

GEOGRAPHY

Study Material

For Class 10th Students

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CHAPTER: I

Resources & Development





Resource?

A resource is anything in environment that fulfils human needs, provided it is:

- Technologically accessible
- Economically viable
- Culturally acceptable

Key Factors in Resource Creation:

- Nature (Physical environment)
- Human Beings (Labor, knowledge)
- Technology (Tools, innovation)
- Institutions (Systems, governance)

Classification of Resources

1. By Origin

- Biotic: From living things (e.g., wood, livestock).
- Abiotic: From non-living things (e.g., metals, minerals).

2. By Exhaustibility

- Renewable: Replenishable (e.g., sunlight, wind).
- Non-Renewable: Finite (e.g., coal, oil).

3. By Ownership

- Individual (Private land, houses)
- Community (Parks, ponds)
- National (Forests, minerals)
- International (Ocean resources beyond EEZ)

4. By Development Status

- Potential: Undeveloped (e.g., untapped solar energy).
- Developed: Ready for use (e.g., active mines).
- Stock: Not yet usable (e.g., hydrogen in water).

- Reserves: Part of stock that can be used with current technology (water in dams).

Resource Planning in India

Resources are not equally distributed in India. Some areas are rich in resources, others lack them. For example:

- Jharkhand, Chhattisgarh, Rajasthan: rich in minerals.
- Arunachal Pradesh: large forest cover, but poor infrastructure.

Resource planning is needed to ensure balanced development and avoid wastage.

Steps in Resource Planning:

- Survey and mapping of resources.
- Planning structure with appropriate technology and skills.
- Matching resource development with national development goals.

Land Resources

India has vast land-used for agriculture, forestry, housing, industry, etc.

Land Use in India:

- Net sown area: 45.6%
- Forests: 23%
- Barren and uncultivable land: 6.9%
- Other uses: buildings, roads, etc.

Land use depends on:

- Physical factors: topography, climate, soil
- Human factors: population, culture, technology

Land Degradation

Human activities like overgrazing, deforestation, mining, and over-irrigation lead to land degradation.

States with severe degradation: Maharashtra, Rajasthan, Gujarat, Uttar Pradesh.

Conservation Measures:

- Afforestation
- Contour ploughing

- Controlled grazing
- Planting shelter belts
- Terracing on slopes

Soil as a Resource

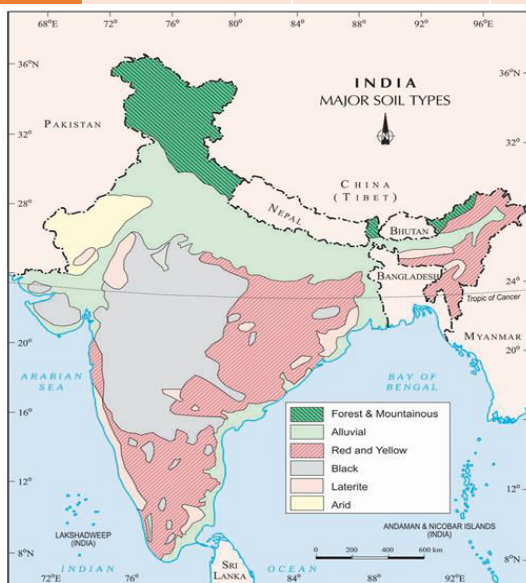
Soil is a vital natural resource formed by the breaking down of rocks and the action of climate and organisms.

Soil Formation Factors

- Parent rock
- Climate
- Organisms
- Topography
- Time

Types of Soils in India

Soil Type	Characteristics	Regions	Crops
Alluvial Soil	Fertile, formed by rivers	Indo-Gangetic plain	Rice, wheat, sugarcane
Black Soil	Clayey, retains moisture	Deccan Plateau	Cotton
Red and Yellow	Low in nutrients, formed from rocks	Eastern/southern India	Millets, pulses
Laterite	Infertile, leached by rains	High rainfall areas	Tea, coffee
Arid Soil	Sandy, dry, low moisture	Rajasthan	Millets
Forest Soil	Found in hilly and forested areas	Himalayas	Varies



Soil Erosion and Conservation

Soil erosion is caused by wind, water, and **deforestation**. **Types:**

- Sheet erosion: Thin layers of soil removed.
- Gully erosion: Deep ditches form, especially in Chambal region.

