

Sustainability and E-waste Management Scenario in India**Reeta**

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Abstract

E-waste recycling is a concept barely existent in India. As a result, the electronic waste generated is often dumped in rivers or dump yards without proper recycling or treatment. This is hazardous on various levels; for both the environment and personal health. The main sources of electronic waste in India are the government, public and private (industrial) sectors, which account for almost 70 per cent of total waste generation. The contribution of individual households is relatively small at about 15 per cent; the rest being contributed by manufacturers. This study is focus on sustainability and E-waste Management Scenario in India

Introduction

In India, Ministry of Environment and Forests (MoEF) is responsible for proper management of hazardous waste. The e-waste management was first included in the List-A and List-B of Schedule-3 of “Hazardous Wastes (Management & Handling) Rules, 1989”. Then the law was amended in 2000 and 2003. Finally, after amendments in 2007 and 2008, e-waste has been included in “The Hazardous Materials (Management, Handling and Trans boundary Movements) Rules, 2008”

Literature Review

Electronic-waste is also known as E-waste, very trendy yet casual name given to electrical and electronic appliances & gazettes, either discarded or of further use.

Kohler, A., Erdmann, L.,(2004)¹ explained that the home appliance like automatic ovens, fridge or chilling machines and many others which also work on programming and computer related activities are very difficult to differentiate from WEEE as they are also part of either electrical or electronic family Wang et al., (2010)², write in detailed that electronic & electrical waste is actually a family and it has many branches which includes all personal, commercial, educational, transportation, private or public products which mainly work on power and have some at least sort of automation to function to meet the requirement.

According to guiding principle for proper management of e-waste⁴ the Utmost important reason of the e-waste creations in world and in India is rapid technological changes slow adaption to changes because today in the world thousands of new technology develops every day which generates new demand for that new technology which finally reduces demand less developed technology which generates tones of e waste in the world.

¹ Kohler, A., Erdmann, L., (2004). “Expected environmental impacts of pervasive computing”. Human and Ecological Risk Assessment, 10(5), pg 831- pg 852.

² Wang, Y., Luo, C., Li, J., Yin, H., Li, X., Zhang, G., (2011). “Characterization of PBDEs in soils and vegetations near an e-waste recycling site in South China”. Environmental Pollution, pg1-pg6.

Kohler et al. (2004)³ narrated like every wastes affect the health of the human being & environment directly or indirectly e wastes also affect the health of both of human & environment directly & indirectly almost every part of electronic waste as effect on the human health directly or indirectly like it affect nervous system, development of the children, disturb the natural ecology which is not good from everyone in the world point of view because it direct & indirect effect is on the human being.

Hilty L.M.,(2005)⁴ narrated the main reason in this case is lack of the knowledge about e waste management & handling to this condition in the further government, society citizen everyone as to take some important step before situation goes out of control. As e-waste is likely to touch 5.50 lakh tones by 2012 if measures are not taken at this time than it is more serious problem.

Rakesh Johri, (2008)⁵ explained the story of Indian scenario; according to him our practices are very much different than worldwide accepted or followed procedures. E-waste is a matter of concern as these procedures are very illegal and not according to the accepted protocols. Therefore, counting of actual generation is very tedious task especially in country like India and, there is no mechanism and policy to check the flow of e-waste in the system. In India the number of e-waste from home activities is around 23% where as the remaining from commercial work i.e. 77%. And out of that around 84% are interested in new product and remaining are interested in second hand due to economical conditions, and that's why commercial sector is major contributor.

M. Khurram, et al., (2011)⁶ explained near to 1000 tons annually contribution is from producers and sellers. There is worldwide agreement on not to dump the waste from one to another nation then also India is major e-waste receiver. In India near about 64 big towns or cities are responsible for more than 66% ewaste generation. Near about 10-11 states generate 71% of the total e-waste of the country. Maharashtra is ahead in all states & then by Tamilnadu, AP, UP, WB, Delhi, Karnataka, Gujarat, MP and Punjab. About cities Mumbai stands first and then capital of India – Delhi, Bangalore, Chennai, Calcutta, H'bad and Pune. Only 2 e-waste handling and management set ups are available in B'lore & Chennai. But there is not a single very large or large set up available and major work is carried out by illegal or slum areas.

