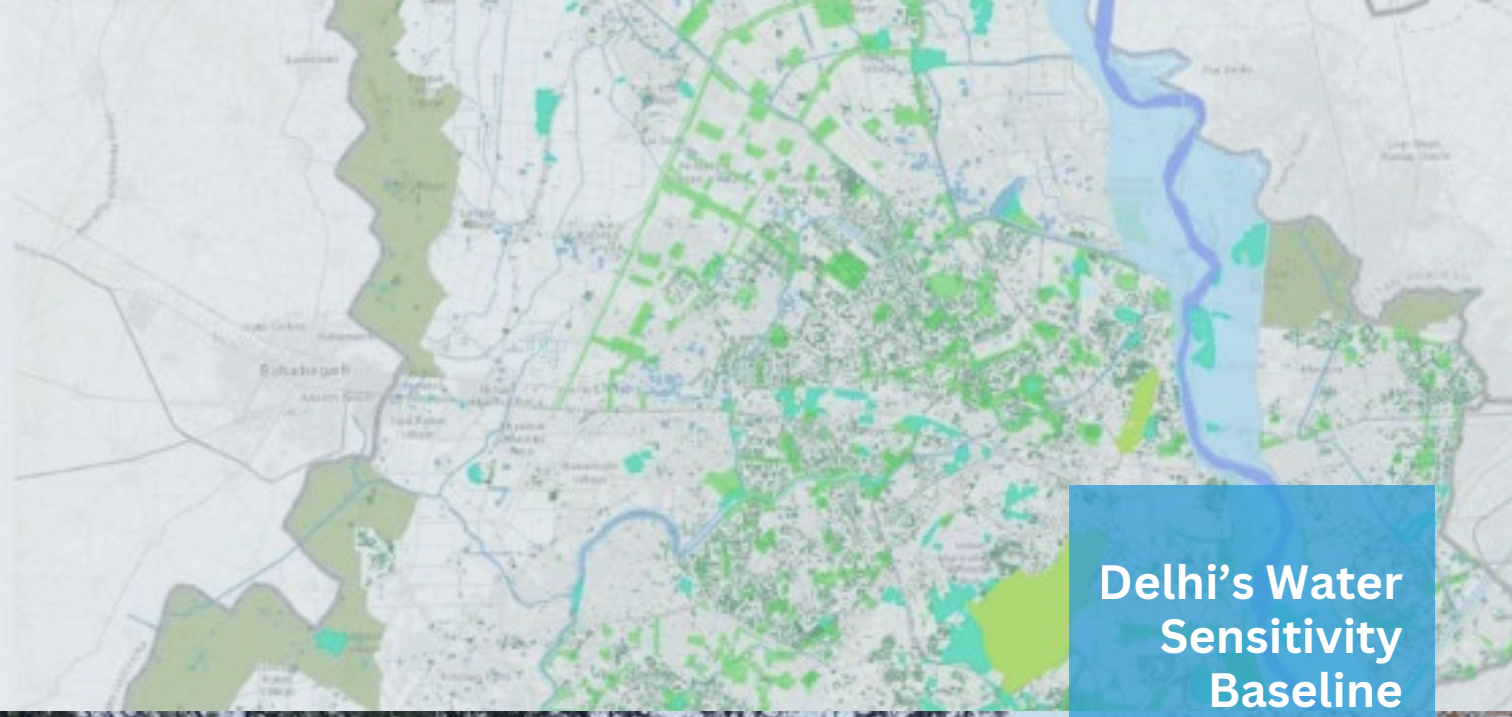

Delhi's Water Sensitivity Baseline

Using the Water Sensitive Cities (WSC) framework developed by the Cooperative Research Centre for Water Sensitive Cities, (CRCWSC), Australia

Australian Government
Department of Foreign Affairs and Trade
AIWASI
Australia India Water Security Initiative
National Institute of Urban Affairs
WRI INDIA
ROSS CENTER
MCGREGOR COXALL
MHT

Disclaimer

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Australian Government
Department of Foreign Affairs and Trade

Delhi's Water Sensitivity Baseline
October 2025

Disclaimer

This baseline assessment has been developed through scoring exercises undertaken by a diverse set of stakeholders from Delhi, including representatives from government, academia, NGOs, and the private sector. All stakeholder inputs have been kept anonymous to maintain neutrality and confidentiality. The indicators used are adapted and contextualised from the Cooperative Research Centre for Water Sensitive Cities' (CRCWSC) seven-goal framework.

As the process is inherently subjective, the findings should be viewed as indicative of Delhi's overall strengths and weaknesses in water sensitivity, and not as definitive technical prescriptions. The assessment is intended as a starting point for dialogue, prioritisation, and future planning, rather than a binding directive for implementation.

While every effort has been made to ensure authenticity of the information used, NIUA does not accept liability for the accuracy of data or for consequences arising from its use. The analysis and conclusions do not necessarily reflect the official views of NIUA or the Ministry.

National Institute of Urban Affairs

Delhi's Water Sensitivity Baseline
October 2025

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WHY DOES DELHI NEED A WATER SENSITIVITY BASELINE?

Delhi is undergoing rapid urban expansion, and despite its significant green cover, the city faces deep-seated inequities—not only in access to green spaces but also in water security. Groundwater extraction remains high at 126 MGD, while total water demand stands at 1250 MGD, only 990 MGD is formally supplied. The city's drainage network, comprising over 4,000 drains, is increasingly fragmented, with only 969 drains traceable and just 700 distinctly identifiable through satellite imagery. Data from the Irrigation & Flood Control (I&FC) Department further suggests that 19 major natural drains mapped in the 1976 Drainage Master Plan no longer exist. The pressures of urbanization and unplanned development have also resulted in a 7% reduction in the total area under water bodies between 1999 and 2012. While green spaces cover 21.88% of Delhi's land area, they are often poorly integrated into water management strategies, leaving them vulnerable to pollution and encroachment. The Yamuna River exemplifies these challenges, entering Delhi relatively clean but leaving as one of the most polluted rivers in the region.

While existing master plans and policies document these figures, Delhi requires an urgent shift toward a holistic and integrated approach that places water at the center of urban planning and design. According to Rogers et al., water sensitivity rests on three pillars: (1) Viewing cities as catchments, (2) Recognizing cities as ecosystems, and (3) Developing water-sensitive communities. However, achieving this transformation requires a clear understanding of the city's current standing. This Water Sensitivity Baseline provides a structured assessment of Delhi's strengths, weaknesses, and opportunities through this lens.

Establishing this baseline is the first step in enabling informed decision-making and targeted action. A water-sensitive transformation cannot be achieved by governance efforts alone—it requires active participation from multiple stakeholders, including policymakers, urban planners, community representatives, and citizens. Since this transition is a long-term and iterative process, identifying where Delhi currently stands will help prioritize interventions, bridge governance and knowledge gaps, and shape policies that can guide the city toward a water-sensitive future.

BACKGROUND AND CONTEXT

The Australia-India Water Security Initiative (AIWASI) aims to facilitate the adaptation of effective Australian water management practices to Indian urban contexts. A key approach under AIWASI is Water Sensitive Urban Design and Planning (WSUDP), which integrates water management into urban planning to enhance sustainability and resilience. While water management may appear to be a technical process, it is inherently multidimensional, involving social, economic, political, environmental, and technical factors.

As cities develop, their water systems transition through different stages—from meeting basic water supply and sanitation needs to achieving integrated and sustainable water management. Brown et al. (2009) outlined this progression through six transition stages: Water Supply City, Sewered City, Drained City, Waterways City, Water Cycle City, and Water Sensitive City (Figure 1). This framework highlights that becoming a Water Sensitive City (WSC) is a long-term, continuous process.

To assess where Delhi currently stands in this transition, the Water Sensitivity Baseline was developed.

Figure 1: Urban Water Transitions Framework

Brown et. al, 2009

This baseline benchmarks Delhi's water performance using the Water Sensitive Cities (WSC) Index, developed by the Cooperative Research Centre for Water Sensitive Cities (CRCWSC), Australia (Rogers et al., 2020). The key insights from this baseline come from the rationale behind the scores, providing decision-makers with a clear understanding of Delhi's water scenario. While this baseline does not prescribe specific steps for progress, it serves as a starting point for future planning and interventions.

DELHI WATER FORUM

Delhi was selected as the pilot city for introducing the Water Sensitive Cities concept under AIWASI. In India, service delivery functions related to water management are handled by multiple organisations across different levels of governance. For a city to transition towards water sensitivity, it is crucial for these entities to collaborate and align their efforts. To facilitate this, a city-level stakeholder forum—the Delhi Water Forum (DWF)—was established.

DWF serves as a platform for diverse stakeholders to exchange ideas and coordinate actions towards making Delhi a water-sensitive city. The forum includes government, non-government, and community stakeholders. Government stakeholders are the decision-makers of a city, non-government stakeholders act as innovators who influence policy directions, and community stakeholders provide the citizen perspective, ensuring inclusivity in the city's water management approach.

Members of the DWF provided the required data and information for developing this baseline.

MEMBERS OF THE DELHI WATER FORUM

Delhi Development Authority (DDA)
Responsible for planned development of Delhi, including land acquisition, infrastructure development, water supply, sewage disposal, and other urban services to ensure sustainable growth as per the Master Plan of Delhi.

Delhi Jal Board (DJB)
Responsible for the supply of potable water, as well as treatment and disposal of wastewater in Delhi.

Municipal Corporation of Delhi (MCD)
Responsible for civic services, including solid waste management, public health, sanitation, infrastructure maintenance, and certain aspects of local water management for Delhi's population.

Irrigation & Flood Control (I&FC)
Responsible for management of natural drains and the river zone.

Delhi Urban Shelter Improvement Board (DUSIB)
Responsible for improving the quality of the life of slum dwellers and economically weaker sections of society in the capital city of Delhi.

National Institute of Urban Affairs (NIUA)
The National Institute of Urban Affairs (NIUA) is India's premier urban think tank, shaping the urban narrative since its establishment in 1976. NIUA bridges the gap between research and practice to promote balanced and constructive transformation. The institute drives solutions that go beyond theoretical frameworks, reshaping ideas and fostering actionable initiatives that deliver tangible impact on the ground.

Council on Energy, Environment and Water (CEEW)
CEEW is a globally engaged policy research organisation which analyses and advises on critical questions on energy, environment and water, not as disparate issues but as inter-connected concerns. These concerns have local impacts, as well as global ramifications.

Centre for Policy Research (CPR)
The Centre for Policy Research (CPR) has been one of India's leading public policy think tanks since 1973. CPR is a non-profit, non-partisan, independent institution dedicated to conducting research that contributes to high quality scholarship, better policies, and a more robust public discourse about the issues that impact life in India.

MEMBERS OF THE DELHI WATER FORUM

INTACH

he Indian National Trust for Art and Cultural Heritage (INTACH) was founded in 1984 in New Delhi with the vision to spearhead heritage awareness and conservation in India.INTACH has pioneered the conservation and preservation of not just our natural and built heritage but intangible heritage as well.

School of planing and Architecture (SPA)

The School of Planning and Architecture, New Delhi (SPA New Delhi) is an Institution of National Importance imparting education in Architecture, Planning, and Design. SPA New Delhi provides training at various levels, in different aspects of human habitat and environment.

Indian Institute of Technology Delhi(IIT D)

Indian Institute of Technology Delhi is one of the 23 IITs created to be Centres of Excellence for training, research and development in science, engineering and technology in India. It offers education in various disciplines including Engineering, Physical Sciences, Management and Humanities & Social Sciences.

United Residents Joint Action (URJA)

URJA is the representative body of 2,500+ Resident Welfare Associations. Its mission is to institutionalise public consultation and citizen participation in governance to help develop a sustainable model for Delhi.

World Resource Insituion (WRI)

WRI aims to fundamentally transform the world's food, land and water; energy; and cities, as well as the economic, finance and governance structures that underpin these key systems. It work across several topics to achieve systemic change globally and in focus countries.

The Mahila Housing Trust (MHT)

MHT is improving urban built environments in poor communities through collective action. Since its establishment in 1994, they have mobilized women to exercise their civic rights and empowered them to take charge of their habitat improvement process. By forging unique relationships with poor communities and local governments, MHT has advanced access to basic services, promoted climate resilience, and deepened participatory governance.

WATER SENSITIVE CITIES INDEX

The Water Sensitive Cities Index consists of seven goals and 34 indicators (Fig. 2), each scored on a scale of 1 to 5. These indicators have been further contextualised for Delhi and categorised into 60 thrust areas, reflecting the city's specific challenges and opportunities. Stakeholders from the Delhi Water Forum, representing various sectors, assessed and scored these thrust areas to provide a comprehensive evaluation of Delhi's water sensitivity.

