

M.Sc. 2nd sem

SEC-201

Unit-1

E-waste Management

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**DID YOU
KNOW ?**

What is E-waste ?

E-waste consist of Wastes generated from used IT, Electronic and Electrical appliances such as Computer Monitor, CPU, Printer, Hard disk etc which are rejected and not fit for their original use and are destined to Recycling or Disposal.



**TODAY'S ELECTRONIC
GADGETS,
TOMORROW'S ELECTRONIC
WASTES!!!**

Less pollution is
the best solution



□ CONTENT

- INTRODUCTION
- MEANING OF E-WASTE
- E-WASTE MANAGEMENT
- SOURCES OF E-WASTE
- PROBLEMS OF E-WASTE
- E-WASTE TECHNIQUES
- E-WASTE RECYCLING
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❑ INTRODUCTION

- Total No. of PC users in India is Over 80 Million.
- Total No. of MOBILE users in India
- India has 554.8 million mobile users.
- These users actively use 643.4 million SIMs actively.



□ E-WASTE MANAGEMENT

- E-waste management is also called urban mining.
- It is the process of extracting the parts out of the e-waste to either sell or reuse.
- The major components of E-waste Management are
 - E-waste collection, sorting and transportation.
 - E-waste recycling.

□ SOURCES OF E-WASTE



- IT and Telecom Equipment's
- Large Household Appliances
- Small Household Appliances
- Consumer & Lighting Equipment's
- Electrical & Electronic Tools
- Toys, Leisure & Sports Equipment
- Medical Devices
- Monitoring & Control Instruments