Conservation Techniques:

- Contour ploughing
- Strip cropping
- Terrace farming
- Afforestation

IN-TEXT QUESTIONS

1. Multiple choice questions.

(i) Which one of the following types of resource is iron ore?

- (a) Renewable
- (b) Biotic
- (c) Flow
- (d) Non-renewable

Explanation: Iron ore is a mineral resource that takes millions of years to form. Once extracted and used, it cannot be replenished in the human lifespan, hence classified as non-renewable.

(ii) Under which of the following type of resource tidal energy cannot be put?

- (a) Replenishable
- (b) Human-made
- (c) Abiotic
- (d) Non-Recyclable

Explanation: Tidal energy is a form of renewable energy derived from the natural rise and fall of ocean tides. Since tides are caused by the gravitational pull of the moon and sun, this energy source is continuously replenished by natural processes.

(iii) Which one of the following is the main cause of land degradation in Punjab?

- (a) Intensive cultivation
- (b) Deforestation
- (c) Over irrigation**
- (d) Overgrazing

Explanation: In Punjab, excessive use of irrigation has led to waterlogging and soil salinity, causing degradation of productive agricultural land.

(iv) In which one of the following states is terrace cultivation practised?

- (a) Punjab
- (b) Plains of Uttar Pradesh
- (c) Haryana
- (d) Uttarakhand**

Explanation: Terrace cultivation is common in hilly states like Uttarakhand, where land is shaped into terraces to reduce surface runoff and soil erosion.

(v) In which of the following states black soil is predominantly found?

- (a) Haryana
- (b) Maharashtra**
- (c) Rajasthan
- (d) Jharkhand

Explanation: Black soil, also called Regur soil, is mainly found in the Deccan Plateau, including Maharashtra, and is ideal for cotton cultivation.

2. Short Answer Questions (About 30 Words)

(i) Name three states having black soil and the crop which is mainly grown in it. Maharashtra, Madhya Pradesh, and Chhattisgarh are major states with black soil. The main crop grown in this soil is cotton due to its moisture-retaining capacity.

(ii) What type of soil is found in the river deltas of the eastern coast? Give three main features of this type of soil.

Alluvial soil is found in the river deltas of the eastern coast. It is fertile, rich in potash and lime, and suitable for growing rice, wheat, and sugarcane.

(iii) What steps can be taken to control soil erosion in hilly areas?

Steps include:

- Terrace farming
 - Afforestation
 - Construction of contour bunds
- These methods help in reducing the speed of water and binding the soil.

(iv) What are the biotic and abiotic resources? Give some examples.

Biotic resources are obtained from the biosphere and are living things like plants, animals, and humans.

Abiotic resources are non-living like water, air, minerals, and sunlight.

3. Long Answer Questions (About 120 Words)

(i) Explain land use pattern in India and why has the land under forest not increased much since 1960–61?

India's land use pattern includes:

- 45.5 % Net sown area
- 23% under forest,
- 3.3 % as pasture land,
- 8.7 % for non-agricultural uses (roads, houses, industries).

Land under forests has not increased significantly since 1960–61 due to:

- Deforestation for agriculture and urbanization,
- Mining and infrastructure development,
- Ineffective afforestation efforts,

- Encroachment on forest land.

Government policies and growing population pressure have also limited forest area expansion despite targets in national forest policy. Thus, land under forest has increased by only about 4% since 1960-61.

(ii) How have technical and economic development led to more consumption of resources?

Technological advancements have made resource extraction easier and faster. Economic growth has increased industrialization, transportation, and urbanization. This has led to:

- Overutilization of mineral and fossil fuels,
- Depletion of renewable resources like water and forests,
- Increased waste and environmental pollution.

Modern lifestyle and demand for convenience have also caused overexploitation of natural resources, often without sustainable practices.

CHAPTER: II

Forest and Wildlife Resources





India is home to an incredibly diverse ecosystem that includes forests, wildlife, wetlands, and mountains. These natural resources are not just valuable for their ecological importance, but they also support millions of people economically and culturally. Despite this, India's forests and wildlife are under severe threat due to various human activities. India, in particular, is one of the world's most biodiverse countries, hosting nearly **8% of the world's species** (estimated at 1.6 million). However, **10% of India's recorded flora and 20% of its mammals are threatened**, with some, like the cheetah and pink-headed duck, on the verge of extinction. This chapter explores the importance of these resources, the threats they face, and the conservation efforts underway.

