ajay, STC 6 undergraduate winner

WATERBODIES STUDIED IN SEASON 6

Groundwater, Kanpur
From Pumping to Restoring: Assessing Groundwater Stress and Community Solutions in Kanpur City

Brahmaputra
River-Living Futures: A Vibrant River Zone Model for Tribal Liveability and Climate Resilience

Yamuna
Planning Strategies for Urban River-Linked Economies: A Case of Yamuna River in Delhi

Kahn & Saraswati
Re-Weaving the Sangam: Context-Based Renewal of the Kahn–Saraswati River Zone at Krishnapura Chhatris, Indore

Bhargavi
Reclaiming the River Bend: A Community-Based Meander Restoration Prototype Framework for Chandanpur, Odisha

Narmada (Narmadapuram)
Adaptive Riverine Zone Delineation: A Multi-Criteria Approach for the Narmada River Urban Stretch, Narmadapuram

Mithi
Mangrove Edge Enhancement: A Case of the Estuarine Habitat of Mithi River

Narmada (Jabalpur)
From Urban Overprint to Living Palimpsest: Unseen Edges of the Narmada

Musi
Reimagining Riverside Urbanity for the Heritage Core of Hyderabad: A Case of the Invisible River Musi

National
Development of a SAR-Based National Flood Inundation Database and Impact Assessment

Indore Waterbodies
Geospatial Analysis of Waterbody Dynamics: A Blue-Green Infrastructure Approach

Dravyavati
Indigenous Microbial Communities for Urban River Restoration: Bioaugmentation and Soil Tailoring in the Dravyavati Basin, Jaipur

Bindal
Nature-Based Solutions for Tackling Urban Flooding in Dehradun: A Case of the Bindal River Corridor

Beas
River-Sensitive Urban Planning in Hilly Regions: A Case of Manali, Himachal Pradesh

Paravanar
Reviving the Paravanar: Ecological Restoration and Socio-Economic Rejuvenation of an Industrial Urban Watershed

Surat Water Systems
Metropolitan Water Balance and River-Centric Circular Economy: An Integrated Urban Assessment

Godavari
Reimagining Sacred Riverfronts through Rights of Nature: An Eco Ghat for the Godavari River, Nashik

Ganga
Species Comebacks as River Health Indicators: A Knowledge-Model Framework for Managing Ganga's Riverine Biodiversity

Making Water Visible

A signage system built to help RCA's member cities communicate the value of eleven riverine ecological elements to the residents who live alongside them.

A river is not only the water that flows through it.

Along its edges are riparian buffers and floodplains. Beneath the ground is the aquifer. Vegetation, wetlands and other ecological features form part of the river system too, although they are not always recognised as such. Much of the knowledge needed to understand these systems sits in technical reports and specialised documents, far removed from the places where people encounter rivers in their everyday lives.

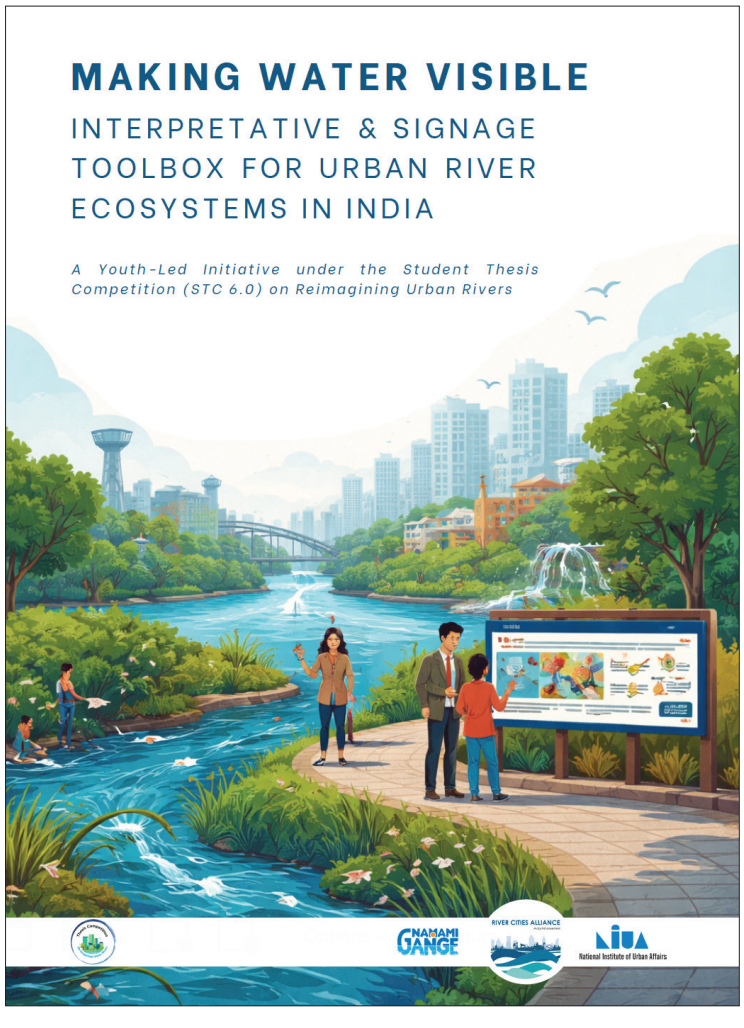
This is where the River Cities Alliance's ***Making Water Visible: Interpretative & Signage Toolbox for Urban River Ecosystems*** comes in.

