Chapter 21
A Holistic Study on E-Waste Management for Ensuring Sustainability of the Environment

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ABSTRACT

Globalization and industrialization have led to drastic increase in the degree of solid waste generation; moreover, due to the migration of people, it is expected that in coming years demand of water and energy will increase manifold. This has led to the requirement of an efficient waste management mechanism. Though the ministry of environment and forest (MoEF) are continuously working for formulating conducive policies to curb the menace of waste disposal, still there is a need to have a central functionary to work at a wider level on this issue. There is a need to spread awareness among the masses so as to set accountability for each and every individual towards the environment. The present chapter is an attempt to provide a holistic approach towards e-waste management, which includes a systematic approach of collection, recycling, and minimization of e-waste resulting in bringing out sustainability in the environment. Finally, some suggestions and recommendations are provided which can be implemented for ensuring efficient e-waste management.

DOI: 10.4018/978-1-6684-8117-2.ch021

INTRODUCTION

When digitization and electronics were less prevalent in our lives before, there was scarcely any trash produced. The growing number of applications for IT in our daily lives produces enormous volumes of garbage, which has been a major contributor to recent environmental problems as the negative effects of E-waste is destroying the surroundings.

Each year, approx. 40 metric tons of e-waste are generated worldwide, of which 5% is global solid trash. UNEP predicted that by 2022, out of the 16 billion smartphones that are currently in use worldwide, 5.3 billion will be discarded. E-waste includes several hazardous elements in addition to priceless metals. The ecology becomes more toxic as a result of hazardous metals such (Cd, Hg, Pb, and Cr).

E-waste produced from household is often managed in one of three ways: formally collected by government agencies; dumped into bins; or collected by certain dealers or businesses. In order to safely and effectively remove valuable materials from the waste collected through municipal collection points, advanced technology and infrastructure are used (formal recycling). On the other hand, outside of the system, individual garbage firms or dealers recycle waste using subpar conditions and outdated methods without any safeguards to lessen the number of dangerous chemicals in the environment (informal recycling). When e-waste is placed in a landfill, it eventually contaminates the soil and groundwater posing problem for agricultural industry. Therefore, there is a dire requirement to implement an efficient waste management mechanism. Absence of an appropriate system of E-waste disposal will worsen the public health & will significantly deteriorate the environment.

A multi-faceted approach is needed to address the problem of e-waste management in order to maintain a balance among the detrimental effects of waste recycling on the human health, environment and financial stability. Presently, one of the most difficult problems in developing countries is managing e-waste Moreover, E-waste management is significantly required to satisfy international environmental standards. Therefore, this study will be effective in developing better understanding about e-waste disposal.

There have been many reviews on the generation of e-waste and its proper recycling, including ones on global e-waste management, e-waste recycling processes and methods. However, very few of these reviews are giving holistic view of E-Waste management.

To develop deep into the best practices & holistic approach for tackling the challenges of E-waste issue at global level, the present paper is an attempt to provide a comprehensive approach towards E-waste management which includes a systematic approach of collection, recycling, minimization of E-waste resulting to bring out sustainability in the environment. The paper takes into account various parameters influencing waste processing such as techniques employed, cost involved, modes of transportation and revenue generated by waste processing. The advanced techniques which can be applied for effectively handling and disposing of the waste are also discussed. The paper highlights the reason behind generation of E-waste & remedies taken to combat this issue in other countries. The limitations and challenges related to effective waste management are also over viewed.

This study gives detailed information on the current worldwide e-waste creation trend, the most recent e-waste recycling techniques, occupational and environmental health concerns, and suggestions for better trash recycling practices. The study is segregated into following sections. Section 2 deals with review of literature. Section3 describes research methodology. Section 4 &5 deals with the discussion, conclusion & future scope of the study.