

The Challenges Of Electronic Waste (E-Waste) Management In India

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ABSTRACT

Information and telecommunications technology (ICT) and systematic networking has pierced nearly every aspect of modern life. It is positively affecting human life even in the most remote areas of the developing countries. The rapid growth in Information and telecommunications technology has led to an improvement in the capacity of computers. But the products lifetime is decreasing the waste electrical and electronic equipment (e-waste) is increase in the large quantity in annually. Information and telecommunications technology development in most developing countries, particularly in Africa, depends more on secondhand or refurbished EEEs most of which are imported without confirmatory testing for functionality. So as a result, large quantities of e-waste are presently being managed in these countries. The challenges facing the developing countries in e-waste management include: an absence of infrastructure for appropriate waste management, an absence of legislation dealing specifically with e-waste, an absence of any framework for end-of-life (EoL) product take-back or implementation of extended producer responsibility (EPR).

Keywords: E-waste, recycling, challenges

1. INTRODUCTION

The electronic industry is the world's largest and longest growing manufacturing industry so the life cycle for electronic products, has reduced significantly in recent years. Due to rapid advances growth in information technology and telecommunications has led to an enhancement in the capacity of computers but at the same time a products life time is decreased. The consequence of its consumer oriented growth combined with rapid product obsolescence and technological advances are a new environmental challenge - the growing threat of "Electronics Waste" or "e waste" that consists of obsolete electronic devices. So it is the emerging problem as well as a business opportunity of increasing significance to given the volumes of e-waste management.

2. REVIEWS

1. **T.Sivakumar et al(2011)** The author said that the electronic waste comprises of old end-of-life electronic appliances such as computers, laptops, TVs, DVD players, refrigerators, freezers, mobile phones, MP3 players, etc., have been disposed by their original users. And the author said that the e waste contains many hazardous constituents affect the environment and as well as the human health if the e waste is not properly managed, and the author said the Various organizations, bodies, and

governments of many countries have adopted and/or developed the environmentally sound options and strategies for E-waste management to tackle the ever growing threat of E-waste to the environment and human health. Here the author went through the E-waste composition, categorization, Global and Indian E-waste scenarios, prospects of recoverable, recyclable, and hazardous materials found in the E-waste, Best Available Practices, recycling, and recovery processes followed, by their environmental and occupational hazards.

2. **Rajesh Kumar et al (2016)** in this paper the author said that the Electronic waste or e-waste refers to unwanted, obsolete or unusable electronic and electrical products are increasing. The usage of electronics and electrical equipment's has resulted in piling up of e-waste. The current practices of e-waste management in India encounters many challenges like the difficulty in inventorization, ineffective regulations, pathetic and unsafe conditions of informal recycling, poor awareness of consumers and reluctance on part of the stakeholders to address the issues. The toxic materials enter the waste stream with no special precautions to avoid the known adverse impacts on the environment and human health as well resources are wasted when economically valuable materials are dumped.
3. **Anwasha Borthakur et al (2017)** In this paper the author reviles that the toxic waste stream of E-waste poses serious challenges to the waste management in India and the hazardous components of E-waste call for environment-friendly disposal mechanisms. The valuable of e waste and precious metal constituents necessitate adequate infrastructural provisions and responsible management programmes to avoid the loss of economically vital materials and the author said about the three sectors which will have a bulk consumers of electrical and electronic equipment's under recent e waste management rules which is introduce in the year 2016 [(1) **IT and electronics**, (2) **banking and** (3) **education, are considered for the study purpose**].
4. **Deepak Kumar Adhana (2019)** In this article the author said that whenever the human being think about e waste they think only in terms of garbage or solid/semi-solid waste and not anything else but in the last ten years e-waste has become a global issue. And India too generates a large quantity of electronic waste/ e-waste every year. But unfortunately e-waste is something which does not get much media coverage and people's awareness regarding e-waste is quite low. So in India E-waste recycling is a concept barely in existent. The electronic waste generated often dumped in rivers and also dump yards without proper recycling and treatment this hazardous on various levels; for both the environment and personal health.
5. **Rama Mohana et al (2019)** In this study the author explain about the Electronic waste (e-waste), that is, waste arising from end-of-life electronic products such as computers and mobile phones. It is one of the fastest growing waste streams in the world today. Annual global production of e-waste is estimated to surpass 50 million tons in 2020. India is among the top five e-waste producing countries in the world with estimated annual production of 2 million tons. While comparing to other developing countries, e-waste management in India is dominated by the informal sector with estimates of more than 90 per cent of the waste being processed in the sector. The E-waste contains several precious metals, rare earth metals, ferrous and non-ferrous metals, plastic, wood and glass. Unscientific practices in the processing of e-waste are associated with several environmental and health externalities. In

response to these concerns, many developed and developing countries have, over the past few decades, introduced regulations.

