

WASTE TO WEALTH



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Project - 1:

Organic Material to Compost



INTRODUCTION

- ❖ Food waste sealed in a plastic bag on a landfill site doesn't decompose properly.
- ❖ Instead, it produces **methane, a greenhouse gas, which contributes to global warming**, as well as a liquid, leachate, which can contaminate water supplies.
- ❖ But composting your **kitchen food waste is easy and requires little time, effort or space**, depending on which system you use.
- ❖ The **compost is invaluable** for the soil in your garden or potted plants.
- ❖ It's a complete and natural food for the soil, helping to improve its structure, water-retaining abilities and overall health.

Materials which can be used for composting

- ❖ Vegetable and fruit peels
- ❖ Tea leaves and coffee grounds
- ❖ Crushed egg shells
- ❖ Grass cuttings and leaves
- ❖ Paper
- ❖ Wood
- ❖ sawdust



Composting organisms require 4 conditions to create compost

1. **Carbon** that comes from brown organic matter like dried leaves, sawdust, paper
2. **Nitrogen** that comes from fruit and vegetable waste
3. **Oxygen** which comes from air
4. **Water** in the right amounts



Steps to compost your kitchen waste

1. Separate your edible kitchen waste (**vegetable peels, fruit peels, small amount of wasted cooked food**) in a container
2. Collect dry organic matter (**dried leaves, sawdust**) in a small container
3. Take a large **earthen pot or a bucket and drill 4 – 5** holes around the container at different levels to let air inside.
4. Line the bottom with a layer of soil.
5. Now start adding food waste in layers alternating **wet waste (food scraps, vegetable and fruit peels) with dry waste (straw, sawdust, dried leaves)**.
6. Cover this container with a plastic sheet or a plank of wood to help retain moisture and heat.



THE COMPOSTING PROCESS



- Every few days, use a spade to give the pile a quick turn to provide aeration. If you think the pile is too dry, sprinkle some water so that it is moist.
- Within **2 - 3 months**, your pile should start forming compost that is dry, dark brown and crumbly and smelling of earth.
- By segregating, recycling and composting, a family of 4 can reduce their waste from **1000 Kg to less than 100 kg** every year.
 1. You can calculate the amount and percentage of compost produced out of the total amount of organic matter used.
 2. Effective composting should have **Carbon- Nitrogen ratio (C : N)** in the range of **30:1 to 40:1**. Carbon and Nitrogen content in the compost can be assessed using simple Soil Testing Kits.
 3. One can identify the type and number of macro-organisms harboured in the final product (Compost). This can be converted into per cent or in any other suitable forms.

