

## **Aspects of E-Waste Management in India**

**G. Ramesh Pandi**

### **Abstract**

Waste of all sorts put together is a major cause of global warming and electronic (e-waste) is one of its biggest contributors. It is because of electronic revolution the globe has become a village. Therefore, we must look at the problem of e-waste in the perception. Electronic waste, generally known as 'e-waste' can be described as end-of-life electronic appliances /electronic equipment / products such as Discarded computers, televisions, VCRs, stereos, copiers, fax machines, electric lamps, cell phones, etc. which have been disposed by actual users because of outmoded due to improvement in technology, changes in fashion, style and status.

**Key Words:** Technology, pollution, threatening, recycling

### **Introduction**

Human beings life is changed owing to advances in the information technology in last century. Even though it's great benefits, in the current situation it leads to create the problem of contagion, and pollution. E-Waste contains hazardous effects which threatening to human health and the ecology resources. In the present era the management of e- waste is a difficult task. But government, NGOs, pollution control boards are advised to take immediate steps for disposal and recycling of e- waste.

### **E-waste in Indian Scenario**

The total generation e- waste of India is 146000 tones per year. Among them the top states are Andhra Pradesh, Tamil Nadu, Maharashtra, West Bengal, Uttar Pradesh, Karnataka,

Gujarat, Madhya Pradesh and Punjab. A recent survey reveals the fact that nearly 80000 lakh tones of e-waste will be generated in India by end of 2012.

Electronic waste or e-waste is one of the rapidly growing environmental problems of the world. In India, the electronic waste management assumes greater significance not only due to the generation of our own waste but also dumping of e-waste particularly computer waste from the developed countries.

Mumbai, Delhi, Bangalore, Chennai, Kolkatta, Ahmadabad, Hyderabad, Pune, Surat and Nagpur are the largest generators of e- waste in India, the projected figure of 30,000 computers become obsolete every year from the IT Industry in Bangalore alone. . Almost 50 per cent of the Pac's sold in India are products from the secondary market and are re-assembled on old components. The remaining market share is covered by multinational manufacturers (30per cent) and Indian brands (22 per cent).

There is an estimate that the total obsolete computers originating from government offices, business houses, industries and household is of the order of 2 million nos. Manufactures and assemblers in a single calendar year, estimated to produce around 1200 tons of electronic scrap.

### **Problems of E- Waste**

E-Waste affects environment and human health in the following way.

Disposal of e-wastes is a particular problem faced in many regions across the globe. Computer wastes that are land filled produces contaminated lichgates which eventually pollute the groundwater. Acids and sludge obtained from melting computer chips are disposed on the ground, which causes the acidification of soil.

**Engineering & Technology in India** [www.engineeringandtechnologyinindia.com](http://www.engineeringandtechnologyinindia.com)

**ISSN 2472-8640** 1:5 December 2016

**Dr. C. Swarnalatha, Ph.D. (Ed.) Entrepreneurship and Management:**

**Innovative Construction Techniques and Ecological Development. *Vol. 1 Management***

G. Ramesh Pandi

Aspects of E-Waste Management in India

Now water is being transported from faraway towns to cater to the demands of the population. Incineration of e-wastes can emit toxic fumes and gases, thereby polluting the surrounding air. Improperly monitored landfills can cause environmental hazards. Mercury will leach when certain electronic devices, such as circuit breakers are destroyed. Not only does the leaching of mercury poses specific problems, the vaporization of metallic mercury and dim ethylene mercury, both part of Waste Electrical and Electronic Equipment is also of concern. In addition, uncontrolled fires may arise at landfills and this could be a frequent occurrence in many countries. The most dangerous form of burning e-waste is the open-air burning of plastics in order to recover copper and other metals. The toxic fall-out from open air burning affects both the local environment and broader global air currents, depositing highly toxic by products in many places throughout the world (including India).

Electronic items are discarded with other household garbage; the toxics pose a threat to both health and vital components of the ecosystem. In view of the ill-effects of hazardous wastes to both environment and health, several countries exhorted the need for a global agreement to address the problems and challenges posed by hazardous waste. Also, in the late 1980s, a tightening of environmental regulations in industrialized countries led to a dramatic rise in the cost of hazardous waste disposal. Searching for cheaper ways to get rid of the wastes, "toxic traders" began shipping hazardous waste to developing countries. Lead exerts toxic effects on various systems in the body such as the central and peripheral nervous system and the reproductive systems for both male and female. Cadmium components accumulate in the body, especially in the kidneys, and there is evidence of its role in carcinogenicity. Polycyclic hydrocarbons affect the lungs, skin and bladder.

