Chapter 14
Solid Waste Management: E-Waste Management for Environmental Sustainability – Issues and Strategies

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ABSTRACT

The global market for recycling electronics is expected to grow to ~ $66 billion by 2026, owing to the growing volume of electronic waste (e-waste), generated by electrical & electronic devices. Significant environmental & health issues result from the fact that only ~18% of this waste is collected & recycled in developing nations. E-waste contains useful materials that can be recycled, reducing need for natural resources & supporting renewable energy technologies. This chapter discusses different kinds of e-waste, recycling techniques, & the possibility of repurposing valuable materials in environmentally friendly technologies. It examines how e-waste is managed in major producing nations, pointing out areas that need improvement and offering best practices. Many nations lack recycling infrastructure & specific

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policies, which makes managing e-waste particularly difficult. Community education & stricter regulations are demanded. A concerted worldwide strategy is needed to properly manage e-waste, lessen its negative effects on the environment, & promote sustainable development.

INTRODUCTION

The large technological advancements and economic expansion of the electronics and telecommunications industries have led to the widespread usage of electronic gadgets. However, if these devices are discarded without being repurposed, they become electronic trash, or e-waste, which is crucial for promoting sustainability and a circular economy. It is anticipated that the e-waste industry would reach ~ 75 million tons by 2030, with a projected yearly growth rate of 2 million tons (Seif et al., 2023). Disposing of e-waste can have long-term repercussions on the ecosystem due to landfill pollution and hazardous uncontrolled recycling processes. The Green Climate Fund aims to support developing countries in addressing climate change, and the 2015 Paris Agreement emphasizes the necessity of renewable energy sources (Seif et al., 2023).

One major problem with waste management in the EU and throughout the world is the growing volume of e-waste, which includes computers, TVs, refrigerators, cell phones, and power tools. The continuous armed confrontation in Northeastern Europe, together with digitalization and the advancement of information technology, are the main causes of the explosive development of e-waste (Constantinescu et al., 2022). As a result, there is now a demand for more efficient electronic equipment recycling and reuse. E-waste may be recycled more successfully since it contains precious elements like rare metals.

Unauthorized recycling methods are damaging the environment. Sustainable growth, particularly in emerging nations like China and India, depends on efficient e-waste management (Soesanto et al., 2023). Scholars have conducted a thorough investigation of the management of e-waste, including bibliometric analysis to pinpoint important themes and trends. This study looks for current trends, potential paths forward, and essential components that facilitate effective e-waste management in order to enhance procedures and advance sustainable development goals (Soesanto et al., 2023). Figure 1 presents a systematic framework for solid waste management, beginning with the generation of waste from primary sources such as kitchen waste (organic and inorganic), electronic waste (e-waste), and other solid materials including plastics, metals, and glass (Poddar et al., 2023; Yang et al., 2024; Mallick & Poddar, 2025). Following generation, the waste is directed through a collection and segregation process, wherein it is classified as either biodegradable

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Aziz Azmanand Cokun Akdeniz (2026). *Advancing Equity in Global Healthcare Systems (pp. 1-26).*
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