



Primary 6 Integrated Science

Term 2

Theme: Science in Human Activities and Occupations

Topic 3/4 – Resources in the Environment

Learning Outcome: The learner;

- appreciates the importance of the environment as a resource base.
- acquires scientific knowledge and skills for harvesting and using resources in the environment.

Resources

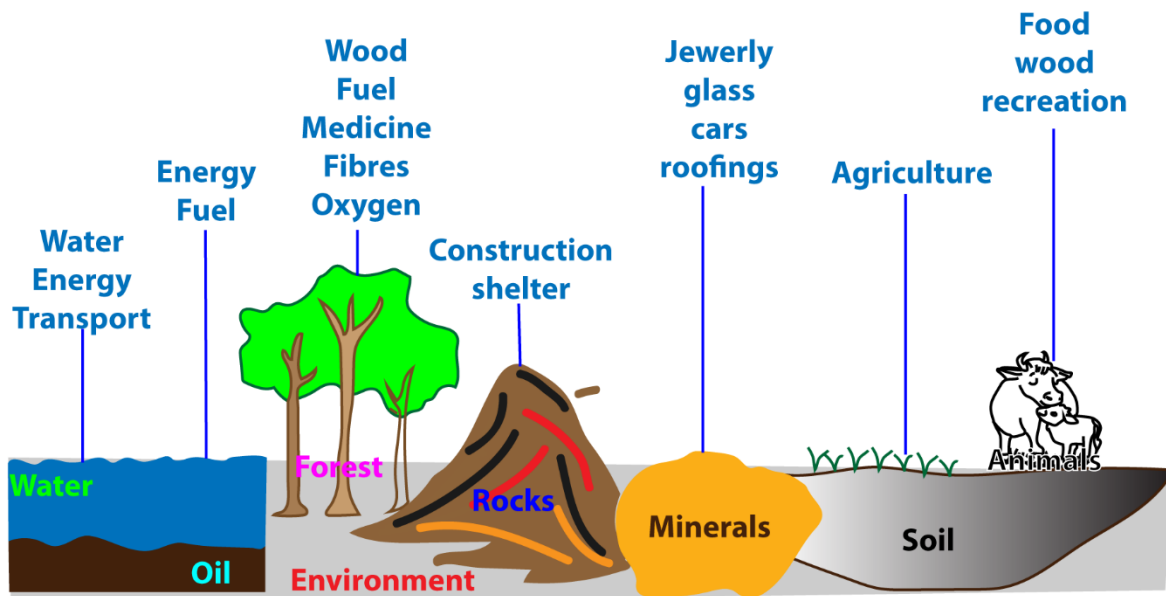
A **resource** is anything that people can use to meet their needs or make life better.

Types of Resources

- Natural resources** – things from nature like water, land, forests, minerals, and animals.
- Human resources** – people and their skills, knowledge, and labor.
- Capital resources** – tools, machines, and money used to produce goods and services.

☞ In short: **A resource is something useful that helps people live, work, and develop.**

Environmental resource



An **environmental resource** is anything found in the natural environment that people use to meet their needs.

Environmental resources can be grouped into two broad categories: **living (biotic)** and **non-living (abiotic)**.

Resources from Living Things (Biotic)

These come from plants, animals, and other organisms.

- (i) **Plants:** food, wood, fruits, vegetables, Fibres (cotton, silk, sisal), rubber, medicinal herbs.
- (ii) **Animals:** milk, meat, wool, skin/hide, honey, silk, horns, and medicine
- (iii) **Microorganisms:** yeast (used in baking), bacteria (used in fermentation and medicine).

Environmental resources from Non-Living Things (Abiotic)

These are derived from nature but not from living organisms.

- (i) **Water:** rivers, lakes, oceans.
- (ii) **Air:** oxygen, carbon dioxide, nitrogen.
- (iii) **Minerals:** gold, iron, copper, salt, coal.
- (iv) **Soil:** used for agriculture and construction.
- (v) **Sunlight:** solar energy.
- (vi) **Fossil fuels:** petroleum, natural gas.