### **Disposal and Recycling of E- Waste**

The framework of extended producer's responsibility shifts the responsibility of safe disposal on to the producers. So it will be recycled in an environmental friendly manner. Recycling can be defined as the assembling, developing promoting or buying of new products,

**Engineering & Technology in India** [www.engineeringandtechnologyinindia.com](http://www.engineeringandtechnologyinindia.com)

**ISSN 2472-8640** 1:5 December 2016

**Dr. C. Swarnalatha, Ph.D. (Ed.) Entrepreneurship and Management:**

**Innovative Construction Techniques and Ecological Development. *Vol. 1 Management***

G. Ramesh Pandi

Aspects of E-Waste Management in India

which are prepared from waste materials. This exercise also reduces litter and the costs of solid waste disposal.

In the past, when pots were broken, they are not thrown away. The broken pots were then crushed into fine clay powder. That improved clay was used to make striking and fine-looking new pots. Today, we use many materials once, and then consider them as waste. Our task now is to develop the age-old art of recycling exercises by our forefathers.

The government, industry, users and NGOs have taken notice of the growing hazards of e-waste and there is consensus that recycling and resource recovery has to be environmentally compatible.

### **Recycle Player in India**

Formal e-waste recyclers are in a nascent stage, with the first ones being established in Bangalore. Currently, the collection, dismantling and recovery are done entirely by a well established network in the informal sector. Even though the sector creates substantial value add, especially by collecting and repairing disused equipment, some recovery process employed is extremely dangerous

Recycling of hazardous products has little environmental benefit if it simply moves the hazards into secondary products that eventually have to be disposed of. Unless the goal is to redesign the product to use no hazardous materials, such recycling is a false solution.

Corporations should treat e-waste differently like bio-medical waste. At present only 3 per cent of e-waste is reached to the recycler. They should put separate collection banks of e-waste in every nook and corner of the cities for the public to drop unused electronic gadgets in the basket. Finally, it is suggested that major municipal corporations should take the responsibility of collecting e-waste directly from consumers to be handed over to a recycler.

### **Stakeholders Involvement in E-Waste**

**Engineering & Technology in India** [www.engineeringandtechnologyinindia.com](http://www.engineeringandtechnologyinindia.com)

ISSN 2472-8640 1:5 December 2016

**Dr. C. Swarnalatha, Ph.D. (Ed.) Entrepreneurship and Management:**

**Innovative Construction Techniques and Ecological Development. *Vol. 1 Management***

G. Ramesh Pandi

Aspects of E-Waste Management in India

Stakeholders are manufacturers, users, recyclers, government, and public. There is an urgent need to bring together all the stakeholders and engage them in a debate to find sustainable solutions.

### **Management of E-Waste**

It is estimated that 75% of electronic items are stored due to uncertainty of how to manage it. These electronic junks lie unattended in houses, offices, warehouses etc. and normally mixed with household wastes, which are finally disposed off at landfills. This necessitates implementable management measures. In industries management of e-waste should begin at the point of generation. This can be done by waste minimization techniques and by sustainable product design. Waste minimization in industries involves adopting:

- ❖ Inventory management,
- ❖ Production-process modification,
- ❖ Volume reduction,
- ❖ Recovery and reuse.

### **Inventory Management**

Proper control over the materials used in the manufacturing process is an important way to reduce waste generation (Freeman, 1989). By reducing both the quantity of hazardous materials used in the process and the amount of excess raw materials in stock, the quantity of waste generated can be reduced. This can be done in two ways i.e. establishing material-purchase review and control procedures and inventory tracking system.

### **Production Process Modification**

Changes can be made in the production process, which will reduce waste generation. This reduction can be accomplished by changing the materials used to make the product or by the more efficient use of input materials in the production process or both. Potential waste minimization techniques can be broken down into three categories:

1. Improved operating and maintenance procedures,

**Engineering & Technology in India** [www.engineeringandtechnologyinindia.com](http://www.engineeringandtechnologyinindia.com)

**ISSN 2472-8640** 1:5 December 2016

**Dr. C. Swarnalatha, Ph.D. (Ed.) Entrepreneurship and Management:**

**Innovative Construction Techniques and Ecological Development. *Vol. 1 Management***

G. Ramesh Pandi

Aspects of E-Waste Management in India

2. Material change and
3. Process-equipment modification.

### **Volume Reduction**

Volume reduction includes those techniques that remove the hazardous portion of a waste from a non-hazardous portion. These techniques are usually to reduce the volume, and thus the cost of disposing of a waste material. The techniques that can be used to reduce waste-stream volume

### **Recovery and Reuse**

This technique could eliminate waste disposal costs, reduce raw material costs and provide income from a salable waste. Waste can be recovered on-site, or at an off-site recovery facility, or through inter industry exchange..

