Theme: **The environment**

Topic 7: **Resources in the environment**

**Resources:** These are things/materials people use to satisfy their needs.

**A resource:** is anything/ material in the environment used to satisfy our needs.

**Types of resources**

Resources are classified according to their ability to be used up completely as;

1. Inexhaustible resources.
2. Exhaustible resources.

**Inexhaustible resources**

These are resources that cannot be used up completely.

***Examples of inexhaustible resources***

1. Sunshine
2. Wind
3. Air

**The sun as resources**

**The sun** is natural and inexhaustible source of energy in the environment.

The forms of energy produced by the sun.

1. Solar energy
2. Heat energy
3. Light energy

**How sun is important to the environment**

1. Sun helps in the formation of rainfall.
2. Light from the sun helps plant to make food (photosynthesis)

**How sun is important to people**

1. The sun is used in the generation of solar electricity.
2. People use sun to preserve food by sun drying .
3. Sun helps the human skin to make vitamin D.
4. The sun helps to disinfect beddings.
5. Light from the sun helps us to see.
6. Sun dries our Clothes.

**Solar electricity:** This is the type of electricity which is generated from light rays of the sun.

***Ways in which solar electricity is friendly to the environment***

1. It reduces the rate at which trees are cut for fire wood.
2. It does not pollute the environment.

***Food stuffs that can be preserved by sun drying***

Cassava, maize, beans, millet, rice, sorghum etc.

**The air as a resource**

**Air** is a mixture of gases in atmosphere.

***Gases that make up air***

1. Oxygen with 21%
2. Carbon dioxide with 0.03%
3. Nitrogen with 78%
4. Rare gas with 0.9%(1%)

**Ways how air is s used as a resource.**

1. Oxygen is used for breathing.
2. Oxygen supports burning of fire.
3. Carbon dioxide is used to extinguish fire.
4. Carbon dioxide is used to preserve bottled drinks such as sodas.
5. Nitrogen and rare gas like argon are used in electric bulbs.

**The wind as a resource**

**Wind** is moving air.

Wind is possesses the form of energy called **kinetic energy.**

**Ways how wind is used as a resource**

1. Wind is used for winnowing seed and grains.
2. Wind is used to sail boats.
3. Wind helps to disperse seeds
4. Wind is used in pollination of flowers.
5. Wind is used to fly kites
6. Wind speeds up evaporation and hence increases the speed to dry man’s things.
7. Wind is used to turn windmills.

These windmills are used to turn generators to produce electricity.

They are also used in drawing water from underground.

**Exhaustible resources**

These are resources that can be completely used up.

***Examples of exhaustible resource:*** minerals, petroleum, forest resources, animal resources etc.

**Groups/ types of exhaustible resources**

Exhaustible resources are divided into two according/depending on whether they can be regained after exhaustion.

1. Renewable resources.
2. Nonrenewable resources

**Renewable resources**

These are resources which can be replaced before they get used up.

***Examples of renewable resources***

1. Plants
2. Animals
3. Soil
4. Water

**Groups of renewable resources**

Renewable resources are also divided into two groups as;

1. Living renewable resources.
2. Nonliving renewable resources.

**Living renewable resources**

These are renewable resources which have life.

***Examples of living renewable resources***

1. Plants
2. Animals

**Plants as a resource**

***Ways how plants are used as resources***

1. Plants are used as food.
2. Plants provide wood used for building, making furniture etc.
3. Roots, barks and leaves are used to make medicine.
4. Plants provide shades.
5. Plants provide wood fuel to man e.g. ***charcoal, firewood and sawdust.***

fibre like cotton and sisal are used to make clothes, sisal rope, sacks etc.

**Plants as energy resources**

Plants contain **chemical energy** which can be changed into other forms of energy like;

1. Heat energy.
2. Light energy.

**Ways how plants acts as energy resources**

1. Plants can be used in production of biogas.
2. Plants are source of food to man which gives man energy.
3. Plants are source of wood fuel to man.

**Animals as resources**

***Ways how animals are used as resources***

1. Manyanimalsare source of food.
2. Some animals are used to plough garden.
3. Animals wastes are used to produce biogas.
4. Their skins and hides are made into leather for making shoes bags belts etc.
5. Their hooves are used to make glue.
6. Bees provides honey which is used as medicine and food.
7. Bees also provide wax which is used in many ways e.g. making candles, shoe polish and floor varnish
8. Meat and milk provide a good source of nutrition.

**Ways how animals are used as a resource**

Animal wastes are used in production of biogas.

