Unit 4.1

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Training Programme

Introduction to the Environment and Waste Management

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OBJECTIVES

- Get participant acquainted with
  - the concept of physical environment (soil, air, water)
  - Discuss the Impact of Human activities on environmental components

THE ENVIRONMENT

OUTLINE

- What is environment
- Components of the environment
  - Atmosphere
  - Hydrosphere
  - Biosphere
  - Lithosphere
- Impact of man on the air, soil and water
- Care for the environment

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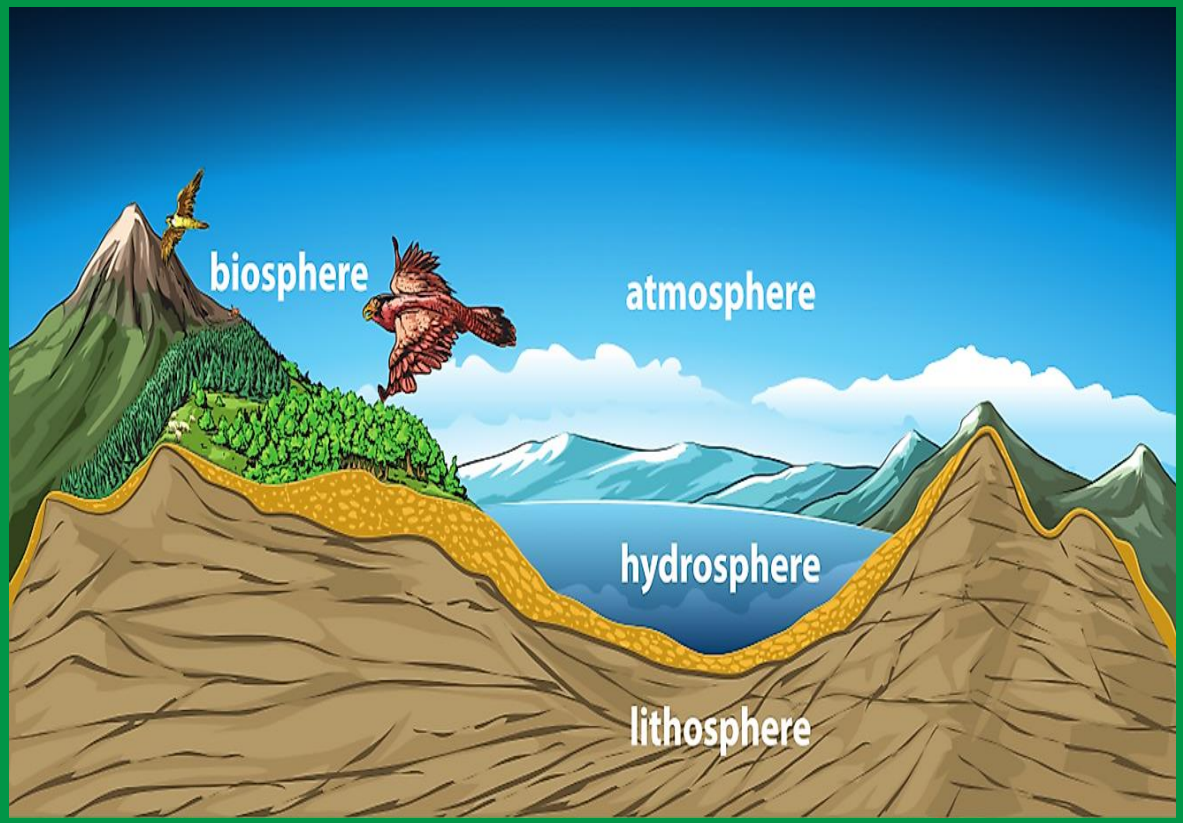
THE ENVIRONMENT

Environment is gotten from the French word **“Environia”** which means ‘to surround’. The Environment is simply defined as anything that surrounds us. Environment can be defined as the aggregate of all the circumstances, people, things, and events around us that influence our life in time and space.



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COMPONENTS OF THE ENVIRONMENT

ATMOSPHERE (AIR)

The atmosphere is the layer of gas that surrounds the earth. Atmosphere simply means air. Atmosphere contains gases like Nitrogen, Oxygen, Argon, Carbon dioxide and Water vapour with particles like dust and soot. The two major gases Oxygen (21%) and Nitrogen (78%).

Air provides oxygen for respiration; All living things including plants and animals require oxygen for their survival.

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COMPONENTS OF THE ENVIRONMENT

HYDROSPHERE (WATER)

Hydrosphere simply means water. It includes the surface water and its surrounding boundary. Water is the most abundant substance on the earth surface. We use water at home, in school, in industry, for agriculture and recreation. There are various sources of water like – surface water (i. e., lakes, rivers, etc), ground water (i. e., spring water, well, etc) and rain water.

