

INTEGRATING RIVER THINKING INTO MASTER PLANS

(OCTOBER 2021)



Brainstorming Workshop on
**MAINSTREAMING
RIVER THINKING
INTO A MASTER PLAN**

27th August, Friday, 10:30am to 12:30pm

With
Chief Town Planners of 36 States and UTs

The discussion will be steered by



Sh. Durga Shanker Mishra
Secretary, MoHUA



Sh. Rajiv Ranjan Mishra
Director General, NMCG



Sh. Hitesh Vaidya
Director, NIUA

This is a closed meeting. An outcome report will be published and available in public domain in a week.



An Outcome Report of a
Brainstorming Workshop
with
Chief Town Planners of India

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CONTEXT

In the first meeting of the National Ganga Council held in December 2019, the Hon'ble prime minister emphasized that **"There is a need for new river-centric thinking in planning for cities on the banks of rivers. River health needs to be mainstreamed into the urban planning process by developing Urban River Management Plans. Cities should be responsible for rejuvenating their rivers"**.

Responding to this call, the National Mission for Clean Ganga (NMCG) and the National Institute of Urban Affairs (NIUA) prepared an advisory on 'Strategic Guidelines for Making River Sensitive Master Plans' (1). The purpose of this guidance document is to help city planners across the basin, and the country at large, understand how to integrate river-sensitive thinking into a Master Plan. The document was officially launched on 20 June 2021 by Sh. Gajendra Singh Shekhawat, Hon'ble Minister for Ministry of Jal Shakti.

To complement the document mentioned above, the Town and Country Planning Organisation (TCPO) prepared 'River Centric Urban Planning Guidelines' (2) that are primarily focused on planning regulations in the river zone (or floodplain).

Many river cities in India are currently preparing new Master Plans or revising the existing ones. Hence, this is an opportune time for them to be introduced to the two documents.



(1) 'Strategic Guidelines for Making River Sensitive Master Plans'

(<https://niua.org/intranet/sites/default/files/1330.pdf>)

(2) 'River Centric Urban Planning Guidelines'

(<http://mohua.gov.in/upload/whatsnew/60b0c96d3481cRCUP%20Guidelines.pdf>)

BACKGROUND


In view of the above, an **online Brainstorming Workshop on "Mainstreaming River thinking into a Master Plan"** was held on 27 August 2021, with the Chief Town Planners and Senior Town Planners of 23 States and Union Territories (UTs) in India (3).

The purpose of the workshop was to collectively deliberate on the guidance documents and explore their application within river cities in the States and UTs.


Sh. Durga Shanker Mishra, Secretary, Ministry of Housing and Urban Affairs, chaired the workshop.

Sh. Rajiv Ranjan Mishra, Director General, NMCG and Sh. Hitesh Vaidya, Director, NIUA, further set the stage for the discussions.

“ *Any city that invests in river thinking will reap exponential environmental, social and economic benefits* ”




Secretary, MoHUA



“ *There is a need to review the existing Master Plans, to what extent they address the issues of water management, water conservation, and river conservation. And learning from this exercise, the cities can upgrade and revisit their plans to include these aspects.* ”

Director General, NMCG

“ *Rivers should be looked at as a part of a culture, heritage, sustainability, biodiversity, economic development. Review, upgrade, prepare your Master Plan with a river-centric approach.* ”

