

**RESOURCES**

Resources is any commodity (thing) that we require for the sustenance of life e.g., land, water, air, cloths, Building etc.

**TYPES OF RESOURCES**

Resources can be classified over a variety of considerations.

On the basis of renewability resources are classified as renewable or non-exhaustible and those that are exhaustible or non-renewable.

Based on origin, resources can be classified as Biotic or Abiotic or Inorganic.

Resources may also be classified as those that have been created by nature and those that have been created by human effort.

**NATURAL RESOURCES**

Any resources that we obtain from nature e.g., Land Water, Air, etc are called Natural Resources. Natural endowments in the form of land, water, vegetation and minerals are called natural resources. Natural resources are available in nature. Land, Water, minerals and forests are some of the natural resources. Land, water, and soil are abiotic resources. Coal and iron ore are biotic resources.

**MAN-MADE RESOURCES**

Resources that are created by man are called Man – Made Resources. Engineering technology, machines, buildings, monuments, paintings and social instructions are some of the human resources. Human having knowledge and skill, health and several other qualities, are also resources. Human resources are essential for development of natural resources.

**RENEWABLE RESOURCES**

The resources which have the ability to renew themselves in a given period of time are known as renewable resources. Plants and animals have the ability to regenerate themselves and forests and wildlife are renewable resources.

**NON-RENEWABLE RESOURCES**

The resources which once they exhaust, cannot be remade are known as non-renewable resources. Minerals, water, solar, wind and tidal energy.

**ECONOMIC RESOURCES**

The resources which help in the growth and development of economy are called economic resources. All resources are economic resources.

**CONSERVATION OF RESOURCES**

The word conservation is derived from two Latin words “Can” keeping. “Serve” together. Conservation of resources means management of resources by humans with the aim at sustainable benefits to the present as well as future generation. It is a Judicious and planned use of natural resources. Conservation is needed most for non-renewable resources.

**REUSABLE RESOURCES**

Are those resources, which can be used again and again . E.g., Water, air etc.

**NON-REUSABLE RESOURCES**

Are those resources which once used cannot be used again. E.g., wood, coal etc.



## RESOURCES PLANNING

Resources' planning is a technique or skill of proper utilization of resources. Resources planning helps in reducing wastage of resources and in keeping the environment pollution free and takes care of future needs.

***Resources planning comprises three stages:-***

1. Preparation of inventory of resources.
2. Evaluation in terms of availability for development.
3. Planning for exploitation of resources.

The first stage includes surveying, mapping and measurement of characteristics and properties of resources.

The second stage examines resources from point of view of technology, economy and need.

The third stage is related to action-oriented planning, which emphasizes use and refuse of the resources.

## LAND RESOURCES

Land is a basic resource to man. The growth of plants and crops depend upon land. The uppermost layer of the earth's crust, which is loose, fragmented, is useful for plants. It is the basic resource for agriculture and consists of both inorganic and organic substance. Faulty agricultural practices, deforestation and overgrazing have lead to soil erosion.

## SOIL

The upper most layer of the earth's crust that has been highly weathered, influenced by climate, plant growth and micro – organisms are referred to as soil. The word soil is derived from a Latin word "Solum" which means floor or ground, soil is one of the geographical factor, that greatly influences food, clothing, housing and life styles of human beings. By its special qualities, soil influences growth of particular foods, fibers and other agricultural products.

Soils are composed of four main ingredients. These are:

- |                   |                     |          |        |
|-------------------|---------------------|----------|--------|
| 1. Mineral matter | 2. Organic material | 3. Water | 4. Air |
|-------------------|---------------------|----------|--------|

A soil good for growing most plants is composed of 45% minerals, 2.5% organic matter, 3.25% air and 4.25% water.e.g., (with sand, soil and clay).

