AIWASI

Australia India Water Security Initiative

# DELHI WATER INVENTORY

## A Comprehensive Data Compendium for Sustainable Water Governance and Planning

Australian Government

Department of Foreign Affairs and Trade

WORLD RESOURCES INSTITUTE

MCGREGOR COXALL

National Institute of Urban Affairs

MHT

# ABOUT AIWASI

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.

AIWASI

Australia India Water Security Initiative

# 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.

# PURPOSE OF THE DOCUMENT

The Delhi Water Inventory has been developed to serve as a centralized compendium of water-related information for the National Capital Territory of Delhi. Its main objective is to compile fragmented datasets scattered across different institutions and present them in a structured, accessible manner. By bringing this information together, the inventory aims to support evidence-based planning, policy-making, and research on water resources in Delhi. The purpose of this document is to serve as a one-stop reference for data on Delhi's water resources. It covers information on surface water, groundwater, and water quality, along with data on sewerage infrastructure, governance frameworks, and catchment characteristics.

# TARGET USERS

The compendium is designed for a diverse group of users, including city officials, planners, regulators, researchers, students, decision-makers, and civil society organizations. For government agencies, it provides a ready reference to track progress and ensure compliance with environmental mandates. For researchers and students, it offers a consolidated data source for academic studies and innovation. For the public, it fosters awareness and engagement with Delhi’s water challenges.

# CONTENT

# URBAN WATER GOVERNANCE & PLANNING

Urban water governance in Delhi focuses on balancing limited freshwater resources with rising demand. Institutions like Delhi Jal Board and DDA coordinate water supply, wastewater management, and drainage. Integrated planning emphasizes conservation, rainwater harvesting, reuse of treated wastewater, and pollution control in the Yamuna. Strengthening policies, infrastructure upgrades, and community participation are central to ensuring sustainable, equitable, and resilient water management for Delhi's future.

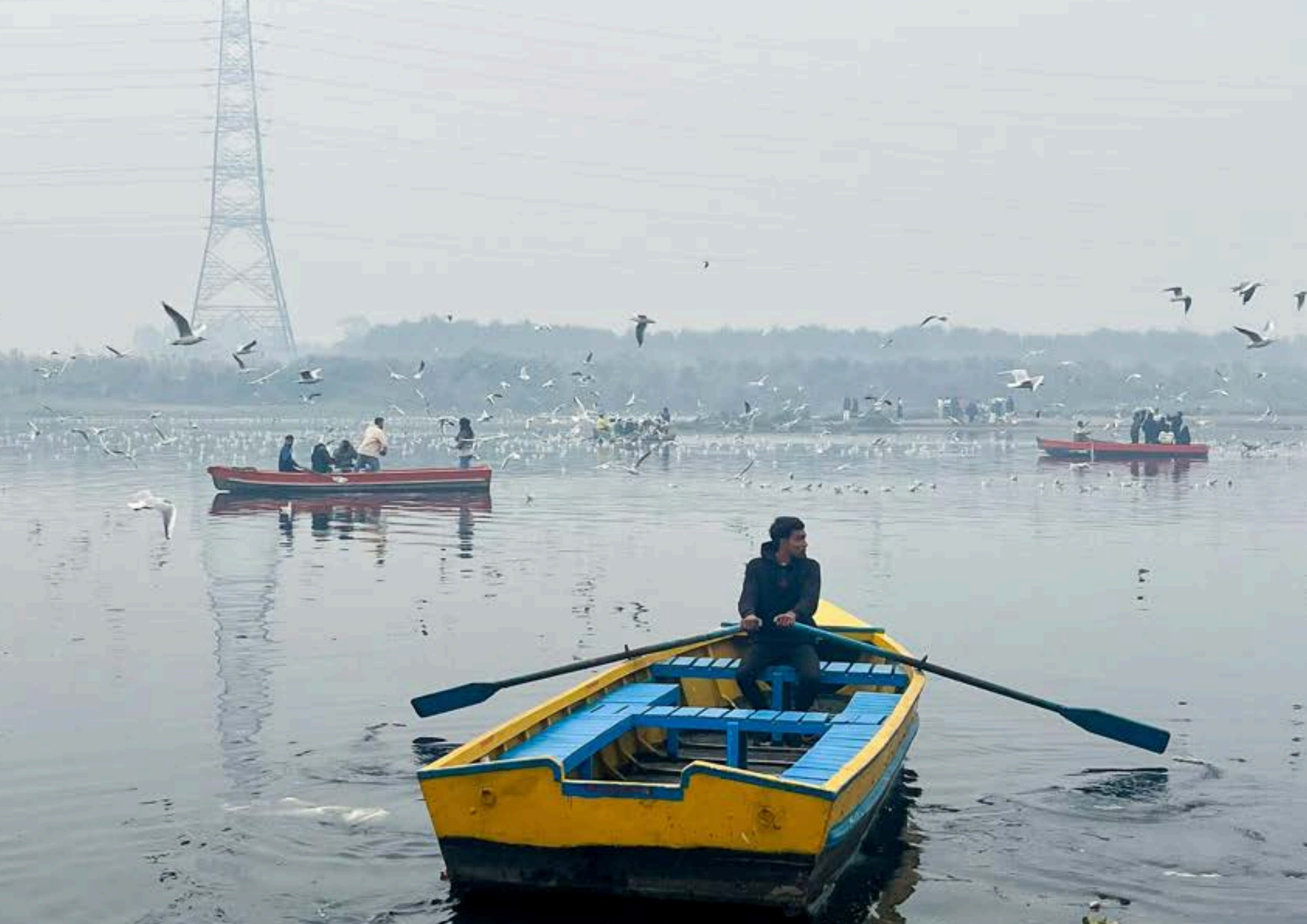
# 1 POLICY

## Description

Delhi's water policies focus on sustainable supply, equitable distribution, and conservation. Through initiatives like the Delhi Water Policy (2016) and alignment with national frameworks, the city promotes rainwater harvesting, treated wastewater reuse, universal metering, and tariff reforms. These policies strengthen governance, improve infrastructure, and address future water security challenges.