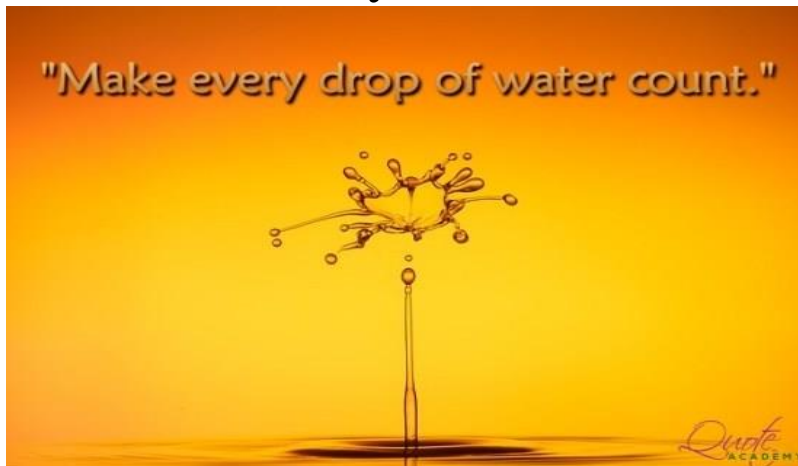


Project - 2

BIO REMEDIATION OF WASTE WATER

INTRODUCTION

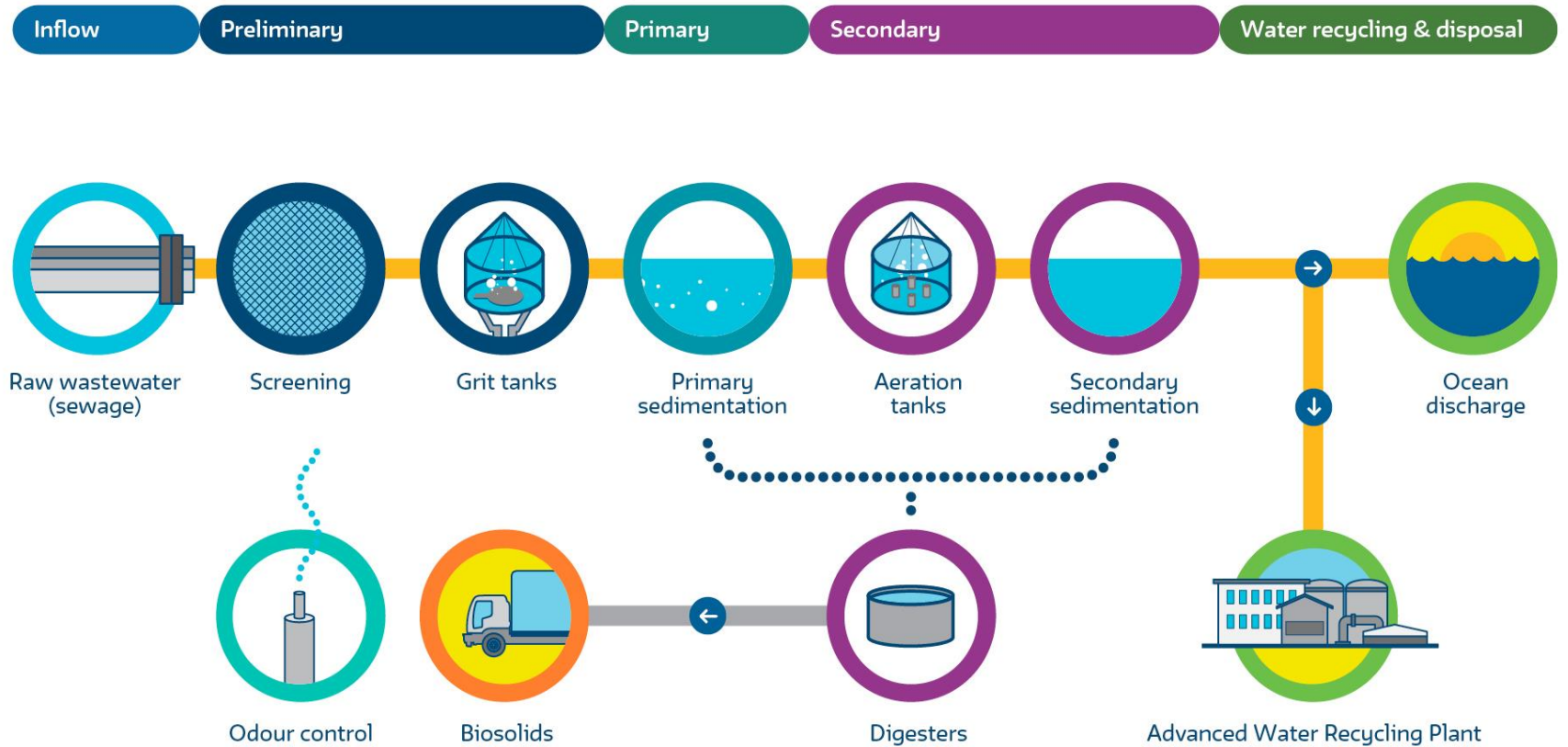
- ❖ Many Communities and Industries across the world are intensely exploring bioremediation as an important source to clean up waste water.
- ❖ Bioremediation mainly uses naturally occurring microorganisms and other aspects of the natural environment to treat the wastewater of its nutrients.
- ❖ This type of initiative provides an avenue to environmentally and economically sustainable treatment methods.



