

Human needs can be satisfied partially or completely through resources. There are thousands of elements in the nature but we can not call all of them resources. These elements can be called resources only when these are utilised by man through his special knowledge and expertise. In other words, the things on which the man is dependent, human needs can be fulfilled by them and man has the physical and intellectual capacity to utilise them can be called as resources. In this way, any thing which is used to fulfill the human needs becomes a resource. In ancient times, man did not know about the minerals buried within the land, so these were not the resources at that time, but today these are extremely useful due to their utility and the developed techniques of mining. The natural resources should have both the virtues of utility and capability to work. The resources are made of the interactions of the three, i.e. Nature, man and the culture.

Uses of resources

Resources are useful to us in many ways. We learn about its role gradually at every stage of human life. All activities from agriculture to industries ultimately depend on natural resources. Let us know more about it.

Resource - as food

Various food requirements of man are complied by various resources. Fruits grown naturally, various crops obtained through agriculture, milk and its products and meat obtained through domestic animals, fish and other aquatic animals from reservoirs, honey prepared by honey-bees etc. are used as food items.

Resource - as a source of raw material

Various goods obtained from forests, agro-products, wool, hides and meat available from animals, mineral ores etc. form the raw material for many industries.

Resources - as energy resources

We use coal, petroleum, natural gas etc. as fuel in industries as well as domestic fuel. Besides, energy can be generated through solar insolation, wind, sea waves, tides and ebbs and waterfalls etc.

Types of resources

Resources are classified as follows :

(1) On the basis of ownership (2) On the basis of re-availability (3) On the basis of distribution centres

Following are the types of resources on the basis of ownership. Let us understand this through the table :

| Sr. No. | Ownership | Details | Examples |
|---------|---------------------|--|---|
| 1. | Individual Resource | Owned by an individual or a family | Land, building etc. |
| 2. | National Resource | Owned by a country or a region | Army, International trade |
| 3. | Global Resource | All physical or non-physical resource which are used for human welfare | Resources of common ownership of all nations of the world |

Resources can be classified as follows on the basis of their distribution.

| Sr. No. | According to distribution area | Details | Examples |
|---------|--------------------------------|---|--|
| 1. | Universal resources | Useful gases in the atmosphere | Oxygen, nitrogen |
| 2. | Generally available resources | Easily available | Land, Soil, Water, Pasture land |
| 3. | Rare resources | Those available at limited places | Minerals like coal, petroleum, copper, gold, uranium etc |
| 4. | Solitary resources | Minerals available only at one or two places in the world | Chryolite, which is available only in Greenland |

You could understand details of two types. Resources can be classified by other methods also, wherein these can be classified into two types as renewable and non-renewable resources. Some resources reproduce themselves as per their usage during a specific time, in other words these are inexhaustible. Solar insolation, wind, birds, animals, Bioresources etc. fall under this category. These are called renewable resources. Non-renewable resources are those which can not be re-used once they are used or they can not be reproduced or can not be reformed in near future. Mineral, coal, natural gas, petroleum etc. are included in its category.

Planning and conservation of Resources

Human needs are unlimited while the resources are limited. During last one hundred years, usage of the resources has increased very much due to the extraordinary development in science and technology and due to population explosion. Severe implications will have to be experienced in future if a serious thought is not given to this matter. So, it is the duty of all of us to conserve resources for the future generations. Resources should be conserved and should be used rationally.

The word conservation is directly related to the scarcity of resources. If the resources are exploited at the current rate where they are exploited haphazardly and irrationally then it will be a dream to maintain the development and the current life style. It includes things like its rational usage, its conservation and re-usage. When there is a danger of existence on the life of a tree or a human life, the arrangement made for it is called its conservation.

Let us understand about the planning and the conservation of resources in details.

- First of all, gather information about the availability of utilised, unutilised and probable resources of any region or a country as a unit.
- The resources, which are limited or non-renewable, should be exploited scientifically and should be used only where it is necessary to use them.
- Attempts should be made to develop those resources the quantity of which can be increased.
- The resources which are cheaper and are easily available should not be wasted, but instead they should be used sparingly for future use.

- Those resources which are in limited quantity should be conserved. Finding its alternative option through technical development is favourable in long term.
- Necessary laws should be formed for the conservation of resources and should be enforced strictly.
- Citizen should be well acquainted with all facts associated with the rational usage of resources and a public awareness should be cultivated.

Soil formation :

Generally the part of the surface of the earth wherein the vegetation grows is known as 'Soil'. The soil is a thin layer composed of various elements on the surface of the earth. Minerals, humidity, humus and air are mixed up in it. The parental rocks lie below the soil. Soil is formed due to the material available through the denudation. Biotic remnants, humidity and air get mixed up with it. In other words, the soil is a natural mixture of minerals and biotic elements which have the capacity to grow and develop vegetation.