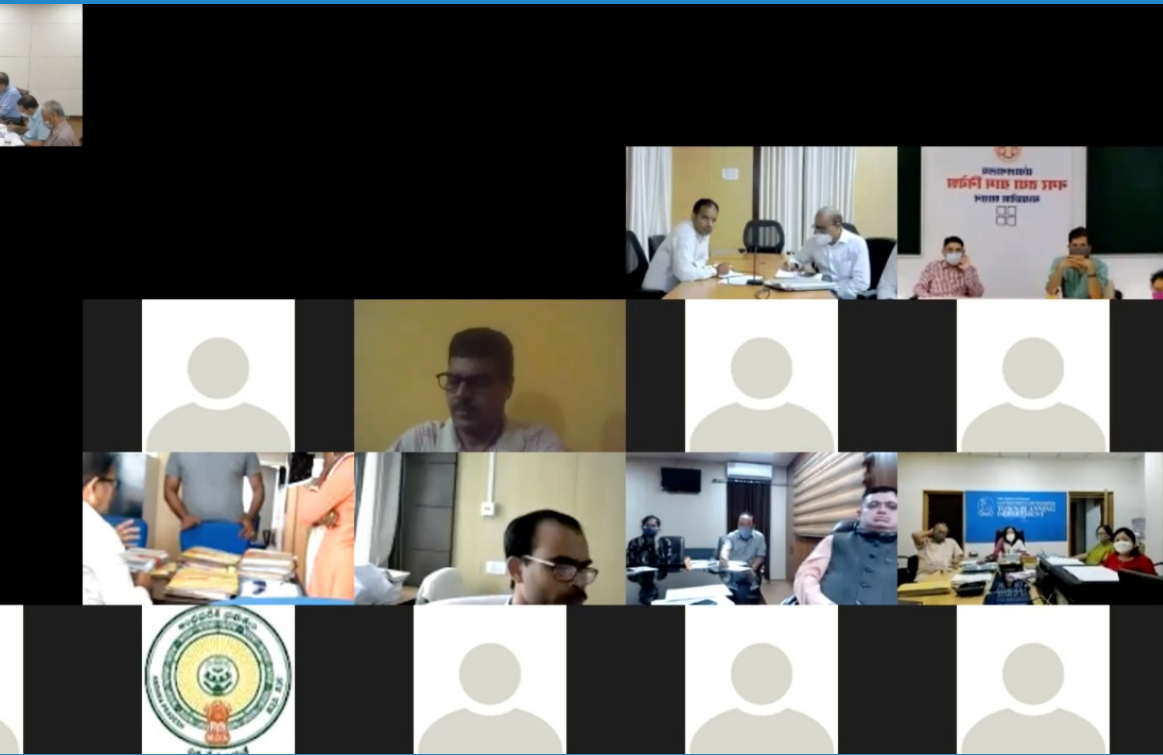
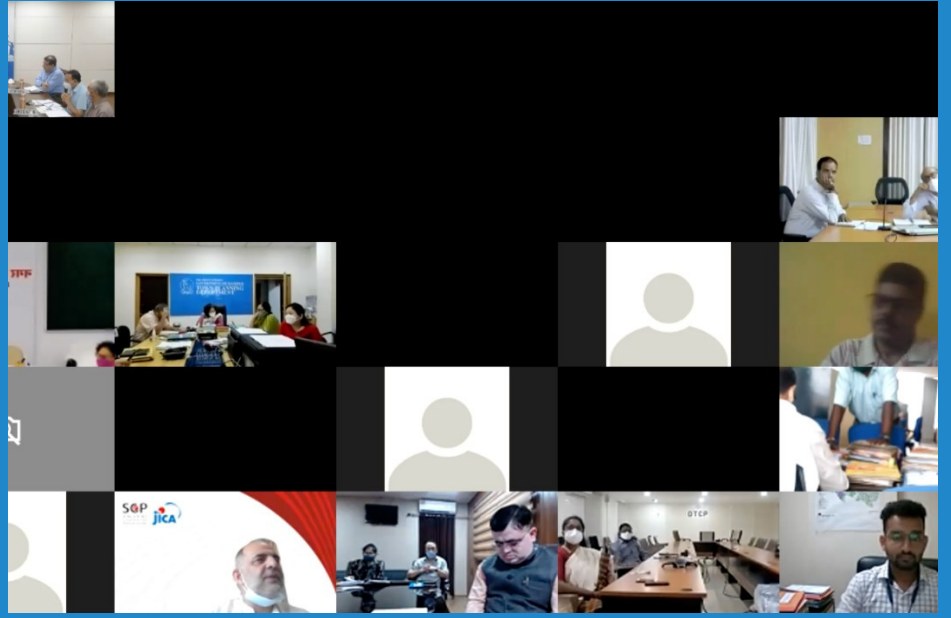


Director, NIUA

(3) The video recording for the session can be accessed on Youtube (<https://youtu.be/oT3gjhImLak>)

GLIMPSES OF THE EVENT





Strategic Guidelines for MAKING RIVER-SENSITIVE MASTER PLANS

Healthy rivers are an absolute necessity for productive and liveable cities. Cities need to plan their development activities with due consideration for the River, respecting the threshold of disturbance that it can handle naturally.

This will not only help in the long-term conservation and preservation of the River; it will also help leverage the economic, social, and environmental value of the River sustainably.

Unfortunately, the Master Plans of many river cities in India have not captured the river-specific considerations adequately.

The document elaborates on seven avenues within Master Plans that can address various river-related urban challenges.

Some of these are conventional instruments typically associated with Master Plans. In the context of river planning, these include land use assignment for the River and the river zone, development control regulations within the river zone, and norms & standards for activities conducted in the river zone.

Some avenues have a strategic focus, such as localising river-related directions stipulated in national policies; and developing sectoral strategies for specific aspects of river management like removing encroachments in the river zone in an empathetic manner.

Others are recommendations and directions for creating the grounds for big-ticket river-related projects like riverfronts, river tourism, river navigation, among others.

Creating an
Enabling Environment
for River-Sensitive
Planning



Creating a Master Plan Vision for the River

Clarify the city's ambition in this regard by setting out a broad vision of how the city views its connection with the River within the plan period.



Developing the River Baseline

Ascertain the 'status quo' of the condition of the River, its interaction with the city, and its contextual setting within the region.