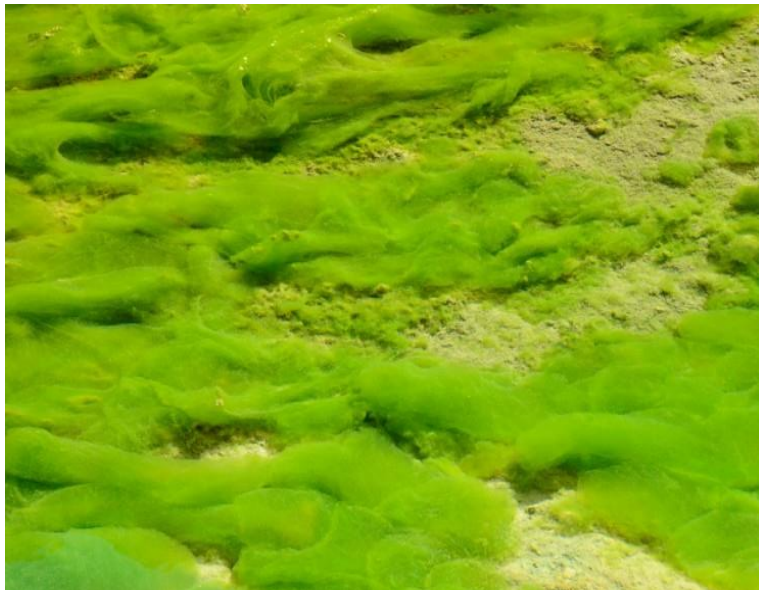
MATERIALS AND METHODS

- ❖ **Maramanjil** was used as an adsorbent in the study. It was obtained from local shop washed using tap water and finally with double distilled water to remove the suspended impurities, dust and soil and then dried in oven.
- ❖ About 500g of powdered **Maramanjil** was mixed with 100ml of con. Sulfuric acid and kept at room temperature for 24hrs.
- ❖ Then, it was dried in a hot air oven at 80°C.
- ❖ The dried material was washed with distilled water to remove excess of acid.
- ❖ Charcoal was dried at 110°C for 12 hours to remove moisture and kept in air tightened bottle

