

Waste Management and Ground Contamination

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Waste Management and Ground Contamination

Overview:

- Classification of waste
- Definition of waste management
- Methods of waste management
- Case studies
- Solutions



Classification of Waste

1. Liquid Waste:

Found in household and industries

2. Solid Rubbish

Found in your household along with commercial and industrial locations

2.1 Plastic Waste

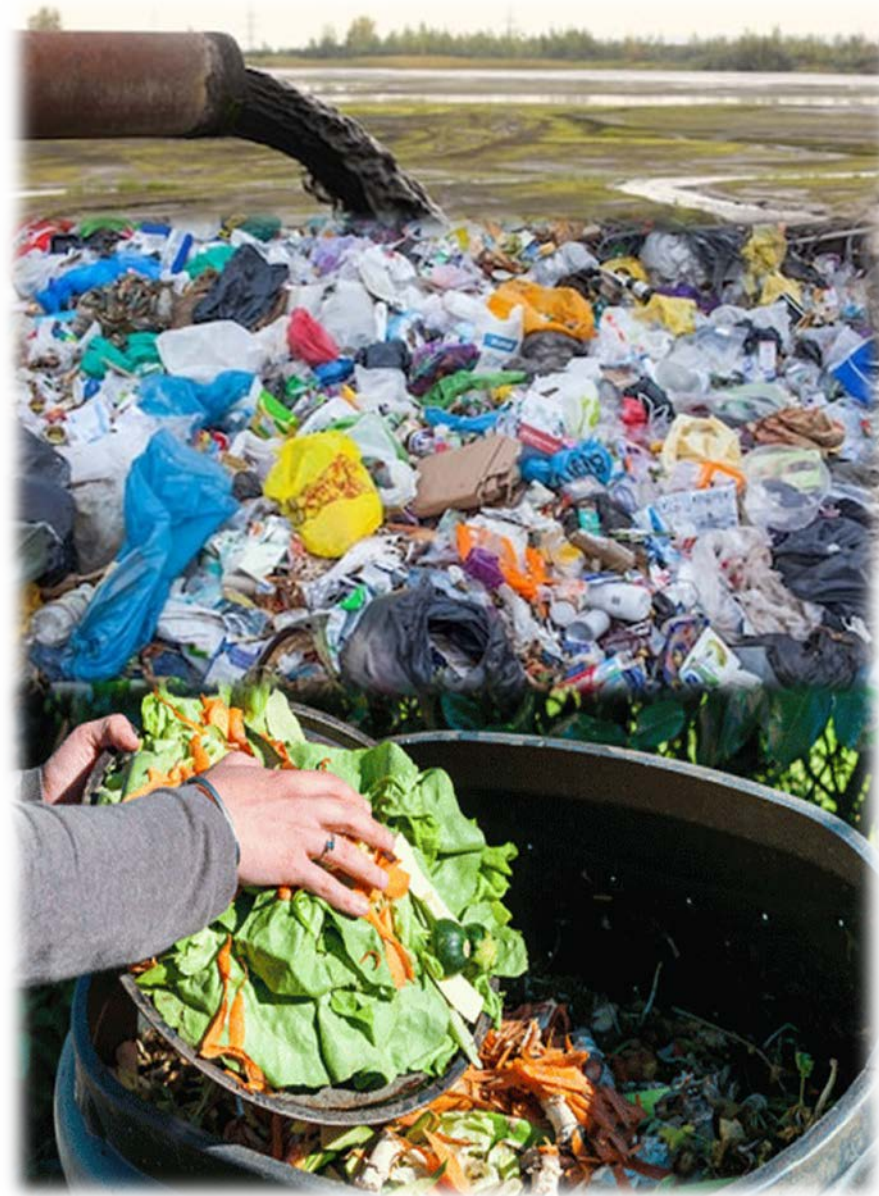
2.2 Paper/card Waste

2.3 Tins and Metals

2.4 Ceramic and Glass

3. Organic Waste

All food waste, garden waste, manure and rotten meat



Classification of Waste

4. Recyclable Rubbish

paper, metals, furniture and organic waste



5. Hazardous Waste

all types of rubbish that are flammable, toxic, corrosive and reactive.