The Toolbox was developed by the RCA Secretariat in collaboration with the finalists of the Season 6 Student Thesis Competition. It brings together the on-ground experiences of RCA member cities and ideas from young researchers to create a common interpretative and signage system for urban river environments.

The need for such a system comes from the diversity of the Alliance itself. Its member cities have different ecological and governance contexts, and a signage approach that works in one landscape may not translate directly to another. The Toolbox therefore provides a framework that cities can adapt while retaining a consistent visual language.

It covers 11 curated riverine ecological elements, translating information about them into visual markers that can be used in urban spaces. The system has been designed with visual coherence and ecological sensitivity in mind, so that it can work across different climatic and landscape conditions.

Some of the subjects it deals with are familiar to people working in water and environmental planning, but less so to the wider public. Riparian buffers, floodplain dynamics and aquifer recharge, for instance, are important to the functioning of urban river systems. The Toolbox seeks to make this information more accessible by giving it a visual form.





Signage mascots

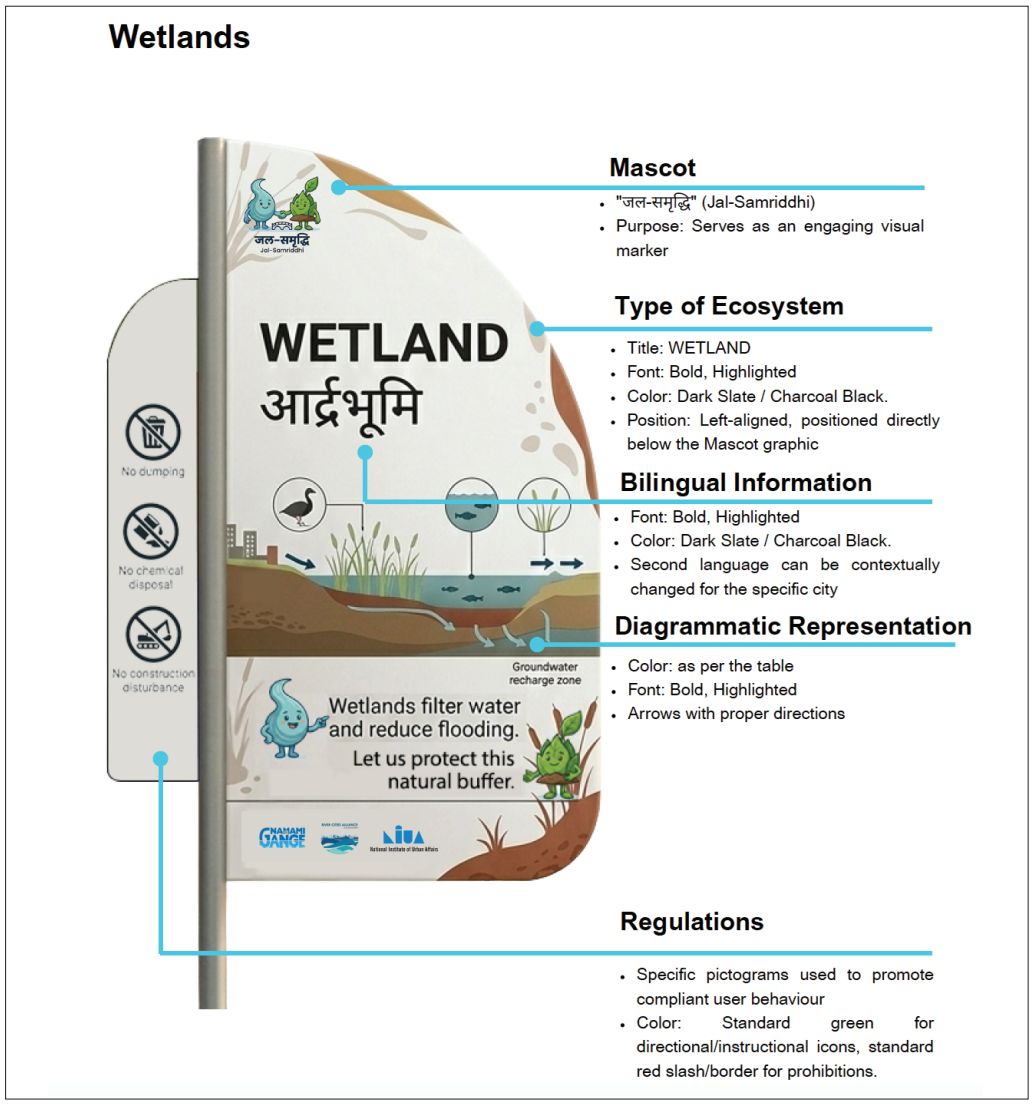


There is a practical resource here for the people designing public spaces as well. Municipal planners, landscape architects, city engineers, urban designers, and environmental planners can use the Toolbox when designing, procuring, and implementing signage. This will make ecological value more visible and encourage citizens to see these environments as part of the urban commons.

