

GOVERNMENT DEGREE COLLEGE, KHAIRATABAD

Affiliated to Osmania University

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STUDENT STUDY PROJECT

ELECTRONIC WASTE MANAGEMENT IN INDIA

CURRENT PRACTICES & CHALLENGES

2021-22

Under the supervision of

K.HARIKA

Lecturer in Physics

Submitted by

- | | | |
|------------------------|--------------------|-----------------------------|
| 1) 114020441025 | G.Sainath | B.SC (M.P.C) II YEAR |
| 2) 114020441040 | p.Denesh | B.SC (M.P.C) II YEAR |
| 3) 114020441038 | N.Madhubabu | B.SC (M.P.C) II YEAR |
| 4) 114020441028 | G.Sidhu | B.SC (M.P.C) II YEAR |
| 5) 114020441031 | K.Srikanth | B.SC (M.P.C) II YEAR |

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Student Signatures:

1. Sainath
2. P. Deneeth
3. Madhubabu
4. Sst
5. Sri Deevi

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HYDERABAD

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CERTIFICATE

This is to certify that _____

Roll No: _____

of Government Degree College, Khairatabad, Hyderabad submitted the Project Work
on "ELECTRONIC WASTE MANAGEMENT IN INDIA CURRENT PRACTICES & CHALLENGES"
to **STUDENT STUDY PROJECT 2021-22.**

Department of Physics

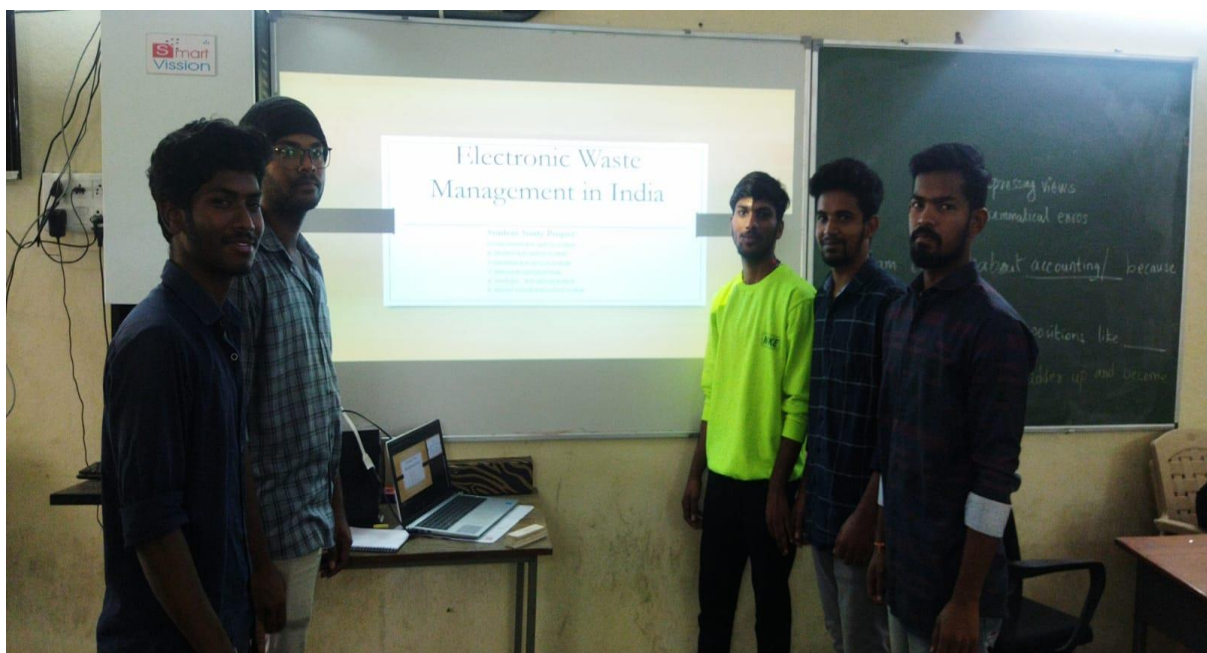
Principal

TABLE OF CONTENTS

- 1) ABSTRACT
- 2) INTRODUCTION
- 3) SOURCE OF E-WASTE IN INDIA
- 4) E-WASTE MANAGEMENT IN INDIA
- 5) E-WASTE GENERATION IN INDIA
- 6) FUTURE ESTIMATE OF E-WASTE IN INDIA
- 7) CHALLENGES OF E-WASTE CONCERN
- 8) CONCLUSION

