

# NCERT Geography Class 10th Chapter 1:

## Resources and Development

### Development Of Resources

#### 1. Importance of Resources:

- Resources are essential for human survival and maintaining the quality of life.
- Historically, resources were considered free gifts of nature, leading to their indiscriminate use.

#### 2. Problems Arising from Resource Mismanagement:

- Depletion of resources due to the greed of a few individuals.
- Unequal distribution of resources, resulting in social division between the rich (haves) and the poor (have-nots).

#### Indiscriminate exploitation has caused global ecological crises like:

1. Global warming
2. Ozone layer depletion
3. Environmental pollution
4. Land degradation

#### 3. Need for Equitable Distribution:

- Equitable resource distribution is crucial for sustaining quality of life and global peace.
- Continued resource depletion by a few could endanger the planet's future.
- Resource planning is necessary for sustainable existence and development.

#### 4. Sustainable Development:

- Sustainable economic development involves development that does not harm the environment and does not compromise the needs of future generations.

### **5. Rio de Janeiro Earth Summit, 1992:**

- The first International Earth Summit was held in June 1992 in Rio de Janeiro, Brazil.
- Over 100 heads of state attended to address environmental protection and socioeconomic development.

#### **Key outcomes:**

1. Declaration on Global Climatic Change and Biological Diversity.
2. Endorsement of Global Forest Principles.
3. Adoption of Agenda 21 for Sustainable Development.

### **6. Agenda 21:**

- Agenda 21 is a declaration signed at the 1992 United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro.
- It aims at global sustainable development by combating environmental damage, poverty, and disease.
- It emphasizes global cooperation on shared responsibilities and interests.
- One of its major objectives is that every local government should create its own local Agenda 21.

## **Resource Planning**

### **1. Importance of Planning for Resource Use:**

- Planning is essential for the judicious use of resources, especially in a diverse country like India.
- India has regions rich in certain resources but deficient in others, necessitating balanced resource planning at all levels.

### **2. Regional Resource Availability in India:**

- Jharkhand, Chhattisgarh, and Madhya Pradesh are rich in minerals and coal.
- Arunachal Pradesh has abundant water resources but lacks infrastructural development.
- Rajasthan is rich in solar and wind energy but deficient in water resources.
- Ladakh is culturally rich but lacks water, infrastructure, and essential minerals.

### **3. Resource Planning in India:**

- **Resource planning is a complex process involving:**
  1. Identification and inventory of resources (surveying, mapping, qualitative and quantitative estimation).
  2. Developing a planning structure with appropriate technology, skills, and institutional setup.
  3. Aligning resource development plans with national development goals.
- India has focused on resource planning since the First Five-Year Plan post-Independence.

**(TYR IT) Question:** Can you name some resource-rich but economically backward regions and some resource-poor but economically developed regions? Give reasons for such a situation. If you know want to answer this question please feel free to comment on this post.

### **4. Role of Resources in Development:**

- The mere availability of resources is not enough for development; technology and institutional changes are also essential.
- Some resource-rich regions in India are economically backward, while some resource-poor regions are economically developed.

### **5. Historical Context of Resource Exploitation:**

- Colonization was driven by the rich resources in colonies, exploited by technologically advanced colonizers.
- Resource development in India is influenced by its historical experiences, technological progress, and the quality of human resources.

### **6. Conservation of Resources:**

- Irrational use of resources leads to socio-economic and environmental issues, making resource conservation crucial.
- Mahatma Gandhi emphasized resource conservation, stating, "There is enough for everybody's need and not for anybody's greed."
- Gandhi critiqued modern technology's exploitative nature and advocated for production by the masses over mass production.

## **7. Global Advocacy for Resource Conservation:**

- The Club of Rome first systematically advocated resource conservation in 1968.
- Schumacher's book *Small is Beautiful* (1974) reintroduced Gandhian principles.
- The Brundtland Commission Report (1987) introduced the concept of Sustainable Development, emphasizing resource conservation.
- The 1992 Earth Summit in Rio de Janeiro was a significant milestone for global resource conservation efforts.

# **Land Resources**

## **1. Importance of Land as a Natural Resource:**

- Land is a crucial natural resource that supports natural vegetation, wildlife, human life, economic activities, and transport and communication systems.
- Given its finite nature, careful planning is essential for the sustainable use of land for various purposes.

## **2. Land Use and Economic Activities:**

- Land is fundamental for human habitation and performing economic activities, including agriculture, industry, and infrastructure development.