The collaboration also extends an idea that has run through the Student Thesis Competition from the beginning: giving students room to work beyond the conventional thesis format. At the end of their Writeshops, finalists have worked together on projects that draw on their research while asking them to approach river issues differently. Season 4 produced a comic book. Season 5 produced River Run, a board game. Season 6 resulted in the signage Toolbox.

That progression says something about the competition itself. Academic research does not have to end with the submission of a thesis. In this case, research has been shaped into a resource for everyone, everywhere.

We are happy to announce that the first phase of implementation will take place in an RCA city soon! Please keep an eye out for that.



Anatomy of a Signage





STC 6 Students working to conceptualise and design and Toolbox

Rivers Enter the Syllabus:

Yale, Columbia, Monash, and Technical University Berlin Just Helped Write a Course on Indian Waterfronts

This year, RCA's academic arm launched two new university courses: one at the School of Planning and Architecture, Bhopal, and one at Mitraj Sarvajanik (IDPT) Surat and O.P. Jindal Global University. Both aim at the same goal: getting future planners and engineers thinking about rivers before they ever start a job.

RCA's academic arm, put river-sensitive planning into three university classrooms this year. Here's what was launched at each, and what students are actually learning.

SPA BHOPAL: ECO-FRIENDLY WATERFRONT DEVELOPMENT

RCA partnered with the School of Planning and Architecture, Bhopal, to launch a new elective called *Eco-Friendly Waterfront Development*. The RCA Secretariat built the course with input from faculty at Yale, Monash, Columbia and the Technical University of Berlin, alongside its own experts.

The first batch has 24 students, from architecture, urban design and urban planning. Weekly lectures cover water-sensitive urban design, sponge cities, ecological design principles, and how to spot greenwashing in riverfront projects. The course strongly focuses on restoring river health, improving biodiversity, and building real community engagement, and pushes students to balance urban development with ecological resilience, climate adaptation, and cultural heritage. The syllabus starts broad, basin-city connections, hydrology, different geoclimatic regions, river types, and the history of waterfronts around the world, then moves into specific topics like floodplain regulation and riparian ecology, before opening up again to governance, economics and implementation. Students also do studio exercises and attend online sessions with the course's international faculty.

Good news for cities! The Secretariat is adapting the same course into a training programme for RCA members, aimed directly at urban practitioners and city officials.



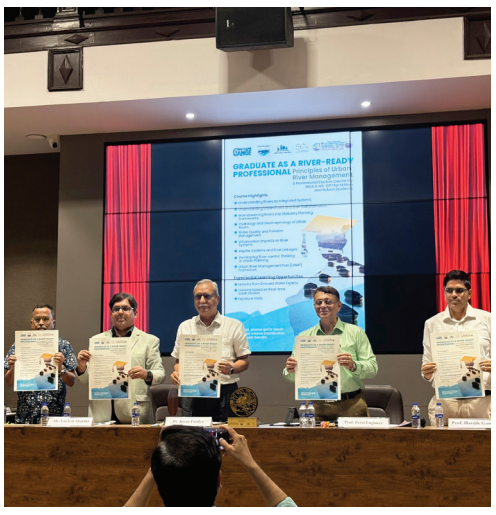
GLOBAL FACULTY BEHIND THE BHOPAL COURSE

- Yale University
- Monash University
- Columbia University
- Technical University of Berlin
- NIUA

MS–SCET, SURAT: PRINCIPLES OF URBAN RIVER MANAGEMENT

The RCA Secretariat and the Institute of Design Planning and Technology (IDPT) at Mitraj Sarvajanik (MS), previously known as SCET Surat, launched a second course, *Principles of Urban River Management*, as a two-credit professional elective. MS-IDPT launched the course at a one-day event titled 'From Risk to Resilience: Rethinking Flood Management in a Changing Climate.' Dr Kiran Pandya, Provost of Surat University, and Prof. Persi Engineer, Principal of MS-IDPT, backed the launch, and Dr Debolina Kundu, Director of NIUA, gave the welcome address.

The course runs in hybrid mode for 22 M.Arch and M.Plan students, with NIUA faculty joining online and in person alongside MS-IDPT's own teachers.