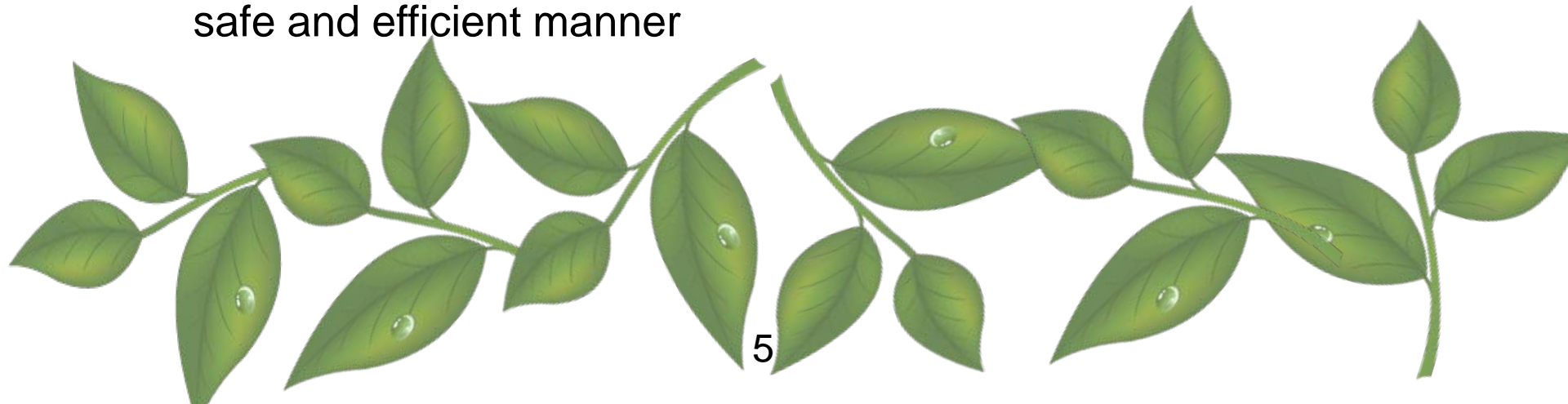


Waste Management

Definition:

Collection ,Transportation and Disposal of Waste

- Waste Management is the process of treating solid wastes and offers variety of solutions for recycling items that don't belong to trash
- Waste management is something that each and every household and business owner in the world needs. Waste management disposes of the products and substances that you have use in a safe and efficient manner



Waste Management Methods

Waste Disposal

1. Landfills

Burying the waste in the land

- most popularly used method
- Commonly found in developing Countries
- raise to air and water pollution



2. Incineration/Combustion

Municipal solid wastes are burned at high temperatures so as to convert them into residue and gaseous products

- Advantage:

Reduce the volume of solid waste to 20 to 30 percent of the original volume decreases the space they take up and reduce the stress on landfill



Waste Management

3.Recovery and Recycling

Recovery :

Process of taking useful discarded items for a specific next use. These discarded items are then processed to extract or recover materials and resources or convert them to energy in the form of useable heat, electricity or fuel.



Recycling:

Process of converting waste products into new products to prevent energy usage and consumption of fresh raw materials

Waste Management

4. Plasma Gasification

The waste's molecular bonds are broken down as result of the intense heat in the vessels and the elemental components.