Quick comparison:

Living (Biotic)	Non-Living (Abiotic)
Wood, fruits, cotton	Minerals (iron, gold)
Meat, milk, wool	Water, air, soil
Honey, silk	Sunlight, fossil fuels

Exercise 1

- (a) What is a resource?
- (b) Name any two plant resource and two animal resources

Ways of Harvesting Resources

- (i) **Farming** – growing crops and keeping animals to get food.
- (ii) **Fishing** – catching fish from lakes, rivers, and ponds.
- (iii) **Mining** – digging the ground to get minerals like gold and copper.
- (iv) **Logging** – cutting down trees for timber and firewood.
- (v) **Hunting** – catching wild animals for meat and skins.
- (vi) **Collecting water** – storing rainwater or fetching from rivers and wells.

Exercise 2

- (a) State any four ways of harvesting resources
- (b) Name the resources being harvested in the diagram below



Use of Living (Biotic) Resources

- (i) **Food:** Fruits, vegetables, meat, milk, honey.
- (ii) **Clothing:** Cotton, wool, silk, leather.
- (iii) **Shelter & Tools:** Timber for houses, furniture, paper.
- (iv) **Medicine:** Herbs, plant extracts, animal products (like insulin from pigs).
- (v) **Energy:** Biofuels from crops (sugarcane, maize).

Use of Non-Living (Abiotic) Resources

- (i) **Water:** Drinking, irrigation, sanitation, hydroelectric power.
- (ii) **Air:** Oxygen for breathing, nitrogen for fertilizers, carbon dioxide for soda industry.
- (iii) **Minerals:** Iron for construction, gold for jewelry, copper for wiring.
- (iv) **Soil:** Agriculture, pottery, construction.
- (v) **Sunlight:** Solar energy, drying crops.
- (vi) **Fossil Fuels:** Petroleum, coal, natural gas for transport and electricity.

Summary Table

Resource Type	Examples	How People Use Them
Living (Biotic)	Cotton, wool, timber, fruits	Clothing, shelter, food, medicine
Non-Living (Abiotic)	Water, minerals, sunlight, soil	Energy, construction, farming, industry

Exercise 3

State any four uses of environmental resources.

Renewable and nonrenewable resource

Renewable Resources

These are resources that **can be replaced or reused naturally**.

They do not run out easily because nature makes more of them.

Examples:

- (i) Sunlight (solar energy)
- (ii) Wind (wind energy)
- (iii) Water (used for drinking and hydroelectric power)
- (iv) Forests (trees grow again if we plant them)
- (v) Animals (they reproduce and increase in number)

☞ Renewable resources are like a **refillable bottle**—when you use them, nature can fill them up again.

Non-Renewable Resources

These are resources that **cannot be replaced quickly** once they are used up.

They take millions of years to form, so when finished, they are gone.

Examples:

- (i) Coal
- (ii) Petroleum (oil)
- (iii) Natural gas
- (iv) Minerals like gold, copper, and iron

☞ Non-renewable resources are like a **packet of biscuits**—once you finish them, they are gone.

Quick Comparison Table

Renewable Resources	Non-Renewable Resources
Sunlight, wind, water	Coal, petroleum, natural gas
Forests, animals	Gold, copper, iron
Can be replaced	Cannot be replaced quickly

In short:

- **Renewable** = can be used again and again
- **Non-renewable** = once finished, they are gone

Exercise 4

- (a) What are the meanings of **renewable** and **nonrenewable** resources?
(b) Give **two** examples each of renewable and nonrenewable resources.

Caring for animal resource

Why Care for Animals?



Animals give us **food, clothing, work, and companionship**. To keep them healthy and useful, people must care for them properly.

Ways of Caring for Animals

- (i) **Feeding** – Give animals enough food and clean water.
- (ii) **Shelter** – Build safe houses to protect them from rain, sun, and predators.
- (iii) **Health Care** – Take them to veterinary doctors, vaccinate, and keep their homes clean.
- (iv) **Kind Treatment** – Do not beat or overwork animals; handle them gently.
- (v) **Protection** – Guard animals from thieves and wild animals.
- (vi) **Breeding** – Allow animals to reproduce so their numbers increase.
- (vii) **Security for wild animals**- guard them against poachers and habitat encroachment.

Quick Summary Table

Way of Caring	Why It's Important
Feeding	Keeps animals strong and healthy
Shelter	Protects from bad weather and predators
Health care	Prevents diseases and death
Kind handling	Makes animals trust and work better
Breeding	Ensures more animals for future use
Security	Animals are protected from poachers

In short: Caring for animals means **feeding, sheltering, protecting, and treating them kindly** so they continue to provide us with food, clothing, and other resources.

