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NAMAMI GANGE

Workshop Series Report
Planners Circle : Expert Panel 2

Water-Centric Master Planning in India

CONTENTS

01 Repositioning the Statutory Master Plan for planned urbanisation around water bodies

India's urbanisation has been confronting new challenges- degeneration and unplanned development around water bodies, urban floods and a plethora of systemic challenges which are embedded in the institutional ecosystem and legal architecture that governs the Master plan instrument. Historically, the absence of city-level river management plan for India's water bodies has contributed to the mismanagement of urban rivers and waterbodies. The environmental consciousness in India began after the Stockholm Conference in 1972 when the Government of India enacted the Water Act of 1974 to prevent and control water pollution. Recently, the need for planned interventions for urban water bodies has been acknowledged as crucial.

The Master Plan is the central instrument of statutory planning framework in India. This essentially translates into the Master Plan being crucial for the protection, management and governance of urban water bodies like rivers. However, the distinct role of the Master Plan in governing urban water bodies has rarely been acknowledged in policy or academic discourse, which has translated into an under-utilisation of existing statutory planning provisions.

To address the contemporary challenges that urban India faces such as ecological degradation of its waterbodies, climate change induced heavy rainfall leading to floods, river pollution; policy frameworks must allow the statutory Master Plan tool to evolve. A growing body of scholarship and practise have highlighted the structural limitations of the Master plan tool and calls for a strategic reimagination of statutory planning instruments like the Master Plan for accommodating water-sensitive interventions.

As a part of a National Mission for Clean Ganga (NMCG) supported research project, TREADS@ CPR seeks to critically engage with the instrument of Master Plan to revisit the role of statutory spatial planning for environmental management. The Namami Gange Programme (NGP) initiated an epistemic shift by recognising cities as integral components of the river ecosystem. Such a reframing of the urban essentially allows to approach environmental challenges, centrally water, in a more comprehensive and coherent way. This is a step towards engaging with the limits, potential and opportunities of the master plan instrument for better governance of India's urban water bodies.

Source: Tapi Riverfront Development Corporation Limited

02| Rationale for Conducting Expert Panels on Water-Centric Master Planning in India

The prevailing body of knowledge on the application, limitations and effectiveness of the Master Plan instrument lies predominantly within the realm of praxis and is therefore shaped by practitioners. Scholarly engagements with the Master Plan as a planning instrument is limited and therefore knowledge about the opportunities, limitations and potential of the Master plan instrument lies within the community of planning practitioners as their experiential knowledge. To address this critical gap between theory and praxis and to harness the knowledge of planning professionals, Expert panels called Planners Circle has been conceptualised as a dedicated forum, with the objective of drawing upon the know-how of the planners to critically engage with the potential to reimagine the Master Plan instrument to accommodate water-sensitive planning parameters.

The first session of Planners Circle: Expert Panel 1 (PC-EP1) focused on the theme 'Master Plan(ning) for Urban Water Bodies', which brought together prominent practitioners to deliberate upon the Master Plan instrument. As a continuation of this effort, a series of talks under the theme 'Water-centric Master Planning in India' was launched, called Planners Circle: Expert Panel 2 (EP-PC2) which brought together leading experts and practitioners to deepen the discourse on Master plans.

The series comprised of ten expert standalone talks which were structured around questions that engaged critically on the contemporary status and potential of water-centric urban planning in India. Set against this backdrop, the talks offered pragmatic insights into the possibilities and limitations of reimagining the Master Plan instrument.

The series explored the following key areas governing the Master Plan instrument:

1. How effective are tools such as zoning, TDRs, DCRs, by-laws, and SPVs in the protection and governance of urban water bodies?
2. Prioritizing water bodies may conflict with other important considerations of land development and economic growth. Can urban planning prioritise water centric imaginations? How does land use planning, specifically zoning, facilitates this approach?
3. Flood Plain Zoning and other buffer zoning relevant as a Master planning tool be effective to counter encroachment? What are the various constraints in useful deployment of buffer zones/ flood zoning? Why have states been slow to legislate urban flood zoning? Can creative application of byelaws/DCRs/ regulatory instruments help?
4. Innovative application of Transferable Development Rights (TDR) kind of instruments can be limited. Weak real estate markets may impact the effectiveness of TDRs for water body protection.
5. Environmental protection laws must be sensitized to accommodate spatial planning scope and limitations. Urban planning and governance should be able to leverage the laws effectively.
6. Insights into difference between programmatic plans (like climate action plan, URMP) and the statutory Master Plan, and the mainstreaming/ alignment of programmatic plans with it? Current constraint and future directions.