**Biogas:** It is methane that is produced from rotting organic matter.

**Materials needed to produce biogas**

1. Cow dung.
2. Plant materials
3. Animal urine

**Uses of biogas**

1. For cooking
2. For lighting
3. For heating

**Advantages** **of** **using** **biogas**

1. It is cheaper than using natural gas.
2. It does not pollute the environment
3. The material are readily available in the environment.

**Biomass:** This is the amount of living materials found in an area.

**Nonliving renewable resources**

This are resources which do not have life.

***Examples of nonliving renewable resources***

1. Soil
2. Water

**Water as a resource**

***Ways how water is used as resources***

1. For cooking
2. For drinking
3. For washing
4. For bathing
5. For cooling machines
6. For irrigating crops
7. Water helps in generation of hydro electricity power (**HEP)**

**Water as energy resources**

***Forms of energy got from water***

1. Hydro electricity
2. Steam energy
3. Tidal energy

**Hydro electricity**

It is the form of electricity produced by fast flowing water.

Fast flowing water possesses **kinetic** **energy.**

Kineticenergy turns the turbines connected to generator.

In this way HEP is produced (**Hydro Electricity Power)**

**Steam energy**

**Steam** is hot gas from Boiling water

It possesses kinetic energy

Steam with kinetic energy helps to power steam engines

**Tidal energy**

This is the form of energy got from water tides on the sea shores.

Tides are periodic rises falls of large bodies of water.

Tides help in the generation of tidal electricity.

**Geothermal energy**

**Geo** means **Earth**. **Thermal** means **Heat.**

**Geothermal energy:** is form of energy got from hot springs/ thermal springs where steam is trapped to turn turbines to produce electricity.

**Ways how water is used as resources**

1. Waterisusedforhydroelectricitypowergeneration.
2. Water helps plant to grow.
3. Water is used to cool machine engines in industries.
4. Tidal energy is used to produce electricity.
5. Water helps in sailing boats

**Soil**

**Soil:** Is the mixture of eroded rock particles and organic matter which covers the earth’s surface.

**Soil as resources**

1. It is used for growing crops.
2. Soil is used for building houses for us and our domestic animals
3. Clay soil is used for modelling. For example pots and stoves
4. Sand soil is used to make glasses and in building houses.

**Nonrenewable resources**

These are resources which cannot be replaced before they get used up.

***Examples of nonrenewable resources.***

Rocks and minerals

Fossils

Fossil fuels

**Rocks and minerals**

**A mineral** is anything that occurs naturally in the Earth but not from living organisms.

**Minerals** are found in the underground.

**An ore** is a natural material from which a metal or mineral is obtained.

***Examples of minerals***

1. Lime
2. Clay and
3. Metals like copper, tin etc.

**Importance of some metals**

**Aluminium;** making aero plane bodies, roofing sheets, saucepans kettles.

**Iron;** making car bodies, hoes, nails, iron bars and axes.

**Copper;** making electrical wires, coins, bullets, refrigerators and others.

**Mercury;** filling teeth and as liquid in thermometers.

**Tin;** making tin cans, dyeing silk clothes and making toothpaste.

**Tungsten;** making bulb filaments. Tungsten is obtained from **wolfram.**

**Gold;** making decorations and jewelry like watches, earrings, necklaces, trophies.

**Uranium;** used to make atomic bombs.

Used as fuel in nuclear powered submarines.

Uranium is burnt to produce atomic electricity.

**A rock** is a naturally occurring substance made up of minerals tightly packed together to form a solid.

**Importance of rocks**

1. Rocks are used in construction
2. Rocks are sold for money
3. Rocks are used in craft making.
4. Minerals in rocks are used for making jewelry, vehicles and other things.

**Alloys**

**An alloy** is a mixture of two or more metals.

***Examples /types of alloys***

**Steel:** iron combines with carbon.

Different alloys are made from steel include;

***Manganese******steel****:* it is strong alloy of steel and manganese used in construction, for example railway lines.

***Stainless******steel****:* it is a mixture of chromium, nickel and steel that does not rust. It is used to make kitchen utensils and cutlery.

**Bronze:** copper combines with zinc.

It is used for making ornaments(for decoration), bells and statues.

**Brass:**  copper combines with tin.

Used in making ornaments and wires.

**Soldier:** lead mixed with zinc.

Joining metals

Making electrical connection in radios television sets, phones and others.

**Dentist Amalgam: copper combines with mercury**

Used for making coins.

Filling holes in teeth

**Why are alloys are made**

To make the metal harder e.g. steel.

To lower the melting point of the metal e.g. solder.

To make the metal more resistant to rust or corrosion e.g. steel.

To increase the electrical resistance of metals.

**Fossils**

Fossils are remains of plants and animals buried underground many years ago.

They are found deep inside the rocks.