Exercise 5

Suggest any **four** care for animal resources.

Conservation of resource



Wild animals

Conservation means using resources wisely and protecting them so they last longer.

Importance of Conservation

- (i) Ensures resources are available for future generations.
- (ii) Keeps the environment clean and healthy.
- (iii) Supports life (plants, animals, and people).

Ways of Conserving Resources

- (i) Planting trees to replace those cut down.
- (ii) Using water carefully (not wasting).
- (iii) Recycling materials like paper, plastic, and metal.
- (iv) Using renewable energy (solar, wind, hydroelectricity).
- (v) Protecting animals by giving them food, shelter, and health care.
- (vi) Avoiding pollution of air, water, and soil.
- (vii) Practicing good farming methods (crop rotation, using manure).

Class activity

- Pupils work in groups to list **five resources** they use daily and suggest **one way to conserve each**.
- Groups present their ideas to the class.

Summary

- (i) Conservation means **using resources wisely and protecting them**.
- (ii) Resources are either **renewable** or **non-renewable**.
- (iii) We conserve resources by planting trees, saving water, recycling, protecting animals, and avoiding pollution.

Exercise 6

- (a) What is conservation?
- (b) State three ways of resource conservation.

Revision exercise

1. Give any one way of conserving microorganism in the soil.
 - (i) **Use organic manure or compost** instead of too many chemical fertilizers.
 - (ii) **Avoid soil pollution** by not dumping plastics, oils, or harmful waste.
 - (iii) **Practice crop rotation** to keep the soil fertile and friendly for microorganisms.
 - (iv) **Keep the soil moist** by watering it regularly, since microorganisms need moisture.
 - (v) **Avoid over-tilling (too much digging)**
2. Mention one way wind is used as a resource.



Electricity



Winnowing

3. Name two ways the sun is used as a resource.
 - (i) **For generation of electricity**
 - (ii) **Drying** harvests and clothes
 - (iii) **Provides light**
 - (iv) **Provides warmth**
 - (v) **Plant Growth**
4. State any one way of conserving water as a resource in environment.
 - (i) **Close taps properly** – Do not leave taps running when not in use.
 - (ii) **Collect rainwater** – Store rainwater in tanks or containers for later use.
 - (iii) **Use water wisely** – Avoid wasting water when bathing, washing, or cleaning.
 - (iv) **Repair leaks** – Fix leaking taps and pipes quickly to stop water loss.

- (v) **Irrigate carefully** – Farmers should use methods like drip irrigation to save water.
- (vi) **Protect water sources** – Keep rivers, lakes, and wells clean by avoiding dumping waste.
- (vii) **Plant trees** – Trees help protect water sources by preventing soil erosion and keeping rainfall balanced.

5. One way biogas helps to conserve environment?

- (i) **Prevents deforestation:** Offers an alternative to firewood and charcoal, helping protect forests.
- (ii) **Provides renewable energy:** Replaces fossil fuels with clean, sustainable power for cooking, heating, and electricity.
- (iii) **Reduces waste:** Organic waste like manure and food scraps is converted into energy instead of polluting landfills.
- (iv) **Produces organic fertilizer:** The leftover of digester enriches soil, reducing chemical fertilizer use and water pollution.

6. (a) Two ways plants support human life

- (i) provide food
- (ii) provide medicine
- (iii) provide fuel
- (iv) provide oxygen
- (v) provide construction materials
- (vi) provide shade/shelter

(b) Two ways human can conserve plant life

- (i) **Plant more trees:** Reforestation and afforestation help restore ecosystems.
- (ii) **Reduce pollution:** Avoid dumping waste and chemicals that harm plant habitats.
- (iii) **Stop deforestation:** Limit cutting of forests and promote sustainable logging.
- (iv) **Protect native species:** Avoid introducing invasive plants that threaten local biodiversity.

- (v) **Practice sustainable farming:** Use organic fertilizers and crop rotation to keep soil healthy.
- (vi) **Preserve natural habitats:** Support conservation areas and protect wetlands, forests, and grasslands.

7. Mention one example of nonrenewable resources

- (i) Minerals
- (ii) Petroleum oil
- (iii) coal

8. (a) What form of energy is stored in wood fuel?

chemical

(c) Name any one form of energy produced when wood burns.