03| Emerging Narratives from the Expert Panels on Water-Centric Master Planning

Two distinct positions on the statutory Master Plan have emerged from the discussions:

- That, the existing Master Plan instrument is adequate to accommodate water-sensitive planning for urban water bodies. Although it has certain limitations, the Master Plan continues to be the central tool for statutory planning in India and therefore it is essential to acknowledge to strengths of the instrument while exploring areas for reform.
- That, the Master Plan in its existing form is inadequate for managing urban water bodies, owing to its structural limitations and legal rigidities. Fundamental governance gaps prevent the inclusion of water related sensibilities into spatial planning through the Master Plan.

These two narratives are presented as analytical frames in the next sections to explore possibilities of reimagining the Master Plan instrument while offering a nuanced engagement with the evolving discourse on water-centric urban planning in India.

NARRATIVE 1:
The existing Master Plan instrument is adequate to accommodate water-sensitive planning for urban water bodies. Although it has certain limitations, the Master Plan continues to be the central tool for statutory planning in India and therefore it is essential to acknowledge to strengths of the instrument while exploring areas for reform.

In the following section we explore how the Master Plan instrument has accommodated water-sensitive planning for urban water bodies.

1. The Master Plan is a viable platform to anchor long term sustained interventions for the governance of urban water bodies.

Urbanisation puts immense pressure on the rivers which flows through urban areas. One of the most visible manifestations of this pressure is the proliferation of informal settlements along the riverbanks. Apart from encroachments, riverfront land also happens to be much sought-after by various stakeholders who seek to prioritise competing functions ranging from agriculture, recreation to real-estate development. In light of existence of such competing yet conflicting claims to riverside lands; systemic, context-sensitive interventions become crucial instead of ad-hoc actions having limited utility.

Competition regarding access to river side land are often embedded in complex social, economic and environmental dynamics which requires an understanding of nuances, thereby, demanding sustained engagement. Owing to such pre-existing competing claims, the planning process related to urban land along rivers needs to negotiate and reconcile such competing interests of diverse stakeholders, which might include farmers, developers, environmentalists. Arriving at pragmatic comprises and regulated interventions therefore becomes the norm when planning for Master Plans with urban rivers. A case in point is the Delhi Master Plan, where various completing interests from multiple stakeholders had to be accommodated through various consultations.

In many instances, river management can extend beyond the jurisdiction of municipal boundaries. Any effective intervention to govern the urban river might therefore necessitate facilitating coordinated action among multiple institutions and organisations. A case in point is the management of the Ganga in Kanpur, where 19 distinct interventions were identified across environmental, social and economic sectors; which validates the significance of having a singular statutory platform like the Master plan capable of enabling such co-ordination among municipalities and state agencies.

Long-term interventions in managing urban rivers like establishing riparian buffer zones, might require incremental strategies. Master Plan provides such an enforceable framework to influence land-use, zoning and design of infrastructural development.

Another challenge to governing urban rivers lie in navigating institutional fragmentation and inadequate planning mechanisms, which have exacerbated into the current challenges facing planning for urban water bodies. In light of such challenges, the Master plan again emerges as a viable platform because of its 20 -30 years horizon period. This time frame allows the Master plan to become an ideal anchor for achieving long-term ecological restoration and river rejuvenation.

Alongside these advantages, the Master Plan possess the legitimacy embed national-level water policies, institutional programmatic strategies like action plans and Urban River Management Plans (URMPs) while also ensuring public outreach and participation. Since the Master Plan can host and implement these

Urban River Management Plan (URMP) provisions for the Kanpur Master plan 2041

The Urban River Management Plan for Kanpur (2021) recommends the following for the proposed Master Plan of Kanpur-41