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COMPONENTS OF THE ENVIRONMENT

LITHOSPHERE (SOIL AND ROCK)

The **lithosphere** is the solid shell of the Earth; it is the rocks and soils. Lithosphere is the outer layer of the solid earth and it lays in-between the atmosphere and hydrosphere. Lithosphere is the solid, rocky part of the earth; earth's crust.

Soil is the most important component for all living beings to create their homes and plants grow in the soil. Also, ground water in the soil provides portable water for drinking and farming, domestic and industrial activities.

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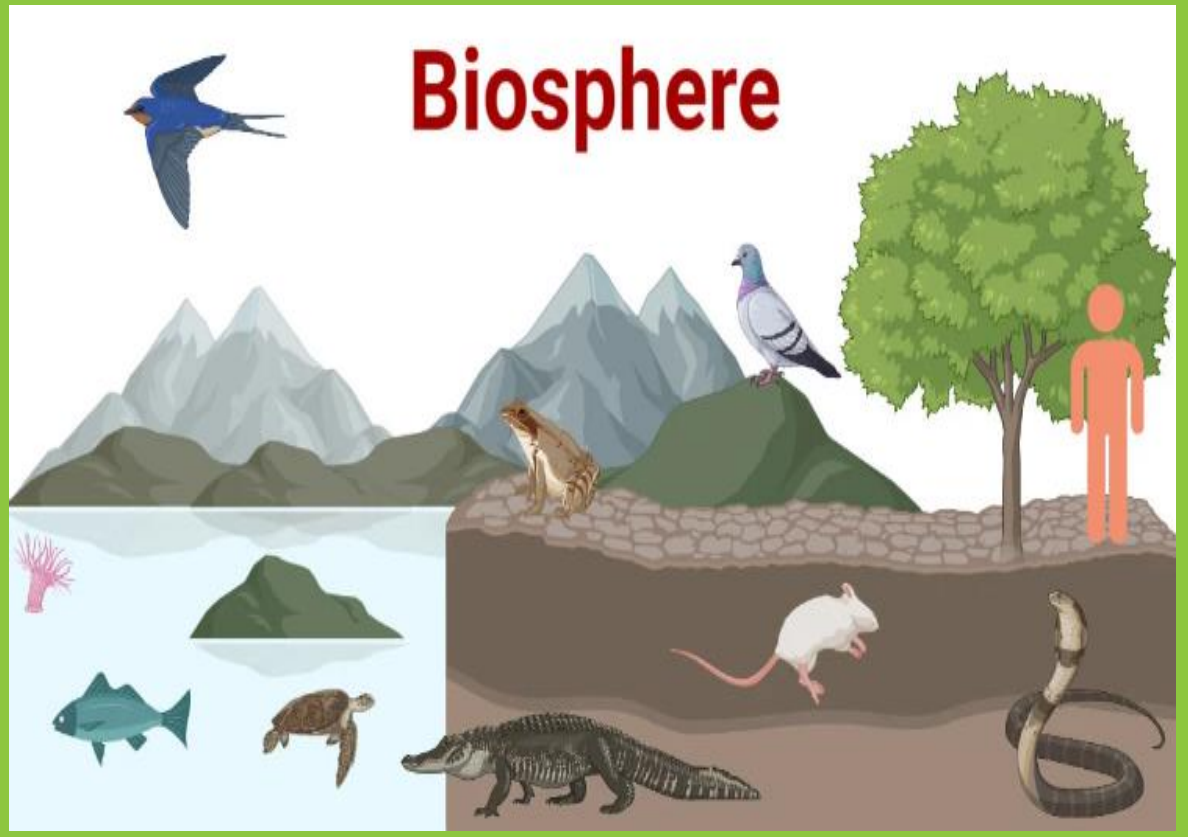
COMPONENTS OF THE ENVIRONMENT

BIOSPHERE (LIFE)

Biosphere are all the zones on the earth in which life is present i.e., the entire living resources/components of the earth including human.

This consists of all living things like, plants, animals and small micro- organisms like bacterial, fungi, virus etc. The Biotic environment work together with the Abiotic environment to form various **ECOSYSTEMS** like the pond ecosystem, marine ecosystem, desert ecosystem, forest ecosystem etc.



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MAN AND THE ENVIRONMENT

Although, man and environment exist as different entities but they need each other for survival. Man gets his shelter, food, raw materials of economic importance (gold, oil, fuel) from the environment; therefore, the environment depends on man for protection against any form of destruction. So, there exist a strong interaction amongst them, and the study of such interaction is known as Ecology.

