Pros and Cons of e-waste Management: Issues and Concern

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Abstract: *Electric waste is considered the fastest growing section of the environment and human health conservation reforms in the society. It is necessary to establish a viable means of shortening this vice to minimize or eliminate the pollution and impact on environment. The term 'e-waste' stands for any electrical or electronic appliance that has reached its end-of-life, such as refrigerators, washing machines, microwaves, cell phones, Televisions and computers. Such waste is made up of ferrous and non-ferrous metals, plastics, glass, wood, circuit boards, ceramics, rubber etc. Through this paper attempts has been made to study the main issues of e-waste management and to find out the pros and cons of e-waste management. The study was based on secondary data. The secondary data have been collected from journals, internet, magazines, newspaper Annual reports etc. Finally the study concludes that "e-waste management" is used as a generic term embracing all types of waste containing electrically powered components. It also contains both valuable materials as well as hazardous materials which require special handling and recycling methods. From the results of the study, we concluded that the majority of the public is ignorant about e-waste and its issues; hence there is a strong required for spreading awareness about the grossing hazards of e-waste.*

Key Words: *'e-waste management, cell phones, computers, issues*

1. INTRODUCTION

The term 'e-waste' stands for any electrical or electronic appliance that has reached its end-of-life, such as refrigerators, washing machines, microwaves, cell phones, TVs and computers. Such waste is made up of ferrous and non-ferrous metals, plastics, glass, wood, circuit boards, ceramics, rubber etc. The major constituent of e-waste is iron and steel (about 50%) followed by plastics (21%), and non-ferrous metals (13%) like copper, aluminum and precious metals like silver, gold, platinum, palladium etc. E-waste also contains toxic elements like lead, mercury, arsenic, cadmium, selenium and chromium.

2. E-WASTE DEFINITION

E-Waste for short - or Waste Electrical and Electronic Equipment - is the term used to describe old, end-of-life or discarded appliances using electricity. It includes computers, consumer electronics, fridges etc which have been disposed of by their original users.

"e-waste" is used as a generic term embracing all types of waste containing electrically powered components. e-Waste contains both valuable materials as well as hazardous materials which require special handling and recycling methods. This guide covers all categories of e-waste but emphasizes categories which contain problematic, scarce and valuable or otherwise interesting materials. Examples: Computers, LCD / CRT screens, cooling appliances, mobile phones, etc., contain precious metals, flame retarded plastics, CFC foams and many other substances. **Categories of e-waste**

- Large Household Appliances Washing machines, Dryers, Refrigerators, Airconditioners, etc.
- Small Household Appliances Vacuum cleaners, Coffee Machines, Irons, Toasters, etc
- Office, Information and Communication Equipment PCs, Laptops, Mobiles, Telephones, Fax Machines, Copiers, Printers etc.
- Entertainment and Consumer Electronics Televisions, VCR/DVD/CD players, Hi-Fi sets, Radios, etc.
- Lighting Equipment Fluorescent tubes, sodium lamps etc. (Except: Bulbs, Halogen Bulbs)
- Electric and Electronic Tools Drills, Electric saws, Sewing Machines, Lawn Mowers etc. (Except: large stationary tools/machines)
- Toys, Leisure, Sports and Recreational Equipment Electric train sets, coin slot machines, treadmills etc. Medical Instruments and Equipment Surveillance and Control Equipment Automatic Issuing Machines.

3. REVIEW OF LITERATURE

Anwesha and Singh, (2012) concluded that E-waste is relatively a novel addition to the ever-growing hazardous waste stream. It includes discarded electronic and electrical equipment. Developing countries are facing enormous challenges related to the generation and management of E-waste which are either internally generated or imported illegally; India is no exception to it. However, the existing management practices related to E-waste in India are

reasonably poor and have the potential to risk both human health and the environment. Moreover, the policy level initiatives are not being implemented in an appropriate way. The austere problem of E-waste along with its policy level implications is looked upon in the paper. During the course of the study it has been found that there is an urgent need to address the issues related to E-waste in India in order to avoid its detrimental future consequences.

Dasgupta et..al., (2014) Examined that the E-waste handling is a major challenge. Over last two decades, escalating generation rate, varying composition and unorganized recycling have made the E-waste handling a complicated practice. Hazardous metals and plastics are major issues and concern when E-wastes are mixed with municipal solid waste along with its haphazard dumping. A skillful management and planning is urgently required for systematic and scientific handling of E-waste.