Abstract:

Electronic waste or e-waste refers to unwanted, obsolete or unusable electronic and electrical products. Ever increasing usage of electronics and electrical equipment all has resulted in piling up of e-waste. The current practices of e-waste management in India encounters many challenges like the difficulty in inventorisation, ineffective regulations, pathetic and unsafe conditions of informal recycling, poor awareness of consumers and averseness on the part of the stakeholders to address the issues. India is also facing the problem of e-waste management due to lack of awareness among people about dangerous effects of e-waste on the environment and human being through informal e-waste collection and absence of implementation of rules for the process of e-waste in environment friendly manner. The project focusses the position of e-waste in India, the problem associated with it and method used for e-waste management in India.



Introduction.

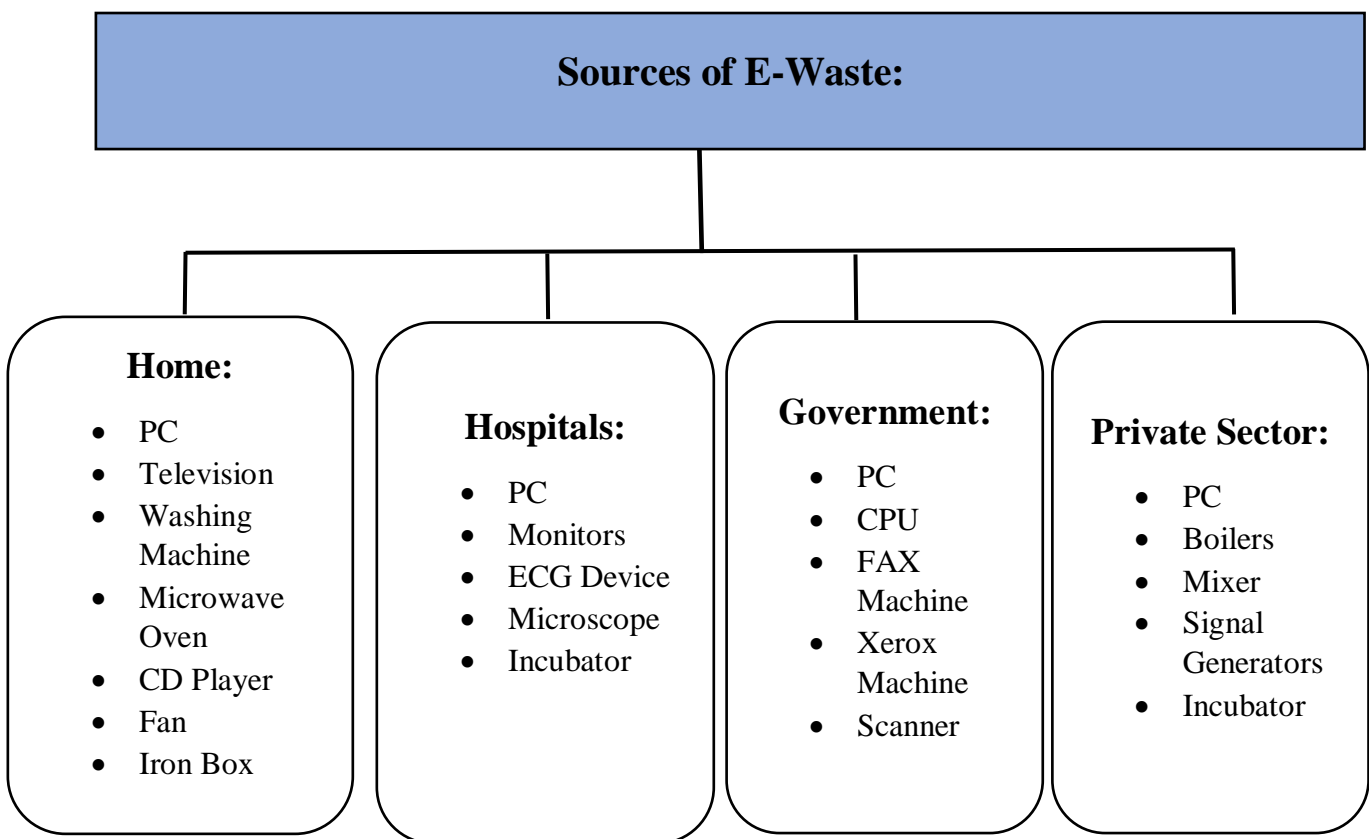
E-waste comprises of waste generated from used electronic devices and household appliances which are not fit for their original future use and are intended for recovery, recycling or disposal. Such wastes encompass wide range of electrical and electronic devices such as computers, handheld cellular phones, personal stereos, including large household appliances such as refrigerators, air conditioners etc. E-waste contain over 1000 different substances many of which are toxic and potentially hazardous to environment and human health.