1

LOCALISING NATIONAL POLICIES AND INITIATIVES

that have a bearing on river conservation, development and management

2

TOWN-SPECIFIC SECTORAL STRATEGIES

for issue-specific consideration of river management within the planning process




3


LAND USE ASSIGNMENT

for delineating the river zone, assigning land use & use zone categories, and prescribing permissible & non-permissible activities

4

DEVELOPMENT CONTROL REGULATIONS

for FAR, ground coverage and height restrictions in the river zone

5

NORMS AND STANDARDS

for prohibiting polluting and detrimental activities that have an impact on the river

6

RECOMMENDATIONS AND DIRECTIONS

for holistic action and interventions on river management




7

SPECIAL PROJECTS

for enhancing the citizen-river connect

7

PLANNING INSTRUMENTS

for integrating river thinking into Master Plans

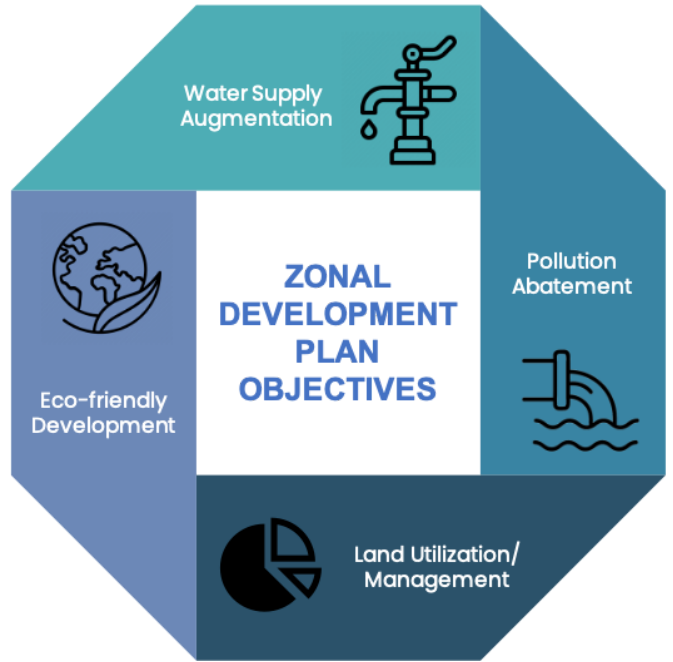
RIVER CENTRIC URBAN PLANNING GUIDELINES

The purpose of this guidance document is to assist city stakeholders in taking action to conserve, preserve, and sustainably manage the river zone. The document reflects on the following aspects primarily.

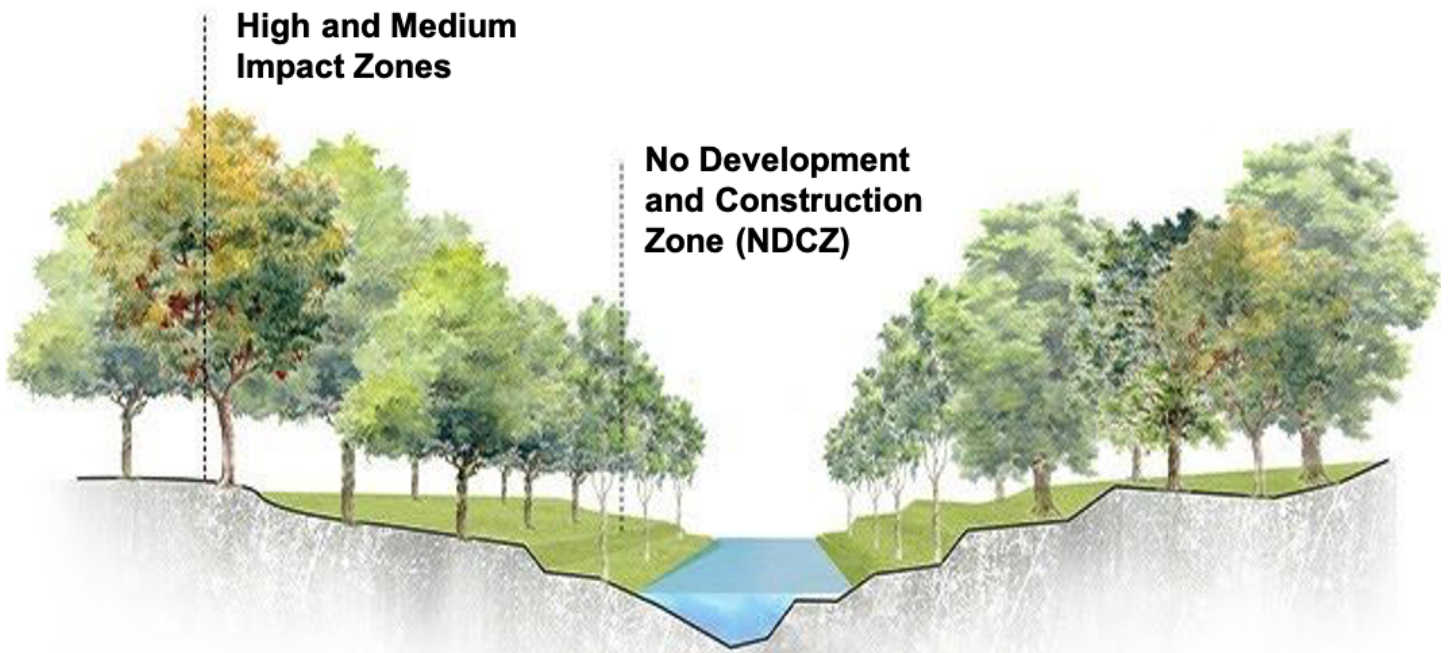
- 01 Need for preparing River Centric Master Plans and Urban River Management.
- 02 Need for a framework for river water conservation and development of river waterfront.
- 03 Devising development regulations /zoning for urban stretches adjoining a river.
- 04 Recommending suitable planning strategies for river water management and riverfront development.
- 05 Transforming riverfronts as multipurpose zones place where people can live, work and utilize it through improvements in public access and the addition of green spaces.