## **3. Relief Features of India's Land:**

- India's land is diverse, comprising mountains, plateaus, plains, and islands.
- **Plains:** Constitute about 43% of India's land area, providing key facilities for agriculture and industry.

- **Mountains:** Cover 30% of India's total surface area, ensuring perennial rivers, supporting tourism, and contributing to ecological balance.
- **Plateaus:** Make up 27% of the country's land area, rich in minerals, fossil fuels, and forests.

## Land Utilisation

### 1. Categories of Land Use in India:

#### A. Forests:

1. Land designated as forest area, supporting wildlife and contributing to ecological balance.

#### B. Land Not Available for Cultivation:

1. **Barren and wasteland:** Land that is unproductive and not suitable for cultivation.
2. **Land put to non-agricultural uses:** Includes land used for buildings, roads, factories, etc.

#### C. Other Uncultivated Land (Excluding Fallow Land):

1. **Permanent pastures and grazing land:** Used for grazing livestock.
2. **Land under miscellaneous tree crops and groves:** Includes land with tree crops not counted in the net sown area.
3. **Culturable waste land:** Land left uncultivated for more than five agricultural years.

#### D. Fallow Lands:

1. **Current fallow:** Land left without cultivation for one or less than one agricultural year.
2. **Other than current fallow:** Land left uncultivated for 1 to 5 agricultural years.

#### E. Net Sown Area:

1. The total land area where crops are sown and harvested.

2. **Gross Cropped Area:** Includes net sown area plus the area sown more than once in an agricultural year.

## Land Use Pattern In India

### 1. Factors Influencing Land Use:

- **Physical Factors:** Land use is influenced by topography, climate, and soil types.
- **Human Factors:** Population density, technological capability, culture, and traditions also determine land use patterns.

### 2. Land Use Data in India:

- India's total geographical area is 3.28 million sq. km.
- Land use data is available for 93% of this area; the remaining 7% includes parts of the northeast (except Assam) and areas in Jammu and Kashmir occupied by Pakistan and China, which have not been fully surveyed.

### 3. Issues with Land Use:

- **Decrease in Permanent Pasture:** The reduction in pasture land raises concerns about feeding India's large cattle population.
- **Quality of Non-Fallow Lands:** Many non-fallow lands are of poor quality or have high cultivation costs, leading to infrequent cultivation.

### 4. Net Sown Area (NSA):

- If poor-quality lands are included, the NSA in India accounts for about 54% of the total reporting area.
- **State Variations in NSA:**

**a.** Over 80% of the total area in Punjab and Haryana is net sown.

**b.** Less than 10% of the total area is net sown in Arunachal Pradesh, Mizoram, Manipur, and Andaman and Nicobar Islands.

### 5. Forest Area in India:

- The forest area is significantly below the National Forest Policy's target of 33% of the geographical area.
- Adequate forest cover is essential for maintaining ecological balance and supporting the livelihoods of millions living on forest fringes.

## 6. Waste Land and Non-Agricultural Uses:

- **Waste Land:** Includes rocky, arid, and desert areas.
- **Land for Non-Agricultural Uses:** Includes land for settlements, roads, railways, and industries.

## 7. Land Degradation:

- Continuous land use without proper conservation and management leads to land degradation.
- Land degradation has serious social and environmental consequences.

# Land Degradation And Conservation Measures

## 1. Importance of Land for Human Needs:

- Land provides 95% of our basic needs for food, shelter, and clothing.
- We share land with both past and future generations, making its conservation crucial.

## 2. Causes of Land Degradation:

- **Human Activities:** Activities like deforestation, overgrazing, mining, and quarrying have accelerated land degradation.
- **Deforestation and Mining:** In states like Jharkhand, Chhattisgarh, Madhya Pradesh, and Odisha, mining-related deforestation is a significant cause of land degradation.
- **Overgrazing:** Overgrazing is a major issue in Gujarat, Rajasthan, Madhya Pradesh, and Maharashtra, leading to land degradation.
- **Over-Irrigation:** In Punjab, Haryana, and western Uttar Pradesh, over-irrigation causes waterlogging, increasing soil salinity and alkalinity.

- **Industrial Pollution:** Dust from mineral processing and industrial effluents contribute to land and water degradation by preventing water infiltration and polluting the environment.

### 3. Consequences of Mining:

- Abandoned mining sites leave deep scars and overburden traces, severely damaging the land.