Localising National Policies and Initiatives	Rainwater harvesting structures to be mandatory for all new construction with a plot area of 300 square meters or more. All existing groundwater users—commercial, industrial, infrastructural, and bulk users—to be charged based on the quantity used, for limiting its use. Prohibition on the pollution of ponds, rivers, wells etc.; ban on direct recharge from open areas into aquifers for pollution monitoring. Commercial, industrial, infrastructural, or bulk users withdrawing ground water above a determined threshold limit to be mandated to recycle water for purposes as may be suitable. Revival and rejuvenation of rivers, ponds, and wells, etc.
Town-specific sectoral strategies	Earmarking a fringe of 15–30 meters for the buffer, wherever possible Assigning an appropriate land use for the riparian buffer Clarifying land ownership in the buffers Direct the concerned agency to develop a riparian planting action plan using the native species
Land use assignment	A clearly defined land use category for the river and its floodplains, within the existing and proposed land use tables. Both the Ganga and Pandu rivers and their floodplains could be clearly marked in the land use plan as well, under the appropriate land use category.
Development Control Regulations	Any new development/re-development of the area must follow the Development Control Regulations for the River Zone A phased strategy for restoring the river zone to be prepared by the concerned agency Demarcate the "no development zone" and "interactive zone", for regulating all development within the flood plains of both the rivers Enlist the prohibited, regulated, and permissible activities within each of these zones Devise a phased strategy for the relocation of prohibited activities

Norms and Standards	A buffer of 75 m as a "No Development and Construction Zone" to be maintained around waterbodies (lakes/ponds), as per the revenue records. The minimum size of water bodies/lakes applicable in this context is to be decided by local stakeholders. A buffer of 50 m for primary, 35 m for secondary, and 25 m for tertiary drains (measured from the edge of drains) to be maintained. Alternatively, the Plan may direct a competent authority to identify and establish adequate buffer standards (as per requirement and land availability analysis) for water bodies and drains within the city.
Recommendations and Directions	Complete prohibition of the dumping of solid waste in or around the river zone or any other eco-sensitive sites by imposition of strict penalties through local bodies Strengthening of waste collection system from unauthorized sector along the rivers Promotion of public awareness campaigns
Special projects	Rejuvenation of the existing fly ash pond in the river zone and its re-development after adequate treatment (for recreational or other uses)

Source: Shinde, V. R., Kumar, G. A., Joshi, D., & Madan, N. (2022). Healthy urban rivers as a panacea to pandemic-related stress: How to manage urban rivers (ADBI Working Paper No. 1349). Asian Development Bank Institute. https://doi.org/10.56506/VYQU8666

2. Leveraging tools of the Master Plan for protection of urban water bodies

India's spatial planning framework with its statutory Master plan instrument is well-equipped to address contemporary environmental challenges that urban areas are increasingly facing. However, there are systemic challenges within the structure of the instrument, within the institutional ecosystem that governs the Master plan coupled by procedural inefficiencies which have hindered the ability of the Master Plan in protecting and managing critical environmental resources like the urban water bodies.

A prominent driving factor behind this stems from a misunderstanding relating to how the Master Plan tool is conceptualised. While the Master planning framework should ideally serve as a strategic framework to guide overall city development, many plans dive too deeply into finer details at an early stage which slows this process to a crawl. The result is that it takes years to complete a master plan which should have been completed within months. The Master Plan should essentially focus on laying out crucial pathways of development – such as land-use zones, networks of infrastructure, perspectives of growth and actions, while the finer design details should be accommodated at the next scale of planning, through the Town Planning Schemes (TPS) and Local Area Plans (LAPs). TPS and LAPs can be leveraged as critical instruments which translate the broader strategic visions of the Master Plan into implementable actions at the local level.

Projects like the Sabarmati Riverfront show TPS and LAPs can be effectively used to operationalise broader goals related to environmental concerns. However, merely transplanting such models into other cities without accounting for adaption to local contexts and challenges might lead to challenges apart from ineffective implementation, thereby highlighting the need for context driven planning.

The Sabarmati riverfront Project and Town Planning Scheme (TPS)

- The TPS enabled pooling of consolidated land parcels along the Sabarmati so that a contiguous stretch of land could be claimed for planned development.
- After pooling of land, the reconstituted land was distributed among the original owners. The TPS provided a statutory backing thereby enabling the process of land acquisition and redistribution, thereby streamlining the process for a riverfront development.
- In order to manage urban growth, the TPS introduced zoning, thereby designating areas for commercial, residential, recreational and public purposes along the riverfront.
- Implementation of Development Control regulations (DCRs) brought regulations on FSI, building heights, permissible land use and setbacks.
- To target flood management, the TPS introduced embankments with green buffers.
- The implementation of this TPS was coordinated between The Ahmedabad Urban Development Authority (AUDA) and Sabarmati Riverfront Development Corporation Limited (SRFDCL).

