



BACKGROUNDERS
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Beyond Wastewater: Turning Used Water into a Resource

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In growing cities, the water cycle does not end when water is used. What flows away from homes, businesses and neighbourhoods does not have to become waste. With the right systems, used water can be collected, treated, recycled and returned to productive use. This shift is shaping a new approach to urban sanitation under the **Swachh Bharat Mission-Urban (SBM-U)**. At its heart is **Used Water Management (UWM)**, which focuses on treating used water, preventing untreated sewage from reaching water bodies, and enabling safe reuse. Sewage Treatment Plants (STPs) are central to this process, turning wastewater management into an opportunity to protect natural resources and recover water for further use.

This approach is reinforced through the **Water Plus certification**, which provides cities with guidelines for managing wastewater generated by households and commercial establishments. It requires wastewater to meet satisfactory treatment standards before being discharged into the environment. The focus extends beyond treatment infrastructure to how cities plan and manage their water resources. **Urban Local Bodies** are being empowered to formulate long-term, city-level plans for wastewater reuse. Clearly defined responsibilities and technological advancements are helping cities improve the efficiency and effectiveness of treatment systems. The **Open Defecation Free (ODF) ++ protocols** further strengthen this approach by assessing the safe management and treatment of entire sewage, including faecal sludge and septage.

Together, these measures are laying the foundation for sustainable sanitation and a circular economy, where used water can be managed as a resource. Under SBM 2.0, projects worth **₹11,785 crore** have been approved for setting up sewage treatment plants in small cities. These projects will add **4,900 million litres per day (MLD)** of treatment capacity, expanding the infrastructure needed for effective used water management.

Where Used Water Finds a Second Life

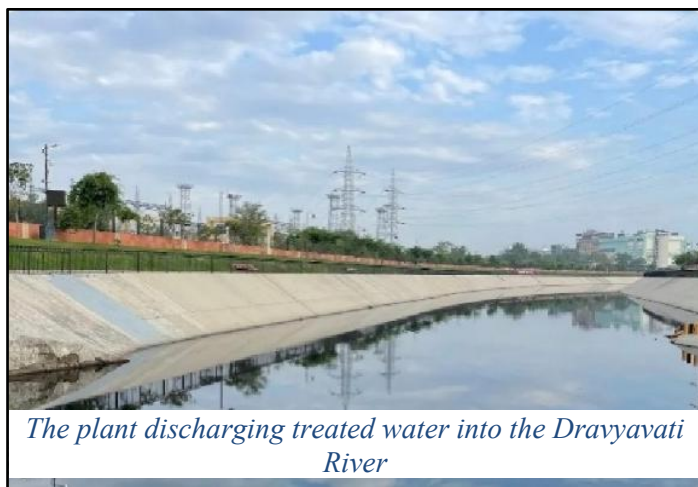
The management of used water is evolving beyond conventional treatment and disposal. Different cities are developing approaches that match their infrastructure, water needs and local conditions. In the process, treated water is finding applications in agriculture, horticulture, industry, road cleaning and lake rejuvenation. The experiences of cities like Jaipur, Indore, Surat and Navi Mumbai highlight some of these varied approaches.

Jaipur: Engineering Water Reuse at Scale

Built over 22.50 hectares during 2020–23, the **Dehlawas Sewage Treatment Plant (STP) in Jaipur** has the highest sewage treatment capacity in Rajasthan, at **215 MLD**. Wastewater is effectively treated and converted into a reusable resource, thereby promoting the concepts of circular economy and water conservation. This high-technology plant is fully automated through a **Supervisory Control and Data Acquisition (SCADA)** system.



Water Treatment at Dehlawas Plant



The plant discharging treated water into the Dravyavati River

Jaipur STP is currently equipped with a highly efficient **Sequencing Batch Reactor (SBR)**. In this process, wastewater passes through a Parshall flume, primary clarifier and basin before reaching the chlorine tank. It is then converted into clean water. Solid waste is separated using primary sludge thickeners and screw press machines. Once treated at the STP, wastewater becomes a valuable resource once again. It is being reused for irrigation and various industrial processes, a practice

known as **wastewater recycling**, which is also an economically viable option. At present, a portion of the treated water is being supplied to a nearby colony for gardening and other purposes. The remaining clean water is discharged into the **Dravyavati River**, while measures are being taken to ensure that untreated wastewater does not enter the river. A green area has also been developed around the plant, with **more than 30,000 plants** adding to the greenery of the site.