Soil

The uppermost layer of the crust of the earth is called soil which contains minerals and biotic elements necessary for the growth and development of vegetation. Although, their proportion is not the same everywhere. Thus soil is the layer or the surface of the matter formed due to the mixture of the scattered material of the parental rocks and vegetation. Factors of denudation prepare very thin layer through the denudation of rocks. The humus formed due to the disintegration or decay of vegetation or insects is added to this. This biotic elements play an important role in the development of vegetation.

The climatic impact in the duration of soil formation is so important and widespread that the soil formed of different types of rocks in that region over a long time is the same. So, the soil formed out of the same parental rocks under different climatic influence is different. Soils are classified on the basis of their colour, climate, parental rocks, structure, humus etc.

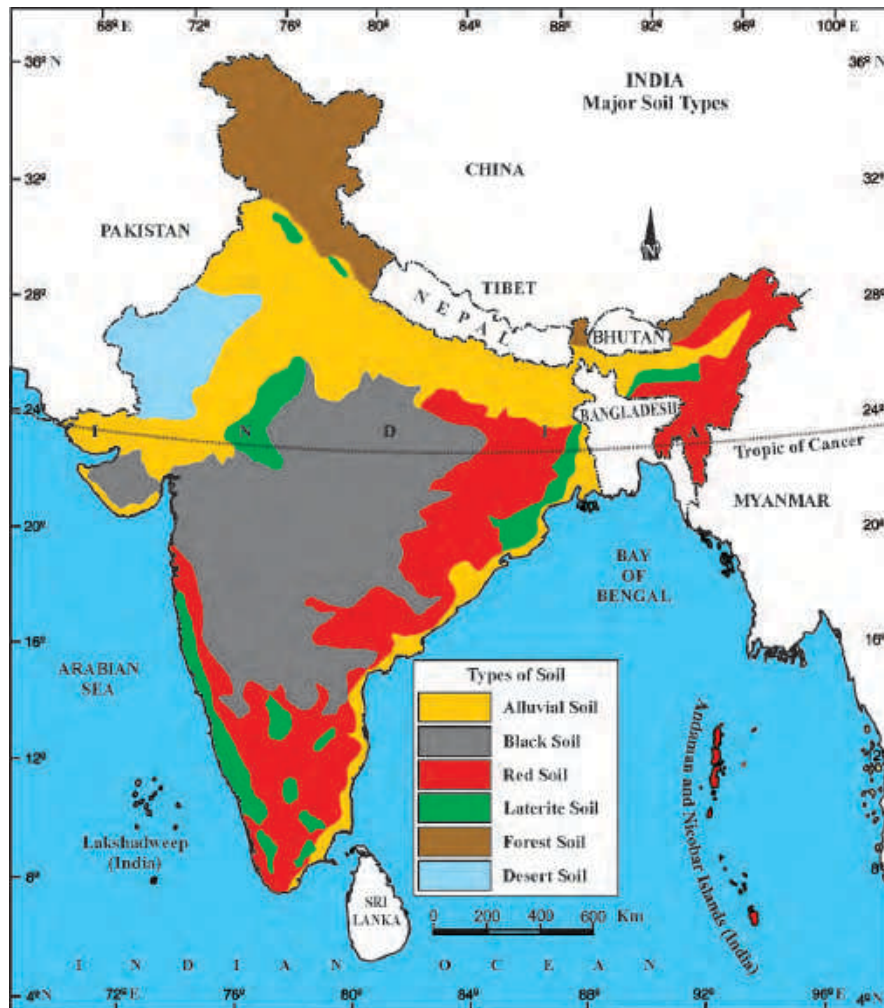
Types of Soil :

Recently, Indian Council of Agricultural Research (ICAR) has divided the soils of India into 8 types. Of these, the Mountain Soil and forest soil are found at different altitude in mountainous regions.

- (1) Alluvial Soil
- (2) Red Soil
- (3) Black Soil
- (4) Laterite Soil
- (5) Desert Soil
- (6) Mountain Soil
- (7) Forest Soil
- (8) Marshy or Peaty Soil

(1) Alluvial Soil : This type of soil is spread over about 43% of the total area of India. This soil is found in the northern plain from the Brahmaputra valley in the east upto Satluj in the west and in the

delta regions of Mahanadi, Godavari, Krishna and Kaveri rivers. The formation of alluvial soil is due to the alluvial deposition by the rivers. There is more proportion of potash, phosphoric acid and limestone in this soil and there is less proportion of nitrogen and humus. If pulses are grown in this soil, the nitrogen content can be stabilised. Crops like wheat, paddy, sugarcane, jute, cotton, maize, oil seeds etc. can be grown in this soil.