Wastewater treatment process



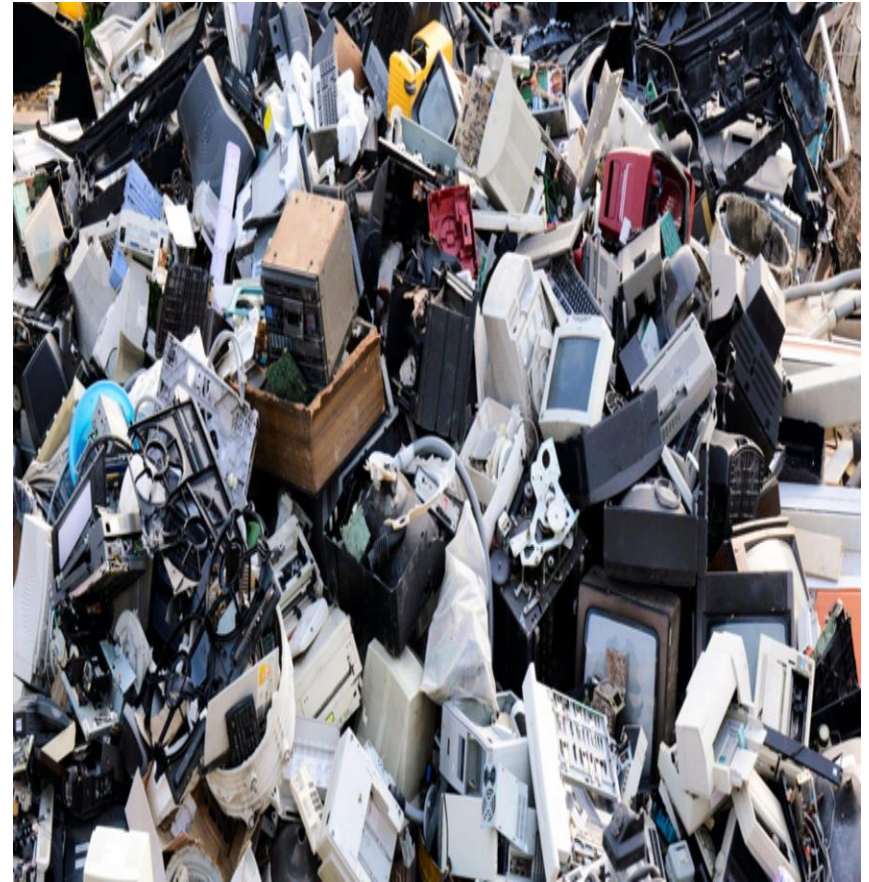
Biomaterials





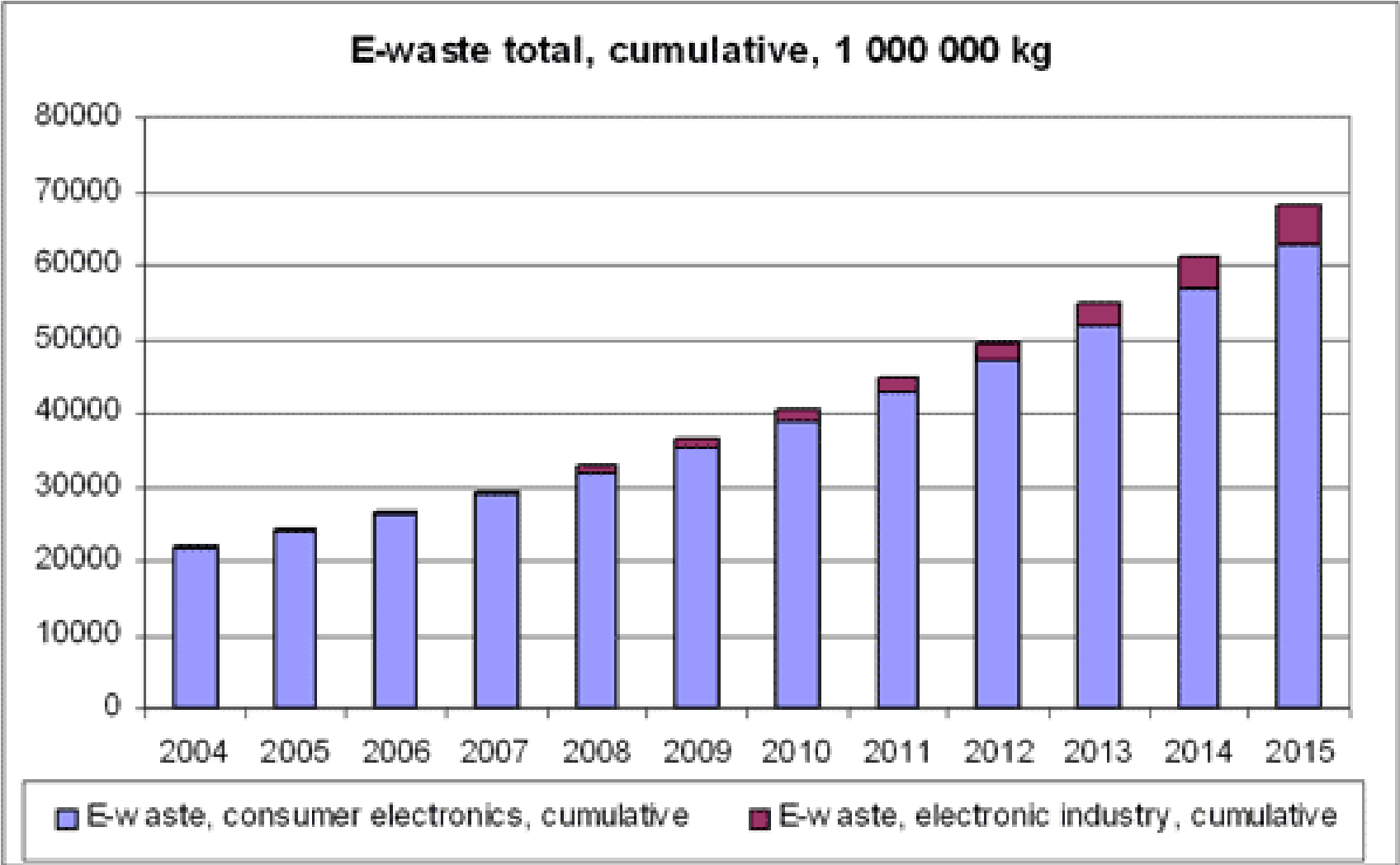
HANDLING OF ELECTRONIC WASTE



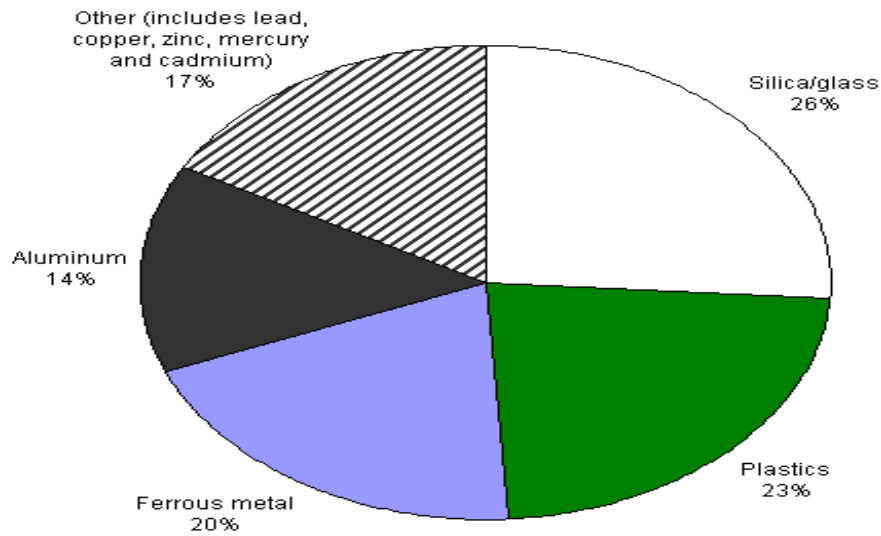


Objective:
To Reduce, Recycle and Reuse the E-waste

E-waste accumulation in India



Material composition of personal computers



Source: Environment Canada.

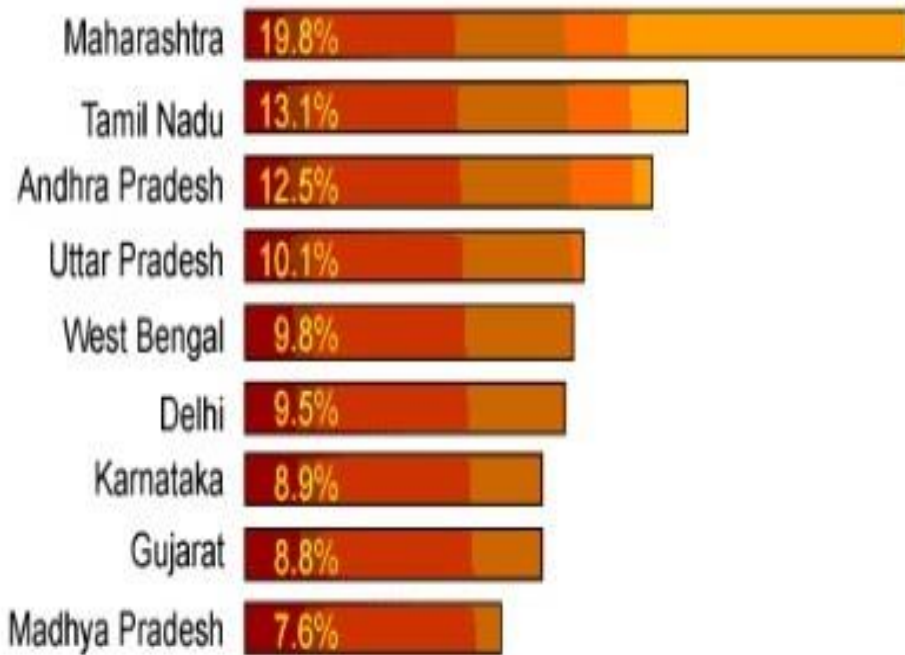
TABLE I
e-Waste Toxins and Affected Body Parts

