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SUSTAINABLE E-WASTE MANAGEMENT: PRINCIPLES AND PRACTICES

SUSTAINABLE E-WASTE MANAGEMENT

PRINCIPLES AND PRACTICES



Editors

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Sustainable E-Waste Management: Principles and Practices

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CHAPTER 18

E-Waste Management System: An Approach and Assessment

Mr. Aqeel Ahmad Khan* & Dr. Uzma*

ABSTRACT

Electronic waste (e-waste) has emerged as one of the fastest-growing waste streams worldwide, primarily driven by rapid technological advancements, shortened product lifecycles, and consumer demand for modern electronics. This study aims to explore the current approaches and assess the effectiveness of e-waste management systems, with a focus on sustainable handling, disposal, and recycling practices. The research delves into the classification of e-waste, its environmental and health impacts, and the legal frameworks governing its management in both global and Indian contexts. Emphasis is placed on the roles of stakeholders, including producers, consumers, recyclers, and regulatory authorities, in the e-waste value chain. Through analysis of existing collection mechanisms, extended producer responsibility (EPR), and informal sector dynamics, the study identifies gaps in implementation and suggests strategic interventions to improve efficiency. The paper also highlights successful models from developed countries that can be adapted in developing nations to mitigate the growing crisis. Ultimately, this assessment seeks to promote an integrated, circular economy-based e-waste management approach that prioritizes environmental safety, resource recovery, and public health.

Keywords: E-waste, management system, recycling, environmental impact, extended producer responsibility (EPR), sustainability, circular economy.

INTRODUCTION

The digital revolution has brought significant transformations to human life, enhancing connectivity and convenience. However, it

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