This interaction is necessary to keep the balance, but human affects it due to his own needs and interest thereby modifying the environment to suit his own purpose. It is impossible to study Man alone without involving the environment because man is a component of the environment.

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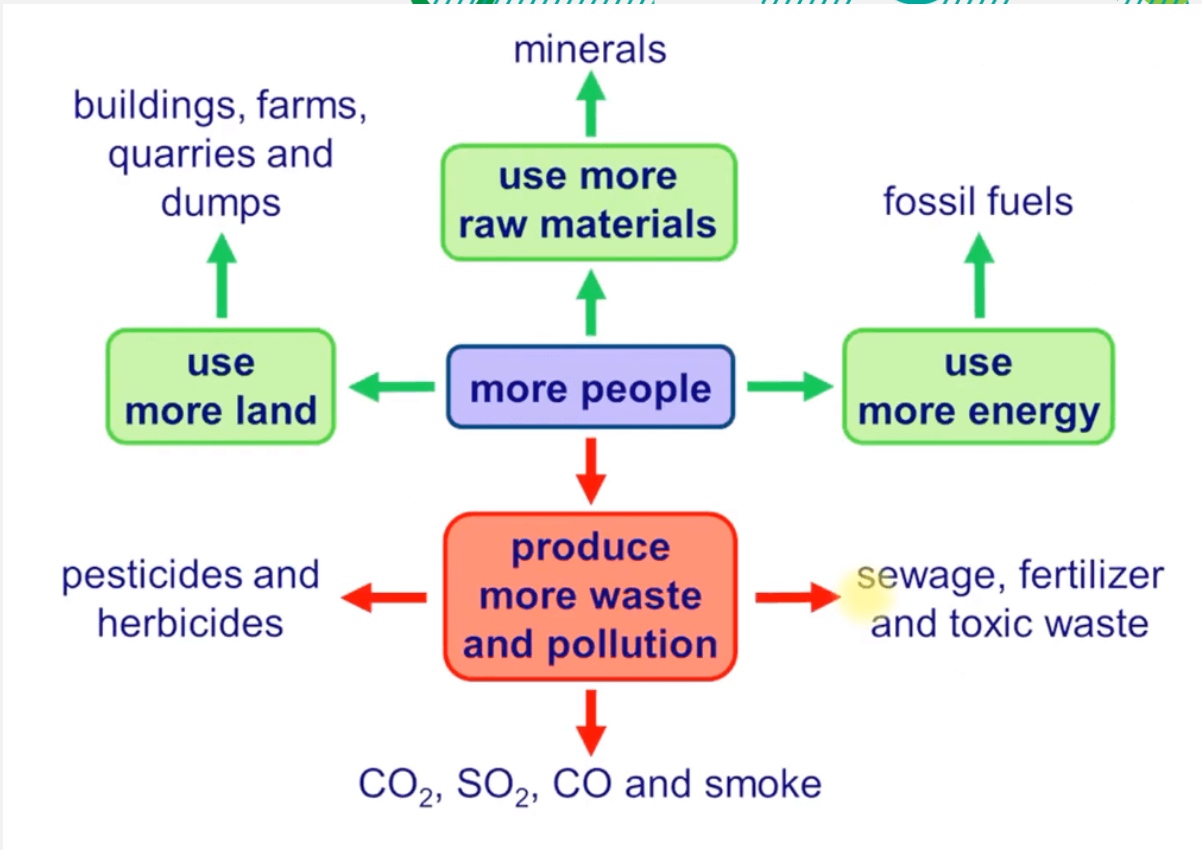
IMPACT OF MAN ON THE ENVIRONMENT