Biodiversity: What Does It Mean?

Biodiversity refers to the variety of life found on Earth. It includes all organisms—from the smallest microbes to the largest mammals and the ecosystems they live in.

India is one of the **12 mega biodiversity countries** in the world.

Importance of Forests and Wildlife

Forests and wildlife provide:

- **Ecological Balance:** They maintain the food chain, provide oxygen, and control climate and rainfall.
- **Livelihoods:** Millions of tribal and rural people depend on forests for food, fuel, fodder, and medicine.
- **Economic Resources:** Wood, fruits, medicinal plants, and tourism are major economic contributors.
- **Cultural Significance:** Many tribal communities and local cultures are deeply rooted in the forest environment.

Threats to Forest and Wildlife

India has experienced significant loss of forests and wildlife due to:

- **Deforestation:** Clearing forests for agriculture, mining, industries, and urban expansion.
- **Poaching and Hunting:** Illegal hunting for fur, tusks, skin, bones, and trade.
- **Overgrazing:** Domestic animals eat away forest undergrowth and saplings.
- **Development Projects:** Large dams, roads, and mining disrupt ecosystems.
- **Forest Fires:** Both natural and man-made fires destroy flora and fauna.
- **Monoculture Practices:** Growing a single type of tree affects biodiversity.

Types of Forests in India

Forests are classified under:

- **Reserved Forests (50%):** Highly protected for conservation.
- **Protected Forests (33%):** Guarded against further depletion.

- **Unclassed Forests:** Include community and private lands.

Conservation of Forest and Wildlife Resources

Conservation means the wise use and preservation of forests and wildlife. It ensures that resources are used in a way that meets current needs without harming future generations.

Types of Conservation in India

1. In-Situ Conservation (Protecting plants and animals in their natural habitats)

- **Examples:** National Parks, Wildlife Sanctuaries, Biosphere Reserves.
- **Benefits:** Keeps ecosystems intact and species in their natural environment.

2. Ex-Situ Conservation (Preserving species outside their natural habitat)

- **Examples:** Zoos, botanical gardens, seed banks, aquariums.
- **Used when:** A species is critically endangered and cannot survive in the wild.

Legal and Governmental Measures

1. The Indian Wildlife Protection Act (1972)

- Protects endangered species.
- Bans hunting and poaching.
- Establishes protected areas like national parks and sanctuaries.

2. Forest Policy and Afforestation

- Replanting trees on deforested land.
- Promoting social forestry and farm forestry.

3. Joint Forest Management (JFM)

- Launched in 1988.
- Local communities and forest departments work together to manage and protect forests.
- Provides forest rights and benefits to local people in return for their protection efforts.

4. Project Tiger (1973):

Focused on tiger conservation.

5. Protected Species Expansion:

Added insects (1980s) and plants (1991) to conservation lists.

India's Biodiversity Hotspots

India has 4 biodiversity hotspots:

1. Himalayas
2. Indo-Burma region
3. Western Ghats and Sri Lanka
4. Sundaland (includes Nicobar Islands)

These areas have high levels of endemic (unique to that place) species but are under severe threat.

Types of Species Based on Conservation Status

1. **Normal Species:** Found in abundance (e.g., cattle, Sal trees).
2. **Endangered Species:** Close to extinction (e.g., Bengal tiger, Asiatic elephant).
3. **Vulnerable Species:** Likely to become endangered soon (e.g., Black buck).
4. **Rare Species:** Small population, may become endangered (e.g., Himalayan brown bear).
5. **Endemic Species:** Found only in a specific region (e.g., Nicobar pigeon).
6. **Extinct Species:** No longer exists (e.g., Asiatic cheetah).

Role of Communities in Conservation

Many communities in India have a long tradition of protecting nature. Some examples:

- **The Bishnoi community** in Rajasthan protects animals and forests.
- Sacred groves in the Western Ghats are preserved by local tribes as part of their religious beliefs.
- **Chipko Movement:** Women in Uttarakhand hugged trees to stop deforestation.

IN-TEXT QUESTIONS

1. Multiple Choice Questions

(i) Which of these statements is not a valid reason for the depletion of flora and fauna?

- (a) Agricultural expansion.
- (b) Large scale developmental projects.