Verma and Agrawal, (2014) discusses the condition of e-waste in India, the problem associated with e-waste, the method used for used for e-waste management and focuses light on the legislation work done regarding e-waste in India. The electronic waste also known as e-waste is a dangerous waste consisting of unwanted electronic and electrical equipment. Developing countries are facing the problem of e-waste management enormously which is either internally generated or are imported from other countries. India is also facing the problem of e-waste management due to lack of awareness among people about dangerous effect of ewaste on environment and human being through informal ewaste collection and absence of implementation of rules for the process of e-waste in environment friendly manner. As per the study it has been found that there is an instant need to address the issue related to ewaste in India in order to avoid its ill effect in future.

Shruti et. Al., (2016) highlighted that the Electronic waste contains disposed electrical or electronic devices. Electronic scrap components include CPUs, Phones, Chips, TV‟s etc. These contain hazardous components like lead, cadmium, beryllium, or brominates flame retardants. Due to these hazardous components, developing countries are facing enormous challenges related to generation and management of E-waste. In hither paper, an path is made as far as calculating the current status of E-waste management in India over and above worldwide, because the current rules and guidelines. It is found that great part of recycling of E-waste is being handled by unconventional part that has less/no knowledge about the effects of exposure to hazardous substances.

Krishnan J.Venu Gopala, (2016) focuses about Managing E-waste in India. The study found that information about the management of E-waste which includes its impact, its status in India and some of its management aspects. It gives information about the recycling effects which is faced by a country and give some ideas about how to tackle the management, recycling of e-waste.

4. OBJECTIVES OF THE PAPER:

- To study the main issues of e-waste management
- To find out the pros and cons of e-waste management.

5. RESEARCH METHODOLOGY:

The study was carried out to see the Pros and Cons of e-waste Management: Issues and Concern. E-waste is different from municipal and industrial wastes and requires special handling procedures due to the presence of both valuable and expensive materials. Recycling of e-waste can help in the recovery of reusable components and base materials, especially copper and precious metals.The study was based on secondary sources and data was collected from internet websites, Magazines, newspapers and annual reports.

6. THE MAIN ISSUES OF E-WASTE ARE AS FOLLOW:

- **High volumes:** High volumes are generated due to the rapid obsolescence of gadgets combined with the high demand for new technology (Basel Action Network [BAN], 2011).
- **Toxic design:** E-waste is classified as hazardous waste (Tsydenova & Bengtsson, 2011) having adverse health and environmental implications. Approximately 40 per cent of the heavy metals found in landfills comes from electronic waste (Montrose, 2011).
- **Poor design and complexity:** E-waste imposes many challenges on the recycling industry (Smith, Sonnenfeld & Naguib Pellow, 2006) as it contains many different materials that are mixed, bolted, screwed, snapped, glued or soldered together. Toxic materials are attached to non-toxic materials, which makes separation of materials for reclamation difficult. Hence, responsible recycling requires intensive labour and/or sophisticated and costly technologies that safely separate materials (BAN, 2011).
- **Labour issues:** These include occupational exposures, informal sector domination causing health and environmental problems, lack of labour standards and rights.
- **Financial incentives:** In general, there is not enough value in most e-waste to cover the costs of managing it in a responsible way. However, in line with EPR policies, new opportunities can be realized with the rise in the price of many of the materials in electronics, such as gold and copper (Widmer, Oswald-Krapf, Sinha-

Khetriwal, Schnellmann & Böni, 2005). Furthermore, with rising e-waste quantities, formal recyclers are increasingly entering the e-waste recycling sector (Raghupathy, Krüger, Chaturvedi, Arora, Henzler, 2010).

- **Lack of regulation:** Many nations either lack adequate regulations applying to this relatively new waste stream, or lack effective enforcement of new e-waste regulations (BAN, 2011).

7. E-WASTE CONCERNS AND CHALLENGES:

- Accurate figures not available for rapidly increasing e-waste volumes—generated domestically and by imports
- Low level of awareness among manufacturers and consumers of the hazards of incorrect e-waste disposal
- No accurate estimates of the quantity of e-waste generated and recycled available in India
- Major portion of e-waste is processed by the informal (unorganised) sector using rudimentary techniques such as acid leaching and open-air burning, which results in severe environmental damage
- e-waste workers have little or no knowledge of toxins in e-waste and are exposed to health hazards
- High-risk backyard recycling operations impact vulnerable social groups like women, children and immigrant labourers
- Inefficient recycling processes result in substantial losses of material value and resources
- Cherry-picking by recyclers who recover precious metals (gold, platinum, silver, copper, etc) and improperly dispose of the rest, posing environmental hazards
- No specific legislation for dealing