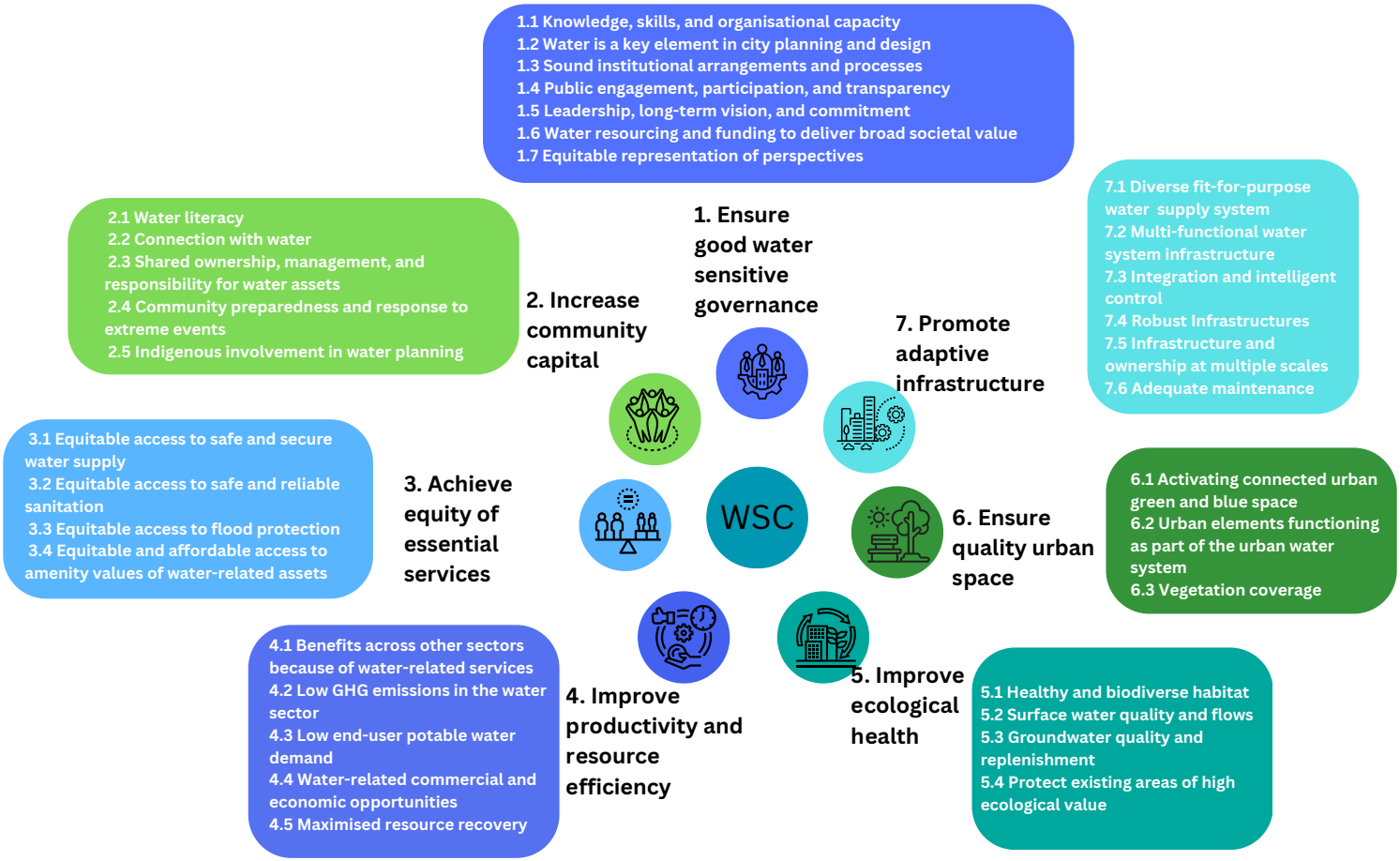


Figure 2: The Water Sensitive Cities Framework

APPLICATION OF THE FRAMEWORK

The Water Sensitive City Visions and Transition Strategies Integrated Research Project (IRP1), led by the Cooperative Research Centre for Water Sensitive Cities (CRCWSC), established a structured methodology to facilitate urban transitions toward water sensitivity. A core component of this project was the application of the Water Sensitive Cities (WSC) Index in five Australian cities: Perth, Sydney, Townsville, Bendigo, and Adelaide to evaluate their water sensitivity status and identify key transition pathways.

In these case studies, the WSC Index assessment was conducted through stakeholder-driven workshops, wherein 34 indicators across seven goal areas were scored using a five-point rating scale. The scoring process was consensus-based, involving structured discussions among representatives from state and local governments, industry bodies, and private water utilities to ensure a holistic evaluation of urban water performance.

For Delhi, a modified and more granular approach was adopted to account for the complexities of India's multi-tiered governance structure and the heterogeneity of urban water management challenges. While the Australian assessments provided a baseline methodology, Delhi's evaluation expanded upon this by contextualizing the 34 indicators into 60 thrust areas, enabling a more nuanced and locally relevant assessment. The Delhi Water Forum, comprising key stakeholders from government agencies, academia, NGOs, and the private organisations, facilitated this process by assigning scores based on structured deliberations.

While the Transition Dynamics Framework (TDF) is typically used to delineate the transition states and drivers necessary for a city's progression from a Water Supply City to a Water Sensitive City, this baseline adopts a pragmatic approach by leveraging the WSC Index results to inform actionable policy interventions.

BENCHMARKING DELHI: METHODOLOGY FOR DELHI'S ASSESSMENT USING THE FRAMEWORK

To capture both institutional and community perspectives, a mixed-method approach was employed for scoring the indicators of the Water Sensitive Cities (WSC) Index framework. The 60 thrust areas, derived from the 7 goals and 34 indicators, were assessed using a five-point rating scale (Annexure 1), providing a granular evaluation of Delhi's water sensitivity status (Table 1).

Refinement of the Framework

The existing WSC Index structure was contextualized for Delhi by disaggregating the 34 indicators into 60 thrust areas (sub-indicators), allowing for a more detailed and locally relevant assessment.

Stakeholder-Based Scoring Approach

Government Stakeholder Assessment: Individual interviews were conducted with relevant government agencies. Given Delhi's fragmented governance structure, agencies were only required to score thrust areas within their jurisdiction.

- Delhi Development Authority and Municipal Corporation of Delhi due to their overarching mandates scored all 60 thrust areas whereas sectoral agencies (Irrigation and Flood Control, Delhi Jal Board, Delhi Urban Shelter Improvement Board) focused on their respective domains.
- All agencies, however, scored the 16 thrust areas under Goal 1: Ensuring Water Sensitive Governance, as governance mechanisms influence all aspects of water management.

Non-Government Stakeholder Assessment: A hybrid methodology was adopted to ensure robust representation of civil society, academia, and private sector perspectives:

- Goal 1 and Goal 7 were assessed through an online survey (Google Forms) to facilitate broader participation.
- Goals 2 to 6 were scored during a workshop held under the Delhi Water Forum (DWF), where participants engaged in structured discussions and consensus-building exercises.

Justification for the scores

Beyond numerical scoring, rationales for each thrust area/sub-indicator have been systematically documented, forming the core insights of this assessment. Given Delhi's institutional fragmentation and lack of cross-sectoral integration, the rationales provide critical explanations of the city's performance, supplemented with key statistics and qualitative insights.

A chart with detailed justification of each indicator is provided in Annexure 2 (through the link or QR code)

To enhance usability for decision-makers, rationales have been categorized under each of the 7 goals into five key thematic dimensions:

1. Institutional – Governance, coordination mechanisms, and regulatory frameworks.
2. Financial – Budget allocations, funding mechanisms, and economic viability.
3. Technical & Implementation – Infrastructure, technological interventions, and operational challenges.
4. Community-Centric – Public awareness, stakeholder engagement, and participatory approaches.
5. Social Equity – Inclusivity, accessibility, and equity in water access and decision-making.

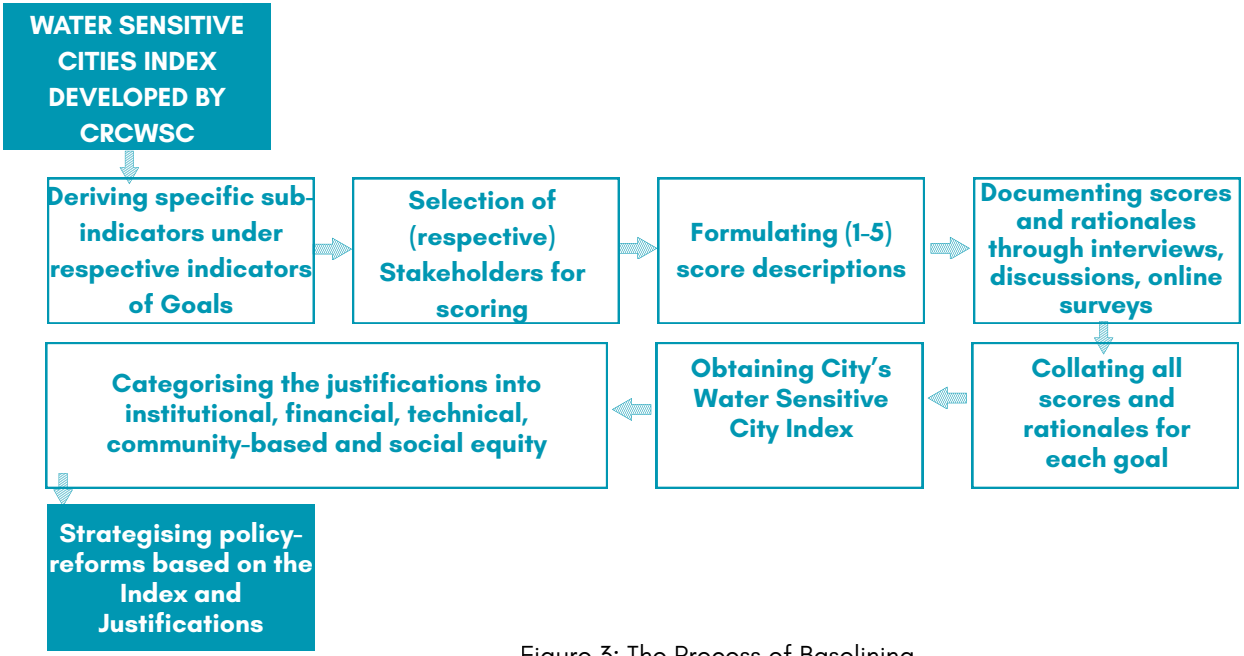


Figure 3: The Process of Baselining

SUB-INDICATORS SCORED FOR ASSESSING DELHI'S WATER SENSITIVITY

Table 1: Sub-Indicators scored for Assessing Delhi's Water Sensitivity

Goal	Indicator	Sub-indicator/Thrust Area
Goal 1: Ensure good water sensitive governance	1.1 Knowledge skills and organizational capacity	1.1a Multidisciplinary skills and knowledge (landscape and ecology, social and urban design, architects)
		1.1b Injection of water-related science and knowledge (e.g. NBS for water management, demand management measures etc.)
		1.1c Opportunities for technical growth and upskilling
		1.1d Organizational knowledge is retained
	1.2 Water is key element in city planning and design	1.2a Policies for urban planning integrates water-sensitive principles
		1.2b Urban development incorporates water-sensitive urban design (WSUD) elements
		1.2c Incentives for implementation of water-sensitive urban development
	1.3 Cross-sector institutional arrangements and processes	1.3a Information sharing and transparency
		1.3b Partnerships/ inter-agency collaboration across government organizations to plan and implement water sensitive solutions
	1.4 Public engagement, participation and transparency	1.4a Citizen communication and engagement activities undertaken by the organizations
		1.4b Levels of actual citizen engagement(considering avenues for engagement)
	1.5 Leadership, long-term vision and commitment	1.5a Organization's commitment to water-sensitive vision

SUB-INDICATORS SCORED FOR ASSESSING DELHI'S WATER SENSITIVITY

Goal	Indicator	Sub-indicator/Thrust Area
Goal 1: Ensure good water sensitive governance	1.6 Water resourcing and funding to deliver broad societal value	1.6a Dedicated budget allocation for water-sensitivity in projects
		1.6b Funding available for water-related R&D and innovation
	1.7 Equitable representation of perspectives	1.7a Equity policy (GEDSI) in the organization for representation of various stakeholder groups
		1.7b Representation by groups who experience marginalization or disadvantaged groups, in governance arrangements and decision-making
Goal 2: Increase Community Capital	2.1 Water literacy	2.1 aCommunity's interest and understanding of the water cycle and water sector
	2.2 Connection with water	2.2aPeople's pride & connectedness with water-related assets and their importance in delivering broader livability
	2.3 Shared Ownership, management, and responsibility of water assets	2.3a Role of community in local water management solutions and maintaining decentralized parts of the water system
	2.4 Community preparedness and response to extreme events	2.4a Capacity of communities to cope with /respond to water-related extreme events
	2.5 Indigenous involvement in water planning	2.5a Consideration of local/ community interests and knowledge in planning and management of water systems