Indore: Leading the Water Plus Journey

Indore's transformation in used water management began with a simple goal: keep untreated wastewater out of the environment. This approach helped the city become the first to receive Water+ Certification. Its practices demonstrated how sustainable sanitation and used water management could work at the city level. The model has also encouraged several smaller cities to pursue similar approaches.

Today, no untreated wastewater flows through Indore's rivers or its natural and man-made stormwater drains. By 2020, the city had **7 decentralised STPs** alongside **3 existing centralised STPs**. It had also laid more than **200 kilometres** of piped network for carrying treated wastewater. Indore simultaneously strengthened measures for conserving both groundwater and surface water. In 2022, more than **1.25 lakh** rainwater harvesting units were installed across residential and non-residential areas. The installations were completed within a span of just four months. Treated wastewater is now used for water gardens, roadside plantations and horticulture. It is also used for washing roads and cleaning sewer machines.



Surat: Making Wastewater an Economic Resource

Surat has taken the idea of wastewater reuse further by treating it as a resource with economic value. The Surat Municipal Corporation has established four tertiary treatment plants with a combined installed capacity of **116 MLD**. The plants have helped reduce dependence on freshwater resources. Treated wastewater is reused across several non-potable applications in the city. These include industrial use, lake rejuvenation, agriculture, mass plantation, sewer cleaning, etc., through direct service lines and tanker filling stations. The city has **170 sewer-cleaning machines**, including equipment based on **Latest Advanced Robotic Technology**. These machines are used for cleaning and maintaining the sewerage system.



Water Treatment Plants in Surat

Navi Mumbai: Reuse Built into City Services

Navi Mumbai's Water+ journey has combined treatment infrastructure with extensive reuse of treated water. It is the only city in Maharashtra to achieve a **five-star rating** and Water+ Certification. The city upgraded its sewage treatment technology and designed its STPs for a population of 30 lakh. Its pumping stations were also upgraded to reduce energy costs.



Sewage Treatment in Navi Mumbai

These stations transfer sewage generated to the STPs. Preventive maintenance of the sewer network was undertaken to avoid hotspots. Navi Mumbai has achieved **100% mechanised cleaning** of sewer lines and septic tanks. Navi Mumbai Municipal Corporation centrally monitors all septic tanks through Level Transmitters installed across the city. More than **30%** of treated water is reused in over 30 city gardens. It is also used to wash solid-waste vehicles, compactors and city transport buses. Sprinklers and road dividers also use treated water, reducing dependence on freshwater.

Tirupati: A Revenue Model for Treated Water

Tirupati has developed a self-sustaining model for operating a sewage treatment plant at Thukivakam. The city has also been declared Water Plus. Built at a cost of **₹19 crore**, the STP has an installed capacity of **50 MLD**. It serves **1,04,057 households** across the city. Of the treated water, **24 MLD is reused** for various purposes. The plant sells **5 MLD** of treated used water to **Srikalahasthi Pipes Ltd.** With this, the plant is able to generate a net revenue of Rs. 6 Lakhs per month. Another **18 MLD** of treated used water is supplied free of cost to farmers for agriculture. The ULB also reuses a portion for road and street cleaning. Treated water is further used for watering road medians, parks and gardens across the city. These measures help maximise the reuse of treated water. Tirupati's approach combines wastewater reuse with a revenue-generating model for sustainable STP operations.



A Shift in the Urban Water Story

The growing focus on used water management is changing how cities approach their water needs. Treatment is no longer only about preventing pollution. It is also about recovering water for productive use. Treated water is finding new uses in irrigation, industry, horticulture and everyday urban services. As more cities strengthen treatment capacity and develop reuse systems, urban water management is becoming more circular and resource-efficient. This shift helps build cleaner sanitation systems while making better use of every available water resource.

Reference

Ministry of Housing and Urban Affairs

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