The last decade has seen a tremendous growth in the manufacturing and consumption of electronic and electrical equipment all over the world. Because of this, combined with rapid product obsolescence, and lower costs, discarded electronic and electrical equipment or 'E-waste' is now the most rapidly growing waste problem in the world. Most companies today design their products for planned or perceived obsolescence. This is reinforced through marketing and retailing practices, and affordability and convenience have taken over from product durability as primary drivers. E-waste is an emerging problem as well as a business opportunity of increasing significance, given the volumes of E-waste being generated and the content of both toxic and valuable materials in them. The fraction including iron, copper, aluminium, gold and other metals in E-waste is over 60%, while pollutants comprise 2.70%. Therefore, recycling of E-waste is an important subject not only from the point of waste treatment but also from the recovery aspect of valuable materials. However, the process of take-back and disposal of E-waste is very complex, which involves various kinds of products, many people and enterprises, extensive areas, and long-time span (sometimes is even over ten years), it is a huge and complicated system. Electronic waste especially computer waste is growing exponentially in volume because of increasing demand of information technology and its application in the national growth process. Various government department, public as well as private sectors are fast feeding old electronics appliances such as computers, telephones, etc., into the waste stream.

Source of E-waste in India.

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.

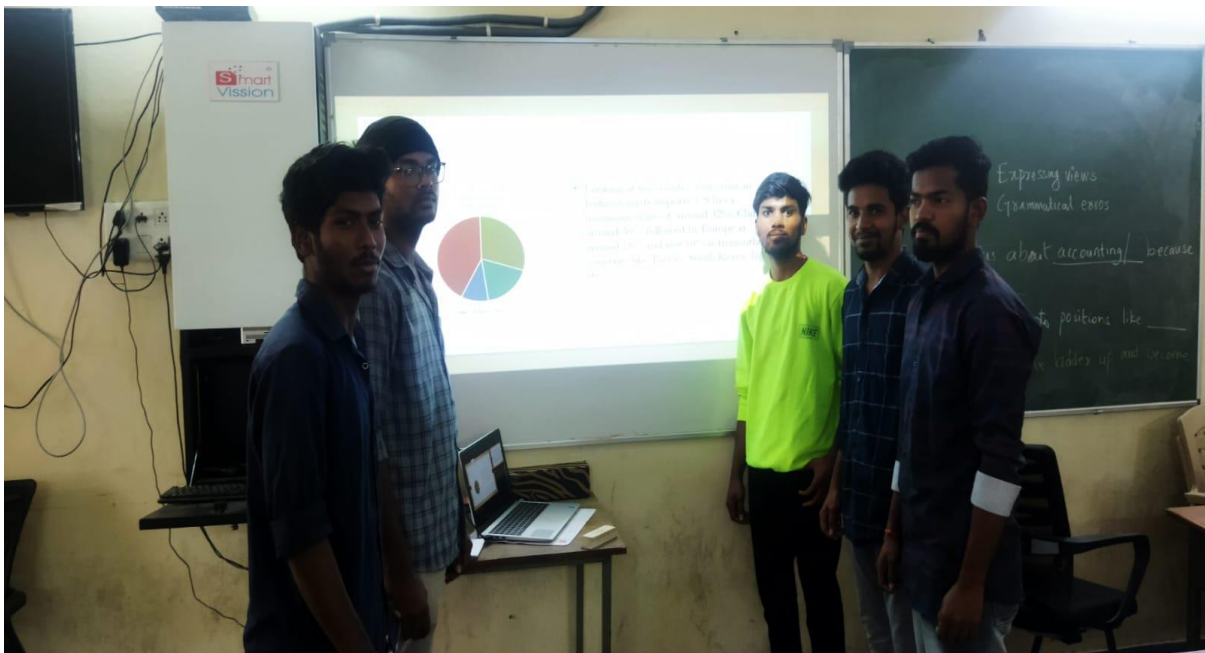
Figure 1. Block diagram of sources of e-waste in India.