SUB-INDICATORS SCORED FOR ASSESSING DELHI'S WATER SENSITIVITY

Goal	Indicator	Sub-indicator/Thrust Area
Goal 2: Increase Community Capital	2.5 Indigenous involvement in water planning	2.5b Involvement of local communities with knowledge of traditional water systems in water governance
Goal 3: Achieve equity of essential services	3.1 Equitable access to safe and secure potable water supply	3.1aAvailability of water to the houses
		3.1b Affordable access to water
		3.1cMeasures taken to prevent water scarcity
	3.2 Equitable access to safe and reliable sanitation	3.2a Access to Safe and Reliable Sanitation
		3.2b Treatment of Waste Water
		3.2c Affordability of safe and reliable sanitation.
	3.3 Equitable access to flood protection	3.3a Understanding of human safety and infrastructural damage
		3.3b Level of response mechanism undertaken for flood risk
		3.3cMultifunctional landscapes to provide flood mitigation
	3.4 Equitable and affordable access to amenities and cultural values of water-related assets	3.4a Extent of provision of water-related assets in Cultural values
		3.4b Accessibility and Affordability to Cultural Values of Water-related Assets
Goal 4:Improve productivity and resource efficiency	4.1 Optimised resource recovery	4.1a Reuse of treated wastewater
		4.1bEnergy recovery
	4.2 Low GHG emission in the water sector	4.2a Maximise the use of alternatives to high carbon-emitting energy sources in water system infrastructure

SUB-INDICATORS SCORED FOR ASSESSING DELHI'S WATER SENSITIVITY

Goal	Indicator	Sub-indicator/Thrust Area
Goal 4:Improve productivity and resource efficiency	4.3 Water-related business opportunities	4.3a Encouragement of new business in collaboration with government agencies
	4.4 Optimal end-user potable water demand	4.4a Local Water-efficient practices/ Demand Management practices
		4.4b End-user potable water demand for total residential, industrial, and commercial
	4.5 Broad community benefits from water services	4.5a Cross-Sectoral Benefits for the Community from Water-Related Services
Goal 5:Improve ecological health	5.1 Healthy and biodiverse habitat	5.1a Design water systems to help protect, restore, and create well-functioning ecosystems that contribute to ecological resilience.
		5.1b Policy and plantation strategy (Biodiversity and quality of vegetation) supports urban Water-Sensitivity
	5.2 Surface water quality and flows	5.2a Quality & flow of surface water ecosystems
	5.3 Groundwater quality and replenishment	5.3a Dependency on groundwater
		5.3b Actions taken for groundwater replenishment
	5.4 Protect existing areas of high ecological value	5.4a Policies for ecological hotspots
		5.4bMechanisms for protecting ecological hotspots from catchment urbanisation
		5.4c Database of native flora and fauna

SUB-INDICATORS SCORED FOR ASSESSING DELHI'S WATER SENSITIVITY

Goal	Indicator	Sub-indicator/Thrust Area
Goal 6: Ensure quality urban space	6.1 Activating connected pleasant urban green and blue space	6.1a Number and distribution of green spaces
		6.1b Quality and interconnection of green spaces or waterways
	6.2 Urban elements functioning as part of the urban water system	6.2a Urban space and built form supports water sensitivity
	6.3 Vegetation coverage	6.3a The proportion of human-accessible areas being covered or shaded by vegetation canopy
Goal 7: Promote Adaptive Infrastructure	7.1 Diverse fit-for-purpose water supply system	7.1a A flexible and adaptive water supply system depending on the quality water requirements of the end user.
	7.2 Multi-functional water system infrastructure	7.2a Provision of multi-functional water infrastructure
		7.2b Public access of the infrastructural assets
	7.3 Integration and intelligent control	7.3a Level of optimisation of water system network performance
	7.4 Robust infrastructures	7.4a Sensitivities and vulnerabilities in the water system network
	7.5 Infrastructure and ownership at multiple scales	7.5aDecentralised systems like rainwater tanks, domestic wastewater systems and groundwater bores
	7.6 Adequate maintenance	7.6aMaintenance and monitoring policies
		7.6bUndertaking maintenance activities (implementation)

SCORES OF GOAL 1: ENSURE GOOD WATER SENSITIVE GOVERNANCE

Table 2: Sub-Indicators scored for Goal 1

Indicator	Sub-indicator/Thrust Area	Score
1.1 Knowledge skills and organizational capacity	1.1a Multidisciplinary skills and knowledge (landscape and ecology, social and urban design, architects)	**1.8**
	1.1bInjection of water-related science and knowledge (e.g. NBS for water management, demand management measures etc.)	**2.5**
	1.1c Opportunities for technical growth and upskilling	**2.1**
	1.1d Organizational knowledge is retained	**2.7**
1.2 Water is key element in city planning and design	1.2a Policies for urban planning integrates water-sensitive principles	**2.7**
	1.2b Urban development incorporates water-sensitive urban design (WSUD) elements	**2.8**
	1.2c Incentives for implementation of water-sensitive urban development	**1.6**
1.3 Cross-sector institutional arrangements and processes	1.3aInformation sharing and transparency	**2**
	1.3b Partnerships/ inter-agency collaboration across government organizations to plan and implement water sensitive solutions	**1.9**
1.4 Public engagement, participation and transparency	1.4a Citizen communication and engagement activities undertaken by the organizations	**2.2**
	1.4b Levels of actual citizen engagement(considering avenues for engagement)	**2.2**
1.5 Leadership, long-term vision and commitment	1.5aOrganization's commitment to water-sensitive vision	**2.2**

SCORES OF GOAL 1: ENSURE GOOD WATER SENSITIVE GOVERNANCE

Indicator	Sub-indicator/Thrust Area	Score
1.6 Water resourcing and funding to deliver broad societal value	1.6a Dedicated budget allocation for water-sensitivity in projects	**2.6**
	1.6b Funding available for water-related R&D and innovation	**1.4**
1.7 Equitable representation of perspectives	1.7a Equity policy (GEDSI) in the organization for representation of various stakeholder groups	**1.9**
	1.7b Representation by groups who experience marginalization or disadvantaged groups, in governance arrangements and decision-making	**2**

Cumulative Score for Goal 1

Delhi's lowest-scoring goal, Goal 1, highlights significant governance challenges that hinder water-sensitive urban management. The city's governance structure remains highly fragmented, with multiple agencies operating in silos, leading to poor interdepartmental coordination. While policies and regulations exist, their implementation is inconsistent, often dependent on individual leadership rather than institutional mechanisms.

JUSTIFICATION OF SCORES FOR GOAL 1

Institutional

- Multidisciplinarity: Water-related expertise exists across departments, but it is largely engineering-dominated. Limited multidisciplinary engagement (e.g., ecology, social sciences, law) hinders holistic planning. Occasional expert committees are formed for specific projects, but institutional capacity remains uneven.
- Capacity-Building: Training opportunities exist but are infrequent, ad hoc, and not sustained within organisations. Many trained personnel leave or do not apply their learning in their work. Upskilling is often limited to sanitation and basic engineering. While some officials are proactive in learning, organisational structures do not incentivise sustained capacity-building or interdepartmental coordination.
- Working in Silos: Bureaucratic silos, conflicting priorities, and a lack of structured coordination mechanisms hinder effective collaboration. Information is primarily shared only when requested through RTI or upon inquiry by other departments or agencies. Some basic data, such as Master Plans and Layout Plans, is available on organizational websites, but it remains limited. There are no regular update meetings to ensure consistent information exchange, and departments largely function in isolation.
- Institutional priorities often shift with changes in senior leadership, leading to inconsistency in water management initiatives.
- There is no dedicated budget section for research and development (R&D) in water management. Instead, R&D is outsourced through consultants rather than being institutionalized within the organization.

JUSTIFICATION OF SCORES FOR GOAL 1

Financial

- There are no strong incentives for the implementation of water-sensitive urban design (WSUD) for either the public or government officials. However, the proposed Master Plan for Delhi includes provisions such as additional floor area ratio (FAR) and the Blue-Green Factor. Some incentives are available, such as a 5% rebate on water charges for communities practicing RWH and a 15% rebate for plots larger than 500 square yards that recycle water. RWH is compulsory for the approval of building plans for plots larger than 150 square meters, but while these systems are constructed, their long-term sustainability is uncertain.
- The Delhi Budget 2023-24 allocated Rs 6,342 crore for water supply and sanitation—approximately 16% lower than the previous year's allocation of Rs 7,610 crore.
- In the current tenure, approximately INR 1,400 crores have been allocated to the Delhi Jal Board (DJB) for water and sewer-related projects. Additional funding is available from external sources, including the central government, the Asian Development Bank (ADB), and the Japan International Cooperation Agency (JICA).
- Certain earmarked funds exist, such as those under the 'Use of Treated Water' budget head, funding for water body development, and Urban Development Funds (UDF) for specific area improvements in water, sewage, and drainage.

Technical and Implementation

- Many agencies assume that water supplied from reservoirs like dams and canals will remain sufficient, leading to superficial engagement with water-sensitive solutions. While policies recognize the need for better water management, their implementation is ineffective due to weak monitoring and accountability.
- Some policies mandate the integration of nearby water bodies into project designs, requiring their quality to be considered in the planning process. Efforts to reuse treated water are helping to reduce extraction pressures.
- There is no overarching vision or integrated approach for water management across organizational verticals. Instead, interventions are taken up in a piecemeal, target-based manner without considering long-term feasibility.

JUSTIFICATION OF SCORES FOR GOAL 1

Community Centric

- There is no formal policy on citizen communication and engagement. While multiple grievance redressal mechanisms exist, such as the '311 App' by MCD, citizen participation remains largely absent in planning and decision-making.
- Public engagement is primarily passive, with citizens submitting feedback through platforms like RTI, Master Plan 'Public Objections & Suggestions,' or via their MLAs. However, there is no active dialogue, and communities often feel that their input does not translate into real action.
- Over time, civil society participation has weakened, and structured citizen engagement has diminished. While some engagement plans may exist in policy guidelines, there are no defined principles for implementation. No ward-level, district-level, or colony-level structured planning occurs. When citizen involvement is mandated, it is often completed through political representatives rather than direct engagement with residents or civil society organizations.
- The existing engagement strategies are fragmented, encompassing public campaigns, seminars, community meetings, instructional programs in schools, and online platforms for information dissemination. However, these efforts lack a concentrated mechanism to capture public opinions in a structured manner. RWAs and MTAs serve as citizen representative bodies, but in the absence of regulatory mechanisms to ensure their accountability, their influence is often diluted.

Social Equity

- The concept of 'DDA Open Greens' ensures that designated green spaces remain accessible to all, with universal access norms in place.
- There are specific initiatives aimed at low-income groups, such as developing parks in underserved areas. A notable example is the recently tendered 'Divyang Park' in Loney Road, Shahdara, designed for people with disabilities.
- The presence of unauthorized settlements and inequitable water supply across different zones highlights systemic exclusion.
- A case example is the Delhi Jal Board vs. National Campaign for Dignity and Rights of Sewerage and Allied Workers, which underscores the lack of tangible measures to address gender and social equity in water governance.

SCORES OF GOAL 2: INCREASE COMMUNITY CAPITAL

Table 3: Sub-Indicators scored for Goal 2

Indicator	Subindicator	Score
2.1 Water literacy	2.1 aCommunity's interest and understanding of the water cycle and water sector	**2.25**
2.2 Connection with water	2.2aPeople's pride & connectedness with water-related assets and their importance in delivering broader livability	**2.5**
2.3 Shared Ownership, management, and responsibility of water assets	2.3a Role of community in local water management solutions and maintaining decentralized parts of the water system	**2**
2.4 Community preparedness and response to extreme events	2.4a Capacity of communities to cope with /respond to water-related extreme events	**2**
2.5 Indigenous involvement in water planning	2.5a Consideration of local/ community interests and knowledge in planning and management of water systems	**2.25**
	2.5b Involvement of local communities with knowledge of traditional water systems in water governance	**2.25**

Cumulative Score for Goal 2:

Delhi's water security is highly uneven, with stark disparities in access, quality, and reliability of water supply across different socio-economic groups. While the city benefits from a formal water supply of 990 MGD, this remains insufficient to meet the total demand of 1250 MGD, forcing a large population to rely on groundwater extraction (126 MGD) and informal sources.

JUSTIFICATION OF SCORES FOR GOAL 2

Institutional

- Fragmented departmental roles: There is a lack of clear demarcation of responsibilities across agencies for addressing waterlogging, drainage, and broader water-related issues, leading to confusion and delays.
- Reactive grievance redressal: Complaints are addressed after issues arise, with no proactive system for regular maintenance, early warning, or preventive interventions.
- Ad-hoc responses to extreme events: Institutional responses to floods and droughts are largely temporary and reactive, rather than being part of a coordinated, pre-emptive resilience strategy across agencies (DDMA, I&FC, Health Department, etc.).