| Data Sets | Agency | FIle LInk | Description |
|---|---|---|---|
| **National Water Policy 2012** | Government of India Ministry of Water Resources | https://nwm.gov.in/sites/default/files/national%20water%20policy%202012_0.pdf | this policy can guide equitable allocation of limited water supplies, ensure minimum ecological flows in the Yamuna, promote wastewater reuse, and enable institutional mechanisms (e.g., regulatory authorities, community water associations) for fair, transparent, and sustainable water management. |
| **Draft Water Policy for Delhi, 2017** | Delhi Jal Board | https://delhijalboard.delhi.gov.in/sites/default/files/Jalboard/universal-tab/water_policy_21112016_0.pdf | The Delhi Water Policy (2016) provides Delhi with strategic direction for equitable, efficient, and sustainable water management. It emphasizes water conservation, non-revenue water reduction, universal metering, rainwater harvesting, and tariff reforms. The policy strengthens governance by promoting accountability, infrastructure upgrades, and equitable service delivery across the city. |

| Data Sets | Agency | FIle Link | Description |
|---|---|---|---|
| **National Framework on Safe Reuse of Treated Water (SRTW)** | National Mission for Clean Ganaga | https://nmcg.nic.in/writereaddata/fileupload/32_SRTW%20Framework_Final_23_11_2021%20(1).pdf | The **SRTW Framework (2021)** guides Delhi in reusing treated wastewater to enhance water security, reduce pollution, and recharge aquifers. It promotes municipal, industrial, and ecological reuse, with clear targets and regulatory support. This approach strengthens governance, reduces freshwater dependence, and aligns with sustainable urban water management and resilience goals. |
| **MPD baseline ( Physical Infrastructure)** | Delhi Development Authority | https://online.dda.org.in/mpd2041dda/_layouts/MPD2041FINALSUGGESTION/Baseline_Physical%20Infrastructure_%20160721.pdf | The MPD-2041 baseline report establishes Delhi's existing water, wastewater, and drainage infrastructure status using 2018–19 data. It serves as a foundational snapshot to guide future planning, enabling evidence-based design, gap assessment, targeting investments, and aligning water-sensitive infrastructure development with the city's long-term resilience goals. |
| **MPD baseline ( environment Infrastructure)** | Delhi Development Authority | https://online.dda.org.in/mpd2041dda/_layouts/MPD2041FINALSUGGESTION/Baseline_Environment_160721.pdf | This 2018–19 DDA baseline report offers a comprehensive snapshot of Delhi's environmental context, covering topography, climate, natural features, pollution levels, and regulatory frameworks. It lays the groundwork for informed planning by identifying key gaps and strengths, guiding strategic interventions in water-sensitive urban design, ecosystem conservation, and infrastructure resilience. |



# WATER RESOURCES

Delhi's water resources include the Yamuna River, groundwater reserves, lakes, ponds, and wetlands. The city depends heavily on surface water from neighboring states, while groundwater supports local supply, especially in outer areas. However, rapid urban growth, pollution, and declining recharge have stressed these sources. Drains, wetlands, and floodplains also play a vital role in water management, making conservation and restoration efforts essential for future sustainability.

# 1 SURFACE WATER: RIVER YAMUNA

## Description

The Yamuna River flows 22 km through Delhi, a fraction of its 1,376 km length, with a 1,485 sq km catchment area. Originating from the Yamunotri Glacier, it sustains Delhi's water needs, agriculture, biodiversity, and cultural heritage. Its floodplains regulate groundwater and provide green spaces. Despite its importance, this stretch suffers from severe pollution, largely due to untreated sewage and industrial waste, threatening its ecological balance and cultural value.

| Data Sets | Agency | FIle LInk | Description |
|---|---|---|---|
| **Water Quality** | Delhi Pollution Control Committee (DPCC) Link- https://dpcc.delhigovt.nic.in/#gsc.tab=0 | https://www.dpcc.delhigovt.nic.in/waterqualitystatusofriveryamuna#gsc.tab=0 | These monthly reports typically include key parameters: pH, DO, BOD, COD, and sometimes Faecal Coliform (FC), challenged for the desired Water Quality Index (WQI) approach.The water quality data for the Yamuna River is provided **monthly** until November 2020, covering **7 monitoring stations** from Wazirabad to Okhla. |
| **Path** | Urban Data Portal Link- https://data.opencity.in/dataset?city=Delhi | https://data.opencity.in/dataset/delhi-drains-maps/resource/pwd-drains-map | The Delhi Drains dataset on the OpenCity Urban Data Portal provides a KML-based map of the city's stormwater drainage system, including **PWD drains, Najafgarh, Barapulla, East drains, and the Yamuna River**. It supports urban planning, water management, and infrastructure analysis. |