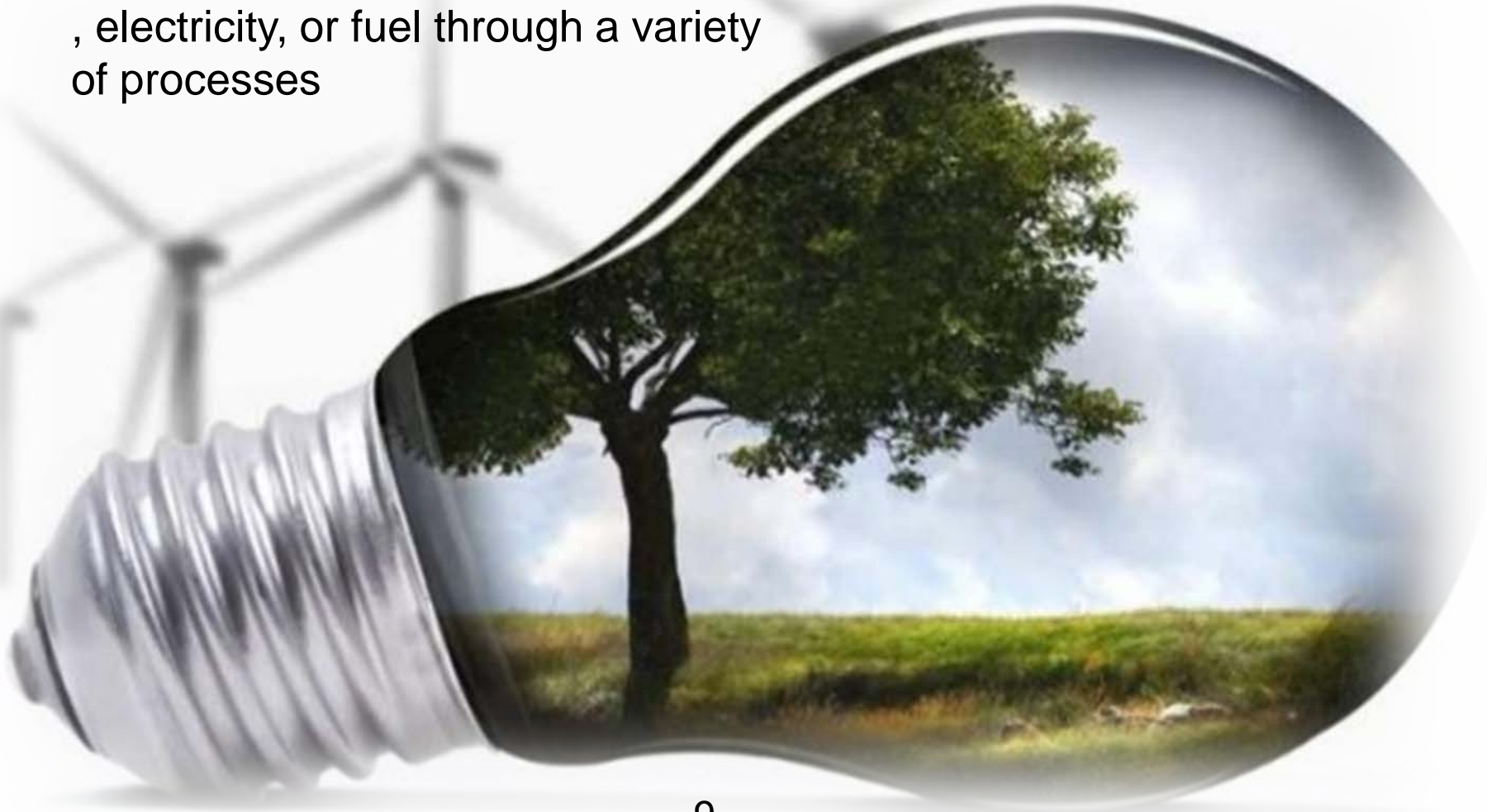


5. Allowing organic materials to sit in one place for months until microbes decompose it. Composting is one of the best method of waste disposal as it can turn unsafe organic products into safe compost

