Natural Resources

- **Atmosphere :** It is the multi-layered gaseous envelope surrounding the earth.

- **Layers of atmosphere :** Troposphere, stratosphere, mesosphere, thermosphere (or ionosphere) and exosphere

- **Role of the atmosphere**

  - It acts like a blanket, thus covering the earth.
  - It absorbs heat from sunlight, thus keeping the average temperature of the earth steady.

- **Wind –** It is caused by the uneven distribution of heat over the Earth's surface.

- **Formation of Wind**

  - Wind is formed as a result of the differential heating of the atmosphere.
  - During the day, wind blows from sea to land. This is known as **sea breeze**.
  - During the night, wind blows from land to sea. This is known as **land breeze**.

- **Factors governing movement of air**

  - Wind is formed as a result of the differential heating of the atmosphere.
  - Rotation of the Earth
  - Relief features of the Earth
  - Vapourisation and condensation
  - Uneven heating of land in different regions of the Earth

- **Sources of water:** The common sources of water are ponds, lakes, rivers, wells, and reservoirs.

- **Water cycle:** Water undergoes different processes in the environment and is found in different states during these processes. This cyclic process through which water circulates in the environment is called the **water cycle**.

- **Importance of water**

  - Water is necessary for germination of seeds, transportation of nutrients from soil and food from the leaves to different parts of the plant, in preparation of food through photosynthesis.

  - Aquatic animals and plants get their nutrients as well as oxygen supply from the water. These substances are present in water in dissolved form.

- Water is used for many other purposes such as in cooking, cleaning, industrial work, running hydroelectric and thermal electric power plants. Sea water is also used as a medium of transportation.

- A solution has two components, namely the solvent and the solute.

- **Solvent** is that part of the solution in which the other component is dissolved. In other words, solvent is that component of a mixture that is present in large amounts.

- **Solute** is that part of the solution that is dissolved in the solution. This is present in a lesser quantity as compared to the solvent. Also, more than one solute can be present in a solution.

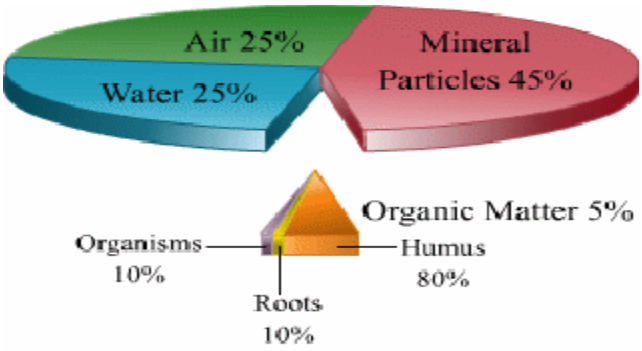
- **Properties of a solution**

- It is a homogeneous mixture of solutes and solvents
- The solute particles in a solution are extremely small in size. They are less than 1 nm (10^{-9} m) in diameter.
- Solute particles are not visible to the naked eye.
- As a result of the small size of the solute particles, a solution does not scatter light.
- Solute particles being small in size get dissolved in the solvent. Hence, the solute cannot be separated from the solution by filtration.
- Solute particles do not settle down when left undisturbed.
- The addition of harmful substances to water which causes its physical, chemical and biological properties to change is called **water pollution**.

- **Uses of Water**

  Water is used for many purposes like drinking, washing clothes and utensils, generating electricity, bathing, irrigation etc.

- Soil is the layer of earth that results from the degradation of the basement rock— also known as bedrock—due to certain physical, chemical and biological processes. The quality of a soil is influenced by the microscopic organisms found in it.