8. PROS AND CONS OF E-WASTE MANAGEMENT:

Pros

- A lot cheaper to send to developing countries
- Many e-waste companies becoming green •many economic benefits
- Sell parts for money
- Not as much in landfills
- 85% of e-waste gets recycled
- Materials being recycled and reused instead of thrown away
- Metals can be melted down into fine riches
- EPA supports e-waste recycling •provides jobs

Cons

- Children exposed to harmful waste & chemicals
- Many people poisoned by e-waste
- e-waste contains lead, mercury, etc.
- No safety laws •most of our e-waste shipped to other countries
- Takes up a lot of space
- Can cause death •children can't go to school
- Effect on respiratory, urinary, and digestive system
- 35-40 years old, incapable of working

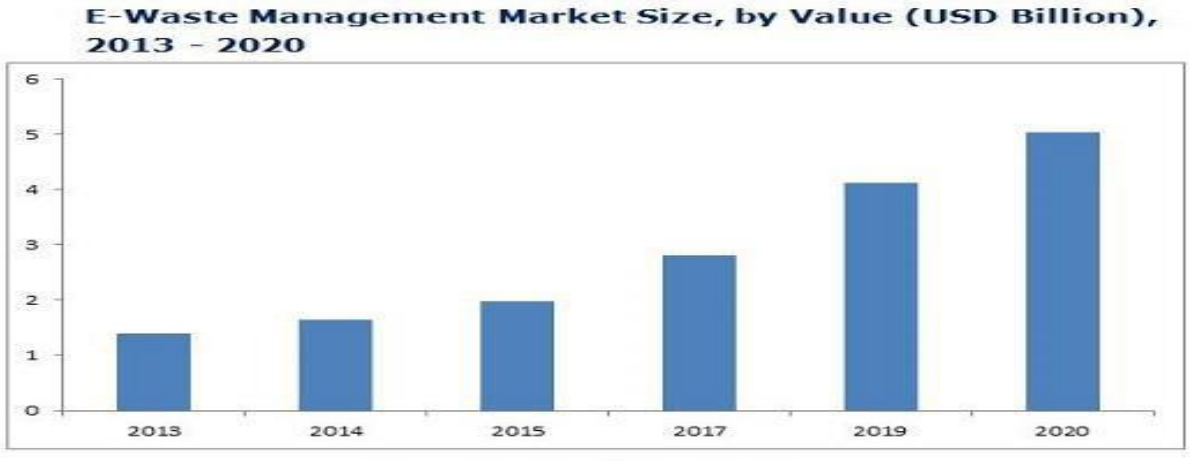

Fig 1: Statistics of E-waste Management

9. CONCLUSION AND SUGGESTIONS:

Electronic waste (or e-waste) is the fastest growing waste stream, and its disposal is a major environmental concern in all parts of the world. More than 50 million tons of e-waste is generated every year with major fraction finding its way to landfills and dumpsites. A continuing rise in the rate of waste production is no longer acceptable – hazardous waste affects the health of millions of people and poisons large areas of our planet. In many places people live surrounded by garbage and landfills. It is essential that governments and corporations face up to waste, using what we know about reduction, recycling and reuse, but also developing new technologies that eliminate waste.

10. SUGGESTIOM TO DECREASE E-WASTE MANAGEMENT:

Minimizing e-waste helps to conserve resources and reduces the amount of energy we take from the earth. Reusing the precious metals and plastics in old cell phones alone instead of making or mining more of them would save as much energy as flipping off the power to 24,000 US homes for an entire year. The typical American household has 24 electronic devices and in 2009 the EPA estimated that there are 2.37 million tons worth of electronics ready to be disposed of. This would fill almost five football stadiums!

- **Re-evaluate.** Do you really need that extra gadget? Try finding one device with multiple functions.
- **Extend the life of your electronics.** Buy a case, keep your device clean, and avoid overcharging the battery.
- **Buy environmentally friendly electronics.** Look for products labeled Energy Star or certified by the Electronic Product Environmental Assessment Tool.
- **Donate used electronics to social programs** and help victims of domestic violence, children safety initiatives, environmental causes, and more. Ask your student REP for a postage paid mailer for your cell phone or ink cartridge. For each item received, the World Wildlife Fund will receive one dollar.
- **Recycle electronics and batteries in e-waste recycling bins located around campus.** Large electronics can go in the larger bins found in your building.

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