RIVER ZONAL DEVELOPMENT PLAN

Zonal Development Plan for river flowing through the city may be prepared to address the following objectives:



URBAN RIVER ZONING REGULATIONS



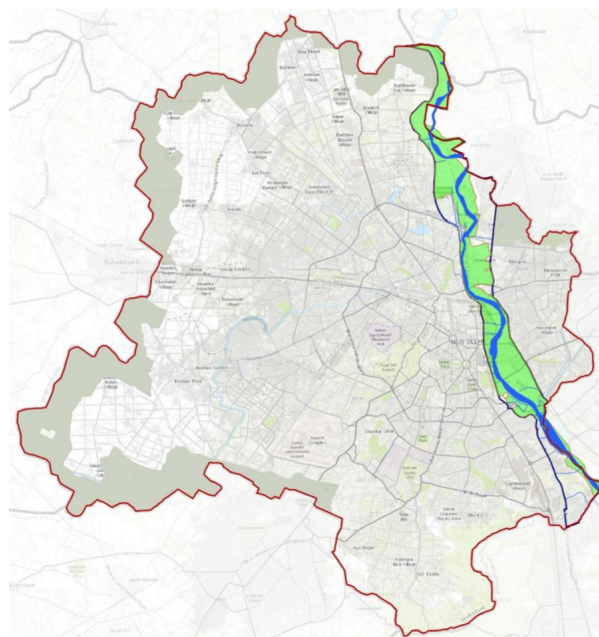
- The competent authority shall identify and designate suitable distance/s from the NDCZ on either bank keeping local topographical conditions in mind, to be called **high impact and medium impact zones**.
- In plains, this zone may range from 1 to 3 km from river zones.
- These areas may be taken up for urban with regulations on building height and ground coverage as per the local topographical requirements.

- The competent authority shall determine an **NDCZ** on either bank for each River
- It shall not be less than the "Active Flood Plain"
- Parks/Gardens, playgrounds, sports facilities, swimming pools, Open-air theatres, etc., may be permitted in this zone.

DRAFT MASTER PLAN FOR DELHI (MPD) 2041

The Delhi Development Authority (DDA), in association with the National Institute of Urban Affairs (NIUA), is preparing the Master Plan for Delhi (MPD) 2041. The guidance documents mentioned in this report have been extensively adopted in the draft MPD-41.

Delhi has adopted a two-pronged approach to rejuvenate the River Yamuna and bring it back to the forefront. This includes specific strategies for management of the river zone as well as broader integrated water management strategies across the city.



Strategies to prevent water pollution

- Strictly prohibit the discharge of untreated wastewater or industrial effluent into the Yamuna, water bodies, or drains. Augment treatment capacity, conformance to minimum discharge standards, and expanded coverage in unsewered areas.
- Direct the Delhi Jal Board to expedite Interceptor Sewer Project to capture 242 MGD of untreated effluent from 108 sub-drains before entering the Yamuna.
- Recognize that the city has very little control over the environmental flow in River Yamuna and directs the concerned authorities to take this matter up at an inter-state level.
- Strictly prohibit solid waste management facilities and landfills near the rivers and water bodies.

Strategies to manage the Yamuna floodplain

- Delineation of the Yamuna floodplain based on 1 in 25-year flood. No permanent construction is allowed in this floodplain.
- Direct DDA to prepare a Comprehensive Yamuna Development Plan in consultation with other concerned agencies, to ensure sustainable development in the river zone.
- Assign a separate use zone category to the River and the floodplain.
- Earmark specific locations in the floodplains for socio-cultural and agriculture activities
- Encourage the use of eco-friendly materials for any temporary built structures.

Strategies to prevent depleting green cover

- Mandate 300 m wide green buffer along the river edge, where ever feasible, with wild grass upto 25-30m from the river edge and tree cover beyond.
- Enhance and strengthen the green-blue network with natural drain green buffers, scrublands, existing buffers, floodplains, or vacant government land.
- Direct agencies to take up special greening projects such as biodiversity parks, amusement parks, children’s play areas, nurseries, etc.
- Mandate blue-green factor, computed by evaluating particular green and blue features provided in the site and building design, for all new projects and developments.