Waste Management

6. Waste to Energy

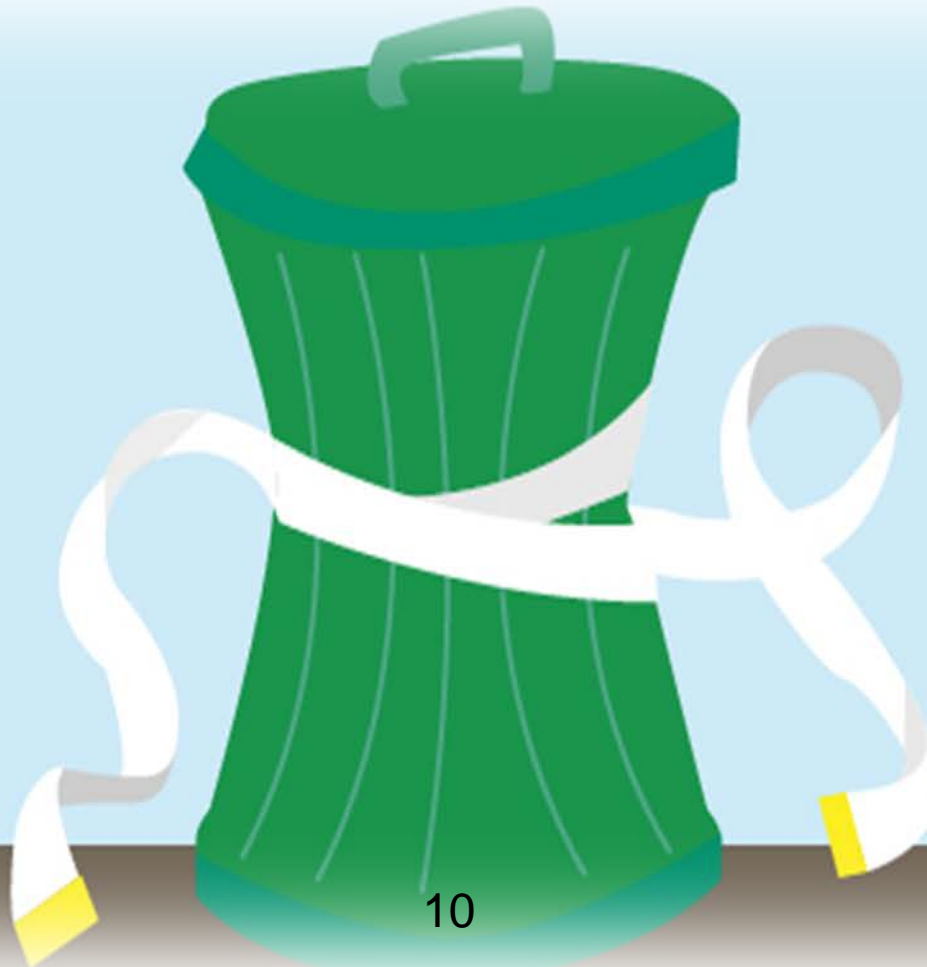
Converting of non-recyclable waste items into useable heat, electricity, or fuel through a variety of processes



Waste Management

7. Waste Minimization

Recycling old materials like jar, bags, repairing broken items instead of buying new one, avoiding use of disposable products like plastic bags, reusing second hand items, and buying items that uses less designing.



What can happen if the waste management fails?

Brazil's worst mining disaster (Hazardous Waste)

