

## Recent Developments in E-waste Management in India

**Authors :** Rajkumar Ghosh, Bhabani Prasad Mukhopadhyay, Ananya Mukhopadhyay, Harendra Nath Bhattacharya

**Abstract :** This study investigates the global issue of electronic waste (e-waste), focusing on its prevalence in India and other regions. E-waste has emerged as a significant worldwide problem, with India contributing a substantial share of annual e-waste generation. The primary sources of e-waste in India are computer equipment and mobile phones. Many developed nations utilize India as a dumping ground for their e-waste, with major contributions from the United States, China, Europe, Taiwan, South Korea, and Japan. The study identifies Maharashtra, Tamil Nadu, Mumbai, and Delhi as prominent contributors to India's e-waste crisis. This issue is contextualized within the broader framework of the United Nations' 2030 Agenda for Sustainable Development, which encompasses 17 Sustainable Development Goals (SDGs) and 169 associated targets to address poverty, environmental preservation, and universal prosperity. The study underscores the interconnectedness of e-waste management with several SDGs, including health, clean water, economic growth, sustainable cities, responsible consumption, and ocean conservation. Central Pollution Control Board (CPCB) data reveals that e-waste generation surpasses that of plastic waste, increasing annually at a rate of 31%. However, only 20% of electronic waste is recycled through organized and regulated methods in underdeveloped nations. In Europe, efficient e-waste management stands at just 35%. E-waste pollution poses serious threats to soil, groundwater, and public health due to toxic components such as mercury, lead, bromine, and arsenic. Long-term exposure to these toxins, notably arsenic in microchips, has been linked to severe health issues, including cancer, neurological damage, and skin disorders. Lead exposure, particularly concerning for children, can result in brain damage, kidney problems, and blood disorders. The study highlights the problematic transboundary movement of e-waste, with approximately 352,474 metric tonnes of electronic waste illegally shipped from Europe to developing nations annually, mainly to Africa, including Nigeria, Ghana, and Tanzania. Effective e-waste management, underpinned by appropriate infrastructure, regulations, and policies, offers opportunities for job creation and aligns with the objectives of the 2030 Agenda for SDGs, especially in the realms of decent work, economic growth, and responsible production and consumption. E-waste represents hazardous pollutants and valuable secondary resources, making it a focal point for anthropogenic resource exploitation. The United Nations estimates that e-waste holds potential secondary raw materials worth around 55 billion Euros. The study also identifies numerous challenges in e-waste management, encompassing the sheer volume of e-waste, child labor, inadequate legislation, insufficient infrastructure, health concerns, lack of incentive schemes, limited awareness, e-waste imports, high costs associated with recycling plant establishment, and more. To mitigate these issues, the study offers several solutions, such as providing tax incentives for scrap dealers, implementing reward and reprimand systems for e-waste management compliance, offering training on e-waste handling, promoting responsible e-waste disposal, advancing recycling technologies, regulating e-waste imports, and ensuring the safe disposal of domestic e-waste. A mechanism, Buy-Back programs, will compensate customers in cash when they deposit unwanted digital products. This E-waste could contain any portable electronic device, such as cell phones, computers, tablets, etc. Addressing the e-waste predicament necessitates a multi-faceted approach involving government regulations, industry initiatives, public awareness campaigns, and international cooperation to minimize environmental and health repercussions while harnessing the economic potential of recycling and responsible management.

**Keywords :** e-waste management, sustainable development goal, e-waste disposal, recycling technology, buy-back policy

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