Components	Constituents	Affected body parts
Printed circuit boards	Lead and cadmium	Nervous system, kidney, liver
Motherboards	Berillium	Lungs, skin
Cathode ray tubes (CRTs)	Lead oxide, barium and cadmium	Heart, liver, muscles
Switches and flat-screen monitors	Mercury	Brain, skin
Computer batteries	Cadmium	Kidney, liver
Capacitors and transformers	Polychlorinated biphenyls (PCBs)	
Printed circuit boards, plastic	Brominated flame-retardant casings cable	
Cable insulation/coating	Polyvinyl chloride (PVC)	Immune system
Plastic housing	Bromine	Endocrine

Of particular concern is Lead in e-waste

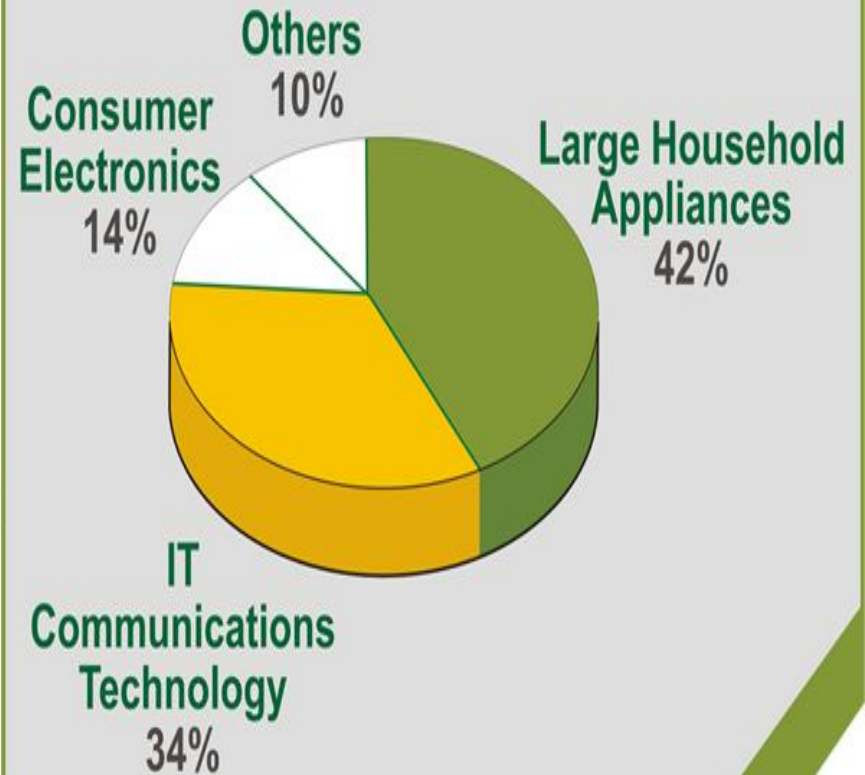
- **Lead** is a toxic substances which may cause lead poisoning and can be especially harmful young children.
- A typical **17-inch computer monitor** contains approximately **2.2 pounds of lead**