3. Zoning, DCRs, and Land Instruments as Master Plan Tools for Protecting and Planning Urban Water Bodies

The tools of the Master Plan can be effectively deployed to protect urban water bodies. Development Control Regulations (DCRs), Transferable Development Rights (TDRs), Zoning, Special Purpose Vehicles (SPVs) can be creatively applied in planning for and governing urban water bodies.

While DCRs standardise urban development, a more context and scale sensitive application of DCRs might be useful. The use of preservation zones can be useful in managing encroachment and unplanned development activities on the floodplain of the river in turn promoting controlled development of public spaces and ecologically sensitive practices to protect the urban water bodies. Floodplain zoning has emerged as a powerful regulatory and preservation practise, case in point being the designated zone 'O' of the Delhi Master Plan for managing the Yamuna floodplains. Similarly, the Bangaluru Master Plan has also accommodated water-centric provisions in its Master Plan.

Water sensitive provisions in the Bangaluru Master plan

The Revised Master Plan 2031 for Bangaluru (BDA) has incorporated various provision to ensure water-sensitivity in its Master Plan. The provisions include:

- Demarcating valley zones and buffer areas around urban lakes (30 meter), streams, primary (50 meter) and secondary drains with clear setbacks.
- Prohibition of construction activities in designated buffer zones
- Rejuvenation of degraded lakes and wetlands
- Ensuring protection of ecological corridors and natural drainage

SPVs can be used as an institutional platform to achieve better co-ordination within organisations in order to support developments around rivers. The Sabarmati Riverfront development project is an example of effective use of the SPV targeting better management of the Sabarmati.

The TDR has also emerged as an innovative policy solution to protect urban water bodies as it raises revenue for ULBs. In India, the TDR has found application in Mumbai, Hyderabad, Bengaluru and Ahmedabad, for the purposes of 'slum rehabilitation, heritage conservation, public housing redevelopment projects; and for conservation of lakes' specifically in Hyderabad. In Hyderabad, the TDR has been instrumental in extending protection to urban water bodies through conservation of lakes, nalas foreshores and recreational buffer development with greenery. The land exchange policy implemented in Daman & Diu, which secured public access to riverfronts also depict the creative deployment of instruments like TDRs. Similarly, storm water credits could also be implemented to promote water-sensitive spatial planning.

4. The Master Plan preparation can benefit from utilising data and technological advancements

A fundamental challenge to the governing of urban water bodies has been inadequate representation and demarcation of existing water bodies. The use of outdated maps, lack of rigorous ground truthing, and limited access to data has been primary factors behind this gap. This often results in existing water bodies being represented as land parcels in the master plan, or vice-versa, where old maps identify land parcels as previous water bodies. In the absence of accurate spatial representation, the urban water bodies remain vulnerable to unplanned development, neglect and encroachment.

Technological advancements with the coming in of new tools like GIS, satellite imagery, drones coupled with technologies to generate models of hydrological flow and contour-mapping has the potential to generate accurate and information rich base maps which can accurately capture ground realities, thereby including water bodies and floodplains.

Master Planning preparation can benefit from utilising these advancements. A case in point is Ahmedabad's vision plan which has targeted environmental sustainability by including natural features like lakes, streams and rivers into its planning framework. There are however, challenges associated with access to data where institutional silos, data ownership and sharing might thwart timely integration of such data-sets into the master planning process. This also highlights the need for a more open institutional collaboration when it comes to data sharing.

5. The statutory Master Plan has the potential to integrate programmatic plans

A persistent challenge in implemental environmental sensibilities into governance of urban areas arises from the disconnect between statutory and non-statutory planning. A study conducted by NIUA in 2020 across 13 cities identified a critical gap in urban planning in India, showing that none of these cities, inspite of located on the banks of rivers had incorporated a vision of protecting the river within their statutory plans, apart from Chennai, which had introduced designated river zones into its Master Plan.