(c) Grazing and fuel wood collection.

- (d) Rapid industrialisation and urbanisation.

Explanation:

While grazing and fuelwood collection do impact forests, they are **traditional and sustainable practices** when done in moderation

(ii) Which of the following conservation strategies do not directly involve community participation?

- (a) Joint Forest management
- (b) Beej Bachao Andolan
- (c) Chipko Movement

(d) Demarcation of Wildlife sanctuaries

Explanation:

Strategies like **Joint Forest Management (JFM)**, **Chipko Movement**, and **Beej Bachao Andolan** actively involve people at the grassroots level. In contrast, the **demarcation of wildlife sanctuaries** is primarily a government activity and doesn't directly require community involvement.

2. Match the animals with their conservation status

Animals/Plants	Correct Category of Existence
Black buck	Endangered
Asiatic elephant	Vulnerable
Andaman wild pig	Endangered
Himalayan brown bear	Rare
Pink head duck	Extinct

Explanation:

- **Endangered:** Facing a very high risk of extinction (Black buck, Andaman wild pig).
- **Vulnerable:** Likely to become endangered unless conditions improve (Asiatic elephant).
- **Rare:** Small population, not yet endangered or vulnerable (Himalayan brown bear).
- **Extinct:** No known living individuals (Pink head duck).

3. Match the following (Forest Classification)

Forest Type	Correct Match
Reserved forests	Forests are regarded as most valuable for conservation
Protected forests	Forest lands are protected from any further depletion
Unclassed forests	Other forests and wastelands belonging to government/private

Explanation:

- **Reserved forests** are strictly protected and activities like hunting or grazing are prohibited without permission.
- **Protected forests** allow certain human activities but are still managed carefully.
- **Unclassed forests** are typically under local communities or private ownership.

4. Answer in about 30 words**(i) What is biodiversity? Why is biodiversity important for human lives?**

Biodiversity is immensely rich in wildlife and cultivated species, diverse in form and function, but closely integrated in a system through multiple networks of interdependencies. It is important for human lives because the human beings, along with the biodiversity, form a complete web of ecological system in which we are only a part and are very much dependent on this system for our own existence

(ii) How have human activities affected the depletion of flora and fauna? Explain.

Human activities like deforestation, hunting, overgrazing, mining, and industrialisation have led to habitat destruction and pollution, which cause the extinction of many plant and animal species.

5. Answer in about 120 words**(i) Describe how communities have conserved and protected forests and wildlife in India.**

Many Indian communities have traditionally protected forests and wildlife through customs and religious beliefs. For example, the **Bishnoi community** of Rajasthan prohibits the cutting of trees and killing of animals. In the **Chipko**

Movement, women in Uttarakhand hugged trees to prevent them from being cut. Sacred groves -forest patches protected by local deities -are found in states like Meghalaya, Maharashtra, and Kerala. These areas are strictly conserved by tribal communities. Practices like **Joint Forest Management (JFM)** have also involved communities in protecting and regenerating degraded forests by giving them a share in forest produce and rights. Such collective actions play a crucial role in biodiversity conservation and sustainable use of natural resources.

(ii) Write a note on good practices towards conserving forest and wildlife.

Good practices towards conserving forest and wildlife are plenty, some of the practices include:

- **Afforestation and reforestation:** Planting more trees to restore forest cover.
- **Wildlife sanctuaries and national parks:** Legally protected areas to conserve flora and fauna.
- **Banning poaching and illegal wildlife trade:** Strict laws and enforcement.
- **Community involvement:** Programs like **Joint Forest Management (JFM)** encourage local people to participate in protecting forests.
- **Eco-friendly technologies:** Reducing dependence on forest resources through cleaner energy sources.
- **Education and awareness:** Promoting knowledge about the importance of forests and wildlife through media, NGOs, and schools.

CHAPTER: III

Water Resources





Water is the most essential natural resource. It is vital for life, used for domestic purposes, agriculture, industries, and generating electricity. Although water is a renewable resource, it is **not evenly distributed** and **not always available** where it is most needed. In India, the problem is not just about scarcity, but also about **mismanagement and overuse**.

Some facts and Figures

- 96.5 percent of the total volume of world's water is estimated to exist as oceans and only 2.5 per cent as freshwater.
- India receives nearly 4 percent of the global precipitation and ranks 133 in the world in terms of water availability per person per annum.
- By 2025, it is predicted that large parts of India will join countries or regions having absolute water scarcity.