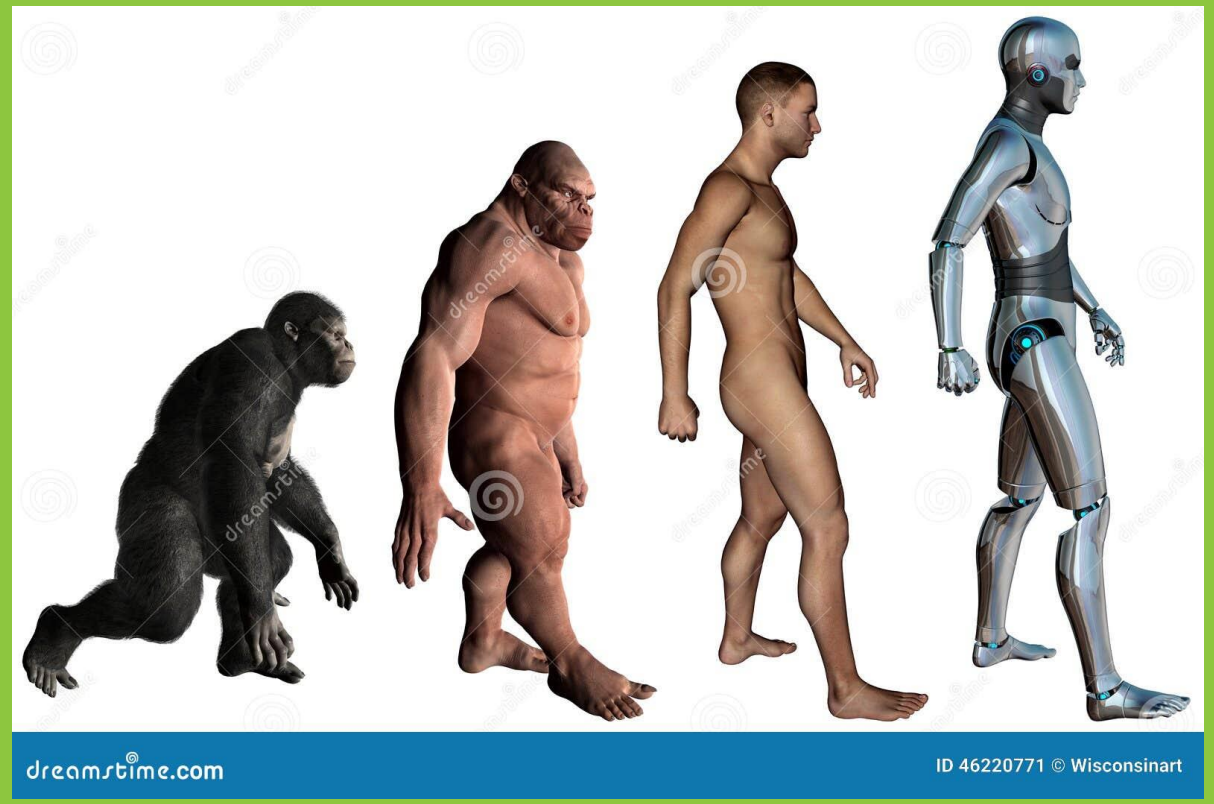
As issues like climate change, global warming, and renewable energy dominate the national conversation, it's easy to assume these topics are exclusive to the modern world. But a huge collaborative study in *Science* reveals that early humans across the entire globe were changing and impacting their environments as far back as 10,000 years ago. To understand our current climate crisis, we need to understand the history of humans altering their environments.



https://lotusarise.com/influence-of-man-on-ecology-and-environment-upsc/

IMPACT OF MAN ON THE ENVIRONMENT

Evolution



https://www.dreamstime.com/stock-illustration-funny-man-evolution-illustration-isolated-monkey-neanderthal-cyborg-robot-white-image46220771

Overpopulation

Is overpopulation a problem? *Diy13/iStock*

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IMPACT OF MAN ON THE ENVIRONMENT

Effluent/Sewage Pollution

Air Pollution

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IMPACT OF MAN ON THE ENVIRONMENT

Land Pollution

Pollution is obvoiusly not a good thing.
zeljkosantrac/iStock

Deforestation

Source: luoman/iStock luoman/iStock

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IMPACT OF MAN ON THE ENVIRONMENT

Controlled/Bush Burning

https://education.nationalgeographic.org/resource/controlled-burning/

Ozone Layer Depletion

Source: nito100/iStock

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IMPACT OF MAN ON THE ENVIRONMENT

Light Pollution

https://education.nationalgeographic.org/resource/light-pollution/

Genetic Modification of plants

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EFFECTS OF HUMAN ACTIVITIES ON THE ENVIRONMENT

- ✓ Loss of Biodiversity.
- ✓ Pollution of the soil, air and water
- ✓ Climate Change.
- ✓ Misuse of Natural Resources.
- ✓ Erosion
- ✓ Flooding

Our environment is a very sensitive topic for the modern-day world. Human activities are literally disrupting the balance of our ecosystem resulting in a huge negative impact on it.