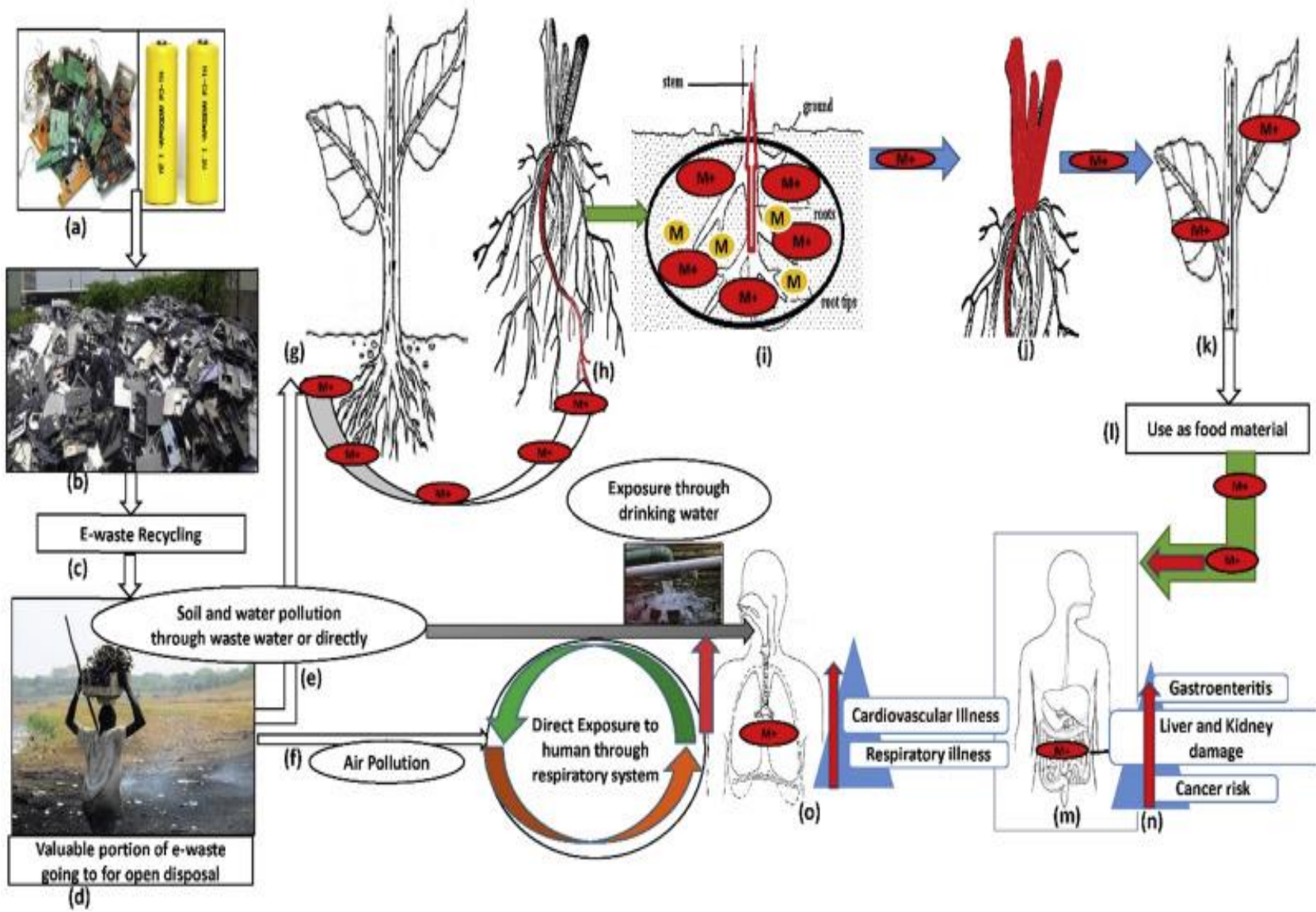




State-wise E-waste Generation in India (Tonnes/year)

Composition of e-waste





E-waste Effects on Human

- **Damage to central and peripheral nervous systems, bloodsystems and kidney damage**
- **Affects brain development of children| Chronic damage to the brain**
- **Respiratory and skin disorders due to bioaccumulation in fishes | Asthmatic bronchitis**
- DNA damage
- **Reproductive and developmental problems | Immune system damage**
- Lung Cancer
- Damage to heart, liver and spleen

Management and disposal options

Reduce, Return and Recycle

Reduce:

Avoid buying products that are of little importance in our daily life. Avoid purchasing gadgets as a status symbol.

Return:

When bored with your old phone, do not throw it; instead return to its manufacturer. Nokia, Apple and Dell are few such brands that ensure their old products are returned after usage for recycle. If there is no recycling company in your vicinity, try donating or selling online.

Recycle:

Scrap that are usually buried or incinerated, can be directed to reprocessing centers for conversion into raw materials that can help conserve finite natural resources, including trees for paper pulp, oil and natural gas for the production of plastics and polymers and many more.



Help keep electronic waste from growing.

Conclusion

- it is important that we create a national framework for the environmentally sound management of e-waste including wide public awareness and education
- Conduct detailed inventories of e-waste
- Initiate pilot schemes on collection and sorting of e-wastes, including take back schemes and schemes for repair refurbishment and recycling

Project - 4

INNOVATIVE TECHNIQUES FOR CONVERTING AGRICULTURE WASTES INTO USEFUL PRODUCTS

Objective:

- ❖ With the development of agriculture in India, the productions of agricultural wastes increase rapidly.
- ❖ The occurrence of agricultural wastes was unique in the different areas.
- ❖ The agricultural straw and livestock excrement are considered to be potential resources.
- ❖ Improper disposition of agricultural wastes not only result in environmental pollution, but also waste a lot of valuable biomass resources.
- ❖ The recycling and utilization of agricultural wastes are considered to be the important step in environmental protection, energy structure and agricultural development.