8.1 Major Soil Types of India

(2) Red Soil : It occupies about 19% of the total land of India. It is spread from Tamil Nadu in the peninsular India upto Bundelkhand in the north, and from Rajmahal Hills in the east upto Kachchh in the west. Such soil is found in some parts of Rajasthan. The soil is red in colour due to the presence of ferric oxide. and it becomes yellow as we go down. Lime, gravel and carbonate are not found in this soil. There is a deficiency of lime, magnesium, phosphet, nitrogen and potash in this soil. Crops like millet, cotton, wheat, jowar, linseed, groundnut, potato etc. are grown in this soil.



8.2 Red Soil

(3) Black Soil : Black or Regur soil covers about 15 % of the total area of India. This soil was formed due to the spreading of Deccan lava. Such soil is found in entire Maharashtra, Western Madhya Pradesh, Andhra Pradesh, and certain part of Karnataka. In Gujarat Surat, Bharuch, Narmada, Vadodara, Tapi and Dang districts have this type of soil. Lava rocks and climate play an important role in the formation of such soil. There is



8.3 Black Soil

more proportion of iron, lime, calcium, potash, aluminium and magnesium carbonates in this type of soil. It is considered to be quite fertile. This soil also has the capacity of retaining more moisture. Whenever the moisture dries up, they develop fissures. Crops like cotton, linseed, mustard, groundnut, tobacco and udad are grown in this soil. As it is more suitable to the cotton, the soil is also known as Black Cotton soil.

(4) Laterite Soil : The name “Laterite” is derived from the latin word “Later” which means a brick. Its red colour is due to the iron oxide. When this soil becomes wet, it becomes smooth like butter and when it is dry, it becomes very hard. It is formed due to the change of dry and moist climate and due to the prevention of silica based material. This soil has developed in the higher area of peninsular plateau of India. The soil contains more of iron, potash and aluminium. The soil is less fertile, but cotton, paddy, ragi, sugarcane, tea, coffeee, cashew etc. can be grown after using fertilizers.

(5) Desert Soil : This type of soil is seen in the area where the climate is arid or semi arid. The soil is sandy and infertile. It contains more dissolved minerals. Rajasthan, Haryana and Southern Punjab have this type of soil. In Gujarat, this type of soil is found in Kachchh and some parts of Saurashtra. With irrigation facilities, crops like millet and jowar can be cultivated in this soil.

(6) Mountain Soil : This type of soil is found in the valley and sloppy regions of Himalayas at an altitude of about 2700 to 3000 metres. Its layer is very thin and is underdeveloped. This soil is found in Assam, Darjeeling, Uttarakhand, Himachal Pradesh and Kashmir. In Himalayas, the soil is found at a general altitude in the regions of pine and chid trees.

(7) Forest Soil : This type of soil is found within the altitude between 3000 metres to 3100 metres in the coniferous forests of Himalayas, Sahyadri, Eastern Ghats and the Terai region of Himalayas. The surface of the earth is covered by the shaded leaves of the trees and the upper part of the land becomes black due to the increase in the humus caused due to the decaying leaves. It changes into blue or red colour while going down within the land. Besides tea, coffee, spices, other crops like wheat, maize, barley, paddy etc. are also taken. The soil is found in limited area.

(8) Marshy or Peaty Soil : This Type of soil develops in humid regions due to the accumulation of biotic elements. During rainy season, this land is submerged under water and when the water recedes, paddy can be grown in it. There is an excess of biotic elements and minerals in such soil, but it shows insufficiency in phosphate and potash. Such soil is found in Odisha, West Bengal, Coastal Tamil Nadu, Central area of Northern Bihar and in Almoda district of Uttarakhand. The soil has very limited extent.

Soil Erosion :

Erosion means the transportation of land particles from one place to another with the help of moving air and water. In other words, the faster transportation of the particles of the surface land to other place by natural forces. It takes many years to form the upper layer. If the soil particles are carried away because of heavy rain or by stormy wind, the agricultural production decreases. It is extremely necessary to maintain this upper layer for agriculture. So the Soil erosion should be prevented.



8.4 Soil Erosion

Measures to prevent soil erosion

- Control the grazing activity on the land.
- Plantation should be carried out in contour method in sloppy regions.
- Plant trees in fallow land.
- Construct check dams where there are streams.
- Cultivate very deeply in the field to reduce the speed of the water.