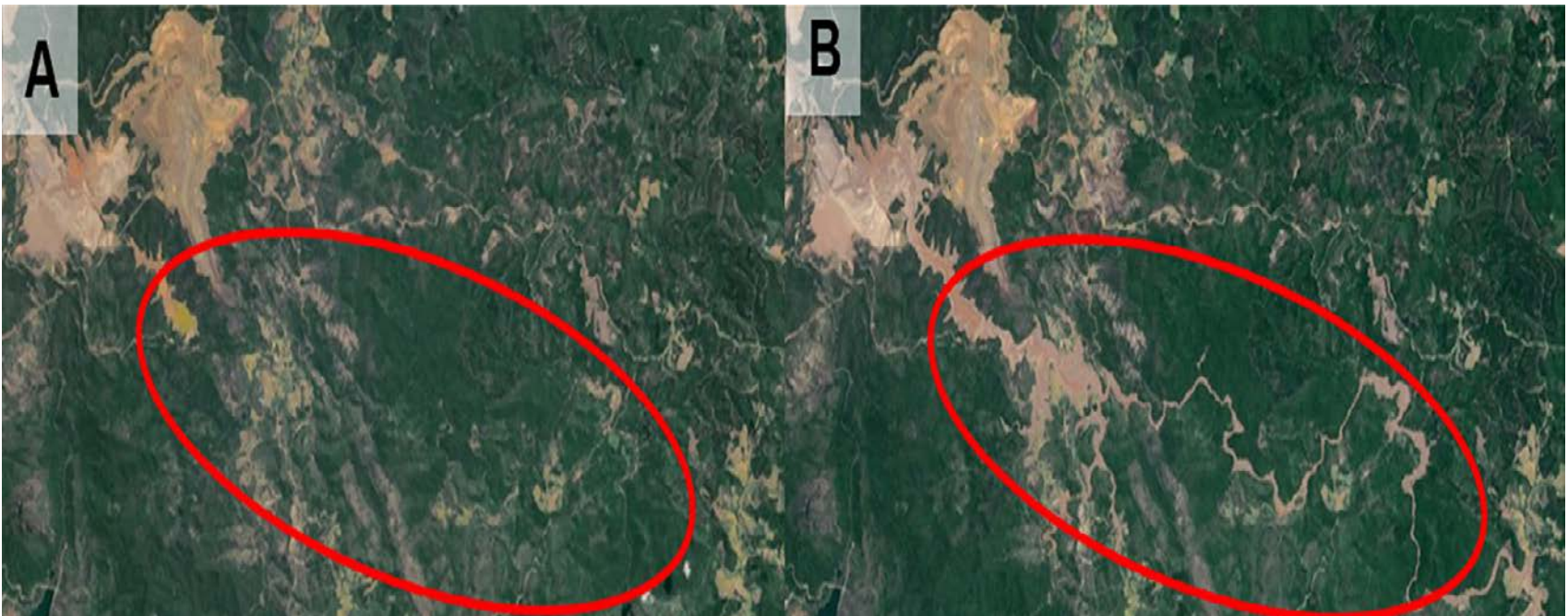


Photo: Rogério Alves / TV Senado

What can happen if the waste management fails?

Brazil - November 2015

- River Rio Doce
- Samarco Company, Brazil's Vale S.A. and Australia's BHP Billinton Ltda
- Iron ores mining



What can happen if the waste management fails?



Figure: Phillips, Dom. 2016. "Samarco Dam Collapse: One Year on From Brazil's Worst Environmental Disaster." *The Guardian*, 15 de outubro. <https://goo.gl/rXLd3s>

What can happen if the waste management fails?



Figure: Comboios beach
with mining tailings in
seawater Regência
Augusta. Nov. 2016

What can happen if the waste management fails?

- 19 people were killed in floods.
- the damage for the ecosystems is really difficult to be evaluated in the long-term.
- about 40 villages on the way were affected.



Waste in the Pearl!

- The pearl of Africa has waste too! ... A lot!
- Uganda; $\frac{2}{3}$ of the waste generated is not collected
 - ✓ Capital city- Kampala ~ 1,200–1,500 tonnes of garbage daily