| Data Sets | Agency | FIle LInk | Description |
|---|---|---|---|
| **River Yamuna: Role, Pressures, and Challenges in Delhi's Drainage System** | Government of Delhi<br>Link-<br>https://ifc.delhi.gov.in/ | https://ifc.delhi.gov.in/sites/default/files/inline-files/main_report_dmp_version51.pdf | • Quantitative data includes rainfall (617–668 mm), groundwater depth (2.9–19.2 m bgl), land use share of Yamuna floodplains (~4–10%), population density (~36,000 persons/km²), drainage lengths (560+ km), and flood protection structures (bunds, pumps).<br>• Qualitative data covers ecological conditions of Yamuna floodplains (largely agricultural but encroached), issues of reversed flow and pump dependency, and socio-economic encroachments along Yamuna. |
| **Flow in the River** | Government of Delhi | Economic Survey Delhi<br>https://delhiplanning.delhi.gov.in/sites/default/files/Planning/chapter_13.pdf | • The report shows annual and seasonal water allocations of the Yamuna among basin states as per the 1994 MoU.<br>• As per the 1994 MoU on Yamuna water sharing, Delhi's annual allocation is 0.724 BCM (809 cusecs), with seasonal allocations of 232 cusecs (Nov–Feb) and 255 cusecs (Mar–Jun)<br>• At present, raw water supply from the Yamuna system to Delhi includes about 120 cusecs (≈65 MGD) directly from the river course, along with canal supplies (CLC and DSB) totaling 612.5 MGD |

| Data Sets | Agency | FIle LInk | Description |
|---|---|---|---|
| **Yamuna Drains** | Government of Delhi | Economic Survey Delhi https://delhiplanning.delhi.gov.in/sites/default/files/Planning/chapter_13.pdf | The report states that under the Interceptor Sewer Project a total of 108 drains were identified for trapping with a combined flow of 242 MGD. Out of this, about 238 MGD or nearly 98 percent has already been trapped and around 220 MGD is being treated at sewage treatment plants. The remaining quantity will only be treated after the completion of additional capacity at the Rithala and Kondli plants, which means that a small portion of wastewater still reaches the Yamuna untreated. |
| **Yamuna Flood Plain** | Irrigation and Flood Control Dept.- https://ifc.delhi.gov.in/doit-tabcontent/378 | https://ifc.delhi.gov.in/sites/default/files/ifc/universal/19.pdf | The page provides a detailed map showing the extent and layout of the Yamuna River floodplains within Delhi. |

# 2 SURFACE WATER: DRAINS

## Description

Delhi's drainage system consists of a network of natural and artificial drains designed to manage stormwater and wastewater. Major drains like Najafgarh, Barapulla, and the East Drain channel water towards the Yamuna River. However, rapid urbanization, encroachments, and inadequate maintenance often cause blockages, leading to flooding and pollution challenges

| Data Sets | Agency | FIle LInk | Description |
|---|---|---|---|
| **Water Quality** | Central Pollution Control Board https://cpcb.nic.in/index.php | https://cpcb.nic.in/wqm/2022/Water_Quality_Drains_STPs__WTPs_2022.pdf | The CPCB's 2022 report evaluates Delhi's sewage treatment plants and drains, revealing that a majority of STPs fail to meet standards for BOD, COD, TSS, and faecal coliform. It lists 26 monitoring locations of major drains across the city, including Najafgarh drain at Wazirabad, Burari drain, Civil Mill drain, Power House drain, Barapula drain, Shahdara drain, Maharani Bagh drain, Sarita Vihar drain, Shastri Park drain, Sonia Vihar drain, and others. |
| **Natural Drains (MPD-1976)** | Irrigation and Flood Control Dept.- https://ifc.delhi.gov.in/ | https://ifc.delhi.gov.in/ifc/natural-drains-mpd-1976 | The page lists natural drains in Delhi as identified in the Master Plan of 1976, including 201 existing drains and 44 that are currently untraceable. |

| Data Sets | Agency | FIle LInk | Description |
|---|---|---|---|
| **Flood Problem with Najafgarh Drain** | Irrigation and Flood Control Dept.- https://ifc.delhi.gov.in/ | https://ifc.delhi.gov.in/ifc/flood-problem-due-sahibi-river | Quantitative data: The account gives specific figures such as water levels at Yamuna and Dhansa bund, discharge capacities of Najafgarh drain and Dhansa regulator, flood years like 1964 and 1977, and the duration of submergence for about three and a half months. These numbers highlight the scale and intensity of Sahibi floods in Delhi.<br>Qualitative data: It describes how floods breached bunds, submerged rural and urban areas, and even threatened colonies like Janakpuri. It also narrates administrative measures, such as committees' recommendations and emergency bund strengthening with sandbags. |
| **Path** | Urban Data Portal Link- https://data.opencity.in/dataset?city=Delhi | https://data.opencity.in/dataset/delhi-drains-maps/resource/pwd-drains-map | The Delhi Drains dataset on the OpenCity Urban Data Portal provides a KML-based map of the city's stormwater drainage system, including PWD drains, Najafgarh, Barapulla, East drains, and the Yamuna River. It supports urban planning, water management, and infrastructure analysis. |
| **In-situ bioremediation and phytoremediation measures** | Government of Delhi | Economic Survey Delhi https://delhiplanning.delhi.gov.in/sites/default/files/Planning/chapter_13.pdf | The table summarizes in-situ bioremediation and phytoremediation measures taken by various drain-owning agencies in Delhi to treat sewage in drains |