Strategies to augment groundwater table

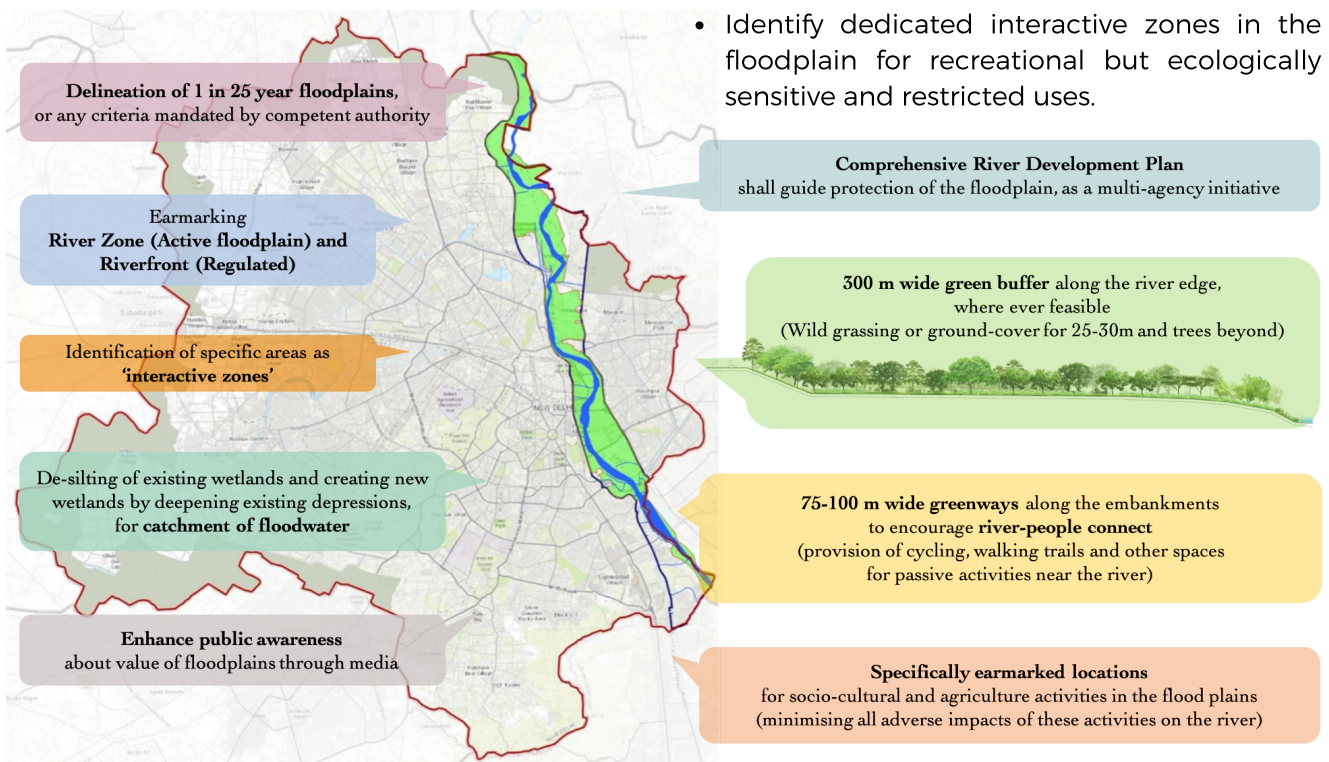
- Adopt WSUD elements such as bio-swales, vegetated filters, pervious stormwater drains, rain gardens, semi-permeable pavements, public parking areas, and public spaces as per ground conditions.
- Maximise stormwater retention through storage or indirectly through groundwater recharge.

Strategies to protect degrading water bodies

- Take up all water bodies above 1 Ha for protection and preparation of database.
- Assign a separate use zone for water bodies and natural drains
- De-silt wetlands and create new wetlands by deepening existing depressions
- Large-scale use of treated wastewater for rejuvenation/ creating artificial water bodies.
- Direct the concerned agencies to establish a protocol for continuous monitoring of water quality in the lakes and water bodies.

Strategies to improve Citizen River Connect

- Green mobility corridor comprising 75-100 m wide greenways along embankments, with walking/ cycling trails, and passive recreational spaces.
- Eco-friendly activities within the buffers of drains, such as open-air exhibitions, performances and arboretums, community gardens, boating, restaurants, heritage trails.
- Nudge civic behavior by creating awareness and aggressively branding the value of river ecosystems.
- Identify dedicated interactive zones in the floodplain for recreational but ecologically sensitive and restricted uses.



KEY POINTS OF DISCUSSION IN THE WORKSHOP

Encroachment in river zones and drains

A river needs its space to perform its natural functions and provide the intended ecosystem services to its beneficiaries. However, unplanned development and encroachment in the river zone have severely restricted the natural channels in many towns. Furthermore, channelisation and excessive concretisation lead to a state where the entire geomorphology and ecology of the River get disturbed. This results in several problems such as fluvial flooding, loss of biodiversity, and pollution, among others.