3. OBJECTIVES OF STUDY:

The study has been geared to achieve the following objectives;

1. To study the trends of Electronic Waste in India.
2. To study the India's current scenario of E-Waste management.
3. To study the challenges and problems of e-waste management.

4. E-WASTE IN INDIA

As there is no detached collection of e-waste in India, there is no clear data on the quantity generated and disposed of each year and the resulting extent of environmental risk and the preferred practice to get rid of obsolete electronic items in India is to get them in exchange from retailers when purchasing a new item. The business sector is estimated to account for 78% of all installed computers in India. Obsolete computers from the business sector are sold by auctions. Sometimes educational institutes and charitable institutions receive old computers for reuse and it is also estimated the total number of obsolete personal computers emanating in each year from business and individual households in India. It will be around 1.38 million. According to a report of Confederation of Indian Industries. The total e-waste is generated by obsolete or broken down electronic and electrical equipment in India. It has been estimated to be 1, 46,000 tons per year. From the observation of the field in some cities, a metropolitan city of India to assess the average usage and life of the personal computers it means PCs, television (TV) and mobile phone showed that the average household usage of the PC ranges from 0.39 to 1.70 depending on the income class. In the case of TV it varied from 1.07 to 1.78 and for mobile phones it varied from 0.88 to 1.70. The low-income households use the PC for 5.94 years, TV for 8.16 years and the mobile phones for 2.34 years while, the upper income class uses the PC for 3.21 years, TV for 5.13 years and mobile phones for 1.63 years. Although the per-capita waste production in India is still relatively small, the total absolute volume of wastes generated will be huge. Further, it is growing at a faster rate. The growth rate of the mobile phones (80%) is very high compared to that of PC (20%) and TV (18%). The public awareness on e-wastes and the willingness of the public to pay for e-waste management as assessed during the study based on an organized questionnaire revealed that about 50% of the public are aware of environmental and health impacts of the electronic items. The willingness of public to pay for e-waste management ranges from 3.57% to 5.92% of the product cost for PC, 3.94 % to 5.95 % for TV and 3.4 % to 5 % for the mobile phones. Additionally considerable quantities of e-waste are reported to be imported. However, no confirmed figures available on how substantial are these trans boundary e-waste streams, as most of such trade in e-waste is camouflaged and conducted under the pretext of obtaining 'reusable' equipment or 'donations' from developed nations. The government trade data does not distinguish between imports of new and old computers and peripheral parts and so it is difficult to track what share of imports is used electronic goods.

5. STATUS OF E-WASTE MANAGEMENT IN INDIA

Despite the wide range of environmental rule in India there are no specific laws or guidelines for electronic waste or computer waste in 2004. As per the Hazardous Waste Rules (1989), e-waste is not treated as hazardous waste unless until it is proved to have higher concentration

of certain substances. Though PCBs and CRTs would always exceed these parameters, there are several grey areas that need to be addressed. Basel Convention has Waste electronic assemblies in A1180 and mirror entry in B1110, mainly on concerns of mercury, lead and cadmium. Electronic waste is included under List-A and List-B of Schedule-3 of the Hazardous Wastes (Management & Handling) Rules, 1989 as amended in 2000 & 2003. The import of this waste therefore requires specific permission of the Ministry of Environment and Forests.

As the collection and re-cycling of electronic wastes is being done by the informal sector in the country at present, the Government has taken the following action/steps to enhance and provide the awareness about environmentally sound management of electronic waste:

- Several Workshops on Electronic Waste Management was structured by the Central Pollution Control Board (CPCB).
- Action has been initiated by CPCB for rapid assessment of the E-Waste generated in the major cities.
- The National Working Group has been constituted for formulating the strategy for E-Waste management.
- The inclusive technical guide on "Environmental Management for Information Technology Industry in India" have been published and circulated broadly by the Department of Information Technology (DIT), and Ministry of Communication and Information Technology.
- Demonstration projects have also been set up by the DIT at the Indian Telephone Industries for recovery of copper from Printed Circuit Boards.
- The lack of reliable data that poses a challenge to policy makers wishing to design an e-waste management strategy and to an industry wishing to make rational investment decisions.
- Only a fraction of the e waste finds its way to recyclers due to absence of an efficient take back scheme for consumers.
- The lack of a safe e waste recycling infrastructure in the formal sector and thus reliance on the capacities of the informal sector pose severe risks to the environment and human health.
- The existing e waste recycling systems are purely business-driven that have come about without any government intervention.

6. E-WASTE RECYCLING

Many discarded machines contain usable parts which could be salvaged and combined with other used equipment to create a working unit. It is labor intensive to remove, inspect and test components and then reassemble them into complete working machines. Institutional infrastructures, including e-waste collection, transportation, treatment, storage, recovery and disposal, need to be established, at national and/or regional levels for the environmentally sound management of e-wastes. These facilities should be approved by the regulatory authorities and if required provided with appropriate incentives. Establishment of e-waste collection, exchange and recycling centers should be encouraged in partnership with governments, NGOs and manufacturers. Environmentally sound recycling of e-waste requires sophisticated technology and processes, which are not only very expensive, but also need specific skills and training for the operation. Proper recycling of complex materials requires the expertise to recognize or determine the presence of hazardous or potentially hazardous constituents as well as desirable constituents (i.e. those with recoverable value), and then be able to apply the company's capabilities and process systems to properly recycle both of these streams. Appropriate air pollution control devices for the fugitive and point source emissions are required. Guidelines are to be developed for environmentally sound recycling

of E Wastes. Private Sector are coming forward to invest in the e-waste projects once they are sure of the returns.

