

Chapter 6

E–Waste Management Transition Towards Circular Economy

Kumar Shalender

Chitkara Business School, Chitkara University, India

Babita Singla

 <https://orcid.org/0000-0002-8861-6859>

Chitkara Business School, Chitkara University, India

Sandhir Sharma

 <https://orcid.org/0000-0002-3940-8236>

Chitkara Business School, Chitkara University, India

ABSTRACT

Electronic waste is one of the most challenging problems faced by the globe today. In order to solve it in an efficient and effective manner, this chapter highlights the role of the circular economy and its elements in effectively recycling and managing electronic waste. With the help of extant literature, the research digs deep into the concept of electronic waste and circular economy and how the elements of this economy can be combined to effectively manage electronic waste. This is followed by the development of a conceptual framework that encompasses all important stakeholders including suppliers, manufacturers, and customers for effective management of electronic waste. The research also emphasizes the adoption of a holistic and all-encompassing policy framework for effectively managing electronic waste and also details significant implications for manufacturers and policymakers.

1. INTRODUCTION

Electronic waste (E-waste) can be easily counted among the most prominent problems the world is facing today. There is no doubt about the utility and benefits the digital revolution has brought to our doorsteps

DOI: 10.4018/978-1-6684-8117-2.ch006

E-Waste Management Transition Towards Circular Economy

but at the same time, the rising number of electronic gadgets, equipment, and devices is assuming the proportions of a huge problem. Countries and Nations across the globe are currently contending with the issue to solve the problem of electronic waste and scientists are working overnight to find a credible solution that will help to discard electronic waste without significantly impacting our ecosystem. The Covid-19 has only exacerbated this problem as the net sales and use of electronic equipment during and after the pandemic have risen significantly (Kulshrestha et al., 2022). Complicating the situation further is the fast rate of changing technology and enhanced innovation capabilities of the companies that have resulted in the launch of new products and devices in the market at breakneck speed. The new iterations that used to take at least a couple of years to come into the market in the past are getting launched today every other day (Awasthi et al. 2018). This entices the customers to buy the new model and dispense with older ones, thereby aggravating the issue of electronic waste.

Another prominent part of the problem is generation of electronic waste throughout the value chain of manufacturing of items. E-waste not only include end products such as our mobile devices, tablets, systems, and PCs but the entire manufacturing cycle starting right from the sourcing of ores and components required to produce them. In addition, production lines, assembly points, and other touch points also lead to generation of electronic waste. At each and every step of this value chain, the electronic waste gets generated and that complicates the situation in more than one way. The impact of electronic waste is comprehensively damaging to our ecosystem and environment. The disposal of the waste itself is associated with the emission of strong radiation emanating from the electronic material, leading to compromised health for the factory workers as well as other allied stakeholders involved in the product manufacturing and disposal of electronic items. In fact, for the entire ecosystem of developing, manufacturing, and disposing of electronic waste has a detrimental impact on the health and environment (Cui and Zhang 2008). Looking closely at the definition of electronic waste, one can easily understand that this waste includes both broken as well as functional electronic equipment. The problem of electronic waste can be addressed with the help of a circular economy. The concept has come into prominence thanks to the enhanced awareness of people, nations, and environment activists related to electronic waste. The following section of the chapter talks in detail about the concept of circular economy in navigating through the issue of electronic waste and how these waste management practices can lead to a more sustainable environment with minimum damage and help in the effective management of electronic waste.

2. CONCEPT OF CIRCULAR ECONOMY

As the name suggests, the concept of circular economy can be described as a model that reduces the consumption of materials for producing and manufacturing goods through a sustained efforts on the reducing, reusing, and recycling. In the specific context of e-waste management, the circular economy can help manufacturers and producers to reduce their requirement for raw materials by effectively recycling the material and components required for the production of items. In simple words, the recycling of the disposed electronic products will go into the manufacturing and production of new devices and help to reduce the overall electronic waste that is generated across the globe (Ganguly 2016). It also pertains to giving a second life to electronic products so that the net quantity of electronic waste that usually goes into the landfills can be reduced to significant levels. Of course, achieving zero electronic waste is not an easy task but if the implementation of the circular economy takes place with the desired efficiency and effectiveness then this ambitious dream can be realised effectively and efficiently. The process of

4 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/e-waste-management-transition-towards-circular-economy/326476

Related Content

The Consumer Role for Sustainable Development: How Consumers Contribute Sustainable Development Goals

Seda Yildirim (2022). *Research Anthology on Measuring and Achieving Sustainable Development Goals* (pp. 872-888).

www.irma-international.org/chapter/the-consumer-role-for-sustainable-development/290948

Use of Mobile Device Apps in Product Design

Tom Page (2013). *International Journal of Green Computing* (pp. 18-34).

www.irma-international.org/article/use-mobile-device-apps-product/80237

Social Technologies as a Social Sustainability Practice

Fernanda Salvador Alves, Eduardo De-Carli, Andrea Paula Segatto and Luiz Aurélio Virtuoso (2022). *International Journal of Social Ecology and Sustainable Development* (pp. 1-17).

www.irma-international.org/article/social-technologies-as-a-social-sustainability-practice/288531

Leachate Treatment: Case Studies in Selected European and Asian Countries

Irvan Dahlan (2020). *Waste Management: Concepts, Methodologies, Tools, and Applications* (pp. 1037-1054).

www.irma-international.org/chapter/leachate-treatment/242750

Green Finance or Daltonic Finance?: The Case of Eolic Energy in Bahia State in Brazil

Felipe Tumenas Marques and Renata Alvarez Rossi (2023). *International Journal of Social Ecology and Sustainable Development* (pp. 1-15).

www.irma-international.org/article/green-finance-or-daltonic-finance/323658