- Individual household and small business as far as PCs emanating from individual households are concerned; it is difficult to know the exact quantity. Individual households are not major contributors in India. They account for 22% of total computers in India. The rest of share, that is 78%, comes from the business sector.
- Large business, institutions, government house and foreign embassies were the earliest users of electronic products; today they account for 78 per cent of total installed PCs. Hence, they are the major producers of obsolete technology in India. It

is observed that the total number of obsolete PCs emanating from business as well as from individual households will be around 1.38 million.

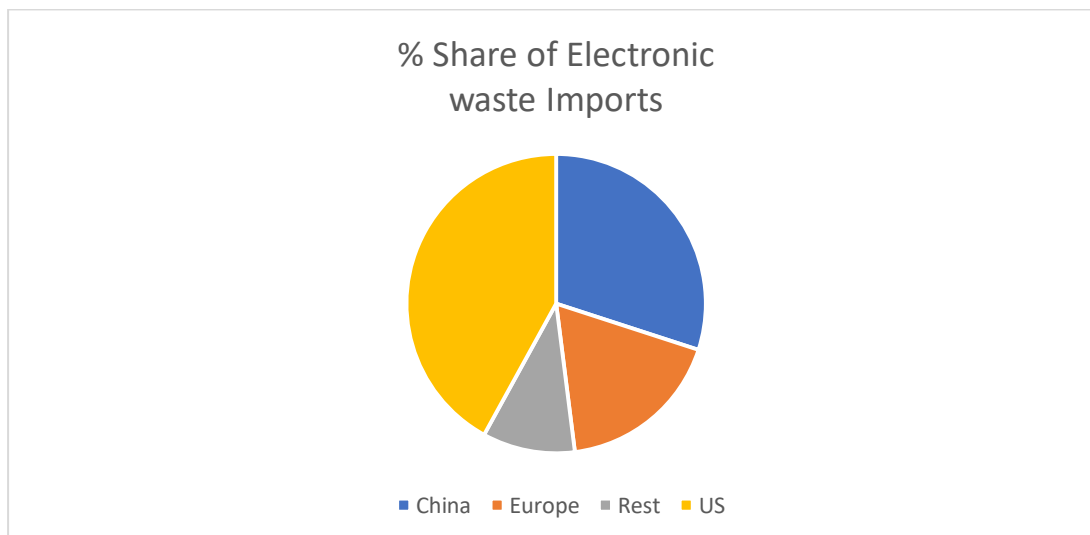
- PC manufacturers and retailers are next on the list of contributors to the e-waste segment in India. The waste from this sector comprises defective IC chips, motherboards, cathode ray tubes and other peripheral items produced during the production process. It also includes defective PCs under guarantee procured from consumer as replacement items. It is estimated that around 1050 tons per year of waste comes from this sector.
- E waste from imports has been biggest sources of PC scrap are imports. Huge quantities of e-waste such as monitors, printers, keyboards, CPU's, projectors, mobile phones, PVC wires, etc. are imported. The computers thus imported are of all ranges, models and sizes, and functional as well as junk materials.
- Secondary market waste includes TV, computers, mobiles, electric boards etc.



E-Waste Management in India.