However recycling of hazardous products has little environmental benefit if it simply moves the hazards into secondary products that eventually have to be disposed of. Unless the goal is to redesign the product to use no hazardous materials, such recycling is a false solution.

### **Legislation for E-Waste Management**

The government of India has enacted the following legislations for e-waste management. They are

- The Municipal Solid Wastes (Management and Handling) rules,2000
- The Hazardous Wastes (Management and Handling) Rules,2003
- The Draft Hazardous Materials (Management, Handling and Tran boundary Movement) Rules, 2007.

These laws cover generation, storage, transportation and disposal of hazardous waste in India.

### **Suggestions for Reduction of E-Waste**

**Engineering & Technology in India** [www.engineeringandtechnologyinindia.com](http://www.engineeringandtechnologyinindia.com)

ISSN 2472-8640 1:5 December 2016

**Dr. C. Swarnalatha, Ph.D. (Ed.) Entrepreneurship and Management:**

**Innovative Construction Techniques and Ecological Development. *Vol. 1 Management***

G. Ramesh Pandi

Aspects of E-Waste Management in India

The way it is being dealt with presently is very harmful to the lives of the stakeholders and for the people residing in the neighboring areas. Use of acid, land and water fill and incineration process to destroy and dump waste lead to generation of carbon dioxide and other harmful gases. Since the same can be done in an environment friendly manner, the government should promote such initiatives by offering certain incentives to this industry like infrastructure status, tax rebate, concessional loan, free land higher depreciation, carbon credit etc.. to the entities having required know how and infrastructure to deal with the same. In our opinion, we need to work fast on two fronts- one to streamline the local business that includes collection, logistics, recycling process, authorization and administration of processing facilities and second to attract international business and make India a global hub for recycling of e-waste. For this, administration must have liberal policies of allowing import with the only objective to recycle in India and that too the designated facilities.

## Conclusion

Finally, we appeal to all the users of electrical and electronic equipments not to discard e-waste to the unorganized facilities until the administrative guidelines are in place and procedures are laid down for the generators and recyclers both. We are confident that the same may happen soon since practically all the environment conscious nations have framed their policies or working on the same. We expect similar initiatives from the administration of our country. The Central Pollution Control Board (CPCB) has taken certain initiatives in this direction and suggested guidelines. We are confident that the same may become reality soon.

We are sure that in the interest of environment, ecology and health, everyone would subscribe to our views. We request all the stakeholders to work as an eco-socio friend of the society.

---

## References

- <https://hbswk.hbs.edu/item/what-is-managements-role-in-innovation>
- <https://www.worldscientific.com> › All Publications › All Journals

**Engineering & Technology in India** [www.engineeringandtechnologyinindia.com](http://www.engineeringandtechnologyinindia.com)  
ISSN 2472-8640 1:5 December 2016

**Dr. C. Swarnalatha, Ph.D. (Ed.) Entrepreneurship and Management:  
Innovative Construction Techniques and Ecological Development. Vol. 1 Management**  
G. Ramesh Pandi  
Aspects of E-Waste Management in India

- <https://icc.oxfordjournals.org> › ... › *Social Sciences* › *Industrial and Corporate Change*
- <https://citycollege.sheffield.eu/.../articles.php?...Business-Management-Technology...Innovat...>

**Engineering & Technology in India** [www.engineeringandtechnologyinindia.com](http://www.engineeringandtechnologyinindia.com)

**ISSN 2472-8640** 1:5 December 2016

**Dr. C. Swarnalatha, Ph.D. (Ed.) Entrepreneurship and Management:**

**Innovative Construction Techniques and Ecological Development. *Vol. 1 Management***

G. Ramesh Pandi

Aspects of E-Waste Management in India



---

G. Ramesh Pandi  
Assistant Professor  
Department of Commerce  
Kalasalingam University  
Krishnankoil 626126  
Tamilnadu  
India  
[g.ramesh.jith@gmail.com](mailto:g.ramesh.jith@gmail.com)

**Engineering & Technology in India** [www.engineeringandtechnologyinindia.com](http://www.engineeringandtechnologyinindia.com)

**ISSN 2472-8640** 1:5 December 2016

**Dr. C. Swarnalatha, Ph.D. (Ed.) Entrepreneurship and Management:  
Innovative Construction Techniques and Ecological Development. *Vol. 1 Management***

G. Ramesh Pandi

Aspects of E-Waste Management in India