Water Scarcity: What It Means and Why It Happens

Water scarcity means a shortage of water relative to demand in a particular area. It's not always caused by low rainfall. Sometimes, even places with high rainfall suffer from water scarcity due to poor planning and misuse.

Causes of Water Scarcity

1. **Over-Exploitation of Resources:**
When water is used excessively, especially in agriculture and industry, it leads to depletion. Overuse of groundwater in particular is a major issue.

2. Unequal Access:

Certain regions, like western Rajasthan or parts of the Deccan plateau, receive less rainfall. These regions naturally face greater scarcity.

3. Increased Demand Due to Population Growth:

A growing population means more domestic use, more food production, and more industrial demand.

4. Irrigation Demands:

Modern agriculture requires more water for high-yielding variety (HYV) crops. Irrigation is heavily dependent on groundwater, especially in Punjab, Haryana, and western UP.

5. Industrialization:

Industries consume large amounts of water and discharge pollutants into water bodies, making the available water unusable.

6. Urbanization and Lifestyle Changes:

More people, more houses, more vehicles—all lead to higher water consumption. Urban areas also lose water due to leakage and unplanned usage.

Multi-Purpose River Projects and Integrated Water Resource Management

To overcome water scarcity and meet the increasing demand, **multi-purpose river valley projects** were developed in India.

What are multi-Purpose Projects?

These are large dams built on rivers to serve many purposes at once—**irrigation, water supply, hydroelectricity, flood control, navigation, and recreation**.

Examples:

- **Bhakra Nangal Dam** on the Sutlej River
- **Hirakud Dam** on the Mahanadi River
- **Sardar Sarovar Dam** on the Narmada River
- **Tehri Dam** on the Bhagirathi River

These projects are often referred to as “temples of modern India”, a phrase used by **Jawaharlal Nehru**, to reflect their contribution to development.

9 Benefits of multi-Purpose Projects

- **Irrigation for Agriculture:** Especially in dry areas, these dams provide water during critical crop-growing periods.
- **Hydroelectric Power (HEP):** Renewable and pollution-free energy.
- **Drinking Water Supply:** For towns and cities near the dams.
- **Flood Control:** By regulating river flow.
- **Inland Navigation:** Helps with transportation in river areas.
- **Recreational Opportunities:** Lakes and reservoirs support tourism and fishing.

Criticism and Challenges

Despite their advantages, these projects have faced increasing criticism over time.

Environmental Issues:

- Deforestation and submergence of large forest areas.
- Displacement of people, especially tribal communities.
- Loss of biodiversity and aquatic life.
- Soil erosion and sedimentation.

Social and Ethical Concerns:

- **Displacement of People:** Large populations have been uprooted without proper rehabilitation.

- **Inequitable Benefits:** Often, the benefits go to richer farmers or industrial users, while poor communities get little help.
- **Conflict Between States:** Sharing of river waters can lead to interstate disputes.

Dams: Boon or Bane?

While dams were initially seen as symbols of progress, their impact on people and nature has sparked protests:

- **Narmada Bachao Andolan** protested against the Sardar Sarovar Project for displacing thousands.
- Dams have been linked with environmental degradation and loss of livelihoods.

Thus, a balance is needed between development and sustainability.

Rainwater Harvesting: A Sustainable Alternative

Rainwater harvesting is a technique to conserve and store rainwater for future use.

Traditional Rainwater Harvesting Methods in India:

- **Rooftop Harvesting:** Collecting rainwater from rooftops and storing it in tanks.
- **Khadins and Johads (Rajasthan):** Traditional embankments to store surface runoff.
- **Tankas (Rajasthan and Gujarat):** Underground tanks to collect rainwater from rooftops.
- **Kulhs and Ghuls (Himachal Pradesh):** Diversion channels to carry water from streams to fields.

- **Bamboo Drip Irrigation (Meghalaya):**
Ingenious method to drip water into root zones of crops using bamboo pipes.
- **Zings (Ladakh):**
Small tanks used to collect glacier meltwater.

Advantages of Rainwater

Harvesting

- Reduces dependence on groundwater.
- Provides water in areas with erratic rainfall.
- Helps in recharging aquifers and improving groundwater levels.
- Prevents urban flooding.
- Encourages self-sufficiency.