Financial

- Limited funding for community-driven projects: Initiatives like Chirag Delhi phytoremediation and DEWATS remain small-scale pilots due to limited financial investment for scaling them up.
- Inadequate support for nature-based solutions: Efforts to build community capacity for nature-based approaches exist but are underfunded, making broader adoption difficult.
- Weak financial incentives for SHGs/RWAs: Existing community structures could play a larger role in water management if they were supported with financial incentives or grants for participatory water governance.

Technical and Implementation

- Disconnected water and land planning: Urban planning rarely integrates natural hydrology, drainage, and waterbody networks, prioritizing land use and infrastructure over water-sensitive design.
- Limited application of scientific water management approaches: While some practices like groundwater recharge, rainwater harvesting, and treated water reuse exist, they are not widespread or well-monitored for effectiveness.
- Poor monitoring and maintenance: Maintenance gaps in water infrastructure and assets (drains, lakes, etc.) lead to recurring issues with water quality, supply disruptions, and infrastructure failures.

JUSTIFICATION OF SCORES FOR GOAL 2

Community Centric

- Community participation is largely limited to filing complaints, with minimal involvement in decision-making, planning, or collaborative maintenance of water assets.
- Cultural connection to water (through Yamuna Aarti, Chhath Puja, ghat restoration) exists, but it remains largely symbolic—this connection does not consistently translate into responsible stewardship or behaviour change (e.g., post-festival waste dumping, misuse of water spaces).
- Community knowledge gaps extend beyond basic awareness—there is limited understanding of how local water systems work (drainage networks, recharge areas) and how communities can play a proactive role in their upkeep.

Social Equity

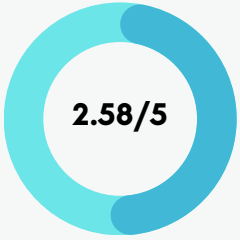
- Awareness of grievance redressal portals and access to timely responses is higher in upscale areas, but outreach and responsiveness are significantly lower in lower-income areas, creating inequitable access to water-related services.
- Vulnerable communities disproportionately bear the brunt of water crises and extreme events (flooding, droughts), often resorting to informal, independent coping strategies such as migration or excessive groundwater extraction.
- There are uneven levels of awareness and engagement across socio-economic segments, with poorer communities having less access to information, capacity-building efforts, and participation opportunities, leaving them further marginalized from decision-making and long-term water management planning.
- Existing community structures like SHGs and RWAs, particularly in lower-income areas, have potential to play a major role in water management, grievance redressal, and local resilience-building, but they have limited roles in formal planning processes.

SCORES OF GOAL 3: ACHIEVE EQUITY OF ESSENTIAL SERVICES

Table 4: Sub-Indicators scored for Goal 3

Indicator	Sub-indicator/Thrust Area	Score
3.1 Equitable access to safe and secure potable water supply	3.1aAvailability of water to the houses	2.5
	3.1b Affordable access to water	2.5
	3.1cMeasures taken to prevent water scarcity	2.08
3.2 Equitable access to safe and reliable sanitation	3.2a Access to Safe and Reliable Sanitation	2.33
	3.2b Treatment of Waste Water	2.58
	3.2c Affordability of safe and reliable sanitation.	3.08
	3.3a Understanding of human safety and infrastructural damage	2.125
3.3 Equitable access to flood protection	3.3b Level of response mechanism undertaken for flood risk	2.33
	3.3cMultifunctional landscapes to provide flood mitigation	2.165
3.4 Equitable and affordable access to amenities and cultural values of water-related assets	3.4a Extent of provision of water-related assets in Cultural values	3
	3.4b Accessibility and Affordability to Cultural Values of Water-related Assets	3.75

Cumulative Score for Goal 3:



Delhi scores 2.58 on the equity of essential services, indicating that while water and sanitation services are accessible to a significant portion of the population, disparities persist, particularly for marginalized communities

JUSTIFICATION OF SCORES FOR GOAL 3

Institutional

- The Delhi Jal Board (DJB) is responsible for water supply through pipelines and tankers, ensuring coverage across most areas.
- Coordination between DJB, MCD, and maintenance departments exists for flood mitigation, but efforts remain inconsistent and reactive.
- Rainwater harvesting (RWH) provisions are mandated in most housing developments, but enforcement and effectiveness remain weak.
- Regulatory oversight exists for wastewater treatment, but gaps in monitoring and enforcement persist, leading to untreated waste entering the Yamuna.
- Sewer networks exist in most planned areas, but unauthorized colonies and JJ clusters often remain outside formal service coverage.
- Borewells are banned in parks, and DJB is exploring additional borewells, but there is no dedicated water storage reserve.

Financial

- Households consuming less than 20,000 liters per month receive free water, promoting affordability but raising concerns about financial sustainability.
- Desludging services for pit-latrines are chargeable, potentially affecting service accessibility for lower-income households.
- Significant investments have been made in sewage treatment infrastructure, yet relative inefficiencies persist.

JUSTIFICATION OF SCORES FOR GOAL 3

Technical and Implementation

- Water supply infrastructure is in place, but shortages persist in resettlement colonies, relying on tanker supply.
- Sanitation systems cover most areas, but maintenance and community ownership are weak, particularly in unauthorized settlements.
- Sewage treatment plants (STPs) treat 712 MGD of the 792 MGD sewage generated daily, but not all 38 STPs are fully functional.
- Flood mitigation measures, such as closing drain gates during heavy rainfall and deploying NDRF teams, are in place but remain reactive rather than proactive.
- Rainwater harvesting (RWH) systems are often installed as a compliance measure.
- Floodplain rejuvenation projects contribute indirectly to water security, but groundwater recharge remains inadequate.
- Waterlogging issues persist due to inadequate stormwater management and high levels of urban concretization.

Community Centric

- Marginalized communities, especially in informal and resettlement areas, have limited voice in planning, monitoring, and grievance redressal related to water, sanitation, and flood services.
- Formal platforms for community participation often exclude women, informal workers, renters, and migrant populations, reinforcing inequitable service outcomes.
- Community-based monitoring and participatory risk mapping are rarely institutionalized, meaning local knowledge about vulnerabilities in marginalized areas is overlooked.
- Management of cultural and recreational water assets lacks inclusive community representation, particularly of lower-income, caste-oppressed, and migrant groups.

JUSTIFICATION OF SCORES FOR GOAL 3

Social Equity

- Significant spatial inequities exist between planned colonies and informal, peri-urban, and low-income areas, where access to safe water, sanitation, and flood protection is either limited or absent.
- Caste, class, and migrant status further compound exclusion, with historically marginalized communities receiving the poorest-quality services or being bypassed entirely in infrastructure upgrades.
- Access to drinking water varies widely—city-wide estimates suggest 60-95% of the population has access, however community-scale data indicate that only 50% have reliable access. Many unserved communities rely on tanker supply, which is often less reliable than piped networks.
- Informal settlements and unauthorized colonies often lack proper sewerage connections, leading to inequalities in sanitation access. Gendered inequities are acute, with women and girls disproportionately burdened with water collection, managing unsafe sanitation, and coping with post-flood impacts.
- Flooding disproportionately affects vulnerable communities, with 2-10% of the population facing severe consequences during rainfall events.

SCORES OF GOAL 4: ACHIEVE EQUITY OF ESSENTIAL SERVICES

Table 5: Sub-Indicators scored for Goal 4

Indicator	Sub-indicator/Thrust Area	Score
4.1 Optimised resource recovery	4.1a Reuse of treated wastewater	2.91
	4.1bEnergy recovery	2.33
4.2 Low GHG emission in the water sector	4.2a Maximise the use of alternatives to high carbon-emitting energy sources in water system infrastructure	1
4.3 Water-related business opportunities	4.3a Encouragement of new business in collaboration with government agencies	2
4.4 Optimal end-user potable water demand	4.4a Local Water-efficient practices/ Demand Management practices	2.41
	4.4b End-user potable water demand for total residential, industrial, and commercial	2
4.5 Broad community benefits from water services	4.5a Cross-Sectoral Benefits for the Community from Water-Related Services	2.75

Cumulative Score for Goal 4:

Delhi's score of 2.2 in improving productivity and resource efficiency suggests that while there are some mechanisms for water conservation, reuse, and resource optimization, their implementation remains limited, inconsistent, and unstructured.

JUSTIFICATION OF SCORES FOR GOAL 4

Institutional

- While Delhi's climate action plans mention energy efficiency and renewable energy (RE) in water and wastewater systems, there's no dedicated institutional mechanism to track and optimize energy use across the urban water cycle.
- Delhi Jal Board (DJB) and Delhi State Industrial & Infrastructure Development Corporation (DSIIDC) operate STPs and CETPs, some with biogas recovery, but energy recovery is not mandated across all plants.
- There's no city-level integration of energy audits, carbon footprint tracking, or renewable energy targets specifically for water and wastewater infrastructure.

Financial

- Investments in solar energy at water utilities (e.g., Baansera solar park) exist, but dedicated funding for energy-efficient technologies like variable frequency drives (VFDs), energy audits, and waste-to-energy systems is missing.
- Biogas recovery at some STPs provides limited operational savings, but financial models to reinvest savings into further energy-efficient upgrades are absent.

Technical and Implementation

- Some STPs and CETPs capture biogas, but energy recovery potential is underutilized due to lack of advanced technologies and trained operators.
- Pumping stations and treatment plants are major energy consumers, but real-time energy monitoring systems are only selectively installed.
- Opportunities for co-digestion (mixing organic waste and sludge to boost biogas production) are untapped, and energy-efficient retrofitting of older water infrastructure is slow.
- Solar power integration at water supply and sewage pumping stations is piecemeal and lacks a city-wide rollout plan.

JUSTIFICATION OF SCORES FOR GOAL 4

Community Centric

- Community awareness about energy embedded in water services (pumping, treatment, transport) is negligible, limiting public support for energy-saving initiatives.
- Local reuse and recycling projects (like greywater reuse in parks) rarely link to energy savings messaging, missing a chance to build awareness around the water-energy nexus.
- RWAs and community groups lack technical knowledge and financial support to adopt decentralized energy-efficient water systems, like solar-powered rainwater harvesting or decentralized waste-to-energy setups.

Social Equity

- High energy costs for water pumping and treatment in unauthorized colonies are often passed onto residents through informal charges, disproportionately impacting low-income households.
- Renewable energy integration (like solar pumping) in informal settlements is extremely limited, leaving vulnerable communities exposed to higher operational costs and service disruptions.
- City-wide energy recovery strategies rarely prioritize underserved areas, perpetuating a divide where wealthier zones benefit from cleaner, cheaper, and more resilient water-energy systems.

SCORES OF GOAL 5:IMPROVE ECOLOGICAL HEALTH

Table 6: Sub-Indicators scored for Goal 5

Indicator	Sub-indicator/Thrust Area	Score
5.1 Healthy and biodiverse habitat	5.1a Design water systems to help protect, restore, and create well-functioning ecosystems that contribute to ecological resilience.	2.75
	5.1b Policy and plantation strategy (Biodiversity and quality of vegetation) supports urban Water-Sensitivity	2.915
5.2 Surface water quality and flows	5.2a Quality & flow of surface water ecosystems	1.935
5.3 Groundwater quality and replenishment	5.3a Dependency on groundwater	1.83
	5.3b Actions taken for groundwater replenishment	2.56
5.4 Protect existing areas of high ecological value	5.4a Policies for ecological hotspots	3.125
	5.4bMechanisms for protecting ecological hotspots from catchment urbanisation	3
	5.4c Database of native flora and fauna	3.75

Cumulative Score for Goal 5:

Delhi's score of 2.73 in improving ecological health indicates moderate progress in integrating ecological considerations into urban water management. While there are policies and projects aimed at restoring water bodies, improving biodiversity, and reducing pollution, their implementation remains fragmented and inconsistent.

JUSTIFICATION OF SCORES FOR GOAL 5

Institutional

- Fragmented responsibilities across DDA, DJB, MCD, and I&FC hinder coordinated action.
- DJB focuses on water supply, with limited mandate for ecological restoration or biodiversity conservation.
- Monitoring and biodiversity data collection are sporadic and fragmented, with no central oversight.

Financial

- Funding focuses on infrastructure projects (DSTPs, STPs), with limited allocation for ecological restoration.
- Maintenance of smaller water bodies and community spaces lacks consistent funding.
- Plantation, afforestation, and biodiversity efforts receive uneven financial support across agencies.

Technical & Implementation

- Water quality monitoring is infrequent and reactive, with no real-time tracking.
- Groundwater recharge efforts are fragmented, with weak tracking of rainwater harvesting and treated wastewater reuse.
- Restoration and plantation strategies exist, but pollution, poor coordination, and urban expansion undermine success.