### 4. Solutions to Land Degradation:

- **Afforestation:** Planting trees can help restore degraded lands.
- **Proper Grazing Management:** Controlling grazing practices can reduce land degradation.
- **Stabilization in Arid Areas:** Planting shelter belts, controlling overgrazing, and stabilizing sand dunes with thorny bushes are effective in arid regions.
- **Waste Land Management:** Proper management of waste lands can mitigate degradation.
- **Mining Control:** Regulating mining activities can reduce environmental impact.
- **Industrial Waste Management:** Proper treatment and disposal of industrial effluents can reduce pollution and land degradation in industrial and suburban areas.

## Soil As A Resource

### 1. Importance of Soil:

- Soil is the most important renewable natural resource for plant growth and supporting diverse life forms.
- Soil is a living system that takes millions of years to form up to a few centimetres in depth.

### 2. Factors Contributing to Soil Formation:



- **Key Factors:** Relief, parent rock or bedrock, climate, vegetation, other life forms, and time are crucial in soil formation.
- **Natural Forces:** Temperature changes, running water, wind, glaciers, and decomposer activities contribute to the soil formation process.
- **Chemical and Organic Changes:** These changes in the soil are equally vital for its development.

### 3. Composition of Soil:

- Soil consists of both organic materials (humus) and inorganic materials.

### 4. Classification of Soils in India:

- Soils in India are classified based on factors such as the formation process, colour, thickness, texture, age, and chemical and physical properties.

## Classification of Soil

India's diverse relief *features, landforms, climatic zones, and vegetation* types have played a significant role in forming various soil types across the country.

**Let's understand the Classification of Soil in India:**

### I. Alluvial Soils:

#### 1. Distribution of Alluvial Soil:

- Alluvial soil is the most widely spread and important soil type in India.
- It predominantly covers the entire northern plains, deposited by the Indus, Ganga, and Brahmaputra river systems.
- This soil extends into Rajasthan and Gujarat through a narrow corridor.
- It is also found in the eastern coastal plains, particularly in the deltas of the Mahanadi, Godavari, Krishna, and Kaveri rivers.

#### 2. Composition and Characteristics of Alluvial Soil:

- Alluvial soil consists of varying proportions of sand, silt, and clay.

- As you move inland towards river valleys, soil particles increase in size.
- Coarser soils are common in piedmont plains, such as Duars, Chos, and Terai.

### 3. Classification by Age:

- Alluvial soils are classified by age into old alluvial (Bangar) and new alluvial (Khadar).
1. **Bangar Soil:** Contains a higher concentration of kankar (calcium carbonate) nodules and has coarser particles.
  2. **Khadar Soil:** Finer particles and more fertile compared to Bangar.

### 4. Fertility and Agricultural Suitability:

- Alluvial soils are generally very fertile and contain adequate potash, phosphoric acid, and lime.
- They are ideal for growing crops like sugarcane, paddy, wheat, and other cereals and pulses.
- Regions with alluvial soils are intensively cultivated and densely populated due to their high fertility.
- In drier areas, alluvial soils are more alkaline but can become productive with proper treatment and irrigation.

## II. Black Soil:

### 1. Characteristics of Black Soil:

- The black soil, also known as regur soil or black cotton soil, is black.
- It is ideal for growing cotton, making it famously known as black cotton soil.
- The formation of black soil is influenced by climatic conditions and parent rock material.

### 2. Distribution of Black Soil:

- Black soil is typical of the Deccan Trap (Basalt) region formed from lava flows.
- It covers the plateaus of Maharashtra, Saurashtra, Malwa, Madhya Pradesh, and Chhattisgarh.
- The soil extends southeast along the Godavari and Krishna valleys.

### **3. Composition and Properties of Black Soil:**

- Black soils are composed of extremely fine, clayey material.
- They have a high moisture retention capacity and are rich in nutrients like calcium carbonate, magnesium, potash, and lime.
- These soils are generally poor in phosphoric content.

### **4. Unique Features:**

- Black soils develop deep cracks during hot weather, aiding in proper aeration.
- They become sticky when wet and are difficult to work on unless tilled immediately after the first shower or during the pre-monsoon period.

## **III. Red and Yellow Soils:**

### **1. Formation and Distribution of Red and Yellow Soils:**

- Red soil develops on crystalline igneous rocks in regions with low rainfall.
- It is primarily found in the eastern and southern parts of the Deccan Plateau.
- **Red and yellow soils are also present in:**
  1. Parts of Odisha and Chhattisgarh.
  2. Southern parts of the middle Ganga plain.
  3. Along the Piedmont zone of the Western Ghats.