# 3 SURFACE WATER: OTHER WATER BODIES

## Description

Delhi is home to several water bodies beyond the Yamuna, including lakes, ponds, and wetlands. Prominent ones are Sanjay Lake, Bhalswa Lake, and the wetlands of the Yamuna floodplain. These water bodies support biodiversity, help recharge groundwater, and act as buffers against urban flooding, though many face pollution and encroachment.

| Data Sets | Agency | FIle LInk | Description |
|---|---|---|---|
| **Water Quality** | Central Pollution Control Board https://cpcb.nic.in/index.php | https://cpcb.nic.in/wqm/2022/Water_pond_tanks_2022.pdf | Water quality monitoring of three Delhi lakes namely Bhalswa, Lake near IIT Flyover and Sanjay Lake presents information on temperature, dissolved oxygen, pH, conductivity, BOD, nitrates and coliform levels. The results indicate that although oxygen and pH values are within normal limits, very high BOD and bacterial counts point to serious sewage contamination in all three lakes. |
| **List of water Bodies** | Delhi Parks and Gardens Society | List-https://dpgs.delhi.gov.in/sites/default/files/SWA/generic_multiple_files/visible_wbs-listed-631-wb.pdf | The PDF lists geo coordinates 631 water bodies in Delhi, verified on the ground—lakes, ponds, and wetlands, prioritized for restoration. |

| Data Sets | Agency | FIle LInk | Description |
|---|---|---|---|
| | https://dpgs.delhi.gov.in/ | Coordinates-https://www.google.com/maps/d/u/0/viewer?mid=1BjMwuPVlftwaPaop5GfE_hJPU_d1oaYv&ll=29.49555265354866%2C77.92353303039935&z=9 | it is a geo-referenced inventory with both quantitative data (area, coordinates, khasra numbers) and qualitative data (ownership, present condition, cultural/ecological use). |
| **Jal Dharohar Water bodies census** | Department of Water Resources, River Development and Ganga Rejuvenation. | https://data.opencity.in/dataset/delhi-water-bodies-census-data | The Delhi Water Bodies Census of 2018–19 records a total of 893 water bodies in the city, of which 849 are in rural areas and 44 are in urban areas. Out of these, 216 water bodies, nearly one fourth of the total, are encroached upon while 77, close to nine percent, are not in use. The remaining 816 water bodies, about ninety one percent, are still functional and continue to serve ecological or community purposes. |

# GROUND WATER

## Description

Delhi's groundwater is a crucial resource but faces severe stress due to over-extraction, pollution, and declining recharge. High nitrate, fluoride, and salinity levels affect its quality in many areas. Despite legal regulations, unauthorized borewells and reduced natural recharge have led to falling water tables and increased dependence on external water sources.

| Data Sets | Agency | FIle LInk | Description |
|---|---|---|---|
| **Water Quality** | Central Pollution Control Board https://cpcb.nic.in/index.php | https://cpcb.nic.in/wqm/2022/NWMP_DATA_2022.pdf | The NWMP 2022 dataset on groundwater quality in Delhi covers 47 monitoring wells located across areas such as Alipur, Aurbindo Marg, Bawana, Burari, Defence Colony, Dwarka, Haiderpur, Najafgarh, Okhla, Rohini, Shahdara, Saket, Vasant Kunj and Vasant Vihar. It records parameters like pH, nitrate and nitrite levels, and total dissolved solids, with some data on fluoride and arsenic, while temperature, BOD and coliform counts are mostly not reported. The results show that although pH values are generally within safe limits, several wells have elevated dissolved solids and higher nitrate levels, pointing to localized contamination risks. |

| Data Sets | Agency | FIle LInk | Description |
|---|---|---|---|
| **Groundwater management** | Government of Delhi | Economic Survey Delhi https://delhiplanning.delhi.gov.in/sites/default/files/Planning/chapter_13.pdf | In quantitative terms, the report states that Delhi Jal Board operates 5169 functional tube wells and 11 Ranney wells along the Yamuna. It highlights augmentation plans, such as 7 proposed tube wells at Noida Mor, 8 at Akshardham, 15 at Bawana WTP Complex, and a large cluster of 150 at Nilothi and Najafgarh, of which 63 are already installed (52 at Nilothi and 11 at Pappankalan). Further proposals include 7 tube wells at Okhla WTP, 150 at Bhalswa Lake, 85 each at Rohini WWTP and Okhla WWTP, 45 at Dwarka WTP, and 35 at Chilla, subject to permissions and approvals. Alongside, the DJB is rejuvenating 64 water bodies, with work completed at 39, and tenders for 25 more to be called, while additional efforts are ongoing at Timarpur, Dwarka, Pappankalan, Rohini, Nilothi, and Roshanara Lake. |
| **Aquifer Mapping and Groundwater Level Trends** | Central Ground Water Board - https://cgwb.gov.in/en | https://cgwb.gov.in/old_website/AQM/NAQUIM_REPORT/Delhi/old/Naquim%20Report%20Delhi%20.pdf | • Maps and categorizes Delhi's aquifers by depth, composition, and groundwater availability.<br>• Shows a declining trend in water levels, especially in southwest and northwest Delhi. |

| Data Sets | Agency | FIle LInk | Description |
|---|---|---|---|
| **Groundwater Status in Delhi** | Central Ground Water Board - https://cgwb.gov.in/en | • Annual Groundwater Quality Report- https://cgwb.gov.in/cgwbpnm/public/uploads/documents/17363272771910393216file.pdf<br>• Ground Water Year Book 2022-23- https://www.cgwb.gov.in/cgwbpnm/public/uploads/documents/17032373871370440403file.pdf | The CGWB report highlights that Delhi's groundwater is over-exploited with contamination from fluoride and nitrate in many areas. It stresses the need for artificial recharge and better regulation to ensure sustainable groundwater use. |