Community Centric

- Community involvement in water body restoration and groundwater recharge is minimal, reducing long-term ownership.
- Urban villages have Phytorid systems and DSTPs, but low public awareness limits local engagement.
- Local initiatives like community-led groundwater recharge are almost absent.

Social Equity

- Larger and more publicly recognized water bodies, such as Sanjay Lake and Yamuna Biodiversity Park, receive consistent maintenance and upkeep, whereas smaller, community-based water bodies, like Mubarakpur Dabas Lake, suffer from neglect, often becoming sites for solid waste disposal due to inadequate management and monitoring.
- Unauthorized areas and informal settlements rely heavily on groundwater, with limited alternatives.
- Lack of open-access water quality data limits transparency and public accountability.

SCORES OF GOAL 6: ENSURE QUALITY URBAN SPACE

Table 7: Sub-Indicators scored for Goal 6

Indicator	Sub-indicator/Thrust Area	Score
6.1 Activating connected pleasant urban green and blue space	6.1a Number and distribution of green spaces	2.75
	6.1b Quality and interconnection of green spaces or waterways	2.375
6.2 Urban elements functioning as part of the urban water system	6.2a Urban space and built form supports water sensitivity	3.125
6.3 Vegetation coverage	6.3aThe proportion of human-accessible areas being covered or shaded by vegetation canopy	4

Cumulative Score for Goal 6:

Delhi's score of 3.06 in ensuring quality urban space suggests that the city has relatively well-developed urban spaces with green infrastructure, parks, and public areas. However, these spaces are not equitably distributed, and they lack complete integration with water-sensitive planning principles.

JUSTIFICATION OF SCORES FOR GOAL 6

Institutional

- Policies exist for tree shade, urban biodiversity, and water-sensitive urban design (WSUD), but enforcement is weak.
- Fragmented governance across agencies slows implementation of green space and water-sensitive strategies.
- Existing biodiversity and floodplain plans lack clear institutional coordination.

Financial

- Limited dedicated funding for green infrastructure maintenance and biodiversity corridors.
- Investment often favors large infrastructure over integrated green-blue projects.
- Funding gaps lead to neglect in informal and high-density areas.

Technical & Implementation

- Green spaces are fragmented, with poor interlinkages between parks, wetlands, and biodiversity zones.
- Water-sensitive design features (rain gardens, pervious surfaces, stormwater harvesting) are often planned but rarely executed fully.
- Urban biodiversity plans need stronger technical integration with floodplain management and ecological corridors.

Community Centric

- Local residents have limited say in green space design or biodiversity planning.
- Public spaces in informal areas are often encroached or poorly maintained, reducing usability for communities.
- Community stewardship for local parks and green patches is underutilized.

Social Equity

- Significant green space gaps in high-density and informal settlements (e.g., East Delhi).
- Uneven access to well-maintained parks and biodiversity zones — wealthier areas fare better.
- Targeted interventions are needed to ensure equitable distribution and access to green and recreational spaces

SCORES OF GOAL 7: PROMOTE ADAPTIVE INFRASTRUCTURE

Table 8: Sub-Indicators scored for Goal 7

Indicator	Sub-indicator/Thrust Area	Score
7.1 Diverse fit-for-purpose water supply system	7.1a A flexible and adaptive water supply system depending on the quality water requirements of the end user.	2.33
7.2 Multi-functional water system infrastructure	7.2a Provision of multi-functional water infrastructure	2.705
	7.2b Public access of the infrastructural assets	2.875
7.3 Integration and intelligent control	7.3aLevel of optimisation of water system network performance	2.41
7.4 Robust infrastructures	7.4a Sensitivities and vulnerabilities in the water system network	2.63
7.5 Infrastructure and ownership at multiple scales	7.5aDecentralised systems like rainwater tanks, domestic wastewater systems and groundwater bores	3.33
7.6 Adequate maintenance	7.6aMaintenance and monitoring policies	2.495
	7.6bUndertaking maintenance activities (implementation)	2.33

Cumulative Score for Goal 7:

Delhi's score of 2.63 in promoting adaptive infrastructure indicates moderate progress in integrating climate-responsive and resilient water infrastructure. While some initiatives exist to enhance adaptability, gaps remain in scaling up nature-based solutions, ensuring infrastructure flexibility, and incorporating long-term climate resilience into urban planning.

JUSTIFICATION OF SCORES FOR GOAL 7

Institutional

- Fragmented Monitoring & Coordination: Monitoring across water sources, treatment plants, and distribution networks exists, but lacks integration with decentralized systems like rainwater harvesting and DEWATS, leading to fragmented governance.
- Transparency & Accountability: Public access to real-time water quality data and monitoring records is limited, reducing accountability and public trust in service delivery.
- Operational Inefficiencies: Infrastructure operations (reservoirs, distribution networks) are monitored manually in several areas, with uneven SCADA coverage and inconsistent application of modern technologies.

Financial

- Funding Constraints & Ad Hoc Approaches: Long-term infrastructure maintenance is hindered by limited funding, over-reliance on CSR, and reactive rather than preventive maintenance policies.
- Underutilization of Budget: Annual budget allocations often go unused or are diverted to other sectors due to poor planning and lack of clear financial prioritization for water-sensitive urban features.
- Limited Investment in Blue-Green Infrastructure: Maintenance and rejuvenation of water bodies and green infrastructure receive inadequate financial support compared to traditional infrastructure.

Technical and Implementation

- Infrastructure Quality & Maintenance: Poor monitoring and irregular maintenance lead to frequent disruptions, pipeline leakages, and compromised water quality due to cross-contamination with untreated borewell water.
- Gaps in Automation & Response: SCADA and district metering systems are partially implemented, with anomalies often addressed manually, slowing down response times and efficiency.
- Decentralized Systems Integration: Decentralized systems like RWH and DEWATS exist mainly at institutional levels without integration into broader urban water management systems.

JUSTIFICATION OF SCORES FOR GOAL 7

Community Centric

- Limited Public Access & Awareness: While some multipurpose water infrastructure integrates community spaces, public access to key assets (reservoirs, treatment plants) is restricted, limiting awareness and engagement.
- Community as First Responders: Leakages, contamination, and supply disruptions are primarily reported by local residents, indicating reliance on community-driven monitoring.
- Missed Opportunities for Participation: Policies encourage community participation in decentralized systems, but lack structured mechanisms for sustained citizen involvement in water governance.

Social Equity

- Uneven Service Delivery: Water supply reliability, quality, and maintenance vary widely across regions, with peri-urban and informal settlements receiving less consistent services.
- Dependence on Unregulated Alternatives: In underserved areas, residents rely heavily on private, unregulated water sources, exacerbating health risks and inequities in access.
- Transparency & Data Gaps Impacting Equity: Lack of accessible, disaggregated data on water quality and service levels limits the ability to identify and address regional and socio-economic disparities.

SCORE INTERPRETATION

- **0 - 1.0: Not Water-Sensitive (Highly Conventional & Unsustainable)**
  - The city relies entirely on conventional, linear water management (supply-consumption-waste-discharge).
  - No integration of ecological principles, green infrastructure, or water-sensitive design in urban planning.
  -
  - Severe governance fragmentation, poor public engagement, and lack of data transparency.
  -
  - High environmental degradation—depleting groundwater, polluted water bodies, and inefficient wastewater treatment.

- **1.1 - 2.5: Low to Moderately Water-Sensitive (Fragmented Progress)**
  - Some water-sensitive principles exist, but their implementation is inconsistent and siloed.
  - Reactive rather than proactive planning—focus on crisis management instead of long-term resilience.
  - Governance is fragmented, with limited inter-agency coordination and weak community engagement.
  - Ecological restoration efforts are small-scale and not mainstreamed into planning processes.
  - Equity gaps persist—marginalized communities face water insecurity despite overall service coverage.

- **2.6 - 3.5: Moderately Water-Sensitive (Structured but Limited Integration)**
  - IInter-agency collaboration is improving, but institutional silos still exist.
  - Water-sensitive urban design (WSUD) is partially integrated into planning, with some successful case studies.
  - Some community engagement initiatives exist, but they are project-based rather than systemic.
  - Data systems are improving, though accessibility remains limited.
  - Policy frameworks acknowledge water sensitivity, but enforcement and scalability remain challenging.

SCORE INTERPRETATION

- **3.6 - 4.5: Highly Water-Sensitive (Integrated & Adaptive City)**
  - Water is a key consideration in urban planning and decision-making across all sectors.
  - Strong inter-agency collaboration ensures coordinated, integrated water management.
  - Data-driven decision-making is institutionalized, with transparent public access.
  - Community engagement is mainstreamed—citizens actively participate in governance
  - Nature-based solutions (NBS) and WSUD are widely adopted, improving water security and resilience.

- **4.6 - 5.0: Fully Water-Sensitive City (Resilient & Regenerative)**
  - The city functions as a 'water catchment,' maximizing rainwater harvesting, groundwater recharge, and decentralized treatment.
  - Circular water economy is fully established—wastewater is effectively treated, reused, and reintegrated into the system.
  - Equity is a core principle—all communities have equal access to water security and climate resilience.
  - Governance is participatory, decentralized, and adaptive—able to respond dynamically to emerging challenges.
  - Ecological restoration is complete—water bodies, wetlands, and green infrastructure are fully integrated into the urban landscape.

DELHI'S WATER SENSITIVITY: RESULTS

Figure 4: Webchart showing scores of Goal 1

Figure 5: Webchart showing scores of Goal 2

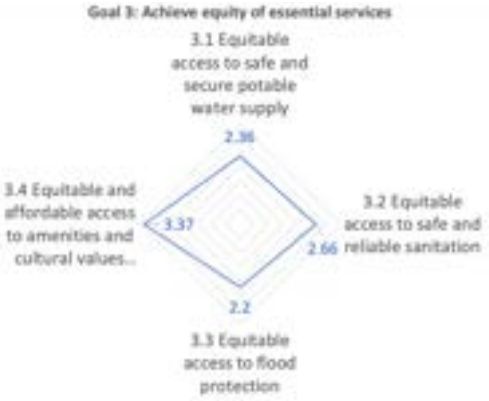


Figure 6: Webchart showing scores of Goal 3

Figure 7: Webchart showing scores of Goal 4

DELHI'S WATER SENSITIVITY: RESULTS

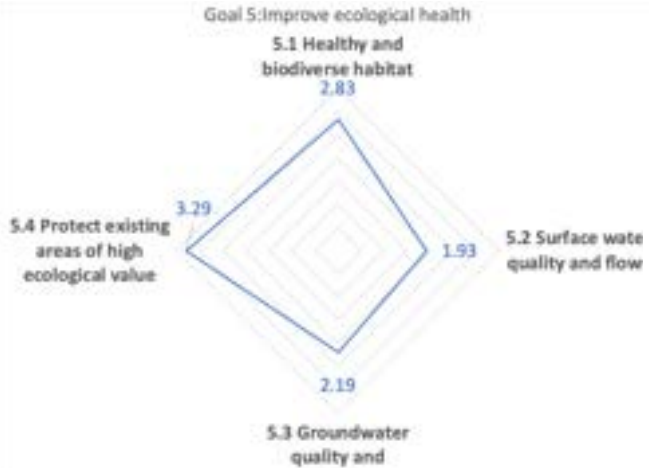


Figure 8: Webchart showing scores of Goal 5

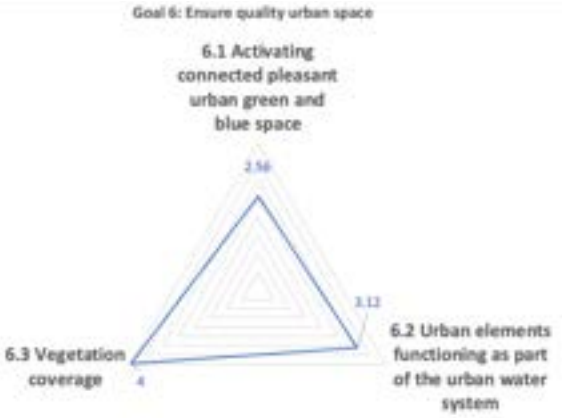


Figure 9: Webchart showing scores of Goal 6

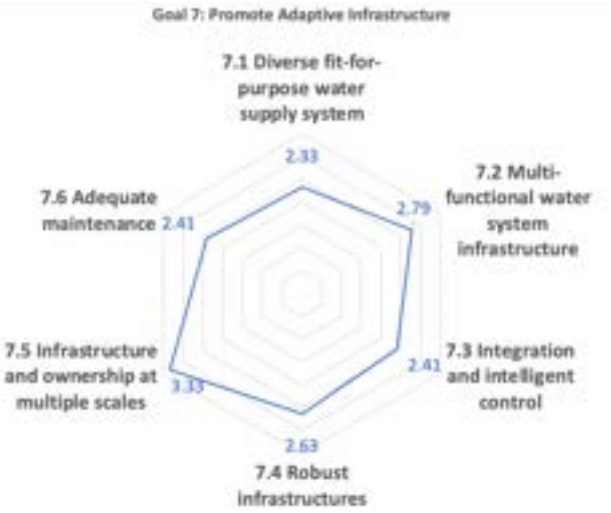


Figure 10 : Webchart showing scores of Goal 7

DELHI'S WATER SENSITIVITY

Cumulative Score for Delhi

Delhi's cumulative water sensitivity score of 2.4 indicates that the city falls within the low-to-moderate range of water sensitivity. The marginal variation in scores across different goals highlights systemic challenges rather than isolated deficiencies, with Goal 1—Ensuring Good Water-Sensitive Governance—receiving the lowest score. While initiatives such as the Delhi Water Forum (DWF) aim to address governance fragmentation and institutional silos, the existing framework remains insufficiently integrated.