Launch of the course in MS-SCET Surat

THE AIM BEHIND THESE COURSES

- Equip the next generation of architects, planners and engineers with the knowledge to design river-sensitive, eco-friendly waterfronts
- Build a cadre of river-sensitive professionals who can help cities plan for environmentally sustainable, water-sensitive urban development
- Give students a holistic, multidisciplinary grasp of the ecological, social, cultural, economic and policy dimensions of rivers and riverfronts
- Combine global expertise with Indian urban realities, so what's taught is practical, not just theoretical
- Eventually extend the same training directly to city officials and practitioners, not just students, through RCA's planned capacity-building programme

O.P. JINDAL GLOBAL UNIVERSITY: PRINCIPLES OF URBAN RIVER MANAGEMENT

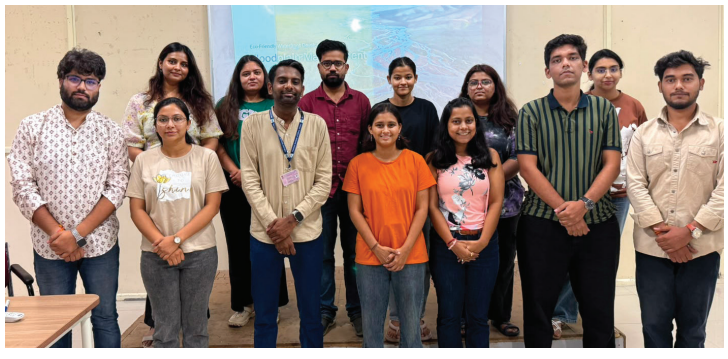
NIUA launched the same course, *Principles of Urban River Management*, with the School of Environment and Sustainability (JSES) at O.P. Jindal Global University, but on very different terms. Here, it's a mandatory four-credit course for 22 fourth-year B.A. and B.Sc. students in the school.

WHAT STUDENTS ACTUALLY STUDY

Both versions of *Principles of Urban River Management*, at Surat and at Jindal, teach the same core material: watersheds, drainage basins, river shape and behaviour, restoration, stormwater governance, environmental flows, and the policies and institutions that decide what happens to a river as a city grows around it. Students work through real case studies from India and abroad, centred on nature-based solutions, community participation and climate-resilience planning, with hands-on assignments and fieldwork built in.

Three universities, two courses, one goal: budding young professionals who are already thinking about the river before they start their first job.





THREE COURSES AT A GLANCE

University	Course	Format
SPA Bhopal	Eco-Friendly Waterfront Development	Elective; first batch of 24 students
MS–IDPT, Surat	Principles of Urban River Management	2-credit elective, hybrid, 22 students
Jindal School of Environment and Sustainability (JSES), O.P. Jindal Global University	Principles of Urban River Management	Mandatory, 4-credit, 4th-year B.A./B.Sc., 22 students

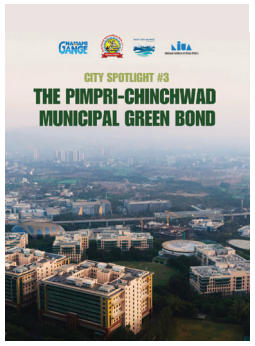
City Spotlight

Read up on some good practices operational across the RCA network.



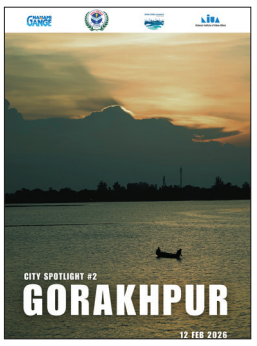
THE ₹200 CRORE QUESTION: HOW PIMPRI-CHINCHWAD MADE GREEN FINANCE WORK

What does it take for an Indian city to raise 200 crores from the market for sustainable urban mobility? Pimpri-Chinchwad Municipal Corporation (PCMC) has done exactly that, making it one of India's pioneering municipal green bond issuances. This case study unpacks the full journey, from the city's urban profile and financial groundwork to the end-to-end process of structuring and issuing the bond. It highlights what made it work: fiscal discipline, transparency, and strategic planning. If your city is looking to mobilise resources, build investor confidence, and put sustainability at the heart of urban growth, Pimpri-Chinchwad's story is where to start.



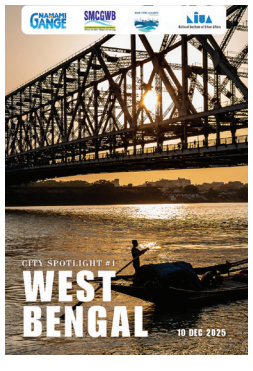
PREDICT, PREPARE, AND PROTECT: GORAKHPUR'S NEW STRATEGY FOR URBAN FLOODING

How do you stop a city from flooding, year after year? Gorakhpur has found an answer with its Urban Flood Management Cell (UFMC)! Using a unique three-pronged approach — Predict, Prepare, Protect — the city now combines hyperlocal rainfall forecasts, flood simulations, and real-time sensor data to stay one step ahead of the monsoon. The system maps where water will collect, plans interventions before flooding starts, and sends instant alerts to teams on the ground, protecting people, property, and infrastructure. This story captures how Gorakhpur turned decades of waterlogging into a rapid-response model, making it a city that can keep its streets dry.