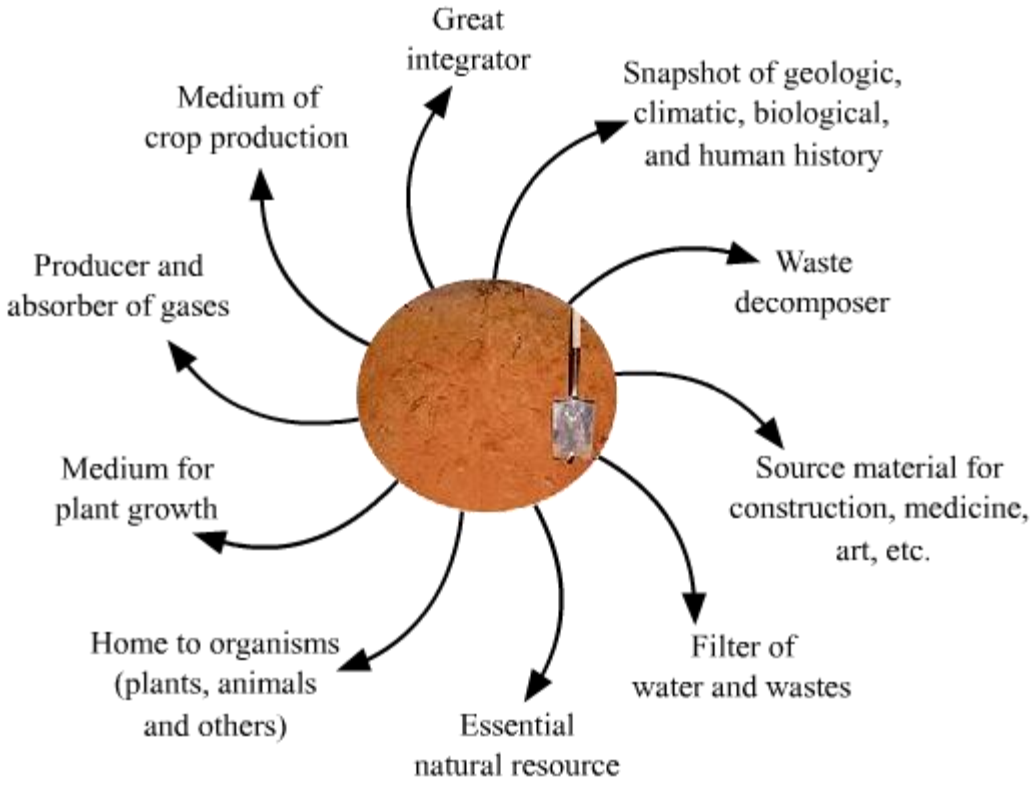


- **Components of soil**:

  - Small particles of rock
  - Humus
  - Microscopic life
  - Nutrients

- **Factors influencing formation of soil**:

- **Importance of soil**:



- **Soil Erosion -** The removal of the top layer of soil

- **Soil Pollution -** The introduction of the substances like toxic compounds, chemicals, salts, radioactive materials in the soil

- **Prevention of soil erosion:**

  - Parent material
  - Climate
  - Topography
  - Organisms
  - Time
  - Afforestation

- Terrace farming
- Proper irrigation techniques
- Construction of proper embankments

- **Air pollution**

- A change in the quality of air brought about by the addition of harmful substances, either by humans or by environmental processes, is termed as air pollution.
- The important sources of air pollution are burning of fossil fuels, burning of wood; automobile exhaust, combustion, refrigerants such as Freon, aerosol sprays etc.

- **Water Pollution**

- A change in the quality of water brought about by the addition of harmful substances by humans is termed as water pollution.
- Important factors that pollute water are fertilisers and insecticides, sewage from towns and cities, waste from factories/industries.
- A change in the temperature of water is also a form of pollution.

- **Greenhouse effect**

- Trapping of heat by gases (CO_2) in the atmosphere.
- Gases that cause the greenhouse effect are responsible for increasing the temperature of the Earth and thus contributing to the phenomenon called **global warming**.

- **Causes of Green house effect**

- A part of solar radiations cause warming of the earth's surface.
- A part of solar radiation is reflected back, which is trapped by the earth's atmosphere. This phenomenon is called green house effect.

- **Green house gases**

- These are the gases, which trap the solar radiations, and in this way, are responsible for the increase in the temperature of Earth.
- The examples include carbon dioxide, methane, nitrous oxide, and water vapours.

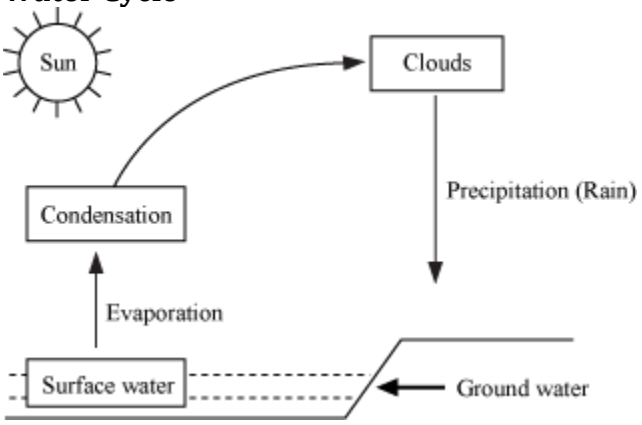
- **Global warming**

- The CO_2 level in atmosphere is increasing due to various human activities such as deforestation and burning of fossil fuels.
- Build up of CO_2 in the atmosphere will result in a rise in the average temperature of earth's atmosphere, leading to global warming.
- Global warming will lead to melting of glaciers and increase in the sea level.