The city is situated at a **Drained City-Waterways City** Transition, reflecting a shift away from basic infrastructure (water supply, sanitation, and flood management) to more advanced water-sensitive goals.

While there are ongoing efforts for waterway restoration and lake rejuvenation, these efforts are often piecemeal, localised, and lack a system-wide integration that is necessary to create a truly water-sensitive city.

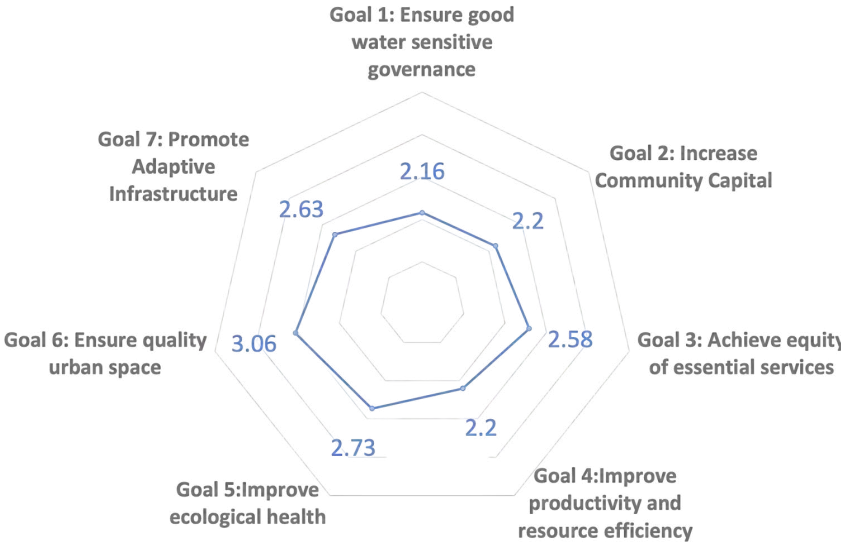


Figure 11 : Webchart showing Cumulitive Scores of Goal 1-7

WAY FORWARD

The baseline assessment serves as an evidence-based foundation for a position paper that will outline priority actions for the Delhi Development Authority (DDA), the agency responsible for city planning and infrastructure governance.

A subset of the WSC Index indicators, specifically those within DDA's regulatory and planning jurisdiction, will be further analysed. Using the rationale behind the baseline scores, the next phase will focus on developing targeted interventions and strategic recommendations. These recommendations will align with the Transition Dynamic Framework (TDF), providing a structured pathway for institutional and policy-level reforms necessary to advance Delhi's transition towards a Water Sensitive City.

ANNEXURE 1: SCORING CRITERIA OF EACH GOAL

GOAL 1: ENSURING GOOD WATER SENSITIVE GOVERNANCE

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
1.1 Knowledge skills and organizational capacity	1.1a. Multidisciplinary skills and knowledge (landscape and ecology, social and urban design, architects)	Multidisciplinary skills and knowledge not existent at all	Available but limited to few individuals	Widely available among all individuals	Widely available and regularly updated	Widely available, regularly updated and implemented
	1.1b. Injection of water-related science and knowledge (e.g. NBS for water management, demand management measures etc.)	Water-related science is not practiced at all	Limited application of water-related science	Limited application of water-related science, with multi-disciplinary measures	Water-related science applied to all projects, with multi-disciplinary measures	Water-related science applied to all projects, and informed by emerging innovations
	1.1c. Opportunities for technical growth and upskilling	No opportunities at all	Few opportunities available but limited to few individuals	Multiple opportunities available to individuals	Opportunities widely available to all individuals, with limited application in the area of work	Opportunities widely available to all individuals, and is applied in different areas of work

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
1.1 Knowledge skills and organizational capacity	1.1d. Organizational knowledge is retained	No mechanism for knowledge retention and transfer	Mechanism for knowledge retention exists, but not practiced	Knowledge transfer is practiced at only individual level	Knowledge retention and transfer is practiced within a few departments	Mechanisms for knowledge transfer at an organizational level and a knowledge bank/ repository accessible to all departments
1.2 Water is key element in city planning and design	1.2a. Policies for urban planning integrates water-sensitive principles	No knowledge of water-sensitive principles	Water-sensitive principles are rarely considered in planning	Water-sensitive principles are considered but not integrated in planning	Water-sensitive principles are partially integrated in planning	Water-sensitive principles are fully integrated in planning
	1.2b. Urban development incorporates water-sensitive urban design (WSUD) elements	No knowledge about WSUD elements	Basic knowledge about WSUD, but not incorporated in urban development	WSUD elements occasionally incorporated at project level	WSUD elements incorporated in some forms of urban planning and development	WSUD elements are incorporated in all forms of urban planning and development with regular monitoring and evaluation of the outcomes

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
1.2 Water is key element in city planning and design	1.2c. Incentives for implementation of water-sensitive urban development	No incentives for WSUD	A few incentives for WSUD exist	Variety of incentives for WSUD exist	Incentives for WSUD exist, but are rarely availed	Incentives for WSUD exist, and are often availed
1.3 Cross-sector institutional arrangements and processes	1.3a. Information sharing and transparency	No information is shared with other agencies	Information is shared with other agencies when required/ asked for	Information is openly shared with other agencies on a regular basis	Information is shared with other agencies and some information is put out in public domain	Information is shared with other agencies and most information is put out in public domain to encourage transparency
	1.3b Partnerships/ inter-agency collaboration across government organizations to plan and implement water sensitive solutions	No partnership or collaboration across organizations	Collaborations as and when needed	Regular collaborations with specific agencies	Regular collaborations with most of the agencies	Regular collaborations with most of the agencies and collective planning and implementation of projects

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
1.4 Public engagement, participation and transparency	1.4a Citizen communication and engagement activities undertaken by the organizations	Citizen communication and engagement not a part of larger planning vision	No policy mandate on citizen communication and engagement, but citizens are informed about certain activities	Formal structures for citizen engagement are in place, but it's a passive form of engagement (example, through online grievance redressal, feedback forms, RTI)	Formal structures for active citizen engagement are in place (example water related committees, public consultations, forums, etc.)	Policy mandates on citizen communication and engagement are present and organizations make citizens are formally involved decision making
	1.4b Levels of actual citizen engagement(considering avenues for engagement)	Citizens hardly provide any feedback	Citizens provide feedback, only when asked for it	Citizens mostly provide feedback through passive mechanisms	Citizens provide proactive feedback	Citizens actively contribute to the decision making (active dialogues/ liaisons through representation in advisory boards)

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
1.5 Leadership, long-term vision and commitment	1.5a Organization's commitment to water-sensitive vision	Water-sensitive approach to development is not a priority for the organization	Water-sensitive approach is supported by only some verticals within the organization	Several verticals support the water sensitive approach to development	Several verticals support and are collectively able to influence organizational commitment to water sensitive approach to development	The Organization is committed to adopt and implement water-sensitive approach to development
1.6 Water resourcing and funding to deliver broad societal value	1.6a Dedicated budget allocation for water-sensitivity in projects	No budget available for water sector projects	Budget available for water sector projects, mostly related to provision of basic services	Limited budget available for water sector projects and integrating water-sensitive elements in some projects	Considerable budget available for integrating water-sensitive elements in some projects	Dedicated budget allocation for water-sensitive projects as well as for integrating water-sensitive elements in all projects

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
1.6 Water resourcing and funding to deliver broad societal value	1.6b Funding available for water-related R&D and innovation	No funds are available for water-related R&D	Limited funds are available for water-related R&D, which are mostly used towards provision of basic services	Considerable funds are available for water-related R&D, to promote water-sensitive practices	Dedicated budget is allocated for R&D, to promote water-sensitive practices	Dedicated budget is allocated for R&D to promote water-sensitive practices, and is also used for pilot projects
1.7 Equitable representation of perspectives	1.7a Equity policy (GEDSI) in the organization for representation of various stakeholder groups	No organizational policy mandate to ensure equitable representation	No organizational policy mandate, but willingness to incorporate GEDSI principles	Policy to incorporate equitable representation is in place	Policy to incorporate equitable representation is in place but is not implemented consistently across all projects	Policy to incorporate equitable representation principles is in place, and implemented consistently in all the projects

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
1.7 Equitable representation of perspectives	1.7b Representation by groups who experience marginalization or disadvantaged groups, in governance arrangements and decision-making	No representation of disadvantaged groups	Low representation of disadvantaged groups (sometimes limited to grievance redressal)	Representation of only a few disadvantaged groups in specific stages of decision-making	Representation from all disadvantaged groups at all stages of decision-making	Disadvantaged groups have the power to influence decision-making

GOAL 2: INCREASE COMMUNITY CAPITAL

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
2.1 Water literacy	2.1a. Community's interest and understanding of the water cycle and water sector	No understanding and no interest either	Community takes an interest, but the understanding is limited to their day-to-day water issues.	The community is interested in this, and they understand the water situation broadly. (People are aware of the existence of water-sensitive solutions)	The community has a fair interest and an understanding of the water sector (People only know what they are paying for where key responsibilities sit organisationally and details of the current water situation politically, technically, and environmentally)	The community takes a deep interest and has a deep understanding (People know what they are paying for, where key responsibilities sit organisationally and details of the current water situation politically, technically, and environmentally) Outreach programs to enhance understanding are developed in close collaboration with the community and yield high participation.

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
2.2 Connection with water	2.2a. People's pride & connectedness with water-related assets and their importance in delivering broader liveability	People lack awareness of the existence of local water bodies/ water assets.	People are aware but lack connection with water-related assets.	People are aware of and recognize the cultural association of the water assets.	People feel a strong connection with water-related assets and their socio-cultural importance and recognize their value in gardens and green	Water-related assets are celebrated and water's importance in supporting green infrastructure and city-wide liveability is acknowledged by all.

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
2.3 Shared Ownership, management, and responsibility of water assets	2.3a. Role of community in local water management solutions and maintaining decentralized parts of the water system	Ownership, management, and responsibility of water assets are with formal water governance organisations only.	Ownership, management, and responsibility of water assets are with formal water governance organisations, except for local ad hoc water management solutions implemented by households. (e.g. water tankers)	Households and communities play a small role in the ownership and management of local water management solutions. (e.g. community helps identify issues through grievances that are used by designated authorities)	Policy and planning provisions are in place for local water management solutions led by community and community-based organizations. These are monitored and maintained by them only.	Policy and planning provisions are in place for local water management solutions led by community and community-based organizations. These are monitored by designated authorities to inform formal planning and management systems and ensure they connect with other local water networks as part of an integrated system.

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
2.4 Community preparedness and response to extreme events	2.4a. Capacity of communities to cope with /respond to water-related extreme events	No capacity within the community to cope with /respond to water-related extreme events	Temporary measures are used by communities to respond to water-related extreme events, and no formal or community response plans are in place.	Communities can respond to certain extreme events. Formal community response plans and emergency response systems exist but are not disseminated widely.	Communities are well prepared to respond to most extreme events. Formal community response plans and emergency response systems exist, which are widely disseminated. However, these plans are not complemented with HH-level preparedness.	Communities are well prepared to respond to most extreme events. Formal community response plans and emergency response systems exist, are developed involving the community, and are widely disseminated. These plans ensure preparedness at the HH level.

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
2.5 Indigenous involvement in water planning	**2.5a. Consideration of local/ community interests and knowledge in planning and management of water systems**	No consideration of local/ community interests and knowledge in the planning and management of water systems.	Informal recognition (only through NGOs/ study groups/ forums/ etc) of local/community interests and knowledge in the planning and management of water systems	Formal practice to integrate some local/ community interests and knowledge in the planning and management of a few water systems	Comprehensive policy and frameworks to ensure integration of local interest/ knowledge (economic, cultural, and/or spiritual) in the planning and management of water systems	Comprehensive policy and frameworks to ensure integration, protection, and enhancement of local interest/knowledge (economic, cultural, and/or spiritual) in the planning and management of water systems

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
2.5 Indigenous involvement in water planning	**2.5b. Involvement of local communities with knowledge of traditional water systems in water governance**	No involvement of local communities with knowledge of traditional water systems in water governance	Some attempt to involve communities with traditional knowledge in water governance	Common practice to involve communities with traditional knowledge in water governance	Legislative mandates to involve communities with traditional knowledge, in water governance, with limited enforcement	Legislative mandates involve communities with traditional knowledge, in governance activities, which is effective in giving a voice to local interests and knowledge.