E-waste Generated in Different Indian Cities:

City	E-Waste per year (in tonnes)
Mumbai	50,000

³ Kohler, A., Erdmann, L., (2004). "Expected environmental impacts of pervasive computing". Human and Ecological Risk Assessment, 10(5), pg 831- pg 852.

⁴ Hilty L.M., (2005). "Electronic waste-an emerging risk?" Environmental Impact Assessment Review, 25(5), Pg-431- pg435.

⁵ RakeshJohri, (2008) "E-Waste Implications,regulations and management in India and current global best practices" The energy and Resources Institute.

⁶ M. KhurramS. Bhutta,1 Adnan Omar,2 and Xiaozhe Yang3,"Electronic Waste: A Rising Concern in Today's Environment"

Delhi	35,000
Bangalore	30,000
Chennai	25,000
Kolkata	19,000
Ahmadabad	14,000
Hyderabad	13,000
Pune	10,000
Indore	8,000

E-waste?

Electronic waste (e-waste) comprises waste electronics/electrical goods that are not fit for their originally intended use or have reached their end of life. This may include items such as computers, servers, mainframes, monitors, CDs, printers, scanners, copiers, calculators, fax machines, battery cells, cellular phones, transceivers, TVs, medical apparatus and electronic components besides white goods such as refrigerators and air-conditioners. E-waste contains valuable materials such as copper, silver, gold and platinum which could be processed for their recovery.

E-Waste Management

The meaning of e-waste management is to make a system or habit, in general, to use electrical and electronic equipments till they reach their exhaustion limit or end-of-life, and after that donate it for reusing, recycling or eliminating it. The main components of e-waste management are:

1. Collection of e-Waste in which sorting and transportation work is involved.
2. Recycling of e-Waste: It involves dismantling, recovery of valuable materials, and sale of dismantled parts and export of processed waste for precious metal recovery.

Strategy of E-waste Management

These are some important strategies taken for the Management of e-waste:

1. Inventory management
2. Production – process modification
3. Volume reduction
4. Recovery and reuse.

Global Significance of e-Waste

E-Waste has raised concerns because many components in these products are toxic and do not biodegrade easily if at all. Based on these concerns, many European countries banned e-Waste from landfills in the 1990s. Ming Hong et al. found alarming levels of dioxin compounds, linked to cancer, developmental defects, and other health problems; in samples of breast milk, placenta, and hair, these compounds are linked to improper disposal of electronic products. Furthermore, surveys have indicated that much exported US e-Waste is disposed of unsafely in developing countries, leaving an environmental and health problem in these regions.

Most of international electronic companies have a tendency to see the end-of-life products in a developing countries as a waste stream not required to be managed. Further, they do not devote any time or effort to treat their waste in these countries. They think that selling new

products is more effective than spending money and resources on treating discarded equipment, especially if those countries do not have a legal framework for e-waste management. Another issue that needs to be discussed is the compliancy of developing countries' governments with enhancing the law of e-waste recycling. Therefore, the author is interested to investigate this issue in Egypt as a developing country with fast growing quantities of electronic waste, and Samsung as a leading company has several programmes related to handling and recycling ewaste around the world.

Conclusion

It seeks to investigate the different trends of national companies when they deal with countries according to their legislations. Further, the research will describe the main rules and regulations for e-waste management in India as a developing region. The research will mainly focus on electronics company practices for e-waste management in Egypt to explore how they can contribute to solving this issue. The present study is confine only to the consumers, manufacturers and E-waste management companies of India.

1. The flow of Ewaste is very rapid causing threats to the human health, environment due to its toxic and hazardous attributes.
2. E-waste is being produced by various sources in the country like Govt. sectors, commercial establishments, institutional sectors, research and developments, household and manufacturing sectors of the country.
3. The lack of public awareness regarding the disposal of electronic goods and inadequacy of policies to handle the issues related to E-waste enhance the problem in India.
4. The Government and the industry are unanimous on the view that E-waste needs to be efficiently managed from a social and environmental standpoint, there still is a need for them to mutually arrive at a consensus by understanding the practical and cultural realities on ground.

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