Case Study: Rainwater Harvesting in Urban India

In **Chennai**, rainwater harvesting has been made compulsory. As a result, the groundwater levels have significantly improved. **Tamil Nadu** is considered one of the leading states in this effort.

IN-TEXT QUESTIONS

1. Multiple Choice Questions (MCQs)

(i) Based on the information given below classify each of the situations as 'suffering from water scarcity' or 'not suffering from water scarcity'.

- (a) Region with high annual rainfall
➤ **Not suffering from water scarcity**
- (b) Region having high annual rainfall and large population
➤ **Suffering from water scarcity (High population leads to high demand)**
- (c) Region having high annual rainfall but water is highly polluted
➤ **Suffering from water scarcity**
- (d) Region having low rainfall and low population
➤ **Not suffering from water scarcity**

(ii) Which one of the following statements is not an argument in favour of multi-purpose river projects?

- (a) Multi-purpose projects bring water to those areas which suffer from water scarcity.
- (b) Multi-purpose projects by regulating water flow help to control floods.
- **(c) Multi-purpose projects lead to large-scale displacements and loss of livelihood.**
- (d) Multi-purpose projects generate electricity for our industries and homes.

(iii) Identify the mistakes in these false statements and rewrite them correctly.

(a) Incorrect: *Multiplying urban centres with large and dense populations and urban lifestyles have helped in proper utilisation of water resources.*

Correct: These trends have led to **overutilisation and misuse** of water resources, not proper utilisation.

(b) Incorrect: *Regulating and damming of rivers does not affect the river's natural flow and its sediment flow.*

Correct: It **does affect** both the natural flow and sediment transportation, leading to ecological imbalance.

(c) Incorrect: *In Gujarat, the Sabarmati basin farmers were not agitated when higher priority was given to water supply in urban areas, particularly during droughts.*

Correct: Farmers **were agitated** because urban areas received preference over agriculture during droughts.

(d) Incorrect: *Today in Rajasthan, the practice of rooftop rainwater harvesting has gained popularity despite high water availability due to the Indira Gandhi Canal.*

Correct: Rooftop rainwater harvesting gained popularity **because of water scarcity** and the unreliability of canal supply.

2. Answer the following questions in about 30 words

(i) Explain how water becomes a renewable resource.

Water is a renewable resource because it is continuously recycled through the **hydrological cycle**. It evaporates, condenses as clouds, and falls as rain, replenishing rivers, lakes, and groundwater.

(ii) What is water scarcity and what are its main causes?

Water scarcity is the shortage of water to meet demand for water. It is caused by **overuse**,

pollution, population growth, urbanisation, and uneven distribution of rainfall.

(iii) Compare the advantages and disadvantages of multi-purpose river projects.

- **Advantages:** Irrigation, electricity, flood control, water supply.
- **Disadvantages:** Displacement, ecological damage, social conflict, disruption of local water systems.

3. Answer the following questions in about 120 words

(i) Discuss how rainwater harvesting in semi-arid regions of Rajasthan is carried out.

In the semi-arid and arid regions of Rajasthan, traditional rainwater harvesting has been a way of life. People use **tankas** (underground tanks) to store rainwater collected from rooftops. **Johads** and **khadins** are used to collect and store rainwater for agricultural use. These structures are built to capture runoff during the monsoon and are often constructed with local materials. In urban areas, rooftop rainwater harvesting has gained popularity due to falling groundwater levels. This method helps people survive dry months and reduce dependency on distant water sources like the Indira Gandhi Canal. These traditional systems are highly efficient, cost-effective, and sustainable, reflecting the ingenuity of communities in managing limited water resources.

(ii) Describe how modern adaptations of traditional rainwater harvesting methods are being carried out to conserve and store water.

Modern rainwater harvesting combines traditional wisdom with scientific approaches. Rooftop harvesting systems are widely used in cities to collect rainwater and store it in tanks or recharge groundwater. **Percolation pits, recharge wells, and contour bunds** are constructed to direct rainwater into the ground, improving aquifer levels. In places like Tamil Nadu and Bangalore, laws have made it compulsory for new buildings to install rainwater harvesting systems. Traditional methods like **kulhs** (Himachal), **tankas** (Rajasthan), and **bamboo drip systems** (Meghalaya) are being revived and modified using concrete and improved design. These systems are part of integrated water resource management efforts that aim to reduce dependency on external water sources and ensure sustainable water availability.