While Master plans can provide directions in terms of regulating the development in the river zone, in many cities, much of the river zone is already built up, making it challenging to make any change on the ground. Some of the thoughts reflected on this topic are as follows:

- It is essential to look at encroachment, particularly informal settlements, in an empathetic manner to arrive at long-term solutions. Overnight removal of encroachments, a common practice in many cities, merely transfers the challenge to another part of the city, ultimately impacting the River anyway.
- Restoring the natural vitality of the river zone is an incremental process. Through their Master Plans, cities must take up whatever is possible today and leverage future redevelopment initiatives in the river zone to push the agenda for enforcing the river zone regulations.
- There was a consensus that the Master Plans of river cities should be more prescriptive than restrictive as far as possible. This will help create an intrinsic value for the River, leading to better implementation of the Plan in the river zone, especially regarding no development zones and regulated zones.

While the guidelines provided by NIUA, NMCG, and TCPO are at a national level, States are encouraged to customize these for their contexts or develop their own.

1. For example, Maharashtra has provided regulations for development within the floodplain by demarcating two distinct zones - Blue (corresponding to 1 in 25-year floodplain) and Red (corresponding to 1 in 100-year floodplain). These are categorized as no development and prohibitive zones, respectively, and have specific development control norms and type of activities allowed for each.
2. Likewise, Uttarakhand has adopted specific guidelines (4) mandated by the NGT or their respective Masterplan for prohibited and regulated activities around the River and its floodplain. The Master Plan for Rishikesh has already adopted some of these provisions.
3. Similarly, in Kanpur, Uttar Pradesh, a 'no construction zone' of 200 m from the river edge in the floodplain has been delineated as per NGT directions.
4. Kerala has developed its guidelines for developing 'Risk-Informed Master Plans,' which has some common features with the guidelines presented in the meeting.

- Some cities in Jharkhand and Tamil Nadu have attempted to adopt the river zone guidelines and development control regulations specific to river zones in their Master Plans. The main challenge in most of these cities is maintaining the no-development zones/buffers, given the existing state of encroachment.
- It is crucial for Master Plans to provide directions on addressing encroachment in the buffers of natural drains, which may not be as conspicuous as the encroachment in the river zone but is equally damaging to the overall riverine ecosystem.
- A common problem in most States is the absence of reference values for the 'no development zone' or buffers. It was discussed that providing national-level guidelines in this regard is complex because of the country's diversity in the nature and types of rivers. However, it is essential to lay out core principles for defining river zones buffer areas across India and invite States to carry out their own studies to arrive at contextualised reference values based on river characteristics and local settings.
- Shifting river courses pose a significant challenge for establishing consistent regulations in the river zone. In some cases, especially in Uttar Pradesh and Bihar, rivers have deviated several kilometers from their original courses. Some of this deviation is natural but upstream obstructions (in the forms of dams and barrages) are equally responsible for the shifting in course. Controlling the latter may help bring down the deviation to a manageable level, which accentuates the importance of regional planning.



(4) Uttarakhand Guidelines

(<http://www.uhuda.org.in/wp-content/uploads/2018/03/combinepdf-1.pdf> and http://www.uhuda.org.in/wp-content/uploads/2017/11/IMG_0005.pdf)

Pollution in rivers and drains

Pollution, unarguably, is one of the most severe concerns in Indian rivers, especially in the Ganga River Basin. Pollution from various sources—domestic sewage, industrial effluents, agricultural runoff, solid waste dumping, and others—is taking a toll on the rivers. Floral offerings and waste generated by religious activities add to the problem. In many cases, large stretches of the rivers have turned into flowing sewers. As the cities heavily depend on these rivers, river pollution poses serious health issues. More importantly, not just the River but the entire riparian ecosystem is heavily affected.

Master Plans must prohibit the flow of untreated discharge into the rivers, drains, and water bodies. It must also strictly disincentivize any solid waste disposal within the river zone. Some of the thoughts reflected on this topic are as follows:

- Mitigating river pollution requires a systems approach to planning. For example, in some smaller cities (e.g., in Uttarakhand, Uttar Pradesh, Bihar), there are sewage treatment plants but no sewer network, making the treatment plants redundant.
- Master Plans must advocate decentralized options for wastewater management (especially nature-based solutions) to complement centralized systems.
- The Master Plans of some cities advocate interceptor sewage projects to divert polluted wastewater to a treatment plant before it outfalls into the River. While such projects help control the pollution in the River, they must not be seen as a 'replacement' for strengthening the city's indigenous sewer and drain network.



Groundwater depletion

As the rate of urbanization in cities increases, the stress on water resources to meet the rising demand also increases. In peri-urban areas, agricultural water demand particularly aggravates the situation. As a result, rivers and aquifers are fast depleting, causing changes in hydro-morphology and the natural hydrological regimes of water channels.

