

E-WASTE RECYCLING ISSUES IN INDIA

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Abstract- E-waste is a global issue which possesses threats to environment and health. E-waste by itself is not problem but only the disposal is the problem. India is one among the developing countries which generate huge quantity of e-waste. E-waste contains many hazardous but also valuable and scarce materials. Precious metals like Gold, Silver, and Platinum etc. are present in the e-waste. Chemicals such as Arsenic, Lead, and toxic fumes such as furans, dioxins are also present in the electronic waste. The method and procedures involved in the disposal of electronic waste is a complex one. Implementing the 3R concept for disposing electronic waste in India is litter more complex. There are several issues connected with recycling of e-waste in India such as legal, social, policy, political and so on. In this paper, we try to identify the issues related to recycling of e-waste in India. Possible solutions to address these issues are also discussed in this paper.

Keywords – e-waste, toxic chemicals, recycling, guidelines, legislations.

I. INTRODUCTION

E-Waste or electronic waste are nothing but broken or discarded electronic devices. E- waste is a safety related issue. The composition of e-waste contains a wide range of devices like mobiles, computers and peripherals, entertainment devices, communication devices, media players, and home appliances. India tops the e-waste generation in Asia next to China. Illegal imports of thousands of tonnes of e-waste from developed countries also accounts for e-waste generation in India. The available data regarding electronic waste in India is very limited. Most of the compounds present in electronic waste are hazardous and toxic in nature. The disposal and recycling of electronic waste in this country has become a serious problem. Unconventional methods of disposing of e-waste are money earning business for many people here. This results in the release of toxic substances into the atmosphere. Landfilling of electronic waste is also not advisable as the hazardous chemicals leaches in to the soil over long run. The 3R factors namely REDUCE, REUSE, and RECYCLE are the most acceptable methods of disposing the electronic waste. But in India following these methods become a challenge. There are wide range of issues are related to these methods of disposal.

II. ACTIONS INITIATED BY THE GOVERNMENT

To curtail the means of issues created by electronic waste, the Indian Government has organised national level workshops and programs. Policies were framed. The rules and regulations of waste disposal were updated. New rules are being framed. The following are some of the actions initiated by the Indian Government.

- National level workshop organised in collaboration with GTZ-ASEM
- Indo-Swiss pilot assessment project in Delhi
- Task force working group were formed including members from ministries, regulatory agencies and industry representatives.
- CPCB has come out with the draft guidelines for environmentally sound management of e-Waste
- Hazardous Waste (Management and Handling) Amended Rules, 2008
- E-Waste Management (Handling Rules) 2011
- E-Waste Management Rules 2016

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III. THE 3R FACTORS

The 3R factors of waste management Reduce, reuse and Recycle are the best and acceptable methods to deal with electronic waste also. Reduce deals with the reduction in the consumption. Reuse deals with the second hand using of the electronic products. The used items are put into reuse. Recycle is the process of collecting and processing materials that would otherwise considered as waste. The best way to reduce the generation of waste is not creating it. This can be achieved by not buying items that are sparingly used. Buy electronic products only if needed. Donation is the best policy which directly reduces the waste generated. This can be achieved by donating the old electronic products to schools, libraries, and to needy individuals. The electronic items have a specified life time and these items can be used till End Of Life (EOL) is reached. The consumers should buy the most environmentally sound products and they should look for labels indicating the machine is environmentally friendly. Buy products that can be easily upgraded.

IV. RECYCLING

Recycling as per Wikipedia definition is the process of converting waste materials into new materials and objects. It is an alternative to "conventional" waste disposal that can save material. Recycling can prevent the waste of potentially useful materials and reduce the consumption of fresh raw materials, thereby reducing: energy usage, air pollution (from incineration), and water pollution (from landfilling). Recycling is a key component of modern waste reduction and is the third component of the "Reduce, Reuse, and Recycle" waste hierarchy.

The steps involved in the Recycling process are as follows:

- Collection of Wastes
- Transportation from collection centre to recycling unit
- Dismantling (Can be manual or mechanical)
- Segregation of components
- Shredding
- recovery (removal of ferrous and non-ferrous items)
- Reuse the recovered materials

The main advantage of recycling electronic items is reduction in pollution and protection of raw material resources. Less than 150 e-waste recycling units are available in India. As per the Central Pollution Control Board's (CPCB) data as on November 2014, only 138 e-waste recycling units are available in India. The state where number of recycling units is high in India is Karnataka followed by Maharastra and Tamil Nadu. The distribution patterns of electronic waste recycling units in India is represented in the Figure:1