Agricultural/crop waste can be converted into energy products

Biochar/charcoal



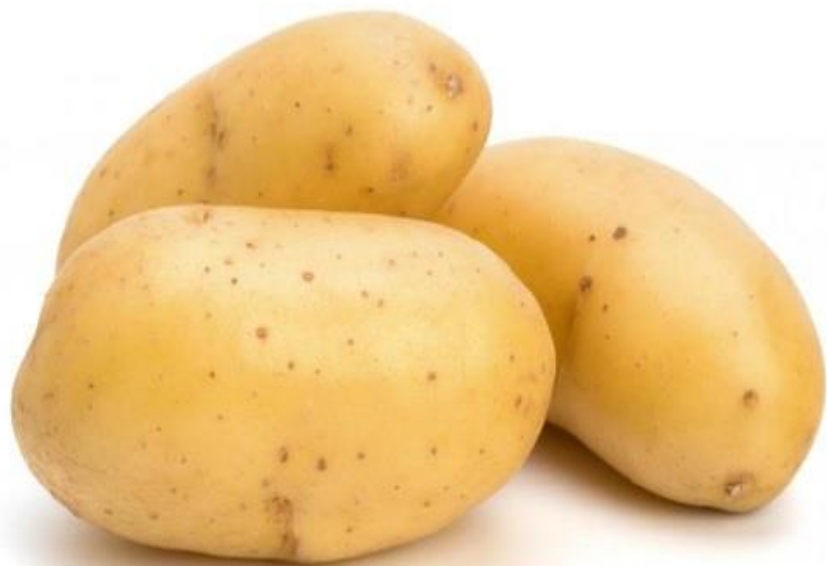
Power generation



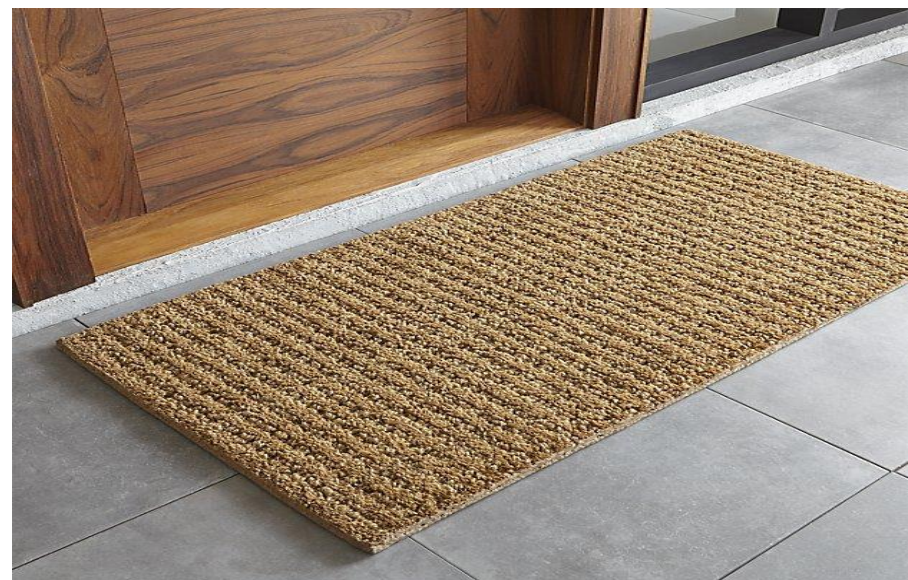
Commercial and industrial heating



Biofuels such as biodiesel or ethanol



Crop waste to plastic substitutes



There are several ways that we can recycle the rice straw:



- ❖ Paper making
- ❖ Mushroom culture
- ❖ Handicraft
- ❖ Mulching mat for erosion control
- ❖ Biofuel
- ❖ Fiber board



T H A N K Y O U