STUDENTS LEARN THE ABCS OF SEWAGE TREATMENT IN THE RCA CITIES OF WEST BENGAL

How do you get students excited to learn about something like wastewater? The State Mission for Clean Ganga West Bengal (SMCG WB) answered this by launching hands-on exposure visits to STPs across the state, including several RCA cities. This story captures how these guided tours transformed curiosity into clarity — helping students connect classroom lessons with real processes that protect our rivers and help keep them clean. The result: deeper awareness, stronger engagement, and growing environmental leadership amongst the youth.



NMCG's Focus on Nature Based Solutions:

Initiation of Two Pilot Projects and Training Programmes On Nbs

River rejuvenation requires a comprehensive approach that combines conventional wastewater treatment infrastructure with sustainable ecological interventions. While sewerage networks and Sewage Treatment Plants (STPs) remain the cornerstone of pollution abatement, the National Mission for Clean Ganga (NMCG) is increasingly integrating Nature-based Solutions (NbS) to complement these efforts. Alongside measures to ensure environmental flows (E-Flows) for maintaining the continuous flow of rivers, NMCG is promoting NbS to strengthen ecological restoration, improve river ecosystem health, and build resilient water management systems. This integrated approach reflects the Mission's commitment to achieving long-term and sustainable river rejuvenation through a combination of engineering and nature-based interventions.

As part of this comprehensive strategy, NMCG is mainstreaming NbS through the Sustainable River Rejuvenation (SRR) programme by implementing pilot projects based on constructed wetlands for in-situ treatment of urban drains, while simultaneously promoting research, innovation, and capacity building for their wider adoption. By augmenting NbS alongside conventional treatment technologies, NMCG is advancing a holistic river basin management approach that integrates pollution abatement, ecological restoration and institutional strengthening to rejuvenate rivers across the Ganga basin.

The two pilot projects—at the **Shastri Park Drain** and **Kailash Nagar Drain**, with combined treatment capacity of approximately 10 MLD, both discharging into the Yamuna—mark an important step towards adopting sustainable, low-energy and climate-resilient approaches for urban drain management. Unlike conventional treatment systems that rely heavily on mechanical infrastructure and energy-intensive processes, these interventions are based on constructed wetland systems, which replicate the treatment functions of natural wetlands.

The treatment systems integrate a combination of stone masonry structures for regulating water flow and enhancing hydraulic retention time, rock filters for removing suspended solids, aquatic vegetation for nutrient uptake and oxygen transfer, and phytoremediation using carefully selected plant species









capable of absorbing, stabilising, and degrading pollutants, including excess nutrients and certain heavy metals. Working together, these natural processes improve dissolved oxygen levels, reduce organic pollution, enhance biodiversity, and restore ecological functions while requiring significantly lower operational and maintenance inputs.

Steady progress has already been achieved at both project sites. At the **Kailash Nagar Drain**, site clearance through desludging and desilting has been completed, brick lining works are currently underway, and installation of rock filters will follow in the next phase. At the **Shastri Park Drain,** preparatory desludging and desilting activities are in progress, paving the way for the installation of stone masonry structures, rock filtration systems, and aquatic plant species. Together, these projects are expected to demonstrate the effectiveness of NbS in treating **around 10 MLD** of wastewater while serving as scalable and cost-effective models for urban drain management across the Ganga basin.





Recognising that successful implementation of NbS requires strong technical expertise and institutional capacity, NMCG is simultaneously investing in knowledge creation and capacity development. Through the **Knowledge Sharing and Development Centre (KSDC)** initiative, 6 capacity-building and training programmes were organised between August 2025 and March 2026, benefiting 100+ participants from key stakeholder organisations. The participants included engineers and officials from the Yamuna Task Force, District Ganga Committees (Uttarakhand), State Mission for Clean Ganga (SMCGs), Forest Departments, Irrigation Departments and other agencies involved in river rejuvenation and watershed management.

The training programmes focused on strengthening technical capacity for planning, designing and implementing NbS, with emphasis on constructed wetlands, ecological restoration and sustainable river management. By bringing together officials from multiple departments and institutions, the programmes promoted inter-agency collaboration and facilitated the adoption of best practices for river rejuvenation. By fostering knowledge exchange and building professional capacity, NMCG is creating a robust ecosystem that supports the wider adoption of innovative and science-based river restoration approaches.

Expanding the application of NbS beyond pilot interventions, NMCG has also implemented a **Constructed Wetland project at Khatauli** for the rejuvenation of **River Kali**, a tributary that receives significant domestic and industrial discharge before joining the Ganga basin. Designed as a sustainable and low-energy treatment system, the project harnesses wetland vegetation and natural biological processes to reduce the pollution load, improve water quality and support ecological restoration closer to the source.