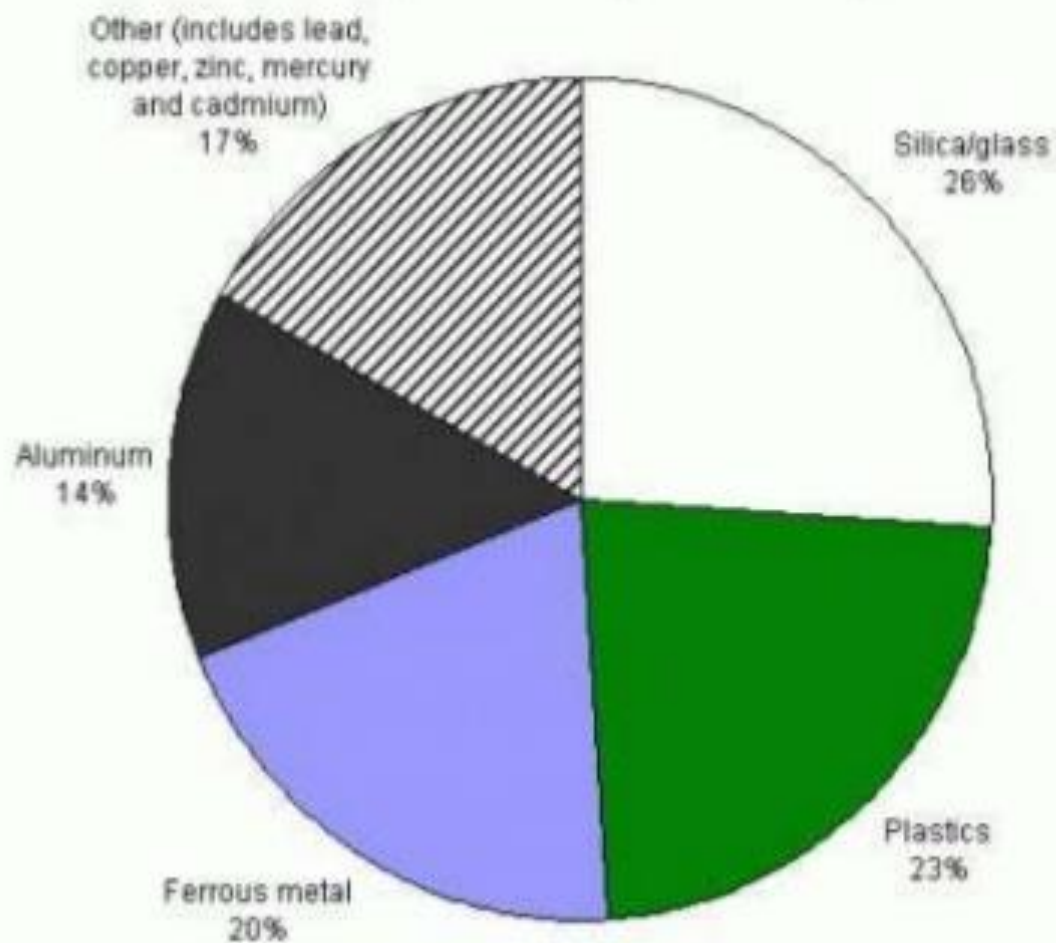
□ PROBLEMS OF E-WASTE



I. ENVIRONMENTAL EFFECTS

- The toxic materials from electronic devices are released into bodies of water, groundwater, soil and air, affecting both land and sea animals.
- When e-waste is warmed up, toxic chemicals are released into the air damaging the atmosphere.

Material composition of personal computers



Source: Environment Canada.

II. TONS E-WASTE IS SHIPPED OVERSEAS

- Much of this left in junkyard to pollute the environment or burned for scrap by kids. Informal recycling markets in China, India, Pakistan, Vietnam, and Philippines handle anywhere from 50 per cent to 80 per cent of the world's e-waste.
- When electronic devices are dumped in these developing countries the impact is detrimental to the environment of the country and the health of the people.

III. HEALTH IMPLICANT OF E-WASTE

- Computers and most electronics contain toxic materials such as lead, zinc, nickel, barium and chromium, specifically with lead, if released is not the environment can cause damage to human blood, kidneys, as well as central and peripheral nervous systems. Residents of Guiyu, China exhibit substantial digestive, neurological, respiratory and bone problems. The impact of electronic waste is detrimental to the health of the people in these developing countries.



Impact of e-waste on Human Life

In addition to its damaging effect on the environment and its illegal use into developing countries, researchers have now linked e-waste to adverse effects on human health, such as inflammation and oxidative stress -- Leads to Heart disease, DNA damage and possibly cancer.

Type of e-wastes

IT and telecommunication Devices: -

1. Personal Computers (CPU with input and output devices)
2. Laptop (CPU with input and output devices)
3. Printers including cartridges
4. Electrical and electronic typewriters
5. Pocket and desk calculators
6. And other products and equipment for the collection, storage, processing, presentation or communication of information by electronic means
7. User terminals and systems
8. Facsimile
9. Telex
10. Telephones
11. Pay telephones
12. Cordless telephones
13. Cellular telephones
14. Answering systems etc...

Consumer Electrical & Electronics:-

- Television sets (including LCD & LED)
- Refrigerator
- Washing Machine
- Air-conditioners
- Microwave