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TAKE HOMRE ASSIGNMENT

- ✓ Loss of Biodiversity.
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WAY FORWARD

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WAY FORWARD

- Encourage resource recovery and recycling to reduce over dependency on natural resources
- Discourage bush burning activities.
- stablishing wildlife preserves and parks can create a positive impact on the ecosystem.
- Reducing the usage of automobiles and switching to public transports can help reduce the emission of harmful gases in the atmosphere.
- Plant more trees
- Spread the news

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Waste and Waste Management

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OBJECTIVE:

Participants will be able to recognize and discuss waste, types of wastes, forms of waste, and waste management techniques

OUTLINE

- INTRODUCTION
- WASTE MANAGEMENT
  - Minimization
  - Collection
  - Transportation
  - Treatment
  - Disposal
- WASTE MANAGEMENT HIERACHY
- CONCLUSION

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INTRODUCTION

- waste is a natural consequence/inevitable by-product of both natural and anthropogenic activities
- all human activities leads to waste generation (domestic, commercial, industrial, health, social, recreation)
- waste generation can be said to be closely linked to population, urbanization and affluence.
- increase in urban population and the rising demand for food and other essentials perpetuate a rise in the amount of waste being generated daily by each household.
- each process in product manufacturing consumes energy, material inputs and generate a lot of waste
- every time we throw a product away we waste the energy and resources that went into manufacturing of that product.
- majority of waste generated by man end up in the landfill/dumpsite especially in developing countries.

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WASTE

Wastes are materials and objects that people put in the bins because they do not need them again. Other names for waste are garbage, rubbish, junk, litter, refuse, thrash, debris, by-products. Waste is seen as useless, worthless or unnecessary materials so people throw them away. Waste can also be materials that are faulty and of no use to the person that owns it.

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TYPES OF WASTE

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LIQUID WASTE

- Liquid Waste is any form of liquid residue that is dangerous to people or the environment. Examples of liquid wastes are human and animal excreta, house hold waste water, cooking oil, fat, grease and effluents from industries
- Liquid waste cannot be easily picked up and removed from the environment.
- It has the ability to flow into the water bodies and affect the composition of the water.
- Liquid waste can cause drinking water to be contaminated, pollute aquatic ecosystem and contaminate the soil.
- Liquid waste can easily seep into the soil, spread out and pollutes other sources water.

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SOLID WASTE

- Solid wastes are non-liquid, non-soluble materials ranging from waste from our homes, schools, markets, hospitals, industrial and commercial premises. Examples of solid wastes are food residue, wood waste, paper waste, paper textile, plastics, tyres, scrap metals, demolition products, electronic wastes, medical waste and other discarded materials.

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GASEOUS WASTE

- Gaseous waste are wastes that are released in form of gas from automobile, factories, industries and burning of fossil fuels like petroleum.
- When gaseous waste gets mixed with other gases in the atmosphere they can cause serious environmental hazards. Gaseous waste include: oxide of carbon like carbon dioxide, carbon monoxide, sulphur dioxide, oxide of nitrogen, hydro carbon, aerosols, methane, chlorofluoro carbon (CFC) which are greenhouse gasses.