CHAPTER: IV

Agriculture





Agriculture plays a central role in the Indian economy. It not only provides food and raw materials but also employment to more than half the country's population.

- Agriculture is the main source of livelihood for 58% of India's population.
- It contributes significantly to national income, employment, and food security.

Types of Farming in India

1. Primitive Subsistence Farming

- Practiced on small patches of land with traditional tools like hoe and digging sticks.
- Found in tribal areas and depends heavily on the monsoon.
- Includes slash and burn techniques (e.g., jhum cultivation in the North-East).

2. Intensive Subsistence Farming

- Done in areas with high population pressure.
- Involves large labour input on small landholdings.
- High yield per unit area but limited mechanization.

3. Commercial Farming

- Uses modern tools and high-yielding varieties (HYV).
- Includes plantation farming (e.g., tea, coffee, rubber) and crops grown for sale.
- Requires capital, irrigation, and fertilizers.

Cropping Seasons in India:

Season	Time	Major Crops
Kharif	June -Sept (Monsoon)	Rice, maize, jowar, bajra, cotton
Rabi	Oct-March (Winter)	Wheat, barley, gram, mustard
Zaid	Summer (between seasons)	Watermelon, cucumber, fodder crops

Major Crops and Their Conditions:

Crop	Tempera	Rainfall	Soil Type	Main Areas
Rice	24–27°C	>100 cm	Alluvial/ clayey	Assam, West Bengal, Odisha
Wheat	10–25°C	50–75 cm	Alluvial/ loamy	Punjab, Haryana, UP
Millets	25–30°C	Low to mod.	Sandy/ loamy	Maharashtra, Karnataka, MP
Maize	21–27°C	50–100 cm	Alluvial/ clayey	Bihar, UP, AP, Karnataka
Pulses	20–25°C	Low	Loamy	MP, Rajasthan, UP, Maharashtra
Sugarcane	21–27°C	>100 cm	Alluvial	UP, Maharashtra, Karnataka
Oilseeds	20–30°C	50–75 cm	Varied	Gujarat, Rajasthan, Tan Nadu
Tea	20–30°C	150–200 cm	Well-drained	Assam, WB, Kerala, TN
Coffee	15–28°C	100–200 cm	Well-drained	Karnataka, Kerala

Horticulture Crops

- India is the second largest producer of fruits and vegetables.
- Mangoes (Maharashtra), Bananas (Kerala), Grapes (TN), Apples (J&K, Himachal).

Technological and Institutional Reforms:

Over **60% of India's population** relies on agriculture. Post-independence, key **institutional reforms** like land consolidation, collectivization, and the abolition of zamindari were implemented. The **1960s-70s** saw **technological reforms** such as the **Green Revolution** (boosting crop yields) and **White Revolution** (enhancing milk production).

In the **1980s-90s**, further measures were introduced, including:

- **Crop insurance** and **low-interest loans** via Grameen banks & cooperatives.
- **Kisan Credit Card (KCC)** and **Personal Accident Insurance Scheme (PAIS)** for financial security.
- **Weather bulletins** and **farm advisory programs** on TV/radio.
- **Minimum Support Price (MSP)** to protect farmers from exploitation.

Challenges in Agriculture:

- Fragmented landholdings
- Dependence on monsoon
- Soil degradation, low productivity
- Lack of mechanization

Contribution of Agriculture to the National Economy, Employment, and Output

In 2010-11, around 52% of India's workforce was employed in agriculture, highlighting its crucial role in livelihoods. However, despite India's growing GDP, the sector has not generated enough employment opportunities. Agriculture remains a key contributor to the economy, but its share in GDP has been declining due to industrialization and service sector growth, necessitating modernization and diversification to sustain rural incomes.

Food Security

The **National Food Security System** ensures food availability through **buffer stocks** and the **Public Distribution System (PDS)**. The **Food Corporation of India (FCI)** procures and stocks foodgrains, while **PDS** distributes them at subsidized prices. Key objectives include **affordable food access for all**, **support prices for farmers**, and **boosting agricultural production** to maintain food security for India's vast population.

Impact of Globalization on Agriculture

Globalization has influenced Indian agriculture since colonial times, with raw