## SOIL FORMATION

The transformation of rock into soil is called as soil formation. Weathering and other erosional agents break up the rocks and form the skeleton soil for soil formation. Soils are dynamic and change over time. The process of formation of soil is called pedogenises. The first step in formation is weathering for the rocks. Plants, animals and human being all contribute in the weathering process. Mechanical or physical weathering involves breaking up of rocks by physical or biological agents. Physical forces responsible for weathering are variation in temperature and frost action. The formation of soils is helped by the following factors:

1. **TEMPERATURE VARIATION:-** Temperature variations take place during day and night and also according to different seasons. Whenever there is rise in temperature, the rocks expand. When the temperature falls there is contraction. The temperature variation causes cracks in the rocks, which causes disintegration. Water enters into such cracks. During cold winter nights, the water freezes and expands leading to widening of the cracks.
2. **PLANTS, ANIMALS AND HUMAN BEINGS:-** Plant roots penetrate deep into the rocks cracks in their search for water and nutrients. As the roots grow in size, the cracks widen further. The rocks get split in this process. Burrowing by creatures like earthworms, rats and rodents



create small tunnels that loosen the rocks. Human beings cause disintegration of rocks through mining and quarrying operations.

3. **CHEMICAL WEATHERING:-** Some rocks contain large quantities of iron compounds, oxidation of iron makes the rock break very easily.
4. **CARBONISATION:-** Carbonization takes place in case of lime stone rocks. Carbon – di – oxide in rainwater forms a weak solution of carbonic acid. This acid enters the rocks and reacts with calcium, which is a constituent of the limestone. The process of carbonization leads to erosion in case of limestone.
5. **SOLUTION:-** The process of solution takes place in case of rock salt. Rocks salt dissolves in water to form solution. In this process, soluble constituent of the rock gets separated from the insoluble portion. Eventually, the rock breaks up.

### FACTORS DETERMINING PROPERTIES OF SOIL:-

*The properties of soil are the result of the following five key factors :*

- i) **Parent material:-** It is the basic material from which the soil is formed. The parent material could be bed rock, organic material or deposit from water, glaciers, volcanoes or material moving down a slope.
- ii) **Climate:-** Sunshine, water and precipitation and other environmental forces break down the parent material or bed rock and affect the rate of soil formation.
- iii) **Organisms:-** The dead remains of both plants and animals decompose in the earth and form organic matter that enriches the soil.
- iv) **Topography:-** Topography is important for climatic effects. Soil at the bottom of a hill will get more water than soils on the slopes.
- v) **Time:-** Soil is formed during hundreds and thousand of years. This period varies according to the nature of the parent rock, climate and vegetation.

**Soil Profile:-** The face of the soil or the way it looks when you cut a section of it is called soil profile.

**Soil Horizons:-** The layers of which soil is made up of is called soil horizons. The soil horizons vary in thickness. The main codes used to describe soil horizons are O, A, B, C, E and R horizons.

**O Horizons:-** It is the top layer of soil and is made up of organic matter . it contains leaves, logs, twigs, and remains of animals. O horizons are common in forested areas.

**A Horizons:-** It is the first mineral horizon of the soil and is known as top soil. This horizon is ideal for agricultural purposes.

**B Horizons:-** It is composed of parent material. It is also termed as subsoil. This horizon is rich in iron, aluminium and other soil constituents.

**C Horizon:-** It is the bed rock only partly decomposed and in the initial stage of soil formation.

**E Horizon:-** It is named after the word alluvial , meaning that clay, iron, aluminium have been leached from out of it. This horizon is commonly found in forests where coniferous trees grow.

**R Horizon:-** It represents a layer of rock that is sometimes found under the soil profile.

### TYPES OF SOIL:-

Soils are classified on the basis of the fertility, colour and texture. Some soils are Sedentary. These are the ones that lie at their place of origin. Some soils are transported soils. They are transported by water and then deposited. Some soils are brought by glaciers. These are drift soils.

Indian soils are generally divided into the following types:

- |                   |                   |                 |
|-------------------|-------------------|-----------------|
| 1. Alluvial Soils | 2. Black Soils    | 3. Red Soils    |
| 4. Laterite Soils | 5. Mountain Soils | 6. Desert Soils |

1. **Alluvial Soils:-** These soils are the most important and widespread. It covers 24% (7.7 lakh km<sup>2</sup>) of the land area of India. They are confined mainly to the northern plains, coastal strips and Chatisghar basin. They have been brought down and deposited by three great rivers – Satluj, Ganga and Brahmaputra. This soil consists of varying proportions of sand, silt and clay. Alluvial soils are generally



of two types Khadar and Bhangar. The Khaddar is more fertile than the bangar. These soils contain adequate potash, phosphoric acid and lime. However, they are deficient in organic and nitrogenous content. Alluvial soils support over half the Indian population.