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SOURCES OF WASTE

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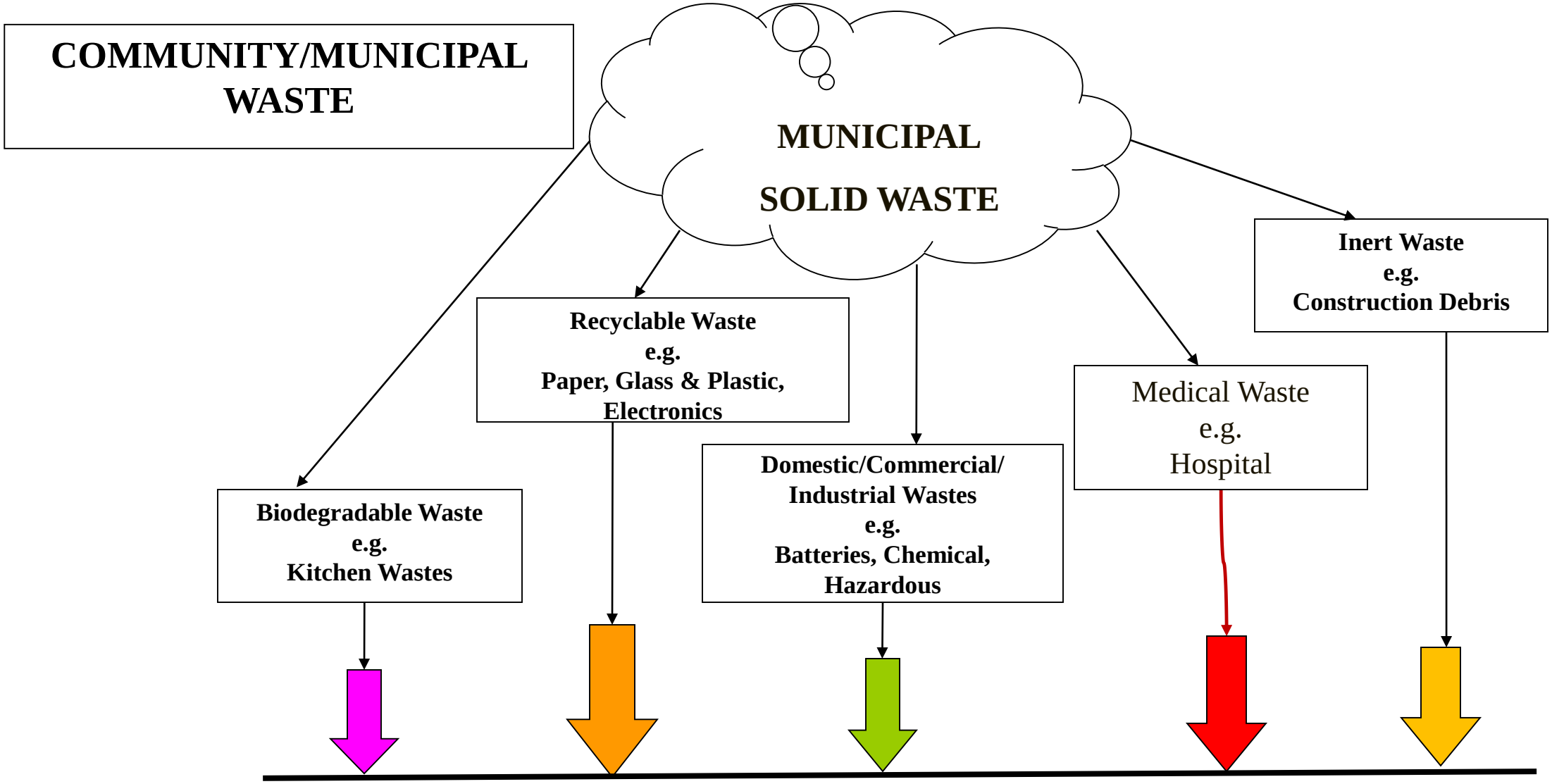
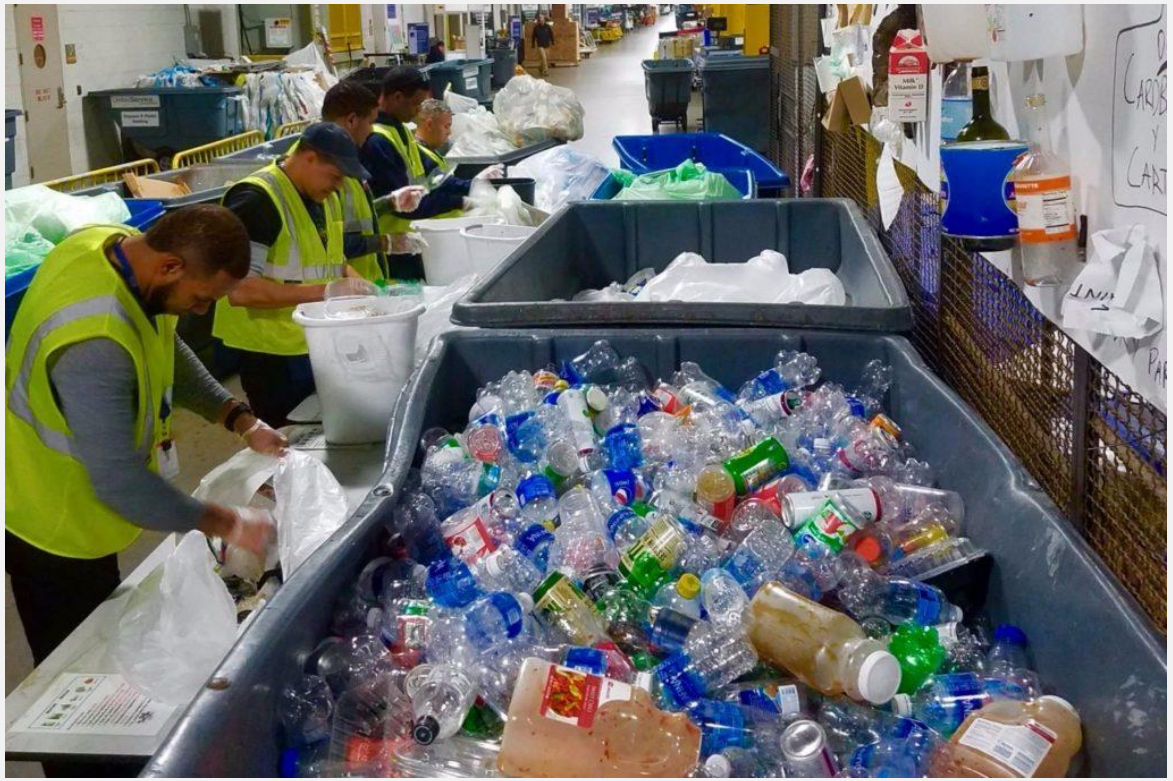