Current Disposal Techniques

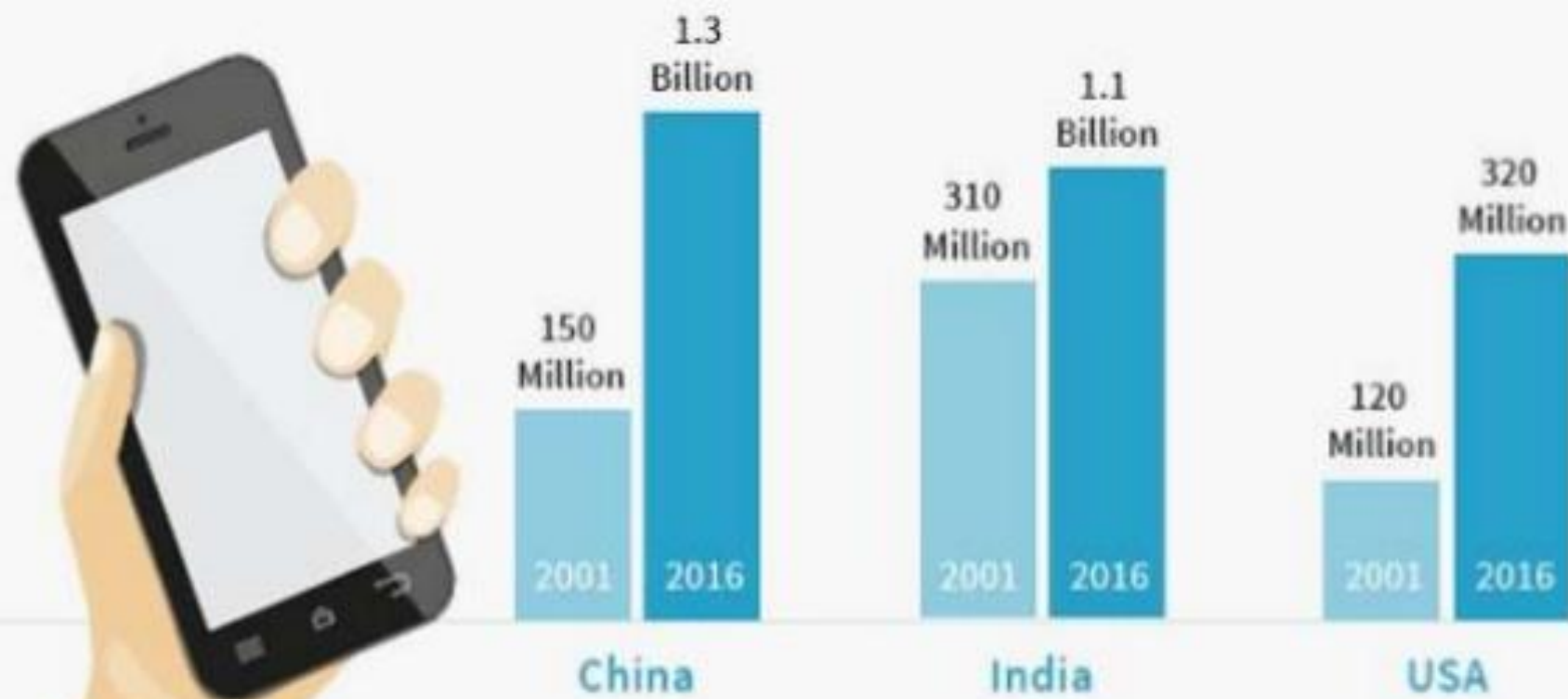
In India Scrap Workers are using Unsystematic manner for the disposal of e-waste which is a dangerous practice for Environment.



10-Year-Old Asif washes Motherboards ripped of gold and silver in the banks of Ganga River. He will sell it as plastic scrap Rs. 2 per kg.



Countries With Biggest Number Of Mobile Phone Users



□ E-WASTE TECHNIQUES



2. DONATE YOUR E-WASTE

- Give away or donate your e-waste.
- If you don't need a thing, donate it so someone else can use it. Donations are great for tax deductions; often the amount will be close to the value of the item if you tried to sell it.
- If something you have isn't worth donating, maybe give your stuff away for free on sites like Free Cycle.

3. TAKE THEM BACK TO THE STORE

- A few stores have a buy-back program. Before you purchase a new gadget at a store, ask the store if they'll buy back your old camera, laptop, or any other electronic. Best Buy has a trade-in-OPTION, where you can get rid of your old equipment in exchange for Best Buy gift cards.



Human Liability

- Social Responsibility
- Secure Data Destruction
- Valuable Space
- Legal Responsibility

Rule of Consumer or Bulk Consumer

- Consumer or Bulk Consumer of electrical and electronic equipment listed in Schedule 1 shall ensure that e-waste generated by them is channelized to authorized collection center or registered dismantles or recyclers or is returned to the pick-up or take back services provided by the producers.
- Bulk consumers shall maintain records of e-waste generated by them in Form 2 and make such records available for scrutiny by the State Pollution Control or the Pollution Control Committee Concerned.

Non-Compliance

- Delivery or Handing over of e-waste to any unauthorized agency is a **criminal offence** under EPA 1986
- The Notification of e-waste rules has already come into force w.e.f. **May 1st 2012**
- Imprisonment for a term which may extend to five years with fine which may extend to one Lakh rupees.