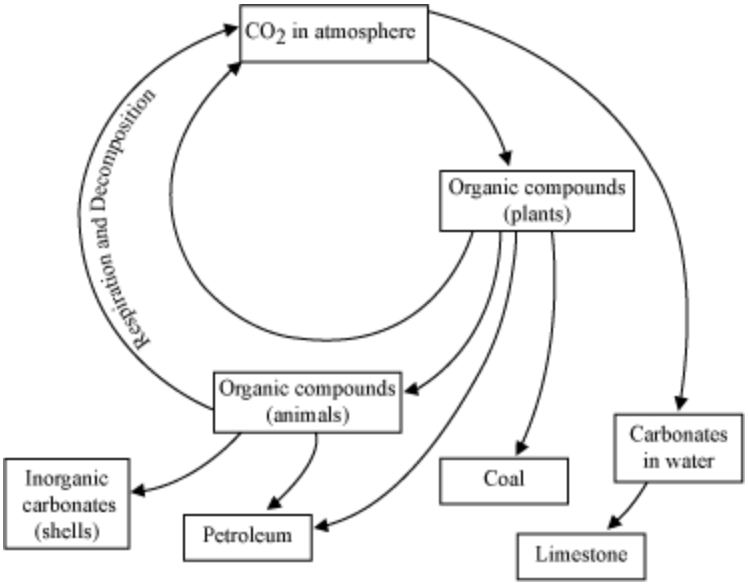
- **Ozone layer**

  - Ozone (O_3) is a form of oxygen and is more stable than the two-atom oxygen (O_2).
  - The ozone layer protects and prevents these ultraviolet radiations from reaching the Earth's surface.
  - The pollutants that are responsible for depleting the ozone layer are gases such as chlorine and fluorine.
  - As a result of ozone depletion, a hole has developed in the ozone layer over Antarctica and its size has been steadily increasing over the years.

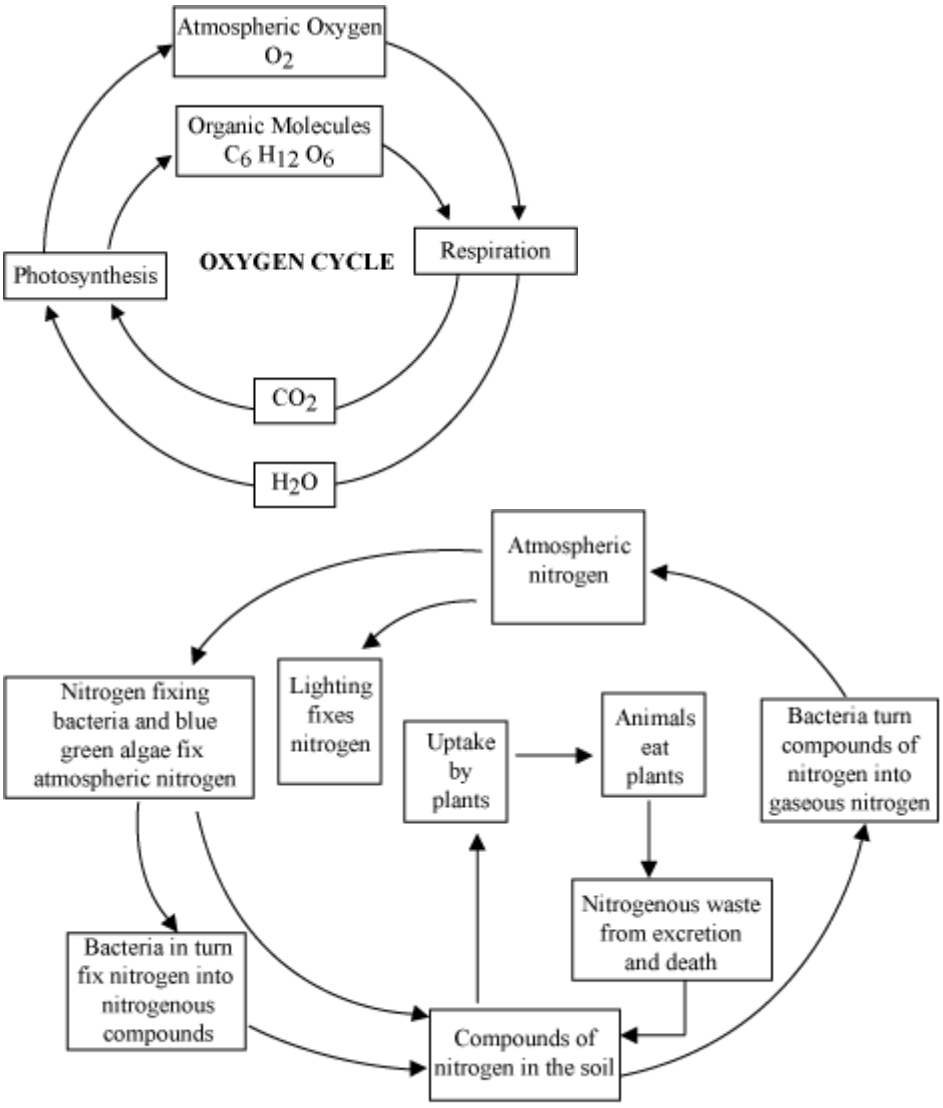
- **Water Cycle**



- **Carbon cycle**



- **Oxygen cycle**



Nitrogen cycle