A regular solid waste usually comprises of plastic, textile, paper, glass, metal, rubber, textile, wood, fiber, leather, vegetable, organics and other food waste which can biodegrade to form leachate

SOURCES OF WASTE

Commercial Waste



Industrial Waste

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SOURCES OF WASTE

Healthcare Waste

Wastewater/Sewage/Effluent

SOURCES OF WASTE

Agricultural Waste

Construction Waste

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WASTE MANAGEMENT

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WASTE MANAGEMENT

Waste management is the collection, transportation, processing or disposal of waste materials, usually ones produced by human activity, in an effort to reduce their effect on human health or local amenity. A sub focus in recent decades has been to reduce waste materials' effect on the environment and to recover resources from them.
Waste management can involve solid, liquid or gaseous wastes, with different methods and fields of expertise for each.

Minimization

Generation

Waste Storage

Waste Collection

Waste Transportation

Treatment

Disposal

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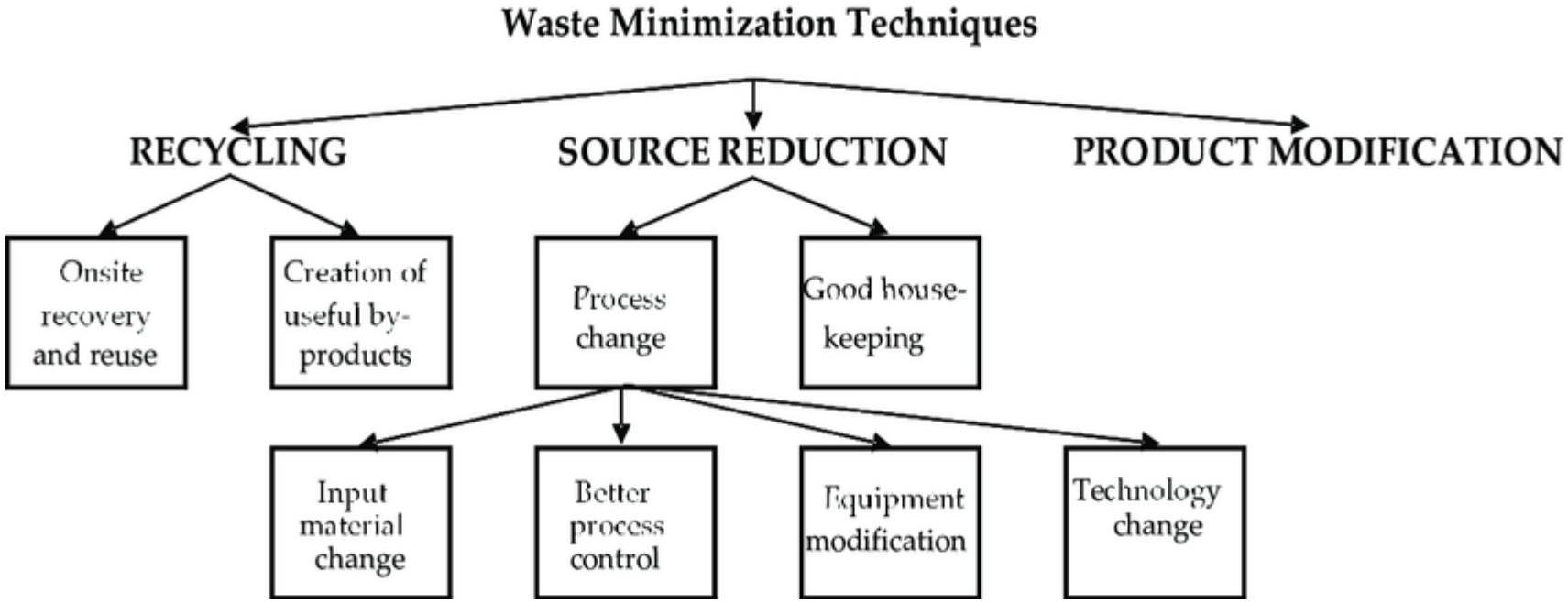
MINIMIZATION



Waste minimisation is a set of processes and practices intended to reduce the amount of waste produced. By reducing or eliminating the generation of harmful and persistent wastes, waste minimisation supports efforts to promote a more sustainability society.

GENERATION

Waste is generated by both human and anthropogenic activities. Living organisms consume materials and eventually return them to the environment, usually in a different form, for reuse. **Solid waste** (or trash) is a human concept.

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COLLECTION

Waste collection is a part of the process of waste management. It is the transfer of solid waste from the point of use and disposal to the point of treatment or landfill Waste collection also includes the curbside collection of recyclable materials that technically are not waste, as part of a municipal landfill diversion program.