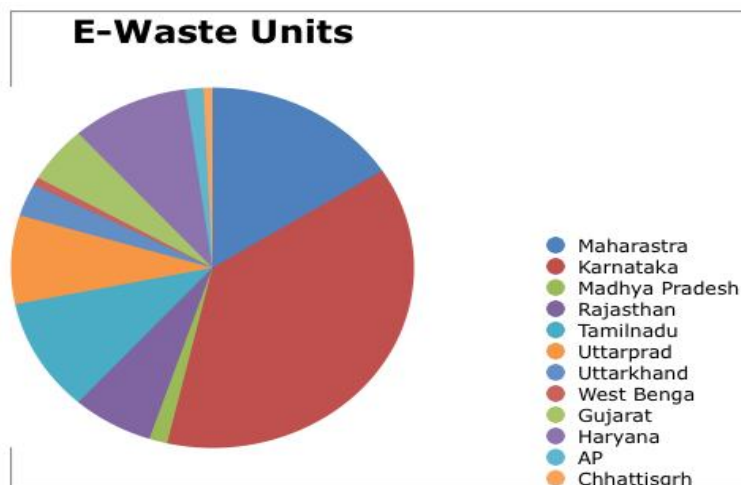


Figure 1: E-Waste units in India(Source: Boomerang Businessweek)

V. ISSUES CONNECTED TO RECYCLING

The issues connected with Recycling are many and specific in nature. The issues are discussed briefly here.

A. Raw Material Issue

For recycling unit to function, sufficient amount of raw materials are required. Raw material mentioned here are the disposed electronic items. Materials are transported from collection centres to recycling unit. There are not much collection centres available in India. Neither the manufacturer nor the business men are interested in establishing the collection centres as the return value is not as expected. The transportation mechanism involved in transporting materials becomes combustion as the legal issues connected are many.

B. Social Issue

The people who involve in disposing the electronic waste play an important role in damaging the society. They indulge in unconventional methods of disposing electrical waste. They pollute the atmosphere by open burning and letting out the toxic fumes in to atmosphere. The people also pollute the water ways by throwing the electronic wastes in the side of river bed. The business men who carry out these activities do injustice the poor as they engage the poor in this kind of activities.

C. Consumer Issue

Consumers directly impact the recycling of electronic waste. There are two types of consumers. The first type of consumers never throws out any wastes. This is due to habits or attaching sentiments to the products. The second type of consumers sells the wastes where they get more money for their products. They never knew that they are encouraging waste Wala who disposes electronic waste in unconventional methods. This causes raw material shortage for recycling units.

D. Environmental issue

The Electronic wastes contain hazardous but also valuable and scarce materials. The valuable parts include Gold, Silver, Platinum, and Palladium. Even though the quantity of these materials present in the electronic waste is low, the value for that is more. Hence people show interest in extracting these materials. Extracting the materials by means of recycling is not cost viable whereas extracting valuable materials from printed circuit boards through acid stripping a profitable one. Using acid stripping method pollute the environment.

E. Economical issue

Even though disposing of electronic waste by recycling is the best practice of disposing electronic waste, not much electronic waste recycling units are available in India. India is one of the biggest users of electronic products and consumes more. Naturally the generation of waste is also high. For the waste generated, the number of recycling units is less. The reason behind is the cost involved in setting up of a collection centre or recycling units. As said earlier, there are some steps involved in recycling process and each steps involves some machinery. The cost of machinery is high. For the investment put, the return of money is not as expected and also takes time.

F. Manufacturers issue

Indian IT market has not fully addressed the environment problems created by e-Waste. The producer industry should be made responsible for their products. E-Waste Rule 2011 was applicable to Producer, Consumer & Recycler but was extended to Manufacturer industry in E-waste rules 2016. Similarly in 2011 rules collection centre can be put up by any person but 2016 rules say that it is exclusively producer's responsibility. The producer is required to obtain authorisation from State Pollution Control Board (SPCB) for putting up collection centres and recycling units. Now it is CPCB's responsibility. Extended producers responsibility is now mandatory for the producer. The facility and recycling processes has to be in accordance with the standards prescribed by the Central Pollution Control Board

G. Legal and Policy issues

These people didn't care about environmental, occupational and health issues as their main aim is to earn money. The businessmen in India are allowed to import waste scrapes against a license. Import of such waste scrapes are allowed if the materials imported are used as raw materials for other component making. Waste importers exploit the gaps in the import laws and continue to import electronic wastes in the name of metal scrapes. This is another reason why the recyclers are not getting enough raw materials for recycling.

VI. CONCLUSION

Unless the industry self-regulates itself and adheres to the laws and policies it is difficult to curtail this problem. The producer industry should be made responsible for their products. The producers may be asked to extend the warranty for their products and they must be encouraged to adopt take back policy for their products. The regulations should prohibit the disposal of e-Wastes in municipal landfills. The Government should encourage the industries to set up

recycling unit for electronic wastes and incentives may be announced. The Government should also ensure collection centre and recycling facility widely available throughout nation. Public awareness programs should be conducted to educate the public about the hazards that are created due to electronic wastes. Common facility centre is to be created to treat waste generated from recycling industries. To make these possible the Government should strictly impose the guidelines and policies. Government should setup regulatory agencies in each city to monitor the e-waste disposal and also should encourage the support of NGO.

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