***Examples of fossils***

1. Bones and teeth of animals.
2. Roots, leaves or stems of plants.

***Uses of fossils***

1. Fossils help to determine the age of a place or rock.
2. Fossils give us information on how plants and animals have changed.
3. Fossils help to tell how land has changed.
4. They help us to discover new deposits of fossil fuels.

**Fossil fuels**

**A fuel** is anything that burns to produce heat and light energy.

**Fossil fuels** are sources of energy formed by action of heat and pressure on remains of living organisms that were buried many years ago.

***Examples of fossil fuels***

1. Coal
2. Petroleum (crude oil)
3. Natural gas

**Coal** this is type of black mineral that is mined/dug from the underground.

It is formed from dead three and other plant materials.

Coal is burnt to get thermal electricity.

***Products from coal***

1. Tar.
2. Fertilizer.
3. Paint.
4. Perfumes.

***Importance of coal***

1. It is used for heating during generation of electricity.
2. It is used as fuel in steam engines.
3. It is used to make dyes and tar for surfacing roads.

**Petroleum (crude oil)**

It is formed from dead marine organisms.

***Examples of petroleum products***

1. Petrol.
2. Diesel.
3. Oil.
4. Jet fuel
5. kerosene/paraffin.
6. Grease.
7. Tar(used on road, plastic and some chemicals)

***Importance of petroleum products***

1. They are used to generate power that can run machines and vehicles.(are used to run engines)
2. They are burnt to produce heat and light.

***Fuels*** ***used*** ***for*** ***lighting***

Diesel. Paraffin (kerosene).

Natural gas

***Fuels used for cooking and heating***

1. Petrol.
2. Diesel.
3. Kerosene
4. Natural gas.
5. Coal

**NOTE:** The process by which fuel is got from crude oil is called **fractional distillation.**

**Fractional distillation:** This is the process of separating the part of liquid mixture by heating it.

**Ways how people use resources**

1. Resources enable us to get food
2. They enable us to get shelter
3. They enable us to get transport.
4. They enable us to get income (money)
5. We get fresh air and water from them.

**Useful skills for the conservation of the environment**

**Conservation;** This is the protection and preservation (proper use) of resources in the environment.

**It** refers to using resources in such a way that the resources will still be available for the future generation.

**Ways of conserving plants in the environment**

1. By practicing a forestation.
2. By practicing forest reserves.
3. By practicing agroforestry.
4. By teaching people the importance of forest.
5. By restricting bush burning.
6. Avoiding overgrazing and overstocking.
7. By using alternative sources of energy for cooking instead of firewood e.g. biogas and electricity.
8. Plants can be conserved by using energy saving stoves.
9. **E**nergy saving stoves use less charcoal, because it is made of clay which help to retain heat for along time.

**Ways of conserving soil in the environment.**

1. By mulching
2. By controlled bush burning.
3. By crop rotation and bush fallowing.
4. Keeping soil fertile by applying manure and fertilizers.
5. By controlling soil erosion.
6. Avoiding over cultivation.
7. Avoiding deforestation.
8. Plastic wastes like broken jerry can, polyurethane papers should be recycled (converted into useful materials)

**Ways of conserving minerals in the environment.**

1. Mixing metals to form alloys to control mineral exhaustion.

This reduces the amount particular metal to be used.

1. Painting the metals to avoid rusting of metals.
2. Re-using metal scraps instead of mining more metals.

**Ways of conserving animals in the environment**

1. By avoiding overstocking animals.
2. By banning the illegal hunting and killing wild animals.
3. By proper feeding of animals.
4. Treating the sick animals.
5. By banning the buying and selling of wild animal products.
6. By gazetting game parks and game reserves
7. Avoiding overfishing and poor fishing methods.

**Ways of conserving water in the environment**

1. By protecting wetlands (Swamps)
2. By practicing a forestation to increase on rainfall
3. By building enclosures for boreholes, springs and we’ll.
4. Protecting water bodies against illegal activity like dumping waste and mining.

**Ways of conserving fossil fuels in the environment**

1. Repair vehicles under dangerous mechanical condition (**DMC)** to reduce on fuel conception.
2. Petroleum products should be used wisely to prevent over exploitation of oil.
3. Using alternative energy resources like electric cars.

**Wildlife**

**Wildlife;** This refers to animals and plants in our environment.

Many kinds/ specie are extinct (have disappeared from earth.

Other animals are about to disappear/to be extinct and we say they are endangered**.**

***Why are some animals and plants about to die out completely (endangered)***

1. Animals are killed for their skins, horns and tusks.
2. Some plants are endangered because of increasing demand

wood and local medicine.