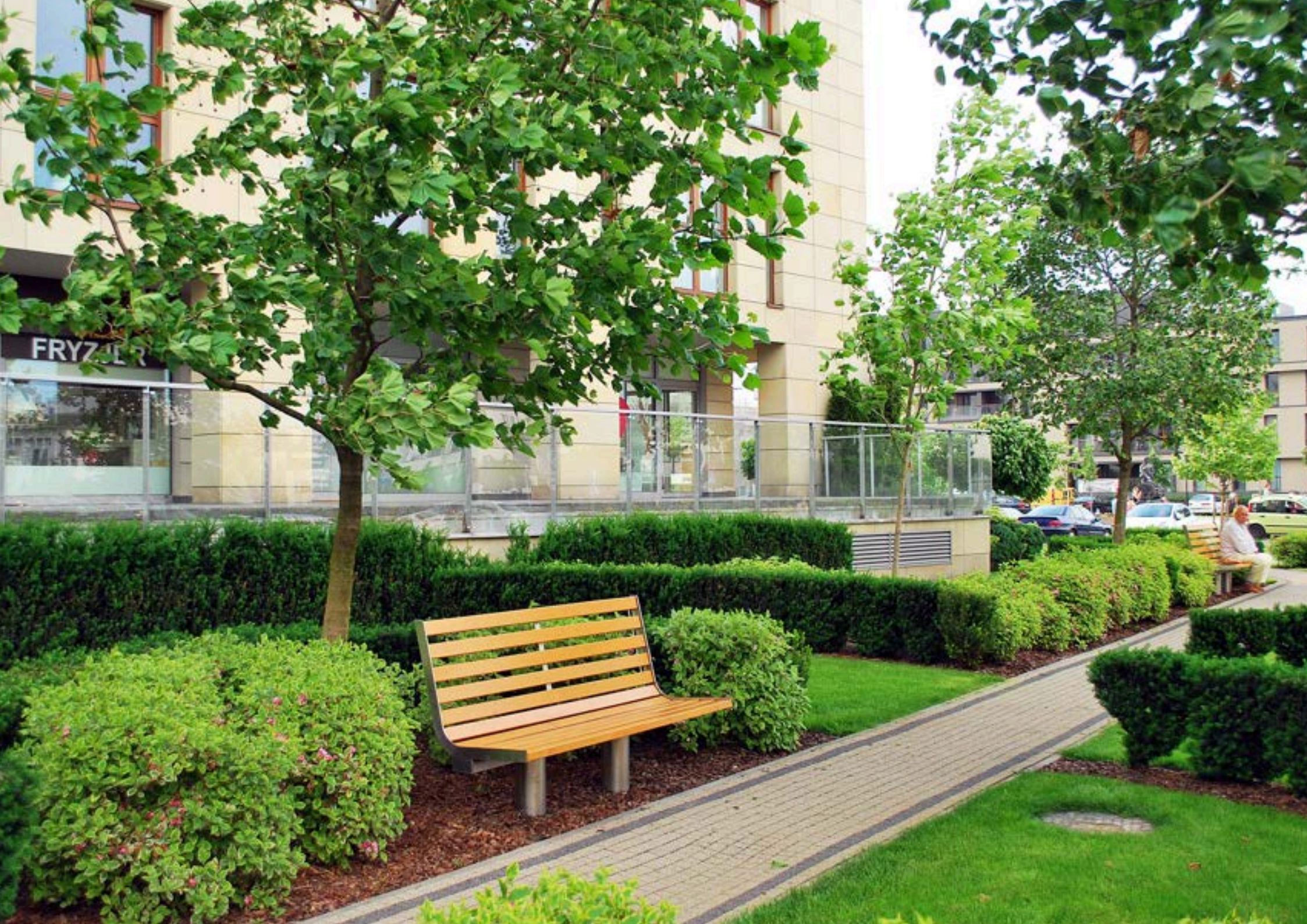
# 5 RAIN WATER

## Description

Delhi’s rainfall is concentrated during the monsoon season, providing a vital source for groundwater recharge and urban water balance. However, high impervious surfaces limit natural absorption, leading to waterlogging and declining aquifers. Promoting rainwater harvesting and sustainable drainage practices helps conserve this resource while reducing urban flood risks.

| Data Sets | Agency | FIle LInk | Description |
|---|---|---|---|
| **Rain Water Harvesting Systems** | Delhi Jal Board | https://delhijalboard.delhi.gov.in/sites/default/files/Jalboard/universal-tab/list_of_adequacy_certificate_for_rwh_system.pdf | A comprehensive PDF listing entities that have received adequacy certificates for rainwater harvesting (RWH) systems from the Delhi Jal Board. |
| **Delhi North Monthly Rainfall Data 1901-2021** | **India Meteorological Department** | Open City: Urban Data Portal https://data.opencity.in/dataset/delhi-rainfall-data/resource/delhi-south-monthly-rainfall-data-1901-2021 | This dataset provides historical monthly rainfall data for North and North Delhi from 1901 to 2021, sourced from the India Meteorological Department. |

| Data Sets | Agency | FIle LInk | Description |
|---|---|---|---|
| **Delhi South Monthly Rainfall Data 1901-2021** | India Meteorological Department | Open City: Urban Data Portal https://data.opencity.in/dataset/delhi-rainfall-data | The Delhi Rainfall Data dataset from OpenCity provides a long-term record of monthly rainfall in two parts of the city—Delhi South (1901-2021) and Delhi North (1901-2021). It is based on IMD grid data, pinpointed to coordinates roughly 77.25°E, 28.5°N for the south and 77.25°E, 28.75°N for the north. In essence, it tells us how rainfall in both halves of Delhi has varied over more than a century. |


