



Mains Practice Question

Q. Discuss the solid waste management scenario in India. Highlight the challenges and opportunities in achieving a sustainable waste management system. **(250 words)**

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Approach

- Briefly give an account of the waste scenario in India
- Mention the challenges faced by the waste management in India
- Highlight the opportunities in achieving a sustainable waste management system
- Suggest measures to improve the waste management system in India
- Conclude suitably

Introduction

India is among the top 10 countries globally in generating municipal solid waste (MSW), producing over **62 million tons** annually, according to The Energy and Resources Institute (TERI). Of this, **only 43 million tons are collected, with just 12 million tons treated**, leaving 31 million tons improperly discarded. A 2021 study from the *Journal of Urban Management* highlights that this **waste includes 7.9 million tons of hazardous waste and 5.6 million tons of plastic waste**. As waste generation is projected to **rise to 165 million tons by 2030**, the country faces significant challenges and opportunities in achieving sustainable waste management.

Body

Challenges in Achieving Sustainable Waste Management System

- **Infrastructure and Financial Constraints**
 - India faces outdated or insufficient infrastructure for waste collection, segregation, and processing, especially in urban areas where rapid population growth and urbanization outpace development.
 - Rural areas often lack access to basic waste management facilities, leading to reliance on traditional methods like open burning or dumping.
 - Financial constraints in municipalities prevent investment in modern waste management technologies, leading to inefficient waste collection and processing.
- **Public Awareness and Participation**
 - Limited public understanding of the importance of waste segregation at the source results in mixed waste that is challenging to process.
 - Inadequate education on proper waste disposal practices, coupled with limited access to recycling facilities and a lack of incentives, contributes to widespread indifference or lack of knowledge about waste management.
- **Technological Limitations and Diverse Waste Streams**
 - Reliance on outdated waste processing technologies, such as open dumping and incineration without proper emission controls, exacerbates pollution and health risks.
 - India grapples with a diverse range of waste streams, including domestic, industrial, e-

waste, and biomedical waste, each requiring tailored approaches for effective management.

▪ **Challenges with the Informal Waste Sector and Land Scarcity**

- The informal waste sector, crucial to waste management in India, faces socio-economic vulnerabilities and lacks formal recognition and support.
- The scarcity of land for waste disposal in urban areas further complicates the management and sustainable treatment of waste, making land a critical resource in the waste management process.

Opportunities in Achieving Sustainable Waste Management System

▪ **Utilization of Waste as Resources through Circular Economy Practices**

- Emphasizing waste as a resource by promoting recycling, reuse, and resource recovery can significantly reduce the waste burden.
 - For instance, Bangalore's Dry Waste Collection Centers (DWCCs) effectively manage non-biodegradable waste, improving segregation at the source and promoting recycling.
 - Implementing Extended Producer Responsibility (EPR) ensures that manufacturers take responsibility for the entire lifecycle of their products, driving sustainable waste management practices.

▪ **Strengthening Regulatory Frameworks and Policy Initiatives**

- Establishing a strong regulatory authority and enhancing policies like the Swachh Bharat Mission can drive innovation, enforce performance standards, and improve waste management infrastructure.
 - The success of Indore's Cleanest City Campaign, which includes 100% door-to-door collection and strict enforcement of waste segregation, demonstrates the effectiveness of robust policy frameworks in achieving high standards of cleanliness and waste management.

▪ **Sustainable Financing and Public-Private Partnerships (PPP)**

- Implementing a waste tax to generate funds and encouraging PPPs can bring in the necessary expertise, technology, and investment for efficient waste management.
 - Pune's SWaCH cooperative, a partnership involving waste pickers, showcases how community-driven models with financial support can lead to significant reductions in waste sent to landfills and improve recycling rates.

▪ **Technological Advancements in Waste-to-Energy**

- Investing in waste-to-energy technologies can convert non-recyclable waste into valuable energy, reducing landfill use and generating renewable energy.
 - Alappuzha's Zero Waste Initiative, with its focus on composting and decentralized waste management, highlights how technology and local practices can drastically reduce landfill dependency while promoting environmental sustainability.
 - For instance, Bio-Bean, a UK-based startup converts coffee grounds into bio-fuel. They have successfully transformed a waste product into a valuable energy source, demonstrating the potential of waste to wealth conversion.

▪ **Community Engagement, Education, and Capacity Building**

- Enhancing community involvement through awareness campaigns and educational programs can lead to better waste segregation and reduced waste generation.
 - Capacity building at all levels, including grassroots initiatives like Alappuzha's decentralized composting program, is essential for long-term sustainability.
 - Public awareness campaigns, as seen in Indore, also play a crucial role in maintaining cleanliness and effective waste management.

Suggestions to Improve Waste System in India

▪ **Strengthen Public Awareness and Community Participation**

Engage the public through continuous sensitization programs and community involvement. Encouraging waste segregation at source and reducing littering can significantly improve waste management.

- The movement in a heritage town of West Bengal exemplifies how public participation can transform waste management and create cleaner cities.

- **Adopt Region-Specific and Bottom-Up Planning**

Implement waste management strategies tailored to the diverse geographical and cultural contexts of different regions in India. Grassroots planning involving local communities, self-help groups, and small entrepreneurs can create sustainable solutions.

- Kerala's decentralized waste management model effectively addresses regional needs, reducing landfill dependency.

- **Enhance Regulatory Frameworks and Private Sector Involvement**

Strengthen legislation and enforcement to ensure compliance with waste management regulations, and encourage public-private partnerships tailored to local conditions.

- Indore, Madhya Pradesh, showcases how strong regulations and private sector collaboration can lead to efficient waste management and consistent cleanliness.

- **Promote Sustainable Financing and Decentralized Schemes**

Develop revenue generation mechanisms, such as waste collection fees based on local economic conditions.

- Decentralized schemes like Bangalore's "Swaccha Bangalore" enhance financial resources for waste management, reducing the burden on centralized systems and improving overall service delivery.

Conclusion

India's path to effective waste management is challenging but enriched with innovative solutions and determined efforts. Embracing advanced technologies, nurturing public-private partnerships, and boosting public awareness are key to creating a cleaner and more sustainable future. Success depends on the collaborative efforts of the government, private sector, and citizens to tackle the waste management crisis and secure a healthier environment for future generations.

PDF Reference URL: <https://www.drishtiias.com/mains-practice-question/question-8417/pnt>