**Advantages (importance)of conserving wildlife**

1. Some mammals, plants and birds are source of food for man.
2. Some animals and birds are valued as cultural heritage.
3. Plants are homes of many animals, birds and insects.
4. Trees or forest help in the formation of rainfall.
5. Wildlife earns foreign exchange for the government through tourism.
6. Plants provide shade to man and other animals.
7. Plants balance amount of carbon dioxide and oxygen in atmosphere.

**How to conserve and protect wildlife.**

1. Fishes can be conserved by controlling fishing.
2. Animals especially those which are endangered should be taken in national game parks and game reserves to be cared.
3. Banning the selling and buying of wild animals’ body parts like horns.
4. Some rare animals should be caught and allowed to reproduce in wildlife educational centers.

**NOTE: A habitat;** is a natural environment or home of animal or a plant.

**U**ganda **W**ildlife **A**uthority (**UWA**)isthedepartmentwhich is responsible for protecting wildlife in Uganda.

**U**ganda **W**ildlife **E**ducational centers (**UWEC**) in Entebbe is where animals that are rescued from poachers, illegal trade or accidents are taken to be cared for.

**Poachers;** These are people who hunt and kill wild animals illegally from game parks and game reserves.

**Poaching;** This is the hunting and killing wild animals illegally from game parks and game reserves.

**Illegal trade;** This is selling and buying goods and services illegally.

**Harvesting resources**

This is the collecting of resources from the environment for the purpose of using them.

**Harvesting living resources**

**Plants resource**

1. Byhandpicking e.g. ripe coffee bellies, maize cobs and cotton balls.
2. By plucking e.g. tea leaves from tea plants.
3. By cutting e.g. sisal leaves.
4. By cutting and collecting liquid sap for rubber plant.

**Ways of harvesting wood**

**Pollarding;** This is where the top part of a tree is cut leaving lower branches to grow.

This method is used to harvest trees for the shade.

**Coppicing;** This is where the main part of the tree stem is cut leaving the stump.

This method is used to harvest trees for electric poles and lumbering.

**Lopping;** This is where the side branches of the tree are cut leaving the upper branches to grow.

This method is used to harvest trees for firewood.

**Animals resource**

**Meat;** Animals are slaughtered, skinned and meat curved or cut off from the carcass (dead animals).

The place where animals are Slaughtered in large number is called **abattoir.(**slaughterhouse**).**

**Skins and hides;** The animal is slaughtered and the skin is carefully removed from the carcass.

**Horns;** The horns are cut or sawn off with a saw from the head of the slaughtered animals.

**Milk;** It is obtained by milking using either hands or machines. Milking is obtaining milk from the udder of animals.

**Honey;** Honey is extracted from honeycombs of bees.

***Methods*** ***of*** ***extracting*** ***honey*** ***from*** ***honeycombs***.

1. By using heat.
2. By squeezing.
3. By centrifuging.
4. By floating method.

Other animal resources that are harvested include eggs, manure and wool.

**Harvesting non-living resources**

**Harvesting energy from the sun**

Energy from the sun is called solar energy.

The methods of harvesting solar energy;-

By using of solar panels.

By using solar heater

By using solar cooker.

By using solar driers.

**Solar panels;** These are equipment that trap sunlight and convert it into electricity.

Solar panels is made of black lining inside them.

Black lining inside helps to absorb sunlight.

**Solar heaters and cookers;** Trap rays from the sun and produce heat energy.

**Harvesting resources from soil**

**Oil;** The method of harvesting oil is **drilling.** A hole is drilled into the ground until the underground oil(crude oil) is reached. The crude oil is then pumped through pipes to the surface and then refined into usable forms like Petrol, diesel and kerosene.

**Mineral;** Minerals are found in underground rocks.

Digging into the ground is done until the rock bearing minerals is reached. And this is called **mining.**

**Sand** is got from river beds by **scooping** it with spades or **digging** it out by machines.

**Harvesting energy from air**

Moving air or wind can be trapped and its energy used to drive wind mills.

It is also trapped using sail to drive sail boat and dhows.

**END OF TOPIC QUESTIONS**

1. What is a resource?
2. Identify the two types of resources.
3. List down five examples of resources we get from the environment.
4. Mention how we can use energy from the following:
5. The sun
6. Fossil fuels
7. Plants
8. Air
9. Water.
10. State any two ways of conserving plants and animals.
11. List any three reasons for sustainable use of available resources.
12. How is the use of solar electricity friendly to the environment?
13. Why are energy saving stoves made of clay?
14. How are the energy saving stoves conserve the environment?
15. What is an alloy?
16. What is the importance of alloys?
17. Cite three examples of alloys.
18. What alloy is made by mixing;
19. Iron and carbon.
20. Copper and tin.
21. Copper and zinc.
22. Lead and copper.
23. Mercury and copper