The Urban River Management Plan (URMP) was introduced to address this gap through a detailed context-based approach at the scale of a city. The URMPs are designed to accommodate water-sensitive sensibilities in managing the rivers of the cities, which can be embedded into the statutory Master Plans. Cities like Bareilly, Kanpur and Chhatrapati Sambhaji Nagar (Aurangabad) have already integrated the guidelines provided by the URMPs into their Master Plans.

URMP informing Master Plans: Cases of Chhatrapati Sambhaji Nagar (Aurangabad), Bareilly and Ayodhya

The URMP for Chhatrapati Sambhaji Nagar (Aurangabad) mapped blue and red flood lines of the city to define prohibited and restricted development zones, riparian buffers and green corridors. The integration of URMP provisions into the Master Plan thereby ensured controlled development along the ecologically sensitive floodplains.

Bareilly's Master Plan has demarcated its floodplains and included zones of no-development around its urban water bodies.

Ayodhya's Master Plan 2045 has conducted a baseline assessment of the Sarayu and implemented tiered buffer zone system for its urban water bodies. The older Master Plan provided for a 30-meter restricted zone from the river boundary along with a 6-meter buffer for all urban water bodies. The URMP recommended an expansion of these buffer zones, accompanied by corresponding DCRs. A 9-meter buffer has now been introduced for urban water bodies.

6. Master Plan can enable long-term ecological integration and conservation efforts

The Master Plan is planned for a period of 20-30 years which makes it a legitimate anchor to enable long term ecological restoration efforts, river rejuvenation. This time period also allows for the adoption of incremental and phased strategies for river conservation into spatial regulations, like river zoning and floodplain buffers. For example, the Delhi Master Plan 2041 has demarcated the 1-in-25-year flood line and has designated the Yamuna floodplain into zone 'O'. This approach embeds river-sensitive framework into the spatial planning framework.

Water sensitive provisions in the Delhi Master plan

The Revised Master Plan 2041 for Delhi (DDA) has incorporated various provision to ensure water-sensitivity in its Master Plan. Modelled after London's planning regulations, the Delhi Master Plan 2041 has introduced a comprehensive Yamuna Development Plan. It has proposed implementation of extensive riparian buffers apart from introducing a blue-green factor into its Master Plan. The plan Designated an 'O' Zone of approximately 9,700 hectares along the Yamuna to accommodate biodiversity parks, recreational spaces and city-level greens while also enforcing strict development controls in the floodplains.

7. Master planning framework accommodates public participation

Master Planning process enables the inclusion of public opinions and suggestions before finalisation. Such citizen engagement has the potential to make spatial planning in India robust, people-driven and inclusive. In Chhatrapati Sambhaji Nagar (Aurangabad) the inclusion of communities in designing river zones not only ensured a stronger institutional model but also showed how public participation can be ensured within the Master Plan framework. Similar public consultations have also been conducted for the Delhi Master Plan 2041.

8. Master Plans can introduce rivers as 'ecological systems' into the spatial planning framework

Master Plan is the only statutory tool which can engage with rivers as ecological system within the urban instead of the reductive understanding of the 'urban stretch' of the river. Urban water bodies are ecological infrastructure embedded within the urban space. Master Plans can introduce rivers as part of the urban ecological system within the statutory spatial framework of India.

NARRATIVE 2:
Master Plans in their current form are challenged by rigid frameworks, legislative obsolescence and institutional fragmentation which makes them inadequate to accommodate water-sensitive provisions within the spatial planning framework.

In this section we look into the inadequacies of the Master plan instrument in providing a water-sensitive urban governance framework:

1. Master Plans in their current form are challenged by rigid frameworks, legislative obsolescence and institutional fragmentation.

Traditional Master Planning in India are essentially land-use plans focused on regulation of land and provision of infrastructure, which is inadequate to address environmental challenges that urban areas of India are increasingly facing. The Town and Country Planning (T&CP) Acts are the legal foundation upon which the Master Planning framework function. The T&CP legislations, enacted by the states on the basis of the Model Acts of 1960 and 1985, are often criticised for being rigid and outdated for the embedded planning instruments framework. The rationalities behind these acts are hardly informed by emerging environmental concerns which has translated into master planning frameworks which are not capable of integrating ecological conservation, climate risk reduction mechanisms and water-sensitive development.