Procedure of Disposal

- Identifying the Right Recycler/agency.
- Having an Agreement With Agency.
- Request for Pick-up of a E-waste.
- Having Form 13 against Pick-up of E-waste.
- Verification of Disposal.
- Form 2 Entry.
- Recycling Certificate with Photo Copy.
- Entry of disposal e-waste in Passbook.

❖ E-WASTE RECYCLING

- E-waste recycling is the reuse and reprocessing of electrical and electronic equipment of any type that has been discarded or regarded as obsolete.
- Recycling of e-waste is a growing trend and was initiated to protect human and environmental health mainly due to the widespread environmental pollution impacts of e-waste.

e-waste recycling



Accepted items ✓



Computers,
laptops, monitors
and accessories



Mobile phones,
tablets and
sat navs



Printers, fax
machines and
cameras



Handheld devices
and headphones



IT cords and
cables



Small
appliances

Not accepted ✗



**No general
waste
accepted**

The items below can be taken
to the Port Phillip Resource
Recovery Centre for recycling.



Batteries



Light bulbs

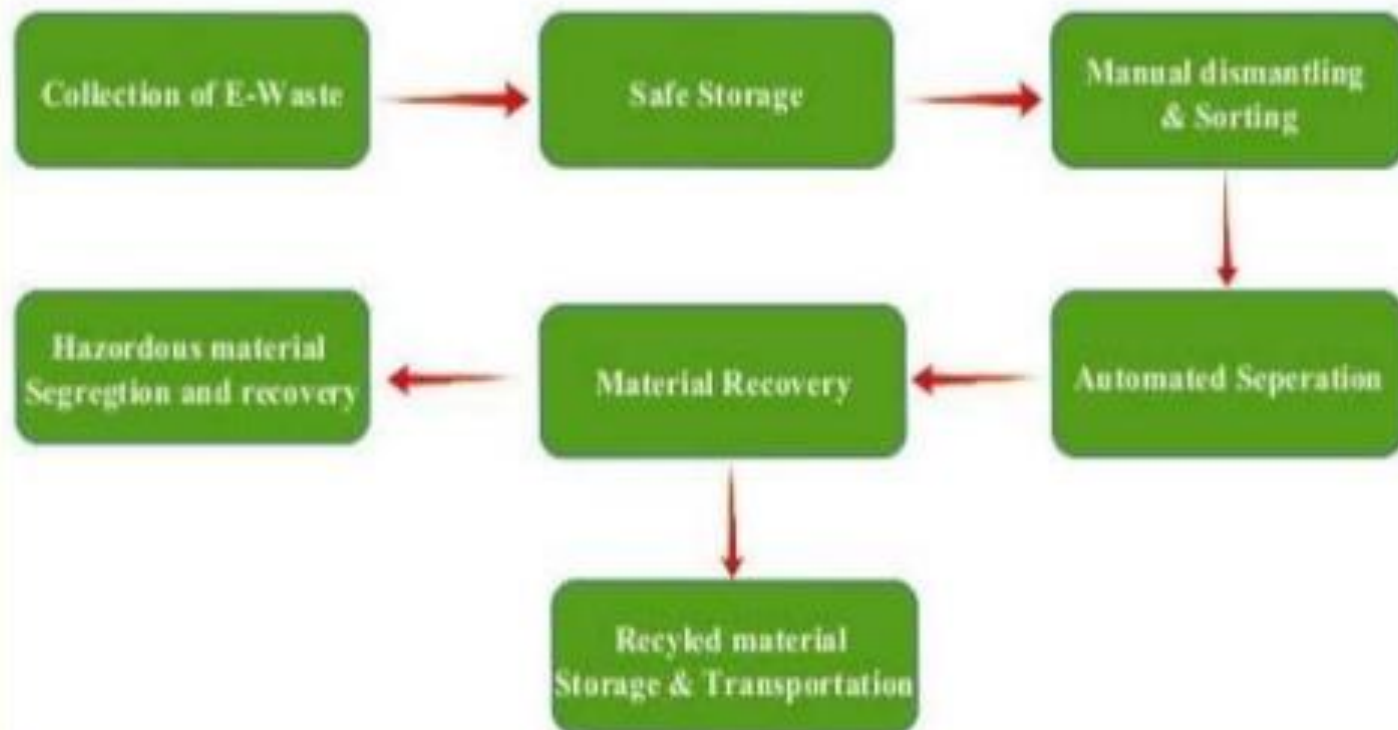


Large televisions



Large appliances

❖ PROCESS OF E-WASTE RECYCLING



Benefits of Recycling

Our purpose is to provide environmentally sound, innovative and economic electronic waste recycling solutions to our community. We strive to provide green alternatives for today's electronic assets management dilemma and to promote policy changes that benefit the environment, health, and economy through safe disposal and recycling of electronic goods.

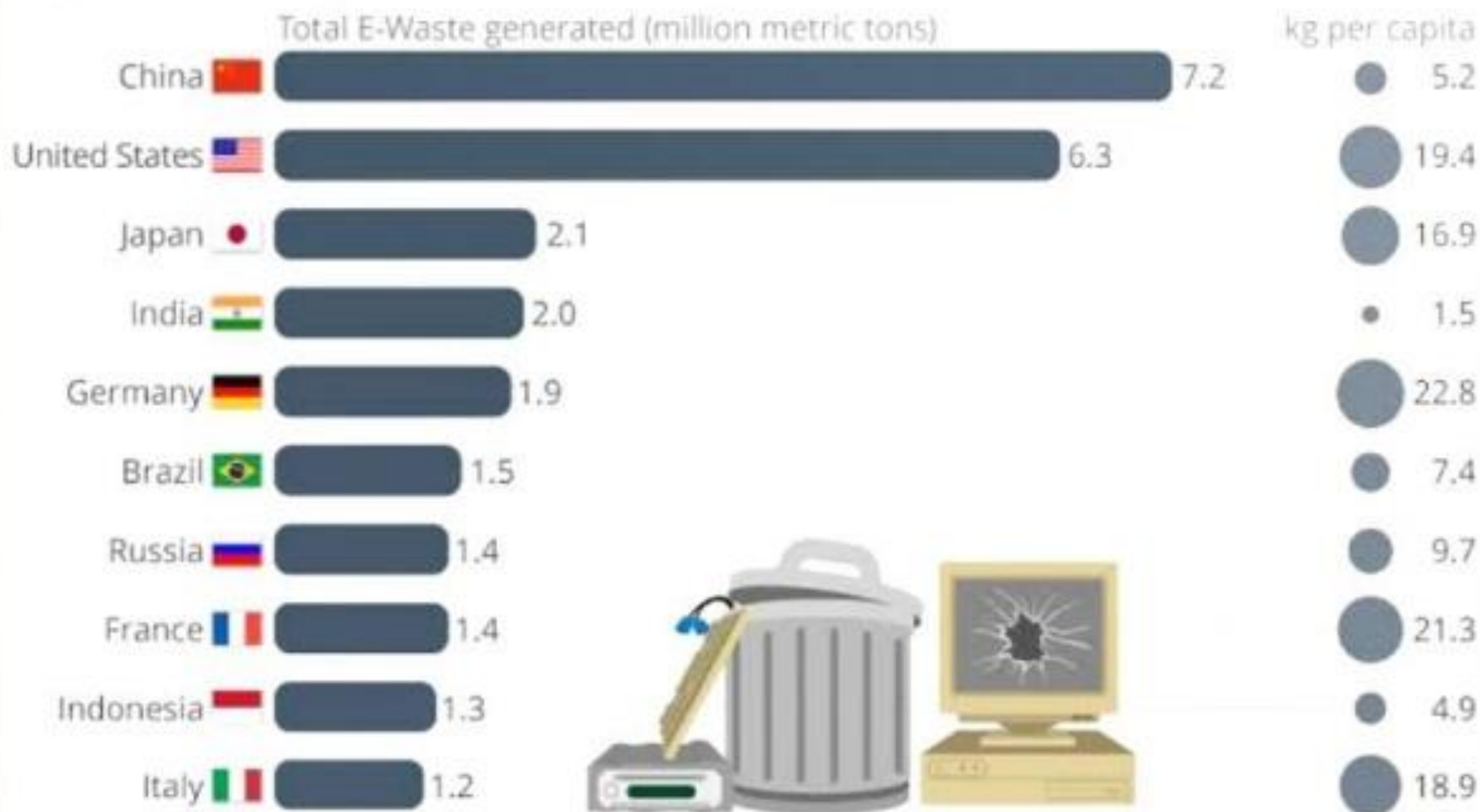
We have developed a sustainable turnkey process for E-Waste management in an environmentally friendly manner.

