



## India's Waste Management Challenge

**For Prelims:** [E-waste](#), [Biomedical waste](#), [Central Pollution Control Board](#), [Swachh Bharat Mission](#), [Extended Producer Responsibility](#)

**For Mains:** Environmental governance and waste management in India, Extended Producer Responsibility and circular economy initiatives

[Source:TH](#)

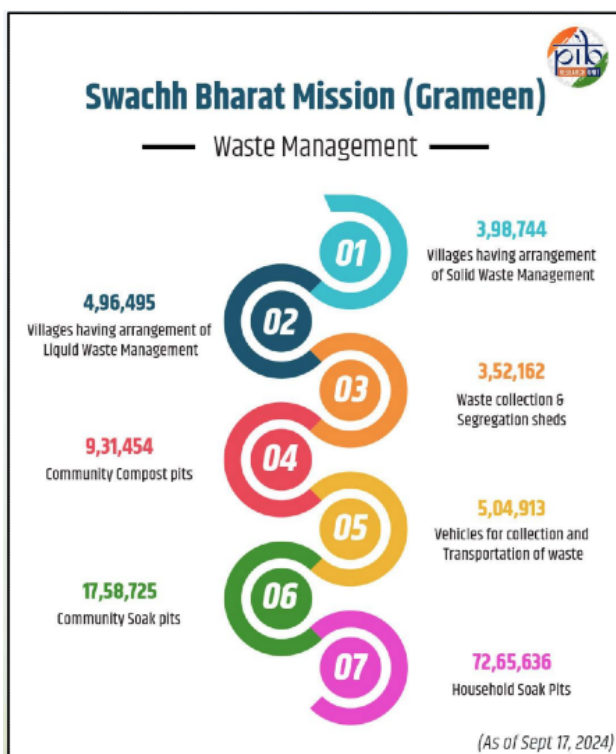
### Why in News?

A Nature study reveals India as the **world's top plastic polluter**, emitting **9.3 million tonnes annually**, about **20% of global plastic emissions** due to widespread [mismanaged waste](#), highlighting the urgent need for systemic accountability.

### What is Waste Management?

- **About:** Waste management refers to the **collection, treatment, and safe disposal of waste to reduce environmental pollution** and health hazards. It also includes **recycling, composting, and energy recovery**, aiming to conserve resources and promote sustainability.
- **Status of Waste Generation in India:** India generates over 159,000 tonnes of waste each day.
  - It is estimated that **rural India generates 15,000 to 18,000 million liters of liquid waste (greywater) and 0.3 to 0.4 million metric tons of solid waste per day.**
  - According to a report by **The Energy and Resources Institute (TERI)**, India, on average, generates **62 million tonnes (MT) of waste annually**, including 7.9 MT of hazardous waste, 5.6 MT of plastic waste, 1.5 MT of [e-waste](#), and 0.17 MT of [biomedical waste](#).
    - Only **43 MT of total waste generated gets collected**, with **12 MT being treated before disposal**, and the remaining **31 MT simply discarded in wasteyards.**
  - The [Central Pollution Control Board \(CPCB\)](#) projects that India's waste generation will increase to 165 MT by 2030.
- **India's Key Initiatives Related to Waste Management:**
  - **Swachh Bharat Mission (SBM):** Launched in 2014, [SBM](#) has significantly improved sanitation across urban and rural India.
    - As of 2024, 4.75 lakh villages have solid waste management systems, and 5.14 lakh villages have liquid waste management systems.
    - [SBM Urban 2.0](#) aims for "**Garbage Free Cities**" by establishing material recovery facilities, waste-to-energy plants, and recycling units, significantly boosting solid waste processing capacity by around 1.06 lakh tonnes per day (TPD) in urban areas.
  - **Waste to Wealth:** This initiative under the [Prime Minister's Science, Technology, and Innovation Advisory Council \(PM-STIAC\)](#) repurposes discarded materials into art and utility items.

- As of 2024, over 3 lakh citizens have been educated on waste management, and 80 out of 800+ evaluated technologies are already in use.
- **Waste Management Rules and Guidelines:** Under the **Environment (Protection) Act, 1986**, the Ministry has implemented several waste management rules and guidelines to promote environmentally sound practices. These include:
  - [Solid Waste Management Rules, 2016.](#)
  - [Plastic Waste Management Rules, 2016.](#)
  - [Bio-medical Waste Management Rules, 2016.](#)
  - [Construction and Demolition Waste Management Rules, 2016.](#)
  - [Hazardous and other wastes \(Management and Transboundary Movement\) Rules, 2016.](#)
  - [E-waste Management Rules, 2022.](#)
  - [Battery Waste Management Rules, 2022.](#)
- **Extended Producer Responsibility (EPR) Mechanism:** **EPR** is a waste management policy that holds producers accountable for the entire lifecycle of their products, including collection, recycling, and disposal.
  - In 2022, EPR for plastic packaging, e-waste, battery waste, and used oil was introduced, boosting growth in the waste management sector.