8.5 Check Dam

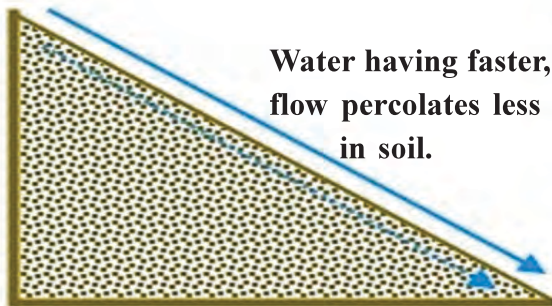
Soil Conservation

Soil conservation means to prevent the soil erosion and to maintain its quality. Soil conservation is directly connected to retain the soil particles at their original place. Different remedies are used at different places in the world according to its location and problems. If the soil is not conserved

Surface run off water



flows faster over the slopes.

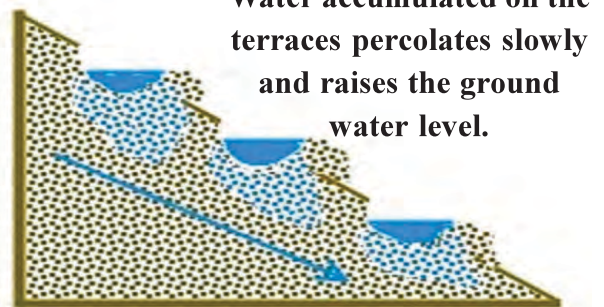


Water harvesting in the terraced slopes

Most of the water is stored therein.



(store a big amount of water)



8.6 Methods of Soil Conservation

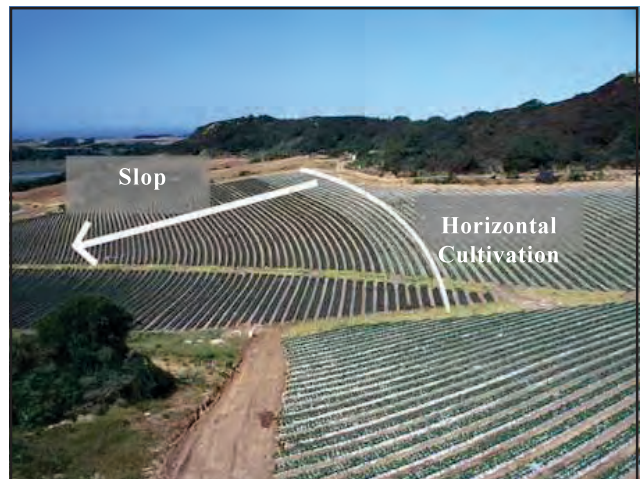
then there are chances of floods which enhances the risk against lives and property. Thus, soil conservations is very much necessary.

Remedies of soil conservation :

- The roots of the trees in forest cover hold up the soil particles.
- Plant trees in the rivers gorges and on mountain slopes.
- A series of trees should be grown near a desert region to prevent the winds with more velocity. It will stop the advancing desert.
- The river floods should be controlled by diverting their flow in other rivers or in dry river beds.
- The unrestricted pasturing loosens the soil layer on the mountains, it should be prevented.



8.7 Terraced Farms



8.8 Horizontal Cultivation

- Methods like horzonal cultivation, terraced farms etc. should be implemented.
- Humus contents should be added to the soil which has lost its fertility.

By implementing these remedies, soil can be conserved. The conservation of soil is a strong necessity today. Government, society and the people should work together for its conservation.

Exercise

1. Answer the following questions in details :

- (1) What is meant by resource? Describe its usages.
- (2) What is meant by soil conservation? State the remedies of soil conservation.

2. Answer the following questions as directed :

- (1) Describe the process of soil formation and state on which basis these are classified ?
- (2) Write notes on Alluvial soil.
- (3) Write notes on Black soil.

3. Answer the following questions in brief :

- (1) State the remedies to prevent soil erosion.
- (2) What is called as Mountain soil ?
- (3) Write short note about the desert soil.

4. Select the correct option and write answer :

- (1) The resource available at one or two places in the world
 (A) Universal resource (B) Common available resource
 (C) Rare resource (D) Solitary resource
- (2) Soil formation takes place due to elements of parental rocks.
 (A) Weathering and erosion (B) Transportation and stagnancy
 (C) Sequence and non-sequence (D) Vertical and headwards
- (3) Which is the other name of Padkhau soil ?
 (A) Alluvial soil (B) Laterite soil (C) Black soil (D) Red soil
- (4) Recently the soils of India are classified into types by Indian Council for Agricultural Research (ICAR).
 (A) Seven (B) Sixteen (C) Five (D) Eight

Activity

- Arrange a field trip of the area facing the problem of soil erosion near your village or town under the guidance of your teacher.
- Observe soils of different regions during your tour.
- Know from the parents about the types of soil near your village or the town.
- Know about new things from the following websites under the direction of your teacher or parents and present them in the prayer meeting or the class.
 (i) www.omaf.gov.on.ca (ii) www.f.panda.org