FRYZJER

# WATER SENSITIVE URBAN DESIGN

Water sensitive urban design focuses on integrating water management with ecological sustainability in cities. It emphasizes stormwater harvesting, groundwater recharge, wetland conservation, and expansion of green cover. By reducing flood and drought risks, curbing urban heat islands, and supporting biodiversity, it enhances ecosystem resilience. This approach improves water quality, promotes climate adaptation, and creates healthier urban environments that balance human needs with ecological integrity for sustainable and livable cities.

# 1 ECOLOGY & URBAN GREEN COVER

## Description

Urban green cover includes tree canopy, forests, and parks that improve air quality, reduce heat stress, and support biodiversity. Government datasets provide plantation targets, forest status, and geo-referenced park inventories. These resources guide ecological restoration and climate resilience in Delhi.

| Data Sets | Agency | FIle LInk | Description |
|---|---|---|---|
| **List of Park** | Delhi Parks & Gardens Society (DPGS)<br>Link-<br>https://dpgs.delhi.gov.in/ | List of Parks<br>Link-<br>https://dpgs.delhi.gov.in/dpgs/list-parks | The “List of Parks” from the Delhi Department of Parks and Gardens provides an inventory of all parks under its management. It gives details such as the name and location of each park, the area in acres, and the officials responsible for maintenance including the section officer and the local caretaker. The list helps to understand the total number of parks in different areas, their size, and how they are being managed and maintained across Delhi. |

| Data Sets | Agency | FIle LInk | Description |
|---|---|---|---|
| **Forest Cover** | Dept. of Forests & Wildlife, GNCTD<br>Link-<br>https://forest.delhi.gov.in/ | Forest at Glance<br>Link-<br>https://forest.delhi.gov.in/sites/default/files/generic_multiple_files/delhi_s_forest_at_a_glance.pdf | Quantitative data:<br>The document provides numerical details such as the total forest and tree cover of about 299.77 square kilometers, which is around 20.22 percent of Delhi's geographical area. It mentions that the recorded forest area is 85 square kilometers, comprising 91.76 percent reserved forest and 8.24 percent protected forest. It also highlights the extent of city forests, plantations, and wildlife sanctuaries like the Asola Bhatti Wildlife Sanctuary, with figures showing their spread in hectares.<br>Qualitative data:<br>Alongside numbers, it describes the types of forests in Delhi such as ridge forests, reserved and protected forests, city forests, deemed forests, and institutional plantations. It also explains the policy framework and governance system for forest management, the role of the Delhi Forest Department, and the ecological significance of these green spaces in terms of biodiversity, wildlife protection, and maintaining environmental balance. |

| Data Sets | Agency | FIle LInk | Description |
|---|---|---|---|
| **Green Action Plan (GAP)** | Dept. of Forests & Wildlife, GNCTD<br>Link- https://forest.delhi.gov.in/ | Link- https://gap.eforest.delhi.gov.in/GAP.aspx | Targets for tree plantation, species mix (≥60% native), eco-restoration projects, citizen engagement (“Dilli Free Tree”). |
| **Biodiversity Park** | Delhi Development Authority (DDA)<br>Link- https://dda.gov.in/ | Yamuna Biodiversity Park<br>• Link- https://dda.gov.in/land-/biodiversity-park-yamuna<br>Tughlaqabad Biodiversity Park<br>• Link- https://dda.gov.in/land-/biodiversity-park-tughlaqabad | The “Yamuna Biodiversity Parks” page from the Delhi Development Authority describes a 457-acre area near Jagatpur village that comprises a mosaic of wetlands, grasslands, and floodplain forest ecosystems. The park functions as a biodiversity repository for the Yamuna Basin, offering ecological, cultural, and educational benefits while aiming to restore the river basin’s once rich ecosystem |

| Data Sets | Agency | FIle LInk | Description |
|---|---|---|---|
| **Forest & Tree Cover** | Government of Delhi | https://forest.delhi.gov.in/forest/extent-forest-and-tree-cover | The “Extent of Forest and Tree Cover” data for Delhi shows that the total forest and tree cover is 299.77 sq. km, which accounts for about 20.22 percent of Delhi’s geographical area, compared to 297.81 sq. km or 20.08 percent reported in the State of Forest Report 2015. This information is compiled from the State of Forest Reports prepared by the Forest Survey of India and is updated periodically, generally on an annual basis, to reflect changes in forest and tree cover over time. |
| **Green Area Under Different agencies** | Government of Delhi | Economic Survey Delhi https://delhiplanning.delhi.gov.in/sites/default/files/Planning/chapter_13.pdf | The data shows that Delhi has a total of **20,524 hectares of green areas**, with the Forest Department managing the largest share at **11,000 hectares or 53.6 percent**. This is followed by the Delhi Development Authority with **4,451 hectares or 21.69 percent**, the Municipal Corporations of Delhi with **2,428 hectares or 11.83 percent**, the Central Public Works Department with **2,200 hectares or 10.71 percent**, and the New Delhi Municipal Council with **445 hectares or 2.17 percent**. |

