

#### Introduction

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#### Introduction

Natural Resources and their Classification

Resources are an indispensable part of human development. Everything which is available in our environment and which can be technologically and economically exploited for satisfying human wants are known as resources.

**Classification of Resources** 



#### **Classification of Resources**

Origin

Biotic and abiotic

**Biotic resources: These** resources are obtained from nature and have life. Examples: Humans, forests, fisheries, livestock Abiotic resources: These resources are obtained from nature but are made of nonliving things. Examples: Metals, air, soil

#### **Classification of Resources**

Exhaustibility Renewable and non-renewable

Renewable resources: These resources are available in plenty in nature and can be replenished. Examples: Sunlight, wind, water Non-renewable resources: These resources are present in nature and are formed after millions of years. They can be exhausted or depleted after a particular period of time. **Examples: Coal, petroleum** 

#### **Classification of Resources**

Ownership Individual, community owned national and international resources

Individual resources are owned privately by a person such as farmlands and houses. Community resources are owned by a community and are accessible to the members of that community such as grazing lands and burial grounds. National resources belong to a nation. Examples:Water resources, forests, minerals International resources are regulated by international laws and regulations. Example: Oceanic resources beyond 200 nautical miles of the **Exclusive Economic Zone** 

#### **Classification of Resources**

Status of Potential Develop resources ment develope

Potential resources, developed resources, stock and reserves

Potential resources: These resources are available in the region but are not fully used such as wind energy and solar energy. Developed resources: These resources are surveyed and their quantity and quality are known. Examples: Coal mines, oil wells. Stock: These resources can satisfy human needs but humans do not have the required technology to access and harness them. Examples: Geothermal power, hydrogen fuel. Reserves: The use of such resources has not been fully started and they are used only up to a limited extent. Example: Dams.

Resources are often centred in a few hands. This has led to a wide gap between the rich and the poor. Indiscriminate use of resources has resulted in its depletion and global ecological crises.

**Development of Resources:** 

Resources are vital for human survival as well as for maintaining the quality of life. It was believed that resources are free gifts of nature. Human beings used them indiscriminately and this has led to the following major problems:

• Depletion of resources for satisfying the greed of few individuals.

**Development of Resources:** 

• Accumulation of resources in few hands, which, in turn, divided the society into two segments i.e. haves and have nots or rich and poor.

• Indiscriminate exploitation of resources has led to global ecological crises such as, global warming, ozone layer depletion, environmental pollution and land degradation.

**Resource Planning in India:** 

Resource planning in India involves the following processes:

• To identify and make a list of existing resources across the country by surveying and mapping.

• To frame a planning structure with the estimates of the level of technology, skill sets and institutions which are required for harnessing these resources.

To map the resource development plans with the national development plans.

#### Land Resource:

The land is among the most important natural resources. It covers only about thirty percent of the total area of the earth's surface. It supports natural vegetation, wild life, human life, economic activities, transport and communication systems. However, land is an asset of a finite magnitude, therefore, it is important to use the available land for various purposes with careful planning.

#### Land Resource:



#### Land Utilisation:

#### 1. Forests

- 2. Land not available for cultivation
- (a) Barren and waste land

(b) Land put to non-agricultural uses, e.g. buildings, roads, factories, etc.

#### Land Utilisation:

3. Other uncultivated land (excluding fallow land)
(a) Permanent pastures and grazing land,
(b) Land under miscellaneous tree crops groves (not included in net sown area),
(c) Cultruable waste land (left uncultivated for more than 5 agricultural years).

Land Utilisation:

4. Fallow lands

(a) Current fallow-(left without cultivation for one or less than one agricultural year),

(b) Other than current fallow-(left uncultivated for the past 1 to 5 agricultural years).

Land Utilisation:

5. Net sown area

Area sown more than once in an agricultural year plus net sown area is known as gross cropped area.

#### Land Use Pattern in India:

The forest cover of the country is less than the prescribed 33% of the total country's land. Forests occupy about 23.81% of the total land surface in India.

The total net sown area of India is 46.24% of the total land in the country. The net sown area differs from state to state. While in Punjab and Haryana, the net sown area is more than 80% of the total land in the state, it is less than 10% in Arunachal Pradesh, Mizoram, Manipur and the Andaman and Nicobar Islands. 3.38% of the total land is used for grazing, while the remaining lands are fallow and waste lands.



Land Use Pattern in India:

Waste land is the land put to other non-agricultural uses which include rocky, arid and desert areas, roads, railways, industry etc. Continuous use of land over a long period of time without taking appropriate measures to conserve and manage it, has resulted in land degradation.

**Reasons for the Degradation of Land in India:** 

Mining: It is the most important factor for land degradation.
o The mining sites are abandoned after excavation work is over. The excavation work leaves deep scars and other material which degrades the soil. This is common in states like Jharkhand, Chattisgarh, Madhya Pradesh and Orissa.
o Mineral processing, grinding of lime stone, ceramic industry releases a heavy amount of dust, which later settles down in the surrounding areas.

**Reasons for the Degradation of Land in India:** 

• Overgrazing: Overgrazing of land by animals results in removal of grass over a large area making it easy for wind and water to remove the soil. Example Gujarat, Rajasthan, Madhya Pradesh, Maharastra etc.

• Water Logging: Over irrigation of land is also responsible for land degradation, water logging, increases salinity and alkalinity in soil making it unfit for cultivation.

**Reasons for the Degradation of Land in India:** 

- Industrialisation: Industrial waste also leads to water and land degradation.
- Deforestation
- Erosion of land because of flooding
- Excess irrigation of lands

**Reasons for the Degradation of Land in India:** 

Mining and deforestation have deteriorated the quality of land in Chhattisgarh, Madhya Pradesh, Jharkhand and Odisha. Overgrazing is one of the main reasons for the land degradation in Gujarat, Rajasthan, Maharashtra and Madhya Pradesh. In Punjab, Haryana and western Uttar Pradesh, excess irrigation has resulted in water logging leading to increased soil salinity. In major metropolitan cities, industrial effluents have degraded the land.