2. **Black Soils (Regur Soils):-** These cover 5.18 lakh km<sup>2</sup> soils are black in colour. These soils are most typical of the Deccan trap region spread over north – west. These occur mainly in Maharashtra, western M.P and Gujarat. Black soils are also found in parts of Karnataks, Andhra Pradesh and Tamil Nadu. The black soils are made of extremely fine material. They are well known for their capacity to hold moisture. They are enriching in soil nutrients, such as calcium carbonate, magnesium carbonate, potash and lime. They develop deep cracks in the field during hot dry weather. This helps in their aeration. Hence, their self-ploughing ability. These soils are ideal for growing cotton.

3. **Red Soils:-** Red soils are formed in areas of igneous and metamorphic rocks. These have developed as the result of weathering. It's red color is due to the presence of iron in it. They are highly porous and fertile when they are fine grained and deep. They are deficient in phosphoric acid, organic matter and nitrogenous material region on all sides, and cover the eastern part of the peninsular comprising Chotanagpur plateau, Orissa, Eastern Madhya Pradesh, Telangana, the Nilgiri and Tamil Nadu.

4. **Laterite Soils:-** The laterite soil is a result of intense leaching owing to heavy tropical rains. They lack in elements of fertility and are normally of low value for crop production. They are red in colour and composed of little clay and much gravel of red sandstones. They are found in patches along the edge of the plateau in the east covering small parts of Tamil Nadu and Orissa and parts of Assam and Meghalaya. These soils support only pastures and scrub forests.

5. **Mountain Soils:-** These soils are found in the mountainous regions of the country particularly in Meghalaya, Arunachal Pradesh, Eastern regions, Uttarakhand Pradesh and Jammu and Kashmir. These soils are characterized by deposition of organic materials. These soils are heterogeneous in nature. These are sandy with gravel, porous and devoid of humus.

6. **Desert Soils:-** These soils are found in the arid and semi-arid conditions in some areas, the soils contain high percentage of soluble salt and lack of organic matter. With irrigation facilities, these soils are found to yield good harvests. They are largely found in arid areas of Rajasthan, Punjab and Haryana.

### SOIL TYPES OF KASHMIR:

*There are mainly three soil types in Kashmir:*

1. **Mountain Soils:-** These soils are found in the mountainous tract between 700 – 3500 metres above sea level. These soils are shallow, immature and highly susceptible to erosion. These are acidic in character, deficient in potash, phosphoric acid and lime. These soils are ideal for cultivation of maize, fruits, pulses and fodder.
2. **Alluvial Soils:-** The sediments brought down by rivers during floods and deposited on the temporally submerged land are known as alluvial soils. These are the most productive soils of J&K. These are found in the Southern plains of Jammu, the valley bottom of Kashmir and in the shape of narrow tracts along the tributaries of Chenab and Jhelum rivers. This type of soil is suitable for the cultivation of Rice and Wheat.
3. **Karewa Soils:-** Karewas are lacustrine deposits found in the form of low flat mounds or plateaus. These are found in Kashmir Valley and Kishtawar. The karewa soils are generally permeable and are hence poor for cultivation. Karewa as are suitable for growing saffron and fruits.



**Land use pattern:-** Land is governed by the nature of the available soil. Alluvial soils are most suited for agricultural crops. Black soils are ideal for cotton. Hill slopes are suited for tea plantation. Desert soils are least suited for growing crops. The use of chemical fertilizers has however widened the choice.

**Land use in India:-** According to the latest data available, the land use pattern in India is as Under:

#### **Soil Erosion:-**

The removal of soil from one place to another is called soil erosion. Soil erosion makes land unsuitable for cultivation, and the land so developed is called badlands. Soil erosion can become a menace as it does not allow farmers to grow crops.

#### **Causes of Soil Erosion:-**

Natural vegetation slows the wind speed and it cannot pick up loose particles from the top layer. In the absence of vegetation, rain is able to easily break up the soil particles. Flowing water carries with it the broken particles. Rivers changing their courses also cause soil erosion.

#### **Types of Soil Erosion:**

- i) **Sheet Erosion:-** If the soil has no vegetation cover, the falling rain water washes the top soil down the slopes leading to sheet erosion.
- ii) **Gully Erosion:-** If the rainfall is very heavy, the water runs fast and creates grooves or gullies. These gullies keep on getting deeper and deeper with time. This is called gully erosion. This problem affects mainly the states of Uttar Pradesh, Madhya Pradesh, Bihar, Rajasthan, Gujarat, Uttaranchal, Chhattisgarh and Jharkhand.