# 2 WETLANDS & ECO-SENSITIVE ZONES

## Description

Wetlands regulate hydrology, enable groundwater recharge, buffer floods, and provide habitats for flora and fauna. Delhi datasets identify wetlands such as Najafgarh Jheel and Bhalswa Lake, with conservation programs led by the Wetland Authority. Mapping and restoration efforts strengthen ecological functions while informing sustainable urban planning.

| Data Set | Agency | Link | Description |
|---|---|---|---|
| **Wetland Mitra-Community Engagement** | Delhi Parks & Gardens Society (DPGS)<br>Link- https://dpgs.delhi.gov.in/ | Link-<br>• https://environment.delhi.gov.in/sites/default/files/environment/important-news/wetland_mitra_journal_2022_2.pdf<br>• https://dpgs.delhi.gov.in/dpgs/engagement-wetland-mitra | Wetland Authority initiatives, conservation projects, community partnerships. |

| Data Sets | Agency | FIle LInk | Description |
|---|---|---|---|
| **Wetlands Mapping** | • Delhi Development Authority https://dda.gov.in/master-plan-2041-draft<br>• Planning Department https://delhiplanning.delhi.gov.in/planning/economic-survey | • Master Plan 2041 https://dda.gov.in/sites/default/files/inline-files/Draft%20MPD%202041%20%28English%29090620 21_compressed_0.pdf<br>• Economic Survey 2023-2024 https://delhiplanning.delhi.gov.in/sites/default/files/Planning/chapter_8.pdf | Identification of wetlands such as Najafgarh Jheel, Bhalswa Lake, floodplain areas. |

# 3 CLIMATE & HEAT RISK

## Description

Delhi faces extreme heat, floods, and droughts. Climate risk datasets include surface temperature maps, heat action plans, and historical climatology records. These resources identify vulnerable zones and guide preparedness measures. Mapping climate risk supports water-sensitive urban design by integrating resilience strategies for public health, infrastructure safety, and ecological sustainability.

| Data Sets | Agency | FIle LInk | Description |
|---|---|---|---|
| **Heat Action Plan** | Delhi Disaster Management Authority<br>Link- https://ddma.delhi.gov.in/ | Delhi Heat Action Plan 2024-25<br>Link-<br>https://ddma.delhi.gov.in/sites/default/files/ddma/generic_multiple_files/final_hap_12.04.2024.pdf | GIS-based ward-level land surface temperature maps (LANDSAT-8), preparedness measures. |
| **Flood Control Mechanism & Pre-** | Irrigation & Flood Control Dept. (IFCD), GNCTD | Flood Control Mechanism" page detailing pre-monsoon | Includes desilting of drains, anti-erosion structures, |

| Data Sets | Agency | FIle LInk | Description |
|---|---|---|---|
| **Monsoon Measures** | Link- https://ifc.delhi.gov.in/ | anti-flood works, control rooms, and flood warning systems<br>• Link- https://ifc.delhi.gov.in/ifc/flood-control-mechanism<br>• https://ifc.delhi.gov.in/ifc/flood-problems | coordination mechanisms for flood season prep. |
| **Flood Protection Infrastructure & Drainage Upgrades** | Irrigation & Flood Control Dept. (IFCD), GNCTD<br>Link- https://ifc.delhi.gov.in/ | IFCD – “Flood Protection/Embankment”<br>LInk- https://ifc.delhi.gov.in/ifc/flood-protectionembankment | • Description of flood control schemes like embankment strengthening, Najafgarh Drain capacity upgrades<br>• Plans and progress on structural flood mitigation like supplementary drains, embankment resilience. |

# 4 POLLUTION & ECOSYSTEM RESILIENCE

## Description

Pollution datasets track air, water, noise, and waste levels across Delhi. Combined with eco-restoration data, they highlight ecosystem resilience and inform soil-water conservation. Monitoring pollution loads alongside restoration programs, including floodplain rejuvenation and moisture conservation, supports Delhi's adaptive capacity and strengthens ecological sustainability in urban planning.

| Data Sets | Agency | FIle LInk | Description |
|---|---|---|---|
| **Environment Data (Air, Water, Noise, Waste)** | Dept. of Environment, GNCTD Link- https://environment.delhi.gov.in/ | https://environment.delhi.gov.in/environment/environment-airwaternoise-waste | Environmental quality monitoring datasets (pollution load indicators). |

# WATER INFRASTRUCTURE

Delhi’s water infrastructure is a complex system that integrates water supply, wastewater management, and stormwater drainage to serve one of the most densely populated metropolitan regions in the world. It is managed primarily by the Delhi Jal Board (DJB), the Delhi Pollution Control Committee (DPCC), and the Irrigation and Flood Control Department (IFCD).