India is the fifth biggest producer of e-waste in the world; discarding 1.7 million tonnes (Mt) of electronic and electrical equipment in 2014 (Economic Times, 2015). In India e-waste collection, transportation, segregation, dismantling, recycling and disposal is done manually by untrained labours in informal sector. Due to low awareness and sensitization, e-waste is terrified along with garbage which is collected and segregated by rag pickers. E-waste contains reusable and precious material. Rag pickers sell this e-waste to scrap dealers and run their livelihood. The scrap dealers supply the e-waste to recycling industries. The recyclers use old and hazardous technologies and equipment, to recycle/treat the e-waste. India produces nearly 12.5 lakh MTs of e-waste every year, India ranks 155 out of 178 nations in environmental performance index. It also ranks poorly in various indicators like 127 in health hazards, 174 in air quality, 124 in water and sanitization. environmentally sound management (ESM) of e-waste will also improve ranking of India in these areas. India is being used as dumping ground of e-waste by many developed nations.

Figure2. Shows % share of e-waste imports in India from different countries.



Looking at the country-wise share in India's e-waste imports, US has a maximum share of around 42%, China at around 30% followed by Europe at around 18% and rest 10% is from other countries like Taiwan, South Korea, Japan etc.

Table 1.1. E-waste Generation in India.

Sr. No.	State	E-Waste Generated in MTA	Metropolitan Cities and others	E-waste Generated in MTA
1	Maharashtra	20270.59	Mumbai	11017.1
2	Tamil Nadu	13486.24	Delhi	9729.15
3	Andhra Pradesh	12780.33	Bengaluru	4648.4
4	Uttar Pradesh	10381.11	Chennai	4132.2
5	West Bengal	10059.36	Kolkata	4025.3
6	Delhi	9729.15	Ahmadabad	3287.5
7	Karnataka	9118.74	Hyderabad	2833.5
8	Gujarat	8994.33	Pune	2584.2
9	Madhya Pradesh	7800.62	Surat	1836.5
10	Punjab	6958.46	Nagpur	1768.9

Table 1.1 shows top ten states and cities producing e-waste in India. The 70% e-waste produced in the country is being produced by ten states only and 60% by 65 cities (Rajya Sabha, 2011). The growth rate of discarded electronic waste is high in India since it has emerged as an Information Technology giant and due to modernization of using electronic products for last 60 years; however, there is no proper disposal system followed in our country that has led to an enormous amount of e-waste. As there is no separate collection of e-waste, no reliable figures are available yet to quantify the e-waste generation. In India, most of the operations related to e-waste such collections, segregation, dismantling, recycling, and disposals are performed manually. In the absence of the adequate technologies and equipment, most of the techniques used for the recycling/treatments of e-waste are very raw and dangerous.

Future Estimate of E-Waste in India.

According to the report of UNEP, by 2020, the e-waste from old computer would grow by up to 500% from 2007 levels in India while South Africa and China will witness a 200-400% rise in computer related waste. The e-waste from discarded phone in India will grow by eighteen times from 2007 levels, whereas in China it is estimated to see a seven time rise in electronic waste from mobile phones.

An assessment conducted by the Manufacturers Association of Information Technology (MAIT) Indian hardware trade organization state that India produces almost 4, 00,000 tonnes of e-waste each year. Out of the country's total e-waste only 5 percent is recycled and about 40 percent of obsolete and unused computers and electronic products decay in homes and warehouses. Due to faster rate of newer model of electronic entering in the market, the e-waste is growing in Indian market at an alarming rate.

Challenges of E-waste Concern.

- 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 with e-waste management.

Conclusion.

It is fact that the e-waste generation is increasing very fast due to obsolescence of the electrical and electronic equipment (EEE). People either store the obsolete equipment in their home or sell it to the local collectors for monetary benefits. Presently there is no legislative binding framework for e-waste management. In view of that there is no e-waste collection mechanism at places. E-waste collection, transportation, segregation, dismantling, recycling and disposal is done manually by untrained labours in informal sector due to low awareness and sensitivity. With a view to bridge the digital divide, there is exponential growth in the use of electrical and electronic equipment (EEE) and so there is an alarming effect on the environment and human health when the ICT wastes are not disposed of scientifically. The legislative work regarding e-waste had been doing lately in time and is not performing well. Therefore, the awareness of people about e-waste need to be increased and the rules should be properly implemented to control the rise in e-waste in future. There is an emergent need to have a proper information system through standardized mechanisms and existing policies, guidelines in line with the international standards and practices for a healthy e-waste management system.