Sewage Treatment Plants in India: Present Scenario & Way Forward

According to the latest report of the Central Pollution Control Board (CPCB), Sewage Treatment Plants (STPs) in India are able to treat a little more than a third of the sewage generated per day. In this report, Assessment of quantities of sewage generation and its treatment is being carried out by Central Pollution Control Board (CPCB) from time to time with the help of State Pollution Control Boards / Pollution Control Committees and Local Bodies.

What is Sewage?

Sewage, or domestic/municipal wastewater, is a type of wastewater that is produced by a community of people. It is characterized by volume or rate of flow, physical condition, chemical and toxic constituents, and its bacteriological status

Key Points of the Report:

- **Installed Capacity of STPs:**
  - India generated 72,368 MLD (million litres per day) whereas the installed capacity of STPs was 31,841 MLD (43.9%).
  - 5 states and Union Territories (UT) - Maharashtra, Gujarat, Uttar Pradesh, Delhi and Karnataka - account for 60% of the total installed treatment capacity of the country.
  - Arunachal Pradesh, Andaman & Nicobar Islands, Lakshadweep, Manipur, Meghalaya and Nagaland have not installed sewage treatment plants.
  - Chandigarh ranks first in terms of total sewage generated to what is actually treated.

- **Reuse of Treated Sewage:**
  - It is maximum in Haryana followed by Puducherry, Delhi, Chandigarh.
  - It has not assumed much importance in the policy planning of many state governments.
  - Treated sewage water can be reused for horticulture, irrigation, washing activities (road, vehicles and trains), fire-fighting, industrial cooling, toilet flushing and gardening.
  - This can decrease the water demand from aquatic sources like rivers, ponds, lakes and as well as groundwater sources.
The 130 MLD sewage water reuse project at Bhandewadi, Nagpur is now supply recycled water to 3*660 MW Koradi power plant owned by MAHAGENCO for next 30 years. The treated sewage water will be recycled in the cooling towers of the Maharashtra Electricity Generating Company Ltd. at Koradi near Nagpur (MAHA-GENCO). This is for the 1st time in India the treated sewage is reused by an electricity generating company. Thus, the reuse of sewage was an attractive long term economic proposition as the water could be obtained at minimal cost in proximity to the power plant resulting in minimization of Water transportation cost and with assurance of continuous supply. Additional benefit is saving of power cost in sewage recycling plant where 40% of OPEX is cost of electricity which could be catered by MAHAGENCO itself. As a result MAHAGENCO could bring down its cost of water for electricity production, civic body will manage sewage in environmentally sound manner and citizens of Nagpur will not have to bear extra tax burden from such infrastructure.

- **Concerns:**
  - Increased Sewage Generation: CPCB has estimated that sewage generation will increase to over 1,20,000 MLD by 2051.
Gaps in Treatment Capacity: The gaps in treatment capacity are amplified at local levels, as STPs are concentrated in larger cities and Common Effluent Treatment Plants (CETPs) are unevenly distributed across states.

Economic Case: Modern Wastewater Treatment Plants (WTPs) are capital-intensive and require the use of innovative technology, such as sensors, Internet of Things (IoT) devices and Artificial Intelligence (AI)-based trackers.

The high upfront capital requirements in machinery and equipment, combined with unpredictable revenue streams, make this a high-risk sector, deterring private sector investment.

Only 23% of treatment capacity is meeting the consented parameters of SPCBs / PCCs.

Way Forward:

- The water and wastewater treatment market in India is a US$4-billion industry, growing at 10-12% annually (pre-covid-19).
- In a post-pandemic economy, central and state governments must work in partnership to create markets for treated water.
- Attaining high rates of economic growth for India will directly be a function of the sustainable use of water, particularly in recycling & reuse as it will be crucial for future urban planning and policy.
- Wastewater can be a cost-efficient and sustainable source of energy, nutrients and other useful by-products like organic and organic-mineral fertiliser.
- The benefits of extracting such resources from wastewater go beyond human and environmental health. They have implications on food and energy security as well as climate change mitigation.

References:

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