The Master plans can reduce this stress by promoting groundwater recharge, regulating the extraction of underground water, and propagating the reuse of wastewater. Some thoughts reflected on this topic are as follows:

- Master Plans must bring major groundwater recharge zones (based on a scientific assessment) under some form of protection. For example, the National Capital Region Regional Plan (2021) advocates bringing some of these under the 'Natural Conservation Zone' category, with dedicated development control norms.
- It may be worthwhile for river cities to explore financial mechanisms such as Tradable Development Rights (TDR), groundwater credits, etc., to ensure sustainable groundwater management. Groundwater credits are an 'allowance' given to industries to extract groundwater (mainly in the river zone, which has a high water table) in lieu of the amount of treated wastewater it provides for groundwater recharge. The Master Plan of Hyderabad has successfully adopted the former, and the Master Plan of Noida the latter.



Degrading water bodies & wetlands

Lakes, ponds, and wetlands are important features that help stabilize the groundwater levels and provide various social and environmental benefits. They serve as a vital source for groundwater recharge, augmenting groundwater levels and reducing the stress on river water resources. However, these water bodies are in a severely dilapidated state in several cities, resulting from encroachment and pollution. Loss of catchment basins, change in water quality, and loss of natural flora and fauna raise concerns about the impacts of rapid urbanization on these vulnerable ecosystems.

Many of these concerns can be addressed in Master Plans through a mixture of appropriate planning regulations and special projects for the rejuvenation of water bodies. Some thoughts reflected on this topic are as follows:

- A common problem in most cities is that there is not enough good quality data for water bodies. The existing records do not match ground reality, and there is very little information available about the quality of water. For effective planning, the Master Plan must plan direct concerned agencies to develop a robust database of water bodies, a first step to managing them.
- Cities in states such as Madhya Pradesh (for example, Bhopal, Indore) have adopted wetland management strategies and prioritized rejuvenating lakes and water bodies in their Master Plan. Indore has introduced several conservatory activities for the buffer around water bodies and lakes.
- Cities are often advised to revive lost water bodies and paleochannels and return them to their 'original' states. Such advice is difficult to implement because of two reasons. First, many of these water bodies have already been built upon. Second, reviving a water body necessitates restoring its entire catchment to ensure natural water flow, making the advice even more arduous to implement.



Depleting green cover

Green cover is critical from a river management point of view. On riverbanks, it serves as an erosion control mechanism. In other areas, it helps augment groundwater levels and provides a habitat for biodiversity to thrive. Unfortunately, the cities today have been trapped in a vicious green-grey debate. The general trend is that as the cities add to their built-up spaces, the green cover continues to decline.

To efficiently manage the green cover, the Master Plans can make provisions to retain the tree cover across the entire city and the riparian zone along the water channel. The broader thoughts reflected on this topic are as follows:

- It is difficult for cities to take up riparian zone plantations along the entire length of rivers within their jurisdictions in one stretch because the present ground conditions do not allow it. However, the approach in this regard should be incremental, where low-hanging fruits (readily feasible plantation zones) could be first targeted. There must be adequate planning provisions to facilitate action when 'difficult' areas come up for redevelopment.
- States expressed a need for some directions on how to dovetail compensatory forestation within the larger green-blue network of the city.

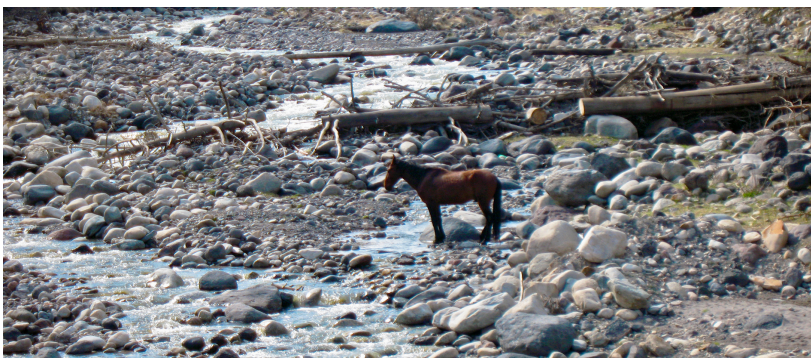


Weak citizen-river connect

Traditionally, the River was at the center of various cultural, religious, livelihood, and recreational practices. This citizen-river connection is critical to establishing the identity of the River, giving it a societal value. This value helps inculcate a sense of ownership of the River among the residents, which is beneficial in the long run. While this is still prevalent in some cities, somehow, many cities (especially larger cities) have lost their connection with the River.

To re-establish that connection, Master plans need to make provisions for developing a sustainable riverfront, an accessible river edge, and encouraging activities to sustain the river economy.