GOAL 3: ACHIEVE EQUITY OF ESSENTIAL SERVICES

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
3.1 Equitable access to safe and secure potable water supply	3.1a. Availability of water to the houses	Availability of water is restricted to very few(less than 30%) households	Some people (30-60% of the urban population) have access to safe and secure water for basic needs.	Many people (60-95% of the urban population) have access to safe and secure water for drinking and other consumptive purposes.	Safe and secure water is available to almost all people (more than 95% of the urban population) all of the time for drinking and other consumptive purposes.	Safe and secure water is available to everyone including the disadvantaged communities for drinking and other consumptive purposes.
	3.1b. Affordable access to water	No mechanism for water metering or water pricing is in place	Water supply is metered but a standardized water tariff is imposed	The water supply is metered with standardized water rates. Some incentives for regulating water consumption.	The water supply is metered and subsidized. Measures are in place (such as discounted bills etc.) to address affordability and access for disadvantaged and low-income groups.	Water supply is metered and subsidized, and gradation of water rates in consultation with disadvantaged and low-income groups to ensure access for all.

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
3.1 Equitable access to safe and secure potable water supply	**3.1c. Measures taken to prevent water scarcity**	No measures in place for future water demands	Measures restricted to fire-fighting needs	There are long-term planning and strategies in place to address future water threats but has not been implemented.	Measures are in place to address the access to water, but only in a few communities.	Measures are in place (such as discounted bills etc.) to address affordability and access for disadvantaged and low-income groups as well as future community needs. Future threats to water security are taken into account in planning and implemented

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
3.2 Equitable access to safe and reliable sanitation	**3.2a. Access to Safe and Reliable Sanitation**	Few people (less than 30% of the urban population) have access to and use safe and reliable sanitation (pit latrine with slab/ventilated, sealed privies)	Some people (30-60% of the urban population) have access to and use safe and reliable sanitation (pit latrine with slab/ventilated, sealed privies)	Many people (60-95% of the urban population) have access to and use safe and reliable sanitation (pit latrine with slab/ventilated, sealed privies)	Safe and reliable sanitation is available to and used by almost all people (more than 95% of the urban population). Most households are connected to a sewer system or otherwise have a hygienic toilet facility in-house (flush/pour flush to sewer, septic tank or pit latrine, or compositing toilet).	Safe and reliable sanitation is available to and used by everyone. All households are connected to a sewer system or otherwise have a hygienic toilet facility in-house (flush/pour flush to sewer, septic tank or pit latrine, or compositing toilet).

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
3.2 Equitable access to safe and reliable sanitation	**3.2b. Treatment of Waste Water**	Wastewater is not treated; it doesn't take place at all.	Wastewater treatment plants exist but are not fully functional.	Wastewater treatment plants exist and are treated to primary standards before release.	Wastewater treatment plants exist and are treated to at least secondary standards before release.	Wastewater treatment plants exist and are fully functional, with treatment to the highest standards before release.

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
3.2 Equitable access to safe and reliable sanitation	**3.2c. Affordability of safe and reliable sanitation.**	Few people (less than 30% of the urban population) have access to and use safe and reliable sanitation (pit latrine with slab/ventilated, sealed privies).	Some people (30-60% of the urban population) have access to and use safe and reliable sanitation (pit latrine with slab/ventilated, sealed privies), not shared by too many and of sufficient capacity.	Many people (60-95% of the urban population) have access to and use safe and reliable sanitation (pit latrine with slab/ventilated, sealed privies), not shared by too many and of sufficient capacity.	Safe and reliable sanitation is available to and used by almost all people (more than 95% of the urban population). Most households are connected to a sewer system or otherwise have a hygienic toilet facility in-house (flush/pour flush to sewer, septic tank or pit latrine, or compositing toilet).	All households are connected to a sewer system or otherwise have a hygienic toilet facility in-house (flush/pour flush to sewer, septic tank or pit latrine, or compositing toilet). Discharge to an environment that causes public health risk is prevented (including leaks) or treated at the wastewater treatment plant to at least secondary standards before release. Measures are in place (such as discounted bills etc.) to address affordability for disadvantaged and low-income groups.

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
3.3 Equitable access to flood protection	**3.3a. Understanding of human safety and infrastructural damage**	Rainfall events lead to minor flooding that always disrupts everyday activities. A substantial proportion of the urban population (more than 10%) is at risk of severe consequences to life associated with flooding.	Rainfall events lead to minor flooding that regularly disrupt everyday activities. A significant proportion of the urban population (2-10%) is at risk of severe consequences to life associated with flooding (including health and welfare).	Rainfall events lead to minor flooding that sometimes disrupt everyday activities. Some of the urban population (less than 2%) are at risk of severe consequences to life associated with flooding (including health and welfare).	Rainfall events generally do not disrupt everyday activities. Almost everyone's lives are well protected against flood risks, although extreme events may affect some property in some areas negatively and the risks are understood.	Rainfall events do not disrupt everyday activities. Human safety is virtually guaranteed, and infrastructure and property damage are infrequent; risks are well understood.

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
3.3 Equitable access to flood protection	**3.3b. Level of response mechanism undertaken for flood risk**	Urban population (more than 10%) are at risk of severe consequences to life associated with flooding. Almost no action is undertaken to address the issue.	A significant proportion of the urban population (2-10%) is at risk of severe consequences to life associated with flooding (including health and welfare).	Some measures are undertaken to reduce the impact on infrastructure and property, but there is a dearth of coordinated responses to take flood-vulnerable communities explicitly into account.	Measures are undertaken to reduce the impact on infrastructure and property. A coordinated and integrated response is undertaken, with a response mechanism for the vulnerable communities.	Rainfall events do not disrupt everyday activities. Human safety is virtually guaranteed, and infrastructure and property damage are infrequent; risks are well understood. A coordinated and integrated response is undertaken with urban planning, infrastructure planning, and housing typology explicitly taking flood risks into account.

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
3.3 Equitable access to flood protection	3.3c. Multifunctional landscapes to provide flood mitigation	There are no harvesting or detention measures in catchments and communities of lower typology suffer from downstream impacts	There are some harvesting measures, but they do not take flood risks into account	Detention measures are located in catchments but fail to mitigate the downstream impacts.	Urban planning, infrastructure planning, and housing typology (raised or floating dwellings) explicitly take flood risks into account. Harvesting and detention measures throughout catchments reduce flooding impacts associated with peak flood events.	Urban areas are designed to provide a flood mitigation function as part of multifunctional landscapes.

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
3.4 Equitable and affordable access to amenities and cultural values of water-related assets	3.4a. Extent of provision of water-related assets in Cultural values	Water-related assets do not provide amenities and cultural benefits in most areas of the city.	Water-related assets provide amenity and cultural values in some areas of the city.	Water-related assets provide amenities and cultural values to not only the major population of the city but also the marginalized communities.	Water-related assets provide amenity and cultural values in most areas of the city, including the marginalized communities.	Water-related assets provide amenity and cultural values in all areas of the city and are implemented to improve lower socio-economic areas.
	3.4b. Accessibility and Affordability to Cultural Values of Water-related Assets	These areas are not easily accessible and enjoyment of these benefits comes at a relatively high cost for the majority of households.	These areas are accessible to some extent, but enjoyment of these benefits comes at a relatively high cost for some households.	These areas are mostly accessible and come at a moderate cost for most households.	These areas are highly accessible and enjoyment of these benefits comes at a low cost.	These areas are highly accessible and enjoyment of these benefits comes at no cost.

GOAL 4: IMPROVE PRODUCTIVITY AND RESOURCE EFFICIENCY

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
4.1 Optimised resource recovery	4.1a. Reuse of treated wastewater	No existing policy for reuse in place	Existing Policies in place but no reuse	Upto 50% reuse of treated wastewater takes place	50%-70% of the reuse of treated wastewater takes place	Greater than 90% of wastewater is being reused
	4.1b. Energy recovery	No knowledge and awareness about energy recovery	Knowledge about energy recovery exists but no policy is in place	Existing policies integrate the concept of energy recovery	Energy recovery concepts are used in the design and development of only new water infrastructure	Energy recovery concepts are used in the design and development of all new water infrastructure, as well as the existing infrastructure is retrofitted using energy recovery models, active research is being conducted to enhance the same

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
4.2 Low GHG emission in the water sector	4.2a. Maximise the use of alternatives to high carbon-emitting energy sources in water system infrastructure	No knowledge and awareness about GHG Emission	Knowledge about the reduction of GHG Emissions exists but no policy is in place.	Existing water sector policies integrate the concept of reducing/neutralizing GHG Emissions.	Organisations undertake demonstration projects on reducing/neutralising GHG Emissions.	All new infrastructures are based on alternative energy sources, progressive upgrades of existing infrastructure for reducing/neutralising GHG Emissions, & regular monitoring of Carbon emissions.
4.3 Water-related business opportunities	4.3a. Encouragement of new business in collaboration with government agencies	No existing thoughts or intent on creating new business opportunities related to water system services.	While there is an intent to create new business opportunities related to water system services, no existing water-related policies with a focus on enhancing business opportunities.	Existing policies encourage creating business opportunities related to water system services.	Business opportunities created by water system services are limited to certain projects.	A significant amount of business opportunity is created by water-related services (digital innovations, advanced service provision, smart/AI-based/GIS Based technologies)

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
4.4 Optimal end-user potable water demand	**4.4a. Local Water-efficient practices/ Demand Management practices**	No consideration was given to water-efficient practices across residential, industrial, and commercial sectors	Water-efficient practices/demand management are encouraged in policies but not implemented.	Water-efficient practices are implemented in residential, industrial, and commercial sectors.	Water-efficient practices across residential, industrial, and commercial sectors. Water efficiency programs (like decentralized systems) targeting households and businesses are widespread and effective.	Very consistent water-efficient practices (water-efficient fittings, fixtures, and appliances) across residential, industrial, and commercial sectors. Water efficiency programs targeting households and businesses are widespread and effective. Water-efficient behaviors are embedded in communities and businesses.

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
4.4 Optimal end-user potable water demand	4.4b. End-user potable water demand for total residential, industrial, and commercial	The total potable water demand is greater than 60 Gallon Per Capita Per Day (GPCD (274 LPCD)	The total potable water demand is between 50-60 GPCD	The total potable water demand is between 40-50 GPCD	The total potable water demand is between 30-40 GPCD	The total potable water demand is between 20-30 GPCD
4.5 Broad community benefits from water services	4.5a. Cross-Sectoral Benefits for the Community from Water-Related Services	No benefits for the community are delivered through water-related services	Few benefits (limited to cultural benefits) for the community are delivered through water-related services.	Minor benefits (beyond cultural benefits) for the community are delivered through water-related services, but they are not formalized.	Some benefits for the community are delivered through water-related services like supporting economic activities. Such services are under planning consideration	Many benefits for the community are delivered through water-related services, which are mainstreamed in plans with a regularly updated database.

GOAL 5: IMPROVE ECOLOGICAL HEALTH

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
5.1 Healthy and biodiverse habitat	**5.1a. Design water systems to help protect, restore, and create well-functioning ecosystems that contribute to ecological resilience.**	The design of water-related services does not consider protecting or restoring natural ecosystems for ecological resilience.	The design of water-related services considers protecting or restoring some natural ecosystems (water sources of consumption for the city, special projects) for ecological resilience.	The design of water-related services considers protecting and restoring natural ecosystems but does not consider the interconnectedness of ecosystems.	Design of water-related services considers protecting and restoring natural ecosystems & interconnectedness of ecosystems limited to a few interventions like green corridors and parks in high-development zones.	Design and Planning of new water-related services focus on protecting and restoring well-connected natural ecosystems. Existing/old infrastructures are also retrofitted with water-sensitive elements.

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
5.1 Healthy and biodiverse habitat	**5.1b. Policy and plantation strategy (Biodiversity and quality of vegetation) supports urban Water-Sensitivity**	No consideration of water sensitivity in plantation strategies.	The policies have mentioned of water-sensitive plantation strategy, but they have not been implemented. .	The policies have a mention of water water-sensitive plantation strategy, but its implementation is limited to places/special projects gardens, and education campuses.	The policies have a mention of water-sensitive plantation strategy and implementation. The plantation strategies adopted by the city take into account the water-sensitive elements and are implemented in all projects.	The policies have a mention of water-sensitive plantation strategy and implementation. The plantation strategies adopted by the city take into account the water-sensitive elements and are implemented in all projects. These initiatives are regularly monitored and capacity-building initiatives are undertaken to promote the same.

