Environmental Engineering and Management Journal xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
http://www.eemj.icpm.tuiasi.ro/; http://www.eemj.eu

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EXPLORING SUSTAINABLE FUTURES: STRATEGIC TRANSITIONS IN INDIA'S URBAN WASTE SCENARIO- A COMPREHENSIVE REVIEW

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Abstract

Municipal solid waste management (MSWM) is a major challenge in India because of rapid urbanization, population growth, and lifestyle changes. Through a systematic review of government reports, academic literature as well as case studies undertaken over the period 2000-2024, this comprehensive review analyses the current status, challenges and future prospects in MSWM used as a case study with an application of a multi-dimensional analysis framework to examine how we discarded the 'technical', 'institutional', 'financial' and 'social' aspects of waste management systems in Indian cities. According to research, India produces more than 150,000 tonnes of municipal solid refuse daily, of which only about 80 per cent is collected and less than 30 per cent is scientifically treated. Key results reveal critical gaps including: 50–75% staff shortage among urban local bodies, insufficiency of segregation at 18%, unsustainability of processing infrastructure treating 28% of collected waste, and 5–25% sustainable funding due to limited budget allocations by municipalities to invest in the sector. The study outlines the solutions, through identification of successful decentralized waste management models, public private partnerships and utilization of technology in cities with examples like Pune, Bengaluru and Indore. Priority interventions include integration of informal waste workers, implementation of user fees, extended producer responsibility, and smart technologies. Using an evidence based approach, this analysis provides a framework for policymakers and urban local bodies to create sustainable and equitable municipal solid waste management systems that align with the aspirations of the circular economy.

Key words: municipal solid waste, public private partnerships, smart cities, waste collection, waste-to-energy

Received: November, 2023; Revised final: December, 2024; Accepted: January, 2025

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