A comprehensive revision of the T&CP Acts as a necessity has been increasingly realised within the domain of praxis. A suggestion was to form apex committees which would be tasked with taking regular reviews of the urban planning legislations thereby addressing the challenges in spatial planning by adapting planning practices to technological and environmental challenges. Such as revision process is already underway in some states. For instance, Bihar has already included provisions for metropolitan and rural planning in its framework, Uttar Pradesh's draft T&CP Act has been opened for public feedback. There is also a need to ensure public consultation in revising the T&CP Acts.

Pronounced institutional fragmentation has also led to an ad-hoc governance with crucial sectors like water management, environmental regulations, pollution etc. governed in silos. Colonial-era acts like the Easements Act of 1882 continue to govern the use of groundwater, which links access to ownership, in turn undermining the principles of governing groundwater as a public good. Additionally, there have been instances where judicial interventions have stepped in to address regulatory inefficiencies, which again can only serve as temporary solutions. Given such structural rigidities, outdated legislative frameworks and institutional fragmentation, the Master planning framework fails to emerge into a framework capable of accommodating water-sensitive provisions.

2. A hierarchal planning framework is crucial for effective water governance.

Effective management of water and urban waterbodies requires an effective river catchment management, which therefore needs to account for jurisdictional concerns. The planning framework has a hierarchy of regional, sub-regional, zonal plans, with the master plans occupying a spatial hierarchy of this planning framework. The mandate of water-sensitivity has to be integrated across the wider hierarchal planning framework, with the Master Plan functioning as a layer of that hierarchy so that jurisdictional challenges, effective groundwater water management, inter-state and inter-agency collaborations for governing the river catchment becomes effective. In the absence of such a hierarchal planning, cities are open to risks arising beyond its jurisdiction while also facing significant challenges of integrating holistic management of water catchments with land-use planning. A case in point is the management of the Bhopal Lake. The Bhopal Master Plan attempted to protect this iconic lake of the city. The process revealed that there were significant gaps in integrating catchment management with land-use planning. Aligning existing frameworks of statutory spatial plans with the ecological needs of large urban water bodies is therefore limited.

However, there are examples where effective governance of water bodies has been successful with the adoption of integrated planning frameworks, as practised in South Africa. The Integrated Development Plans of South Africa brings together crucial sectors such as spatial planning, sectoral planning along with financial allocations into a singular platform, facilitating coordinated governance. With such frameworks in place, water and climate sensitivity can be addressed comprehensively while avoiding challenges posed by institutional fragmentation.

3. The existing Master Planning framework also face limitations in floodplain zoning.

Another crucial challenge for the existing Master Plan framework lies in floodplain zoning. The mapping of floodplains in India is often inadequate which problematise implementing zoning regulations for protection of the rivers. Additionally, private ownership of such lands, political interests in riverfront lands exacerbate the implementation of floodplain zoning.

Although regulations such as the Floodplain Zoning Bill of 1975 exist, the implementation has been inconsistent. Such regulatory vacuums inspite of having the Bill in place has resulted in unplanned developments, encroachments, garbage dumping etc., leaving urban waterbodies vulnerable to ecological degradation.

4. Master Plan remains a narrow instrument in its vision. A paradigm shift is essential in the way the Master Plan instrument is imagined.

Given the recent challenges that the urban areas of India face, like Bangaluru's water shortage and Delhi's flooding - reflects systemic challenges in the current master planning process and inadequacies of the current governance frameworks. These challenges are also multi-faceted ranging from peripheral urban expansion beyond the municipal boundary or master plan boundary, groundwater recharge, urban heat island effects, risks of flooding, increased surface run-off etc. Inspite of such escalating challenges, the tools of the traditional master plans have failed to evolve beyond land-use zoning, while treating environmental challenges as peripheral to urban growth.

There is also lack in coordinated efforts within different tiers of planning- ranging from regional and perspective plans to master plans, which has often resulted in ad-hoc responses when dealing with largescale challenges like ecological degradation, climate risk and watershed management. Planning continues to be defined through engineered land-use zones, which fails to cater to urban challenges beyond such boundaries. In light of increasing urban challenges, there is a need to reimagine the paradigm that governs the master plan framework if water-sensitivity is to be incorporated onto it.