❑ E-WASTE AT GLOBE LEVEL



These Countries Generate the Most Electronic Waste

Top 10 countries by the amount of e-waste generated in 2016*



* includes discarded products with a battery or plug including mobile phones, laptops, televisions, refrigerators, electrical toys and other electronic equipment



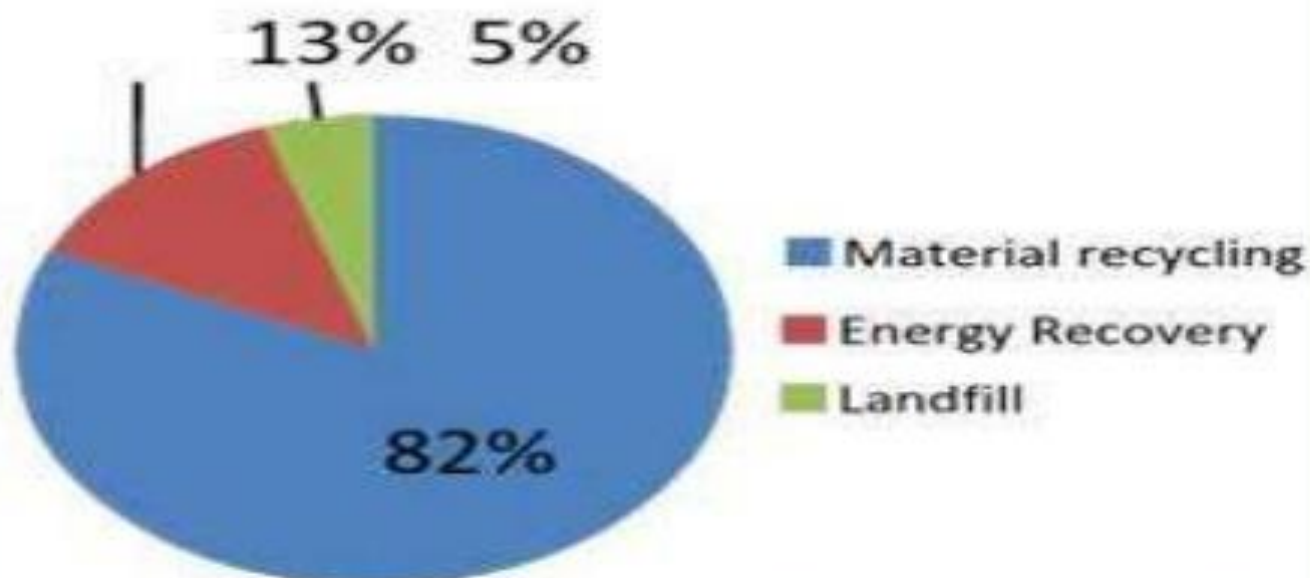
@StatistaCharts

Source: The Global E-waste Monitor 2017

statista

□ USA

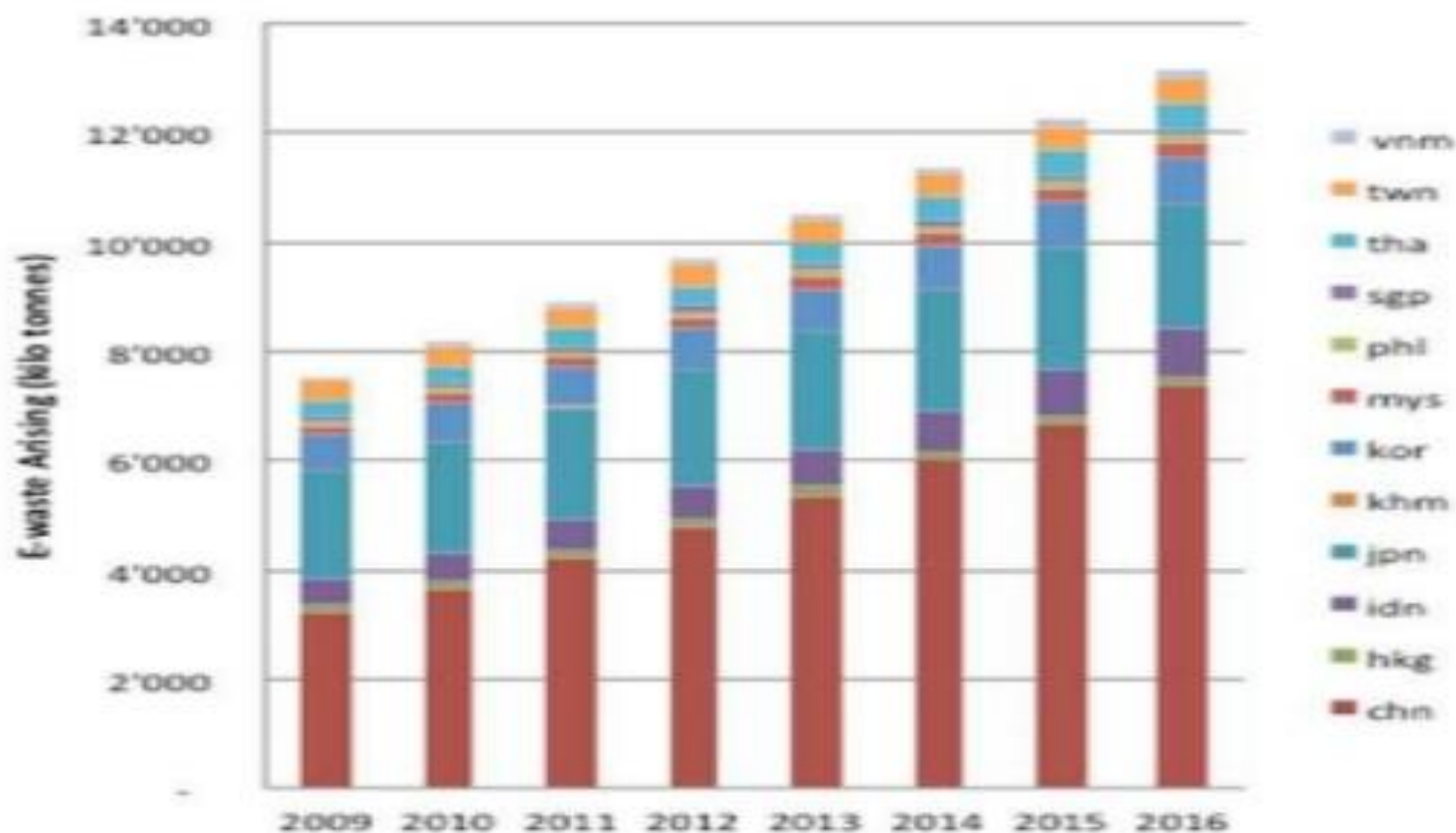
E-waste - Recycling and recovery in Norway



Source: Norwegian Environment Agency, 2014

□ SOUTHEAST ASIA

E-waste Arising Per Capita in East & Southeast Asia



□ CONCLUSION

- It is the process of extracting the parts out of the e-waste to either sell or reuse. The toxic materials from electronic devices are released into bodies of water, groundwater, soil and air, affecting both land and sea animals.
- We have use those material whose produce less gasses like lead.



***PLEASE RECYCLE
E-WASTE***

THANK YOU...