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
5.2 Surface water quality and flows	5.2a. Quality & flow of surface water ecosystems	The quality and flow characteristics of the surface are detrimental to functioning ecosystems. They are not monitored at all.	Some of the water bodies are better than others, but overall the ecosystem deteriorates. There is a significant lack of biodiversity due to lesser flow.	Most of the existing water bodies have quality and flow characteristics that support biodiversity in the local environment. However, the quality is not monitored.	Most of the existing water bodies have quality and flow characteristics that support biodiversity in the local environment, the quality is monitored on an ad-hoc basis. (like water-borne disease outbreaks)	All the existing water bodies have quality and flow characteristics that support biodiversity in the overall environment, the quality is monitored regularly and actions are taken accordingly.

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
5.3 Groundwater quality and replenishment	**5.3a. Dependency on groundwater**	Almost all households are dependent on groundwater for their potable use. The quality and level of groundwater are never monitored and are subject to contamination through leachate, heavy metals, etc.	There is a mix of dependency on surface and groundwater, but the water table levels are highly reduced over time. The quality check happens on an ad-hoc basis.	There is a mix of dependency on groundwater and surface water. The groundwaters are not being depleted but are contaminated. The quality and level of groundwater is monitored on a district level.	There is a mix of dependency on groundwater and surface water. The quality and replenishment of groundwater in the area support healthy ecosystems and valued ecosystem services(wetlands/water bodies etc). Mostly the groundwaters are of good quality and not being depleted. The quality and level of groundwater is monitored regularly on all scales.	There is a mix of dependency on groundwater and surface water. The quality and replenishment of groundwater in the area support very healthy ecosystems and value ecosystem services (e.g. groundwater-dependent ecosystems). Mostly the groundwaters are of good quality and not being depleted – this is consistently monitored throughout the city through real-time piezometric meters.

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
5.3 Groundwater quality and replenishment	**5.3b. Actions taken for groundwater replenishment**	No action is undertaken to address domestic and industrial wastewater, and urban runoff, impacting groundwater.	Some action is undertaken to address domestic and industrial wastewater, quality before discharge. The urban runoff is not treated before discharge.	Action is undertaken to address domestic and industrial wastewater, or urban runoff, impacting groundwater. The urban runoff is stored in water retention ponds/artificial lakes in some places, but there is a lack of stormwater drains and dual piping.	Significant action is undertaken to address domestic and industrial wastewater, and urban runoff, impacting groundwater.	Extensive action is undertaken to address domestic and industrial wastewater, and urban runoff, impacting groundwater. The actions are based on nature-based solutions like and concepts of Sponge City.

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
5.4 Protect existing areas of high ecological value	**5.4a. Policies for ecological hotspots**	There are no policies in place to protect and conserve biodiversity hotspots like wetlands, and waterbodies.	Legislation and policy are limited to designated conservation zones (like eco-sensitive zones) and some urban water systems.	Legislation and policy are in place to protect and conserve all landscapes of ecological significance, but their development is not regulated.	Legislation and policy are in place to protect and conserve all landscapes of ecological significance, & urban development is excluded in some areas through designated conservation zones.	Legislation and policy are in place to protect and conserve landscapes of ecological significance. They are implemented and multiple actions are taken to protect and conserve them. Citizens recognise and contribute actively to the maintenance of water systems and landscapes of ecological significance.

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
5.4 Protect existing areas of high ecological value	5.4b. Mechanisms for protecting ecological hotspots from catchment urbanisation	All Natural Conservation Zones are in bad shape.	Few Natural Conservation Zones are protected (Only on an ad-hoc basis)	Some Natural Conservation Zones are protected (Only the eco-sensitive zones)	Almost all Natural conservation Zones are protected but are subject to encroachment	All Natural Conservation Zones are protected and there are no encroachments.
	5.4c. Database of native flora and fauna	No Mapping and records of native flora and fauna are available	Limited mapping and records of native flora and fauna are available (at a regional scale, not specific to Delhi)	Records of native flora and fauna are available on old reports but are not digitised spatially.	Extensive mapping and records of native, endangered, and protected species are available at a repository.	Extensive mapping and records of endangered and protected species are available and updated regularly.

GOAL 6: ENSURE QUALITY URBAN SPACE

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
6.1 Activating connected pleasant urban green and blue space	6.1a. Number and distribution of green spaces	Very low number of green spaces across the city (with less than 10% of the population having spatial access)	Adequate number of green spaces (9sqm per capita) but inequitable distribution in the city (with 10%-30% of the population having spatial access)	Adequate number of green spaces (9sqm per capita) but inequitable distribution in the city (with 30%-60% of the population having spatial access)	Adequate number of green spaces (9sqm per capita) but reasonably equitable distribution in the city (with 60%-90% of the population having spatial access)	More than an adequate number of distributed, well-connected green spaces (9sqm per capita) equitably distributed across the city. (with 100% of the population having spatial access)
	6.1b. Quality and interconnection of green spaces or waterways	Green and blue spaces are mostly ill-maintained, polluted, and unappreciated by citizens.	Some green spaces or waterways are designed as active recreational spaces but are not maintained.	Some green spaces or waterways are designed as active recreational spaces and are well-maintained and appreciated.	All green spaces or waterways have active recreational infrastructure and are well maintained and appreciated. However, their interconnectedness is not considered.	All green spaces or waterways have active recreational infrastructure and are well-maintained, appreciated and well-connected.

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
6.2 Urban elements functioning as part of the urban water system	**6.2a. Urban space and built form supports water sensitivity**	No consideration of water sensitivity in any of the existing policies on urban space and built form.	The existing policies on urban space and built forms have a mentioned water sensitivity but are not implemented.	Some water-sensitive elements have been considered in the existing policies, but their implementation is limited to special projects.	Some water-sensitive elements have been considered in the existing policies and are implemented in all projects (e.g. rainwater harvesting)	Water Sensitivity is an integral part of all existing policies on urban space and built form, and is implemented in all projects. Capacity building of citizens and innovations are undertaken to promote the same.

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
6.3 Vegetation coverage	**6.3a. The proportion of human-accessible areas being covered or shaded by vegetation canopy**	Hardly any trees are around the area. There is no urban tree/shade policy in place. Approx of (>10%) degree of vegetation canopy coverage is present.	Some streets have trees but many do not. There is an urban/tree shade policy in place, however, there has been little implementation. Around (10-20%) of vegetation canopy coverage is present.	A fair proportion of streets have trees. There is an urban/tree shade policy being actively implemented but progress is slow. Around (20-30%) of vegetation canopy coverage is present.	A high proportion of streets have trees. There is a long-standing urban/tree shade policy being actively implemented and significant progress is being made. Around (30-40%) of vegetation canopy coverage is present.	Most of the streets have trees. A long-standing urban/tree shade policy has been successfully implemented and established. Around (>40%) of vegetation canopy coverage is present.

GOAL 7: PROMOTE ADAPTIVE INFRASTRUCTURE

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
7.1 Diverse fit-for-purpose water supply system	**7.1a. A flexible and adaptive water supply system depending on the quality water requirements of the end user.**	The water supply system does not account for the quality of water supplied. No system of measuring the quality at the user's end.	Need-based or one-time water quality measurement is undertaken at the user's end.	Regular real-time water quality measurement is undertaken at the user's end but measures for anomalies are not in place.	Regular real-time water quality measurement is undertaken at the user's end but ad-hoc measures exist to ensure fit-for-purpose water quality. (e.g. decentralized private tertiary treatment)	Regular real-time water quality measurement is undertaken and a diversified water supply system provides fit-for-purpose water for different end uses. The system is highly flexible and decentralised, and local supply and treatment options are designed and managed in an integrated manner. (e.g. DFT in Orissa with regular chlorination in the integrated supply system)

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
7.2 Multi-functional water system infrastructure	**7.2a. Provision of multi-functional water infrastructure**	There is a lack of infrastructural assets when it comes to water. The surrounding lands are unhygienic and victims of open defecation.	Water infrastructure assets are present, but only function to serve a single purpose. There is no separate pipeline for grey and black water.	Water infrastructure assets are compromised on durability and quality and are not monitored regularly. Hence their functionality is disrupted.	Water infrastructure assets are based on conventional technologies, but are regularly maintained and do not disrupt functionality.	Water infrastructure assets are multi-functional and co-located with other assets (like parks, gardens, and RWH structures) to deliver multiple beneficial outcomes for the community. They are regularly monitored and maintained.

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
7.2 Multi-functional water system infrastructure	**7.2b. Public access of the infrastructural assets**	There are no existing policies recognising public access as a benefit of multipurpose infrastructure.	There are no existing policies. Few assets are available for public access but conflict with operational requirements.	The policy recognizes public access as a benefit, But they are not implemented due to unplanned development/ unavailability of land.	Most assets (including the surrounding land) are available for public access. Policies are in place which recognise the benefit of multipurpose infrastructure and encourage public access.	Almost all assets (including the surrounding land) are available for public access. The importance of multipurpose infrastructure and public access is mainstreamed.

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
7.3 Integration and intelligent control	7.3a. Level of optimisation of water system network performance	Limited monitoring and automated control systems are in place.	Intelligent control is typically limited to the control of systems in isolation (e.g. water supply system only)	Some assets owned by water authorities are equipped with intelligent control systems. Where automated monitoring exists in the government. For owned assets, a manual response is typical.	Intelligent control is used in some parts of the system allowing monitoring and control of various aspects in an integrated manner.	Integrated intelligent system controls are typical across all scales, and allow the operation and performance of multifunctional assets to be optimised. System capacity and resources across all levels can typically be monitored and adjusted in real time.

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
7.4 Robust infrastructures	7.4a. Sensitivities and vulnerabilities in the water system network	The system is highly sensitive to stresses and the number and frequency of failures per capita per year is very high.	The system is sensitive to stresses but some redundancy measures are in place, but there is no regular monitoring of infrastructure.	The system is fairly robust. There are some redundancy measures and bypass systems. Infrastructure integrity is checked on an ad hoc basis.	The system is robust. There are redundancy measures and bypass systems. Infrastructure integrity is checked on a regular basis. The number and frequency of failures per capita per year is low.	The system is highly robust and virtually insensitive to stresses and failures. The system has redundancy and by-pass systems and infrastructure integrity is actively monitored. The number and frequency of failures per capita per year is extremely low.

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
7.5 Infrastructure and ownership at multiple scales	**7.5a. Decentralised systems like rainwater tanks, domestic wastewater systems and groundwater bores**	There are existing essential infrastructure provided by centralised authorities. Conflicts arise between authorities in case of multiple owned stretches. Decentralized systems are not encouraged in policies.	Decentralised systems are encouraged in policies but are not implemented in development.	Essential services are owned by a combination of property owners, companies and one or more authorities but there is no integrated water system planning for the city leading to poor operation.	A combination of centralised/decentralised infrastructure is sometimes planned and operated, but do not involve citizens in the decision making process barring ad hoc needs.	Essential services are owned and operated by a combination of property owners, companies and one or more authorities. Diversified and decentralised water system services are planned and operated as part of an integrated system which includes increasing neighbourhood-run cooperative facilities such as rainwater harvesting schemes.

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
7.6 Adequate maintenance	**7.6a. Maintenance and monitoring policies**	There are no existing policies and practices to ensure the long-term integrity of all water system infrastructure.	Maintenance policies exist, but only address the immediate needs of aging infrastructure.	Maintenance guidelines and procedures are widely available for traditional water infrastructures, but do not take into account the development of green/blue infrastructure.	Maintenance guidelines and procedures are widely available for all water-related infrastructure including green-blue assets. Policies encourage GIS-based comprehensive databases.	Policies encourage innovation and proactive maintenance programs are undertaken to adapt practices and support innovation.

Indicator	*Sub-indicator*	*Scoring Criteria*				
		1	2	3	4	5
7.6 Adequate maintenance	7.6b. Undertaking maintenance activities (implementation)	There is evidence of systematic failure of traditional water infrastructure. There are inadequate budgets allocated to maintain the long-term water system performance.	Some evidence of systematic failure of traditional water infrastructure. System maintenance addresses the immediate needs of aging infrastructure, although an extensive backlog of activities may exist.	Access to adequate funding for maintenance activities is limited to traditional water infrastructures. Maintenance procedures for green-blue assets are less well understood and often inadequately undertaken.	Access to funding for maintenance activities is available. Long-term maintenance needs of traditional water infrastructure and green-blue assets are well understood, planned for, and undertaken to a reasonable standard.	Long-term maintenance needs of traditional water infrastructure and green-blue assets are well understood, planned for, and undertaken to a reasonable standard. Assets are all recorded on a GIS system supported by comprehensive databases. Asset audits and proactive maintenance programs are undertaken. Asset information is used to adapt practices and support innovation.

ANNEXURE 2: JUSTIFICATIONS OF EACH SCORED INDICATOR

For justifications under each thrust area, go to the following link or scan the following QR:

https://drive.google.com/file/d/1gDaACxJZQLXwx91kx3XHi6ciL2oLvqZu/view?usp=sharing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