5. The efforts of programmatic plans have not been integrated with the statutory master plans

Programmatic plans like URMPs, Climate Action Plan, Heat Action Plans etc. could serve as powerful and effective toolkits to target existing urban challenges. However, the Master planning frameworks have not been able to incorporate these toolkits and therefore, such plans remain disconnected from what is being implemented on the ground to shape urban growth. Many of such programmatic plans are also prepared by international agencies with limited engagement with the local planning institutions or with existing budgetary frameworks. Such a process creates parallel exercises, ultimately failing to translate on ground. Embedding such toolkits into the statutory master planning process would go a long way in accommodating water-sensitivity into the existing master planning framework.

6. Master Plans are also constrained by institutional limitations, resource and expertise

There are also multiple limitations within the planning structure of India which hamper effective urban governance. Planning agencies in India face limited capacity, constrained resources and the expertise needed to integrate emerging environmental challenges into the statutory master plan. Planning education and practise could also benefit from capacity building exercises, so that new master plans can move beyond the traditional land-use anchor and become well equipped to handle recent urban challenges.

7. Master Plans still have a long way to go to ensure transparency and effective public participation

It is crucial to make master plans more accessible and transparent through community consultations thereby ensuring a robust public participation in planning for the city's rivers and other water bodies. Communities can also play a vital role in restoration and rejuvenation efforts. Grassroots participation has to be an essential component in managing urban water bodies, because their governance lies beyond the initial planning endeavour and becomes a social infrastructure of the communities. Transparency in Master plan preparation and ensuring effective participation are still goals that the master planning process is working towards.

8. The Master Plan framework faces challenges in inter-agency co-ordination, creating data silos and fragmented water governance.

Access to data remains a fundamental challenge in the process of master planning which thwart the integration of environmental mandates into the plans. The institutional ecosystem within which Master Plans function is marred with obstructed collaborations, leading to data silos, poor coordination, ultimately resulting in ad-hoc planning outcomes.
Overcoming such barriers are crucial in order to building an effective and efficient institutional ecosystem. Some pathways to achieve this could be through the introduction of clear data-sharing objectives in collaborations, tying funding to the production of inter-agency collaborated planning outcomes etc. Strengthening interagency coordination is essential to ensure access to time sensitive data for preparing updated master plans.

9. Master Plans have ignored ecological continuities and groundwater dynamics resulting in weak urban water governance

Existing master plan frameworks has misrepresented the continuity of rivers as ecological systems but selecting a segmented approach such as 'urban rivers'. Such a perspective does not fully capture the ecological and hydrological functions that a river functions. Increasingly concretisation along river banks in the name of 'beautification' have degraded the river's biodiversity while exacerbating the risk of flooding. Groundwater plays a significant role in ensuring the flow continuity of rivers through baseflow. Rampant urbanisation has compromised such flow, in turn turning perennial rivers into seasonal flows. Master Planning tools hardly imagine such wider ranging implications in planning urban growth and thereby remain inadequate to accommodate water-sensitive urban governance.

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06| Appendix:

Speakers on the Planners' Circle – Expert panel 2

Expert Speakers	Focus area of their Talk
R. Srinivas Urban Planning Expert with High Level Committee on Urban Planning, Ministry of Housing and Urban Affairs	Opportunities and Challenges of Water-Centric Master Planning in India
Shirley Ballaney Architect and Urban Planner Saswat Bandyopadhyay Professor, CEPT University, Gujarat.	Environmental Perspectives for Master Plans
Mathew Idiculla Legal and Policy Consultant	Integrating Environmental and Water Sensitivity in Master Plans
Venkatesh Dutta Environmental Scientist. River Systems and Aquatic Ecology Lab. Babasaheb Bhimrao Ambedkar University	'Urban Planning, Water Governance, and the Law'
Victor Shinde Head. Climate Centre for Cities. National Institute of Urban Affairs	'Rivers, Riverfronts and 'Urban Rivers' Making River-Sensitive Master Plans.
Ishleen Kaur Senior Environment Specialist at National Institute of Urban Affairs.	'Mainstreaming River-thinking in Master Plans/Development Plans of Indian Cities
Anuradha Parmar Executive Director, Urban Design Research Institute, Mumbai	Spatial Planning in Transition: Tackling Institutional Fragmentation and Climate Risks in India
Nishant Lall Urban Designer/Architect Visiting Professor, School of Planning and Architecture, Delhi	Regenerating Riverfronts: A framework for Indian Cities
Benjamin John Head of Implementation for South and West Asia, C40 Cities	Mainstreaming climate action into Statutory Master Planning