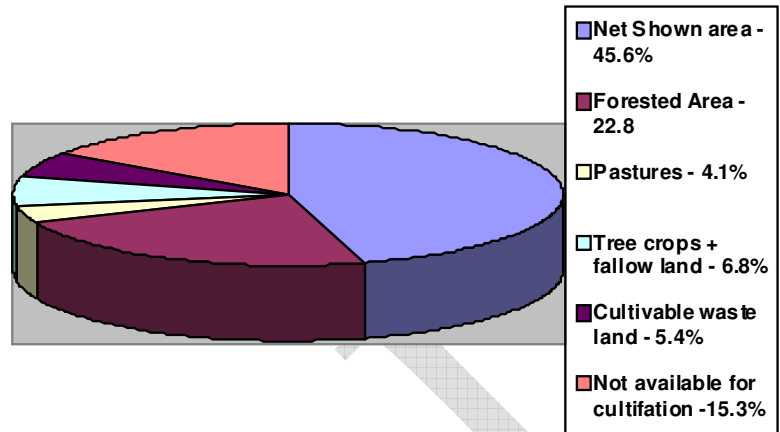
#### **Methods of Control Erosion**

*There are several methods of controlling soil erosion. These methods are:*

- i) **Terracing :-** In this method, a series of wide steps are made along the slopes. This method is common in the hilly tracts and area where rice is grown.
- ii) **Strip Cropping:-** In this method grasses are planted as cover crops alternated with cultivated crops. The cover crops help in holding running water and also prevent the top soil from being stripped by wind.
- iii) **Plugging of Gullies:-** In this process, trees are planted across the gullies.
- iv) **Planting Shelter Belts:-** Wind erosion can be best checked by planting best of shrubs and trees around the area to be protected. Vegetation checks the velocity of the wind and retards the movement of soil particles.
- v) **Contour Bunding:-** In this method small bunds are erected around the fields. The bunds help in retaining water and allowing it to soak in instead of running off. This stops erosion.

#### **Land Degradation:-**

The depletion in the soil, when it cannot be used for agricultural purposes is called land degradation. This degradation is caused by soil erosion, human-activities, over grazing by animals.





Deforestation and careless management of forests. There are several measures of controlling land degradation. Soil erosion in hilly areas can be checked by construction of terraces for forming and plugging of gullies by construction of check dams. Afforestation can control soil erosion on slopes. Preparation of shelter belts of plants, control of overgrazing by animals and stabilization of sand dunes. Moisture conservation and weed control in agricultural lands, regularization of grazing and proper management of waste lands and control of mining activities are some of the methods which can be used to curb land degradation. Proper discharge and disposal of industrial wastes after treatment can reduce land degradation.

**Q. How does industry cause degradation?**

Human activities are a main cause of land degradation. Mining and industry are two important activities of human. The mineral processing like grinding of limestone for cement industry, and calcite and soapstone for ceramic industry, generates heavy amount of dust and releases it in the atmosphere. It settles down in the surroundings areas, affecting infiltration of water and crop cultivation. Industrial effluents and wastes have also become a major source of land degradation.

**Conservation of land:-** Preventing erosion of soil and making efforts to maintain its fertility is called soil conservation. The following steps need to be taken for the conservation of soil:

1. Afforestation is an effective method of soil conservation. We must stop reckless felling of trees or clearing of forests.
2. Strong embankments along rivers reduce soil erosion by the flooding river water.
3. Farms should be properly leveled.

**Tick mark the most appropriate answer:**

1. One of the following is not an exhaustible resource  
a) Forest                      b) Water                      c) Soil                      d) Metals
2. \_\_\_\_\_ soil is found in the uplands with heavy rainfall.  
a) Alluvial                      b) Regar                      c) Red                      d) Laterite
3. The type of soil mostly found in the deltas is called  
a) Khadar                      b) Bangar                      c) Regar                      d) Sandy
4. The total net sown area in India is  
a) 22.5%                      b) 46.6%                      c) 13.8%                      d) 4.8%

\*\*\*\*\* End of the Lesson \*\*\*\*\*