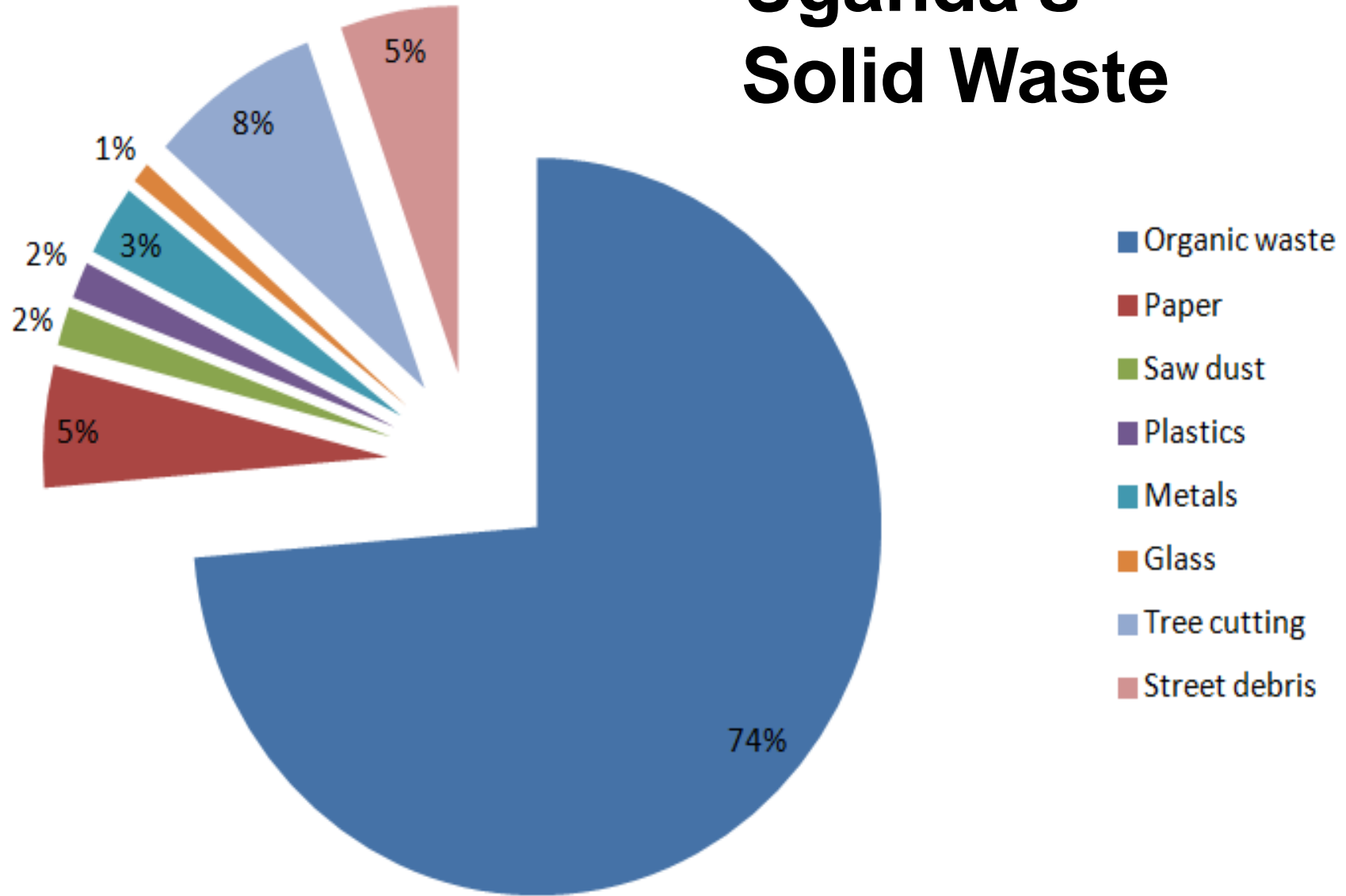


- Growing urban population= more waste



- Uncollected waste, dumped indiscriminately in the streets and in drains
- Mixes with human and animal excreta

Uganda's Solid Waste



Causes

- ✓ Situation grim in slums



- ✓ Many perceive waste collection as a luxury, not a necessity (ignorance).



- ✓ Few dumping sites

- ✓ low price of packaging material e.g. polythene bags
- ✓ Poor government attitude towards waste management



Consequences

- Human sanitation and Health:
 - unpleasant smell; breeding sites for flies and other vectors
 - communicable diseases such as cholera



- Ecosystem health
 - pollution of surface and ground water
 - high concentration of nitrates near rivers



- Obstacle to development
 - blockage of drainage channels by mud, polythene and other solid wastes create pools of water, potholes develop on the roads



Typical day in Uganda



What can help?

- Prevention of waste
- Preparing for re-use
- Recycling
- Material of energy recovery
- Disposal



Zero-waste Bulk Stores



Zero-waste Bulk Stores

- No plastic or non-recyclable material, container-to-container

Advantages:

- Reduce of WM
- Easy packing
- Healthier
- Fresh products

Disadvantages:

- Expensive
- No infrastructure
- Reluctance
- Heavy packaging and carrying



Waste to build roads

- Plastic roads
- India
- More than 21 000 miles
- Faster, simpler



Waste-to-energy

- Burning municipal and industrial solid waste
- Steam for electricity, heat buildings etc.
- Reduction of waste – 87 %
- Europe – 50 million tons of waste → energy
 - Electricity for 27 million Europeans
- Ecology + economy
- Link: https://www.youtube.com/watch?v=UYvprn_RRs8

Thank You