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TRANSPORTATION

The **transportation** of **waste** is the movement of **waste** over a specific area by trains, tankers, trucks, barges, or other vehicles.

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TREATMENT

Waste treatment refers to the process of managing, treating, and disposing of waste in a safe and environmentally responsible manner. The goal of waste treatment is to reduce the harm caused by waste to human health and the environment.

DISPOSAL

Dumping or **Land Filling** is an old way of disposing off wastes. It is an easy method of disposal of dry refuse. In this process, solid wastes are dumped in a low lying area and as a result of bacterial action, refuse decreases considerably in volume and are converted gradually into humus.

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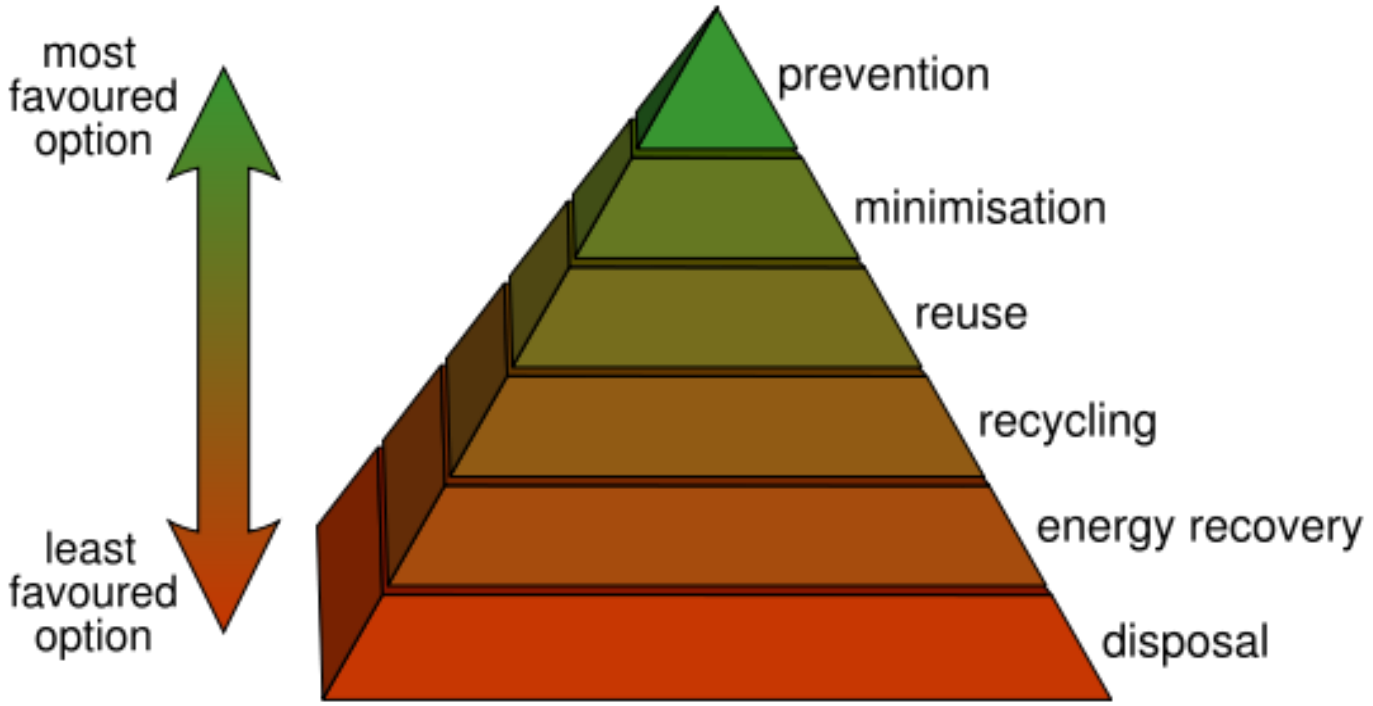
WASTE MANAGEMENT HIERACHY



Waste hierarchy is a tool used in the evaluation of processes that protect the environment alongside resource and energy consumption from most favourable to least favourable actions. The hierarchy establishes preferred program priorities based on sustainability.

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CONCLUSION

In conclusion, effective waste management is not merely a matter of convenience; it is a fundamental pillar of environmental stewardship and public health. As we face the challenges of burgeoning populations and increasing waste production, we must also acknowledge the opportunities for innovation and progress. By reducing our own waste, supporting local recycling initiatives, and advocating for responsible policies, we can all play a vital role in shaping a cleaner, more sustainable future. Remember, the key to a brighter tomorrow lies in the conscientious choices we make today. Together, we can transform waste into a resource and safeguard our planet for generations to come.

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