# 1 WATER SUPPLY

## Description

DJB provides online consumer services like new connection applications, billing, and grievance redressal through its RMS portal. It also introduced a revised new-connection policy allowing token payments followed by six bi-monthly installments—facilitating access to water infrastructure under flexible payment terms.

| Data Sets | Agency | FIle LInk | Description |
|---|---|---|---|
| **Water Connection and Billing System** | Delhi Jal Board (DJB), DJB RMS Portal | https://djb.gov.in/DJBRMSPortal/portal/faq.html | Online system for applying, tracking, paying for water and sewer connections, including new connections, disconnection, mutation, billing, and complaint lodging. |
| **Water Requirement Norms** | Government of Delhi | Economic Survey Delhi https://delhiplanning.delhi.gov.in/sites/default/files/Planning/chapter_13.pdf | The Economic Survey of Delhi provides norms for per capita water requirements covering domestic, non domestic, fire protection and other uses. |

| Data Sets | Agency | FIle LInk | Description |
|---|---|---|---|
| **Quality of Drinking Water** | Delhi Jal Board (DJB) https://delhijalboard.delhi.gov.in/doit/tab-content/daily-drinking-water-quality | https://delhijalboard.delhi.gov.in/sites/default/files/Jalboard/universal-tab/wsc_210225_to_240225.pdf | This report provides daily data on the quality of drinking water supplied across Delhi, featuring data from sample collections conducted over various dates. |
| **Water Demand and Supply (WTP)** | Government of Delhi<br>Delhi Jal Board | • Economic Survey Delhi- https://delhiplanning.delhi.gov.in/sites/default/files/Planning/chapter_13.pdf<br>• DJB- https://delhijalboard.delhi.gov.in/sites/default/files/Jalboard/universal-tab/water_samples_collection_reports_on_01.03.2024_to_10.03.2024.pdf | The report presents the installed capacity of Delhi Jal Board's water treatment plants from 2009 to 2023, showing an increase from 810 MGD to 946 MGD over 15 years. |

# 2 SEWAGE AND WASTEWATER SYSTEMS

## Description

Citywide, Delhi generates 3600 MLD of sewage, with only 205 MLD currently connected to treatment plants. The city faces a massive treatment shortfall of about 222 MGD, resulting in significant untreated sewage entering waterways, highlighting critical gaps in wastewater infrastructure.

| Data Sets | Agency | FIle LInk | Description |
|---|---|---|---|
| **Sewage Treatement Capacity** | Government of Delhi | Economic Survey Delhi https://delhiplanning.delhi.gov.in/sites/default/files/Planning/chapter_13.pdf | As of 31st March 2023, Delhi has 20 sewerage treatment plants (STPs) with a total capacity of 632.26 MGD, of which 550.07 MGD was actually treated, resulting in an overall utilization of 87%. Some plants, like Sen Nursing Home and Narela, operate near full capacity, while others like Ghitorni are underutilized. Underperformance is due to incomplete sewer line connections and ongoing rehabilitation. Current sewage generation is 792 MGD, leaving a treatment gap of 242 MGD. |

| Data Sets | Agency | FIle LInk | Description |
|---|---|---|---|
| **Wastewater Generation** | Government of Delhi | Economic Survey Delhi https://delhiplanning.delhi.gov.in/sites/default/files/Planning/chapter_13.pdf | This data shows that Delhi's water demand has steadily increased from 2,685 MLD in 2004 to an estimated 5,891 MLD in 2024, reflecting rapid urban growth. The net water supply, however, remains lower, at 4,540 MLD in 2024, indicating a supply-demand gap. Wastewater generation has also risen from 1,812 MLD to 3,632 MLD, of which a portion comes from areas outside the sewer network. After accounting for unsewered areas and infiltration, the gross wastewater reaching treatment plants is estimated at 4,540 MLD. The proportion of unsewered areas has fluctuated, highlighting challenges in expanding sewer coverage and ensuring complete wastewater management. |
| **Sewage Treatement Capacity** | Government of Delhi | Economic Survey Delhi https://delhiplanning.delhi.gov.in/sites/default/files/Planning/chapter_13.pdf | The report presents the sewerage treatment capacity and utilization of Delhi's STPs as of March 2023. |

| Data Sets | Agency | FIle LInk | Description |
|---|---|---|---|
| **Treated water use** | Government of Delhi | Economic Survey Delhi https://delhiplanning.delhi.gov.in/sites/default/files/Planning/chapter_13.pdf | The report shows the supply of treated wastewater from different STPs in Delhi for irrigation, horticulture, industrial and construction purposes.<br>Delhi supplies 89 MGD of treated wastewater from various STPs for irrigation, horticulture, construction, and industrial purposes, efficiently reusing effluent from Okhla, Keshopur, Coronation Pillar, Rithala, and other plants. |
| **Sewage System** | Government of Delhi | Economic Survey Delhi https://delhiplanning.delhi.gov.in/sites/default/files/Planning/chapter_13.pdf | The report shows the status of sewerage and water supply systems across different categories of colonies in Delhi. |
| **Sewerage status** | Government of Delhi | Economic Survey Delhi https://delhiplanning.delhi.gov.in/sites/default/files/Planning/chapter_8.pdf | The report outlines the current status of sewerage network development in unauthorized colonies of Delhi. |

| Data Sets | Agency | FIle LInk | Description |
|---|---|---|---|
| **Interceptor Sewer Project (ISP)** | Government of Delhi<br>Delhi Jal Board | Economic Survey Delhi https://delhiplanning.delhi.gov.in/sites/default/files/Planning/chapter_13.pdf | The report shows the status of trapping and treatment of wastewater flows into the Yamuna, with full completion targeted by March 2024. |
| **STP reports** | Delhi Jal Board | https://delhijalboard.delhi.gov.in/sites/default/files/Jalboard/universal-tab/01-31_oct_24.pdf | This contains the Delhi Jal Board's daily sewage treatment plant (STP) reports, detailing operations, performance metrics, and treated wastewater utilization policy. |