Some of the ways through which we can solve the problems of land degradation are:

- Afforestation and proper management of grazing.
- Planting of shelter belts of plants.
- Stabilisation of sand dunes by growing thorny bushes.
- Proper management of waste lands.
- Control of mining activities.

• Proper discharge and disposal of industrial effluents and wastes after treatment.

#### **Soil Resource:**

Soil is a renewable natural resource. It supports various living organisms and is a medium of plant growth. Topsoil is the uppermost layer of the Earth. It consists of humus. Factors such as variation of temperature, parent rock, decomposers and running water affect the formation of soil. Soil in India can be classified based on their texture, thickness, age, chemical and physical properties.



#### **Classification of Soils:**

Alluvial Soil: It is the most widely spread soil in India. It has been deposited by three Himalayan river systems—Ganga, Indus and Brahmaputra. Alluvial soil is composed of sand, silt and clay particles. The entire North Indian Plains are made of this soil. It is also found in the eastern coastal plains and some parts of Rajasthan and Gujarat. The soil is suitable for the cultivation of paddy, wheat, sugarcane and other cereal and pulse crops.

#### **Classification of Soils:**

On the basis of age, soil can be classified as bangar and khadar soils.

**Bangar Soil** 

**Khadar Soil** 

(i) Bangar is the old alluvium. (i) Khadar is the new In other words, Bangar is older than Khadar. (ii) Bangar often contains kankar nodules with calcium carbonates in sub-soil.

alluvium. In other words, Khadar is younger in age. (ii) Khadar is finer, more sandy and free from kankar nodules.

#### **Classification of Soils:**

**Bangar Soil** 

(iii) Bangar is not renewed frequently. Hence, it is less fertile.(iv) Bangar is found away from the river and higher than ground level.

#### Khadar Soil

(iii) Khadar is renewedfrequently and is more fertile.(iv) Khadar is found nearriver channels in deltas andin flood plains.

#### **Classification of Soils:**

**Black Soil:** 

• This soil is black and is also known as regur. Because the soil is ideal for growing cotton, it is also known as black cotton soil.

• This soil is found in the plateau regions of Saurashtra, Maharashtra, Malwa and Chhattisgarh. The soil is made of fine clayey material and is known for holding moisture.

• The soil is rich in calcium carbonate, magnesium and potash. It is most suitable for growing cotton.

#### **Classification of Soils:**

**Red and Yellow Soils:** 

• These soils are found in parts of Odisha, Chhattisgarh, southern parts of middle Gangetic plains and some parts of Western Ghats.

• The soil becomes reddish because of the presence of iron oxides. It looks yellow in a hydrated form. Potatoes, maize and cotton are crops which are grown in red soil. Vegetables, tobacco and citrus fruits such as grapes are grown in yellow soil.

#### **Classification of Soils:**

Laterite Soil:

• This soil is found in areas of high temperature and heavy rainfall. This soil has low humus content as most of microorganisms get destroyed because of high temperature.

• This soil is found in Kerala, Karnataka, Tamil Nadu, Madhya Pradesh and hilly regions of Assam.

• This soil is suitable for growing tea and coffee. Cashew nuts are grown in red laterite soils of Tamil Nadu, Andhra Pradesh and Kerala.

#### **Classification of Soils:**

Arid Soils:

- These soils are sandy in texture and saline in nature. They are found in areas of high temperature and dry climate.
- Because of dry climate, the moisture and humus content of the soil is very low. In some areas, common salt is obtained by evaporating the water from the soil.
- These soils are not fertile but can become fertile after adequate irrigation of the soil.
- The arid soil is found in Rajasthan and in the northwestern parts of Gujarat.

#### **Classification of Soils:**

**Forest Soil:** 

• This soil is found in the hilly and mountainous regions. It is made of sand and silt. In the snow regions of the Himalayas, the soil lacks humus content because of the loss of top cover of the soil.

• The forest soil found in the lower parts of the Himalayas is fertile.



Alluvial Soils

Black Soil



Red and Yellow Soils





Laterite Soil

Arid Soils

#### **Soil Erosion:**

The wearing away (because of the action of winds) and washing down of soil cover (because of running water) is known as soil erosion. Because the processes of erosion and soil formation occur simultaneously, there is a balance between the two. However, overgrazing and deforestation at a rapid pace can disturb this balance.

#### **Soil Erosion:**

#### **Different kinds of erosions are**

Gully Erosion: This occurs when running water cuts through the soil making deep channels. The land thus becomes unsuitable for cultivation and is known as bad land.

Sheet Erosion: The washing away of the topsoil because of the flowing of water as a sheet over large areas is known as sheet erosion.

Wind Erosion: When the wind blows away the topsoil, it is known as wind erosion.

#### **Soil Erosion:**



**Soil Conservation:** 

Soil can be conserved in the following ways:

• Contour Ploughing: When one ploughs along the contour lines, it is called contour ploughing. It decreases the flow of water down the slopes and thus helps in soil conservation.

• Terrace Farming: When steps are cut out on the slopes of the hills making terraces, it reduces soil erosion.

**Soil Conservation:** 

• Strip Cropping: When strips of grass are grown between the strips of crops, it is known as strip cropping. It breaks down the speed of winds.

• Shelter Belts: When trees are planted in a row, it breaks the force of winds. This method has proved very useful in destabilising the sand dunes in the deserts of western India.

#### **Soil Conservation:**





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