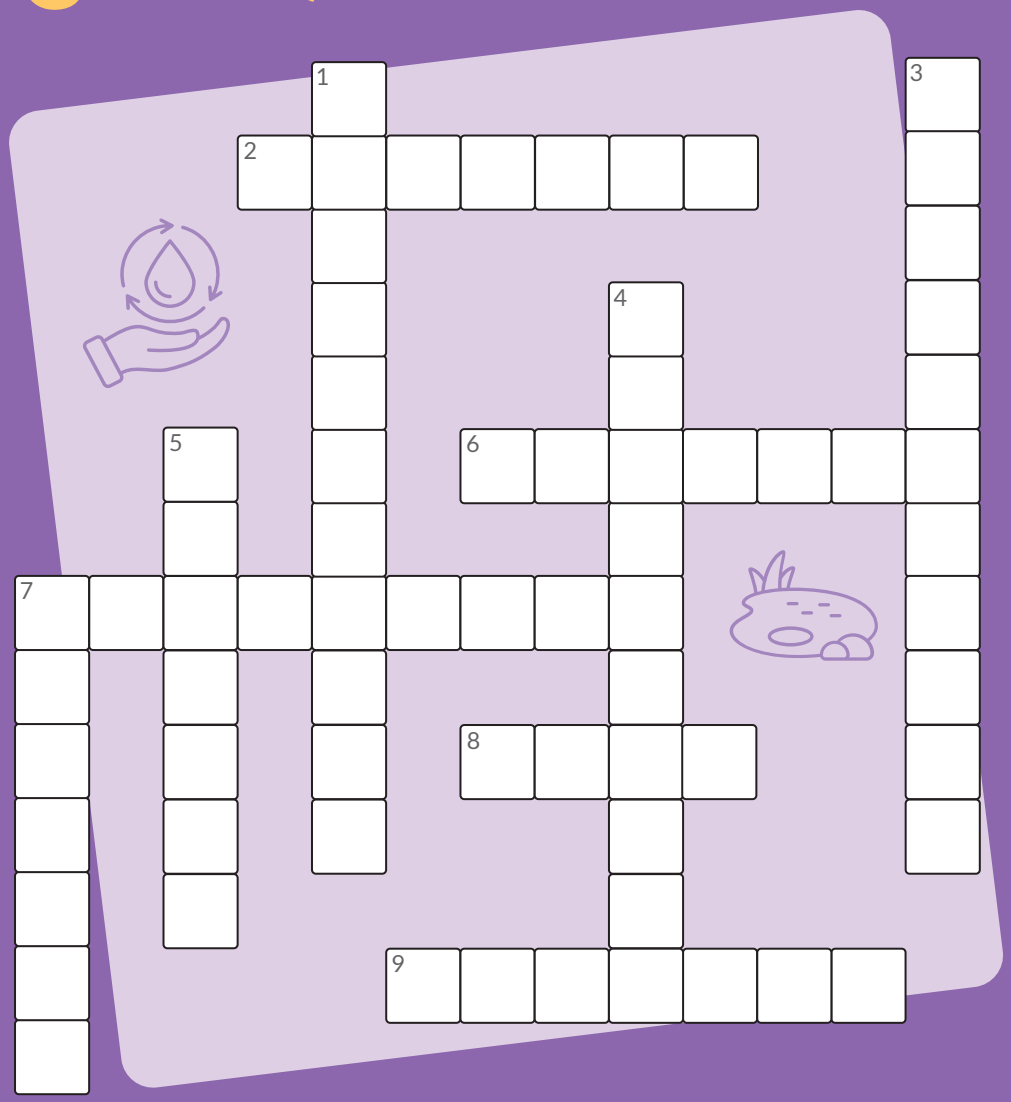
By complementing conventional pollution abatement measures with nature-based interventions, the project exemplifies NMCG's integrated approach to river rejuvenation, combining engineering solutions with ecological restoration to create healthier and more resilient river ecosystems. By working with nature rather than against it, the Mission is laying the foundation for cleaner rivers, healthier urban ecosystems and more resilient water management systems, while creating scalable models that can guide river conservation efforts across the country.



Riverside Recess

Crossing Currents

Test your knowledge of rivers, cities and the ideas that keep them flowing. Fill in the grid using the clues below.



Across

2. **Vegetation growing along the banks of a river is called _____ vegetation. (8)**
6. **The process by which flowing water gradually wears away soil and sediment. (7)**
7. **The entire area of land that drains into a particular river. (9)**
8. **A structure traditionally used to access a river in many Indian cities. (4)**
9. **A bend or curve formed naturally in a river channel. (7)**

Down

1. **The variety of living organisms found within an ecosystem. (12)**
3. **Water stored beneath the Earth's surface. (11)**
4. **A low-lying area beside a river that naturally stores excess water during high flows. (10)**
5. **The place where a river meets the sea. (7)**
7. **Land saturated with water that provides important habitat and flood-buffering functions. (7)**

Answers
Across: 2. RIPARIAN, 6. EROSION, 7. WATERSHED, 8. GHAT, 9. MEANDER
Down: 1. BIODIVERSITY, 3. GROUNDWATER, 4. FLOODPLAIN, 5. ESTUARY, 7. WETLAND

Can you Identify Me?

Three Clues, One River City.

Where Am I?

1.

My riverfront has more than **80 ghats**, many connected by a continuous series of stone steps along the riverbank.