### **2. Characteristics of Red and Yellow Soils:**

- The red colour of the soil is due to the diffusion of iron from crystalline and metamorphic rocks.
- The soil appears yellow when it is in a hydrated form.

## **IV. Laterite Soil:**

### **1. Origin and Formation of Laterite Soil:**

- The term "laterite" is derived from the Latin word 'later,' meaning brick.
- Laterite soil develops under tropical and subtropical climates with alternate wet and dry seasons.

- It forms due to intense leaching caused by heavy rainfall.

## **2. Characteristics of Laterite Soil:**

- Lateritic soils are generally deep to very deep and acidic with a pH less than 6.0.
- These soils are typically deficient in plant nutrients.
- In regions with deciduous and evergreen forests, laterite soil is rich in humus; however, it is humus-poor in semi-arid areas with sparse vegetation.
- They are prone to erosion and degradation due to their landscape position.

## **3. Geographical Distribution of Laterite Soil:**

- Laterite soils are found in southern states, the Western Ghats region of *Maharashtra, Odisha, parts of West Bengal, and the North-eastern regions of India.*

## **4. Agricultural Uses:**

- With proper soil conservation techniques, particularly in hilly areas of *Karnataka, Kerala, and Tamil Nadu*, laterite soil is suitable for growing tea and coffee.
- Red laterite soils in *Tamil Nadu, Andhra Pradesh, and Kerala* are more suitable for cultivating crops like cashew nuts.

## **V. Arid Soils:**

### **1. Characteristics of Arid Soils:**

- Arid soils range in colour from red to brown.
- They generally have a sandy texture and are saline.
- Some areas have high salt content, where common salt can be obtained through the evaporation of water.
- These soils lack humus and moisture due to the dry climate and high temperatures, which accelerate evaporation.
- The lower horizons contain Kankar due to the increasing calcium content, forming a hard layer.

## 2. Challenges and Solutions:

- The Kankar layer in the lower horizons restricts water infiltration, posing challenges for agriculture.
- With proper irrigation, arid soils can become cultivable, as demonstrated in western Rajasthan.

## VI. Forest Soils:

### 1. Characteristics of Mountain Soils:

- Mountain soils are found in hilly and mountainous areas with sufficient rainforests.
- **The texture of these soils varies according to the mountain environment:**
  1. Loamy and silty on valley sides.
  2. Coarse-grained on the upper slopes.
- In snow-covered areas of the Himalayas, these soils experience denudation and are acidic with low humus content.
- Soils in the lower parts of valleys, especially on river terraces and alluvial fans, are fertile.

## Soil Erosion and Soil Conservation

### Differentiate between soil erosion and soil conservation:

Let's understand the difference between soil erosion and soil conservation with the help of these pointers.

### 1. Soil Erosion and Its Causes:

1. **Soil Erosion Definition:** Denudation of soil cover and washing down of soil is termed soil erosion.
2. **Balance of Soil Formation and Erosion:** Normally, soil formation and erosion occur simultaneously in a balanced manner.
3. **Disturbance of Balance:** This balance can be disturbed by human activities like deforestation, over-grazing, construction, and mining.

4. **Natural Causes of Erosion:** Natural forces such as wind, glaciers, and water also contribute to soil erosion.
5. **Gully Erosion:** Running water cuts through clayey soils, forming deep channels known as gullies; affected lands are termed badlands (e.g., ravines in the Chambal basin).
6. **Sheet Erosion:** Occurs when water flows as a sheet over large areas, washing away the topsoil.
7. **Wind Erosion:** Wind blows loose soil off flat or sloping land, leading to soil erosion.
8. **Defective Farming Methods:** Ploughing up and down the slope forms channels that accelerate water flow, increasing erosion.

## **2. Soil Conservation Methods:**

1. **Contour Ploughing:** Ploughing along contour lines slows down the water flow, reducing erosion.
2. **Terrace Cultivation:** Cutting steps on slopes restricts soil erosion, as seen in the western and central Himalayas.
3. **Strip Cropping:** Dividing large fields into strips with grass between crops breaks wind force, reducing erosion.
4. **Shelter Belts:** Planting rows of trees creates barriers against wind, stabilizing dunes and deserts in western India.