- Planned riverfront development in cities can prevent encroachment while also enhancing people's connection with the River.
- Master Plans hardly ever consider the economic valuation of riverine ecosystems to decide on suitable strategies to enhance the river-related economy. Such an evaluation is imperative to provide a scientific basis to the planning exercise while at the same time building a case for investments that may be needed to initiate relevant projects.
- Often planners are encouraged to leverage the spiritual value of rivers to create a premise for its sustainable management. However, this value is not an accurate measure of how well a river is taken care of because people will visit religious places irrespective of the state of the River. The Yamuna River in Delhi is an example where women perform the Chathh Puja in frothy polluted waters. Cities would be better off targeting that value of the River, which is dictated by the 'choice' of residents instead of necessity.



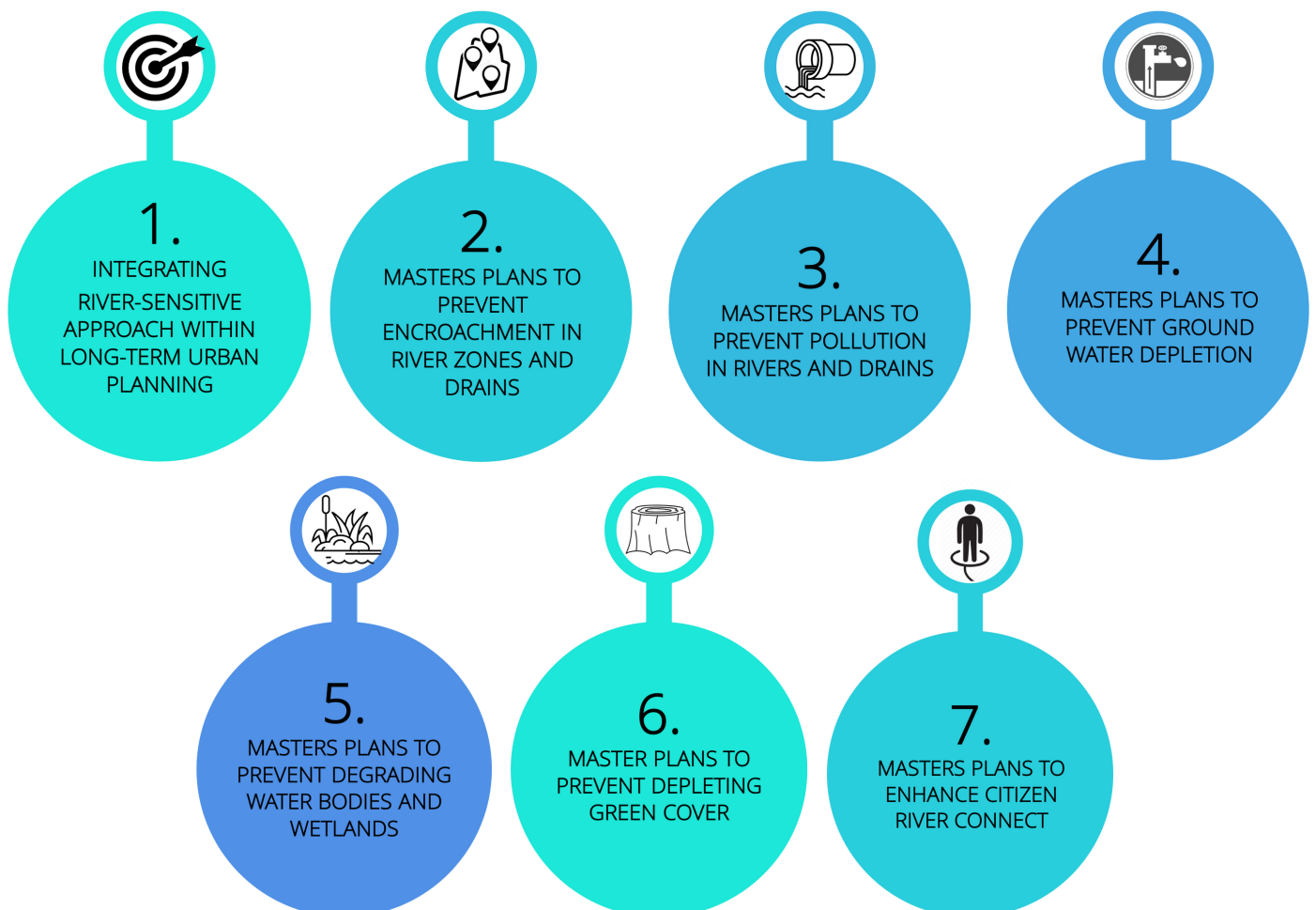
UPCOMING CERTIFICATION PROGRAMME

NIUA is designing an extensive certification programme on 'How to prepare river-sensitive Master Plans?', which will be available on the National Urban Learning Programme by November 2021. This is a self-paced programme where participants will have the opportunity to study the entire gamut of the directions provided in the guidance documents and have a chance to understand their applications through various exercises and case studies.

The certification programme has no fee and will feature video lectures, case studies of good practices, and interviews with sector experts. The programme is open to all interested participants, including government officers, practitioners, consultants, students, and academicians.

Upon completing the programme and the subsequent evaluation, a certificate of meritorious completion will be awarded by the NIUA and NMCG.

The following lectures (tentative) will be a part of the online module.



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