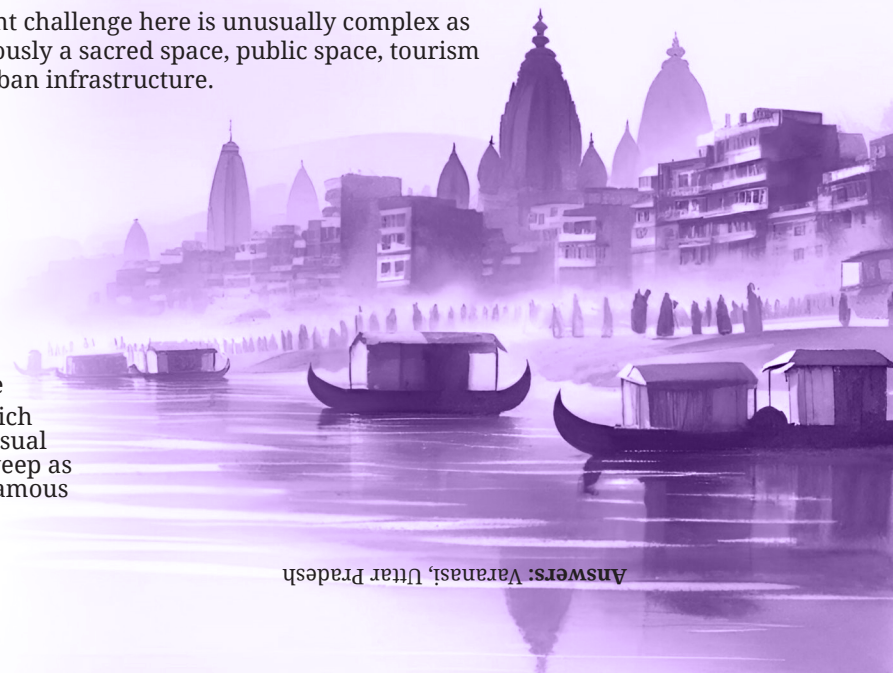
2.

Two smaller rivers **the Varuna** and **Assi** are traditionally associated with the origin of my name.

3.

I sit beside the **Ganga**, which makes an unusual northward sweep as it passes my famous riverfront.

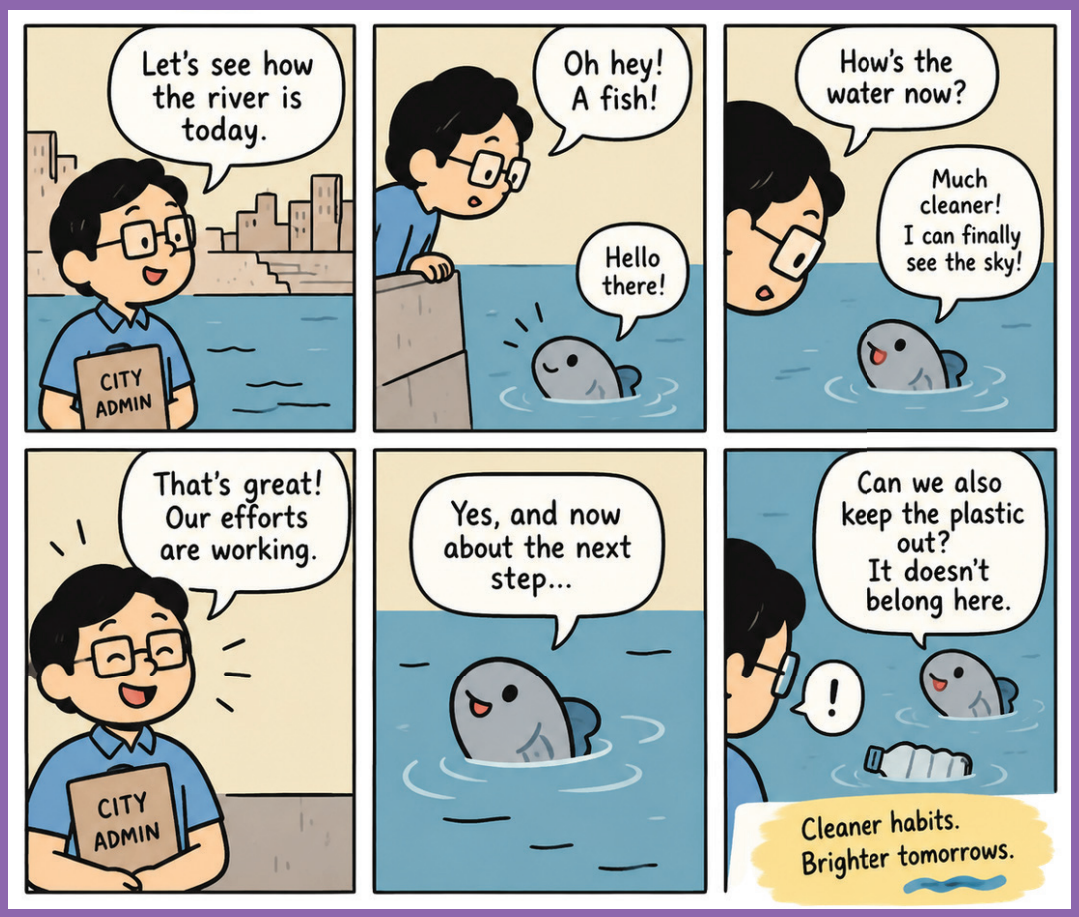
Fact: The river-management challenge here is unusually complex as the riverfront is simultaneously a sacred space, public space, tourism destination and piece of urban infrastructure.