Light, heat

(d) State two practices carried out at home to conserve wood fuel

- (i) **Use improved cook stoves** – they burn wood more efficiently than traditional open fires.
- (ii) **Cook smart** – prepare meals together or in bulk to reduce repeated use of firewood.
- (iii) **Use dry firewood** – it burns faster and cleaner, saving fuel.
- (iv) **Cover pots while cooking** – keeps heat inside and shortens cooking time.
- (v) **Mix fuels** – combine wood with crop residues or biogas where possible.
- (vi) **Plant trees near home** – ensures a sustainable supply of firewood without depleting forests.

9. Name the source of solar energy

Sun

10. Give one characteristic of nonrenewable energy.

It is not replaceable once used

11. How is water as a renewable resource replaced in environment?

- (i) **Precipitation** – Rain, snow, and hail replenish rivers, lakes, and groundwater.
- (ii) **Water springs**- replace water in the wells, ponds and sea
- (iii) **Infiltration** – Water seeps into the soil and refills underground aquifers.
- (iv) **Surface runoff** – Rainwater flows into streams, rivers, and eventually oceans, maintaining water bodies.
- (v) **Evaporation** – Heat from the sun turns water from oceans, lakes, and rivers into vapor.

12. State one way animals can be used as energy resource?

- (i) **Biogas from manure** – animal waste (like cow dung) is digested to produce biogas, which can be used for cooking, heating, and electricity.
- (ii) **Animal power** – oxen, donkeys, and horses provide mechanical energy for plowing fields, grinding grain, or transporting goods.
- (iii) **By-products for fuel** – fats and oils from animals can be processed into biodiesel or used in lamps.
- (iv) **Dung provide heat at night in tropics**

13. Why is biogas regarded as y friendly energy source

- (i) **Uses waste productively** – it turns animal manure, crop residues, and food scraps into useful energy instead of polluting landfills.
- (ii) **Reduces greenhouse gases** – captures methane (a strong greenhouse gas) and burns it for energy, lowering emissions.
- (iii) **Renewable** – continuously produced as long as organic waste exists, unlike fossil fuels which are limited.

- (iv) **Produces organic fertilizer** – the leftover digestate enriches soil naturally, reducing chemical fertilizer use.
- (v) **Protects forests** – provides clean cooking fuel, reducing dependence on firewood and charcoal.
- (vi) **Cleaner combustion** – burns more cleanly than coal or kerosene, reducing indoor air pollution.

14. (a) Give any two examples of nonrenewable resources in the environment.

- (i) **Coal** – used for electricity generation.
- (ii) **Crude oil (petroleum)** – refined into fuels like petrol, diesel, and kerosene.
- (iii) **Natural gas** – used for heating, cooking, and power.
- (iv) **Uranium** – mined for nuclear energy.
- (v) **Metals and minerals** – such as gold, copper, and iron ore.

(b) State any two ways of conserving nonrenewable resources.

- (i) **Use energy efficiently** – switch off lights and appliances when not in use.
- (ii) **Adopt renewable alternatives** – solar, wind, and biogas reduce dependence on coal, oil, and gas.
- (iii) **Practice fuel conservation** – carpooling, using public transport, or walking instead of driving saves petroleum.
- (iv) **Recycle and reuse materials** – metals like aluminum, copper, and iron can be recycled to reduce mining.
- (v) **Promote sustainable industry** – encourage cleaner production methods that use fewer fossil fuels.
- (vi) **Protect forests** – reduce charcoal and firewood use by planting trees and adopting alternative fuels.

15. Name energy resource obtained from animal dung and urine.

Biogas

16. Why is water grouped as renewable resources?

It is continuously replaced

17. The diagram shows how electricity is produced. Use it to answer the question that follows.



What source of energy is used to produce the electricity?

Wind

18. Give one way in which the use of solar energy is good to our environment.
- (i) **Renewable and abundant** – sunlight is naturally replenished and will not run out.
 - (ii) **Reduces greenhouse gases** – solar power produces electricity without releasing carbon dioxide or methane.
 - (iii) **No air pollution** – unlike burning coal or oil, solar panels generate clean energy without smoke or harmful gases.
 - (iv) **Protects forests** – reduces dependence on firewood and charcoal, helping prevent deforestation.
 - (v) **Saves water** – solar power generation uses very little water compared to fossil fuel or nuclear plants.

Thank You

Dr. Bbosa Science