## What are the Challenges in India's Waste Management System?

- **Underreporting of Waste Generation:** Official data suggests a plastic waste generation of **0.12 kg per capita per day**, but studies estimate it at **0.54 kg per capita per day**, indicating significant **underreporting, especially in rural areas and informal sectors**.
- **Lack of Comprehensive Waste Audits:** No clear methodology is in place for collecting or auditing waste data, especially in rural areas that fall under [Panchayati Raj institutions](#) and does not fall under the scope of municipal bodies or local self-governance agencies.
- **Inadequate Infrastructure:** **Dumpsites outnumber sanitary landfills** by a significant margin (10:1). **While India claims a national waste collection coverage of 95%,** much of the waste is either burned or poorly handled. A lack of robust infrastructure to process and recycle waste further compounds the problem.
  - In remote and rural areas, waste processing facilities like material recovery facilities (MRFs) and recycling units are limited.
  - The establishment of kiosks for waste segregation and collection, as proposed for the EPR system, requires careful planning and significant investment in infrastructure, especially in

areas with difficult access.

## What Measures Could Strengthen Waste Management in India?

- **Judicial Mandates for Compliance:** In the 2025 case **Vellore District Environment Monitoring Committee vs. The District Collector**, the Supreme Court of India emphasized the need for **remediation programs to address environmental harm** caused by industrial pollution.
  - This approach can be similarly applied to **waste management**, where the **"polluter pays" principle** holds those responsible for pollution accountable for the costs of damage and restoration.
  - The **Supreme Court** has observed that environmental protection is not only a regulatory obligation but also a **constitutional imperative aimed at safeguarding the fundamental rights** of individuals and preserving ecological balance, including effective waste management.
- **Third-party Scrutiny of Data and Practices:** The Supreme Court's insistence on transparency in reporting and monitoring of environmental data can be **extended to waste management data as well**, ensuring that such information is accurate, independently verified, and publicly accessible.
- **Geotagging and Tracking:** **Geotagging** waste management infrastructure under the **EPR E-Waste portal** would significantly enhance tracking, ensure greater accountability, and improve resource allocation.
- **Material Recovery Facilities (MRFs):** All local governments, urban and rural, must connect to MRFs, recyclers, and kiosks for EPR.
  - Establishing **kiosks** for producers, importers, and brand owners (PIBOs) to collect waste will aid in waste collection and segregation across India.
  - These facilities should be customized based on the area's geographic and demographic characteristics.
- **Redesigning Products for Circularity:** Companies must move beyond single-use models and design products for recyclability. The integration of **biodegradable, reusable, and modular components** will help extend product life cycles and reduce waste.
  - Additionally, Circularity requires active **consumer participation**. Industries must invest in campaigns to engage consumers, incentivize recycling, and promote sustainable consumption behaviours.
- **International Cooperation:** India can leverage its collaboration with the **Global Alliance for Circular Economy and Resource Efficiency (GACERE)** to adopt global best practices, attract green investments, and strengthen policy frameworks for sustainable resource use, paving the way for more effective waste management.

### **Drishti Mains Question:**

India's waste management system is struggling to keep pace with the scale of urbanization." Critically analyze this statement with a focus on infrastructural gaps and policy measures.

## UPSC Civil Services Examination, Previous Year Questions (PYQs)

### **Prelims**

**Q.1 In India, 'extend producer responsibility' was introduced as an important feature in which of the following? (2019)**

- (a) The Bio-medical Waste (Management and Handling) Rules, 1998
- (b) The Recycled Plastic (Manufacturing and Usage) Rules, 1999
- (c) The e-Waste (Management and Handling) Rules, 2011
- (d) The Food Safety and Standard Regulations, 2011

**Ans: (c)**

**Q.2 How is the National Green Tribunal (NGT) different from the Central Pollution Control Board (CPCB)? (2018)**

1. The NGT has been established by an Act whereas the CPCB has been created by an executive order of the Government.
2. The NGT provides environmental justice and helps reduce the burden of litigation in the higher courts whereas the CPCB promotes cleanliness of streams and wells, and aims to improve the quality of air in the country.

**Which of the statements given above is/are correct?**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Ans: (b)**

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**Mains**

**Q:** What are the impediments in disposing the huge quantities of discarded solid waste which are continuously being generated? How do we remove safely the toxic wastes that have been accumulating in our habitable environment? **(2018)**

PDF Reference URL: <https://www.drishtiias.com/printpdf/india-s-waste-management-challenge>