7. CHALLENGES

The specific to developing and industrializing countries in WEEE management after assessing management issues from China, India, and SouthAfrica. These difficulties are summarized below:

- ❖ “although the quantity of indigenous e-waste per capita is still relatively small and in populous countries such as China and India are already huge producers of e-waste in absolute terms;
- ❖ These countries also display the fastest growing market for EEE;
- ❖ Some developing and transition countries are importing Considerable quantities of e-waste. Some of them arrive as donations to help ‘the poor’ while others are mislabeled.”

The challenges facing End of Life management of e-waste in developing countries are enormous and include the following items.

1. The increasing volume of e-waste imported illegally into the developing countries. Second-hand EEE imported into the developing countries are rarely tested for usage. This significant quantities used in EEE imports estimated at between 25–75%.
2. Ignorance of the toxicity or hazardous nature of e-waste. There is lack of awareness in government and public circles of the potential hazards. The present management of WEEE in the developing countries to human health and the environment. These two were involved in the dangerous crude recycling activities..
3. There is absence of infrastructure for the recycling or appropriate management of e-waste following the principles of sustainable consumption/development. In Africa formal recycling facilities for e-waste exists only in South Africa at 2005
4. Lack of funds and investment to finance profitable improvements in e-scrap recycling. There is loss of resources, energy wastages and environmental pollution as a result of the crude ‘backyard’ recycling activities.
5. Absence of legislation dealing specifically with e-waste. There is also a near absence or ineffective implementation of existing regulations/legislation relating to the control of trans-boundary movement of hazardous wastes and recyclables.
6. Absence of mandated or effective voluntary take-back programmes (EPR) for end-of-life EEE in the developing countries. There is also the unwillingness of consumers and enterprises to hand out their obsolete EEE or pay for WEEE recycling.

8. CONCLUSION

The many wastes is related to main environmental impacts of e-waste management it arise due to inappropriate processing. Rather than inherent toxic contents, and furthermore, drawing boundaries between secondary goods intended for reuse and waste materials is difficult. There are social benefits to secondary markets, especially computers. They have made goods available to low-income people, raising standards of living. Given that unregulated processing in developing countries generate income,

there is a strong economic forcedriving the creation of an informal sector, which poses achallenge for enforcement of regulations of Williams in 2005. There is a need to introduce a system for the labelling of secondhand electronics to distinguish such from e-scrap meantfor material recovery. This will ensure a certification and confirmation of the functionality of secondhandelectronics meant for export. For effective management ofe-waste in the developing countries, there is urgent need forthe implementation of legislation dealing specifically withe-waste, the implementation of producer responsibility andthe introduction of formal recycling, and appropriate landfilltechnology for toxic wastes that will arise from these wastemanagement activities.

9. REFERENCES

- [1] Agarwal R. (1998) India: The World's Final Dumpyard!, January, Basel Action News, Vol.1 atwww.ban.org accessed on 14th September 2006.
- [2] CII (2006). "E-waste management", Green Business Opportunities, Vol.12, Issue 1,
- [3] Confederation of Indian Industry, Delhi.
- [4] Devi B.S, Shobha S. V, Kamble R. K. (2004). E-Waste: The Hidden harm ofTechnological
Revolution, Journal IAEM, Vol.31, pp.196-205.
- [5] DIT (2003). Environmental management for Information Technology industry in India,
- [6] Department of Information Technology, Government of India, pp.122-124.
- [7] Kurian Joseph (2007) "Electronic Waste Management In India-Issues And Strategies Eleventh International Waste Management and Landfill Symposium.
- [8] O. Osibanjo and I.C. Nnorom (2007) The challenge of electronic waste (e-waste) management in developing countries, Waste Management & Research
- [9] Widmer, R., Oswald-Krapf, H., Sinha-Khetriwal, A., Schnellmann, M. &Boni,H. (2005) Global perspectives on the e-waste. Environmental Impact Assessment Review, 25, 436–458.
- [10] Williams, E. (2005) International activities on E-waste and guidelines for future work. In: Proc. Third Workshop on Materials Cycles and Waste Management in Asia, National Institute of Environmental Sciences: Tsukuba Japan.
- [11] Williams, E.D. (2003) Extending PC lifespan through secondary markets. In: Proc. 2003 IEEE International Symposium on Electronics and the Environment, May 19–22, 2003, pp. 255–259.
- [12]