Answers: Varanasi, Uttar Pradesh

Bankside Banter





Flow or Faux?

Three claims about our rivers.

Which Ones Hold True?

1. **Rivers can clean all the pollution on their own if we just give them time.**

2. **Treating sewage before it enters the river helps improve water quality**

3. **Plastic waste in rivers eventually flows to the ocean, where it becomes a problem for the marine life**

Fact: Rivers have some natural self-purification capacity, but they cannot indefinitely absorb pollution. When pollutant loads exceed that capacity, water quality deteriorates.

Answer: 2 and 3

Coming Up Next with RCA



The River Cities Challenge on Rejuvenating Urban Rivers

Cities can keep their eyes out for the upcoming River Cities Challenge where they can win a grant of up to INR 20 Crores! This is a competition to encourage River Cities Alliance member cities to develop and pilot innovative, practical, and outcome-oriented projects addressing urban river challenges. Selected cities will receive a 100% grant support, along with technical assistance, expert support, and opportunities for national and international recognition.



River Sensitive Master Plan (RSMP) Training for Jharkhand and Gujarat

This is being organised soon at the request of each state, to support ULBs currently preparing or updating their Master Plans. The training will combine expert lectures with experiential, site-based learning to strengthen the capacity of urban practitioners to integrate river-sensitive approaches into city planning.

Season 7: Student Thesis Competition on Reimagining Urban Rivers

We're excited to launch the seventh season of the Student Thesis Competition, which has been held annually since 2020! Over six completed seasons, STC has evolved into a unique platform that encourages students to explore innovative and interdisciplinary approaches to river management and urban water systems.



RCA Cities!

- Every volume of the Tribune will come with its own unique IEC material.
- No volume will be the same!
- Please cut along this line to detach the poster and pin it to your bulletin boards.

NAMAMI GANGE

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National Institute of Urban Affairs

50 Years
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Serving the Nation since 1976

RIVER CITIES ALLIANCE
A city led movement

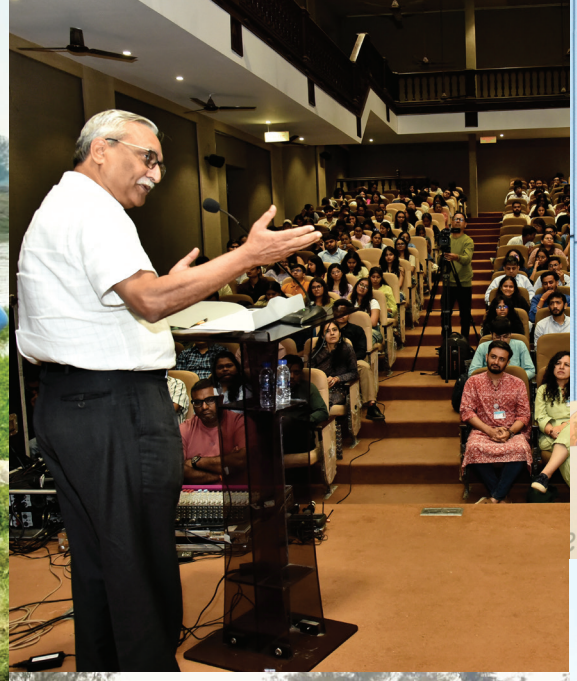


WE ARE A PROUD MEMBER OF THE

RIVER CITIES ALLIANCE

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HALF OF THE
WATER
INDIA
FROM
Transition
G20
U20


RIVER CITIES ALLIANCE
GLOBAL RIVER CITIES ALLIANCE
URBAN RIVER MANAGEMENT PLAN
PROPOSED INTERVENTIONS






जिला मजिस्ट्रेट
पीली भीत


School of Planning & Architecture Delhi


WORKSHOP
ON
MANAGING URBAN
RIVERS - FROM PLANNING
TO PRACTICE


GRADUATE AS A RIVER-READY
PROFESSIONAL
Principles of Urban
River Management
Course Highlights
Prof. Persi Engineer
Prof. Hardik Gandhi

The RCA Impact

Advancing River-sensitive Urban Planning

5000+
Individuals Trained in Water and River Management

60
Dedicated URMPs being Prepared

15+
Cities Supported through Direct Technical Assistance

200+
Indian Civil Servants Trained in Water and River Management

90+
River Systems Impacted

55+
Academic Engagements for Advancing Urban River Management

5+
Thematic Courses Launched

100+
Youth Engaged in Making Healthy Rivers a Reality

National Mission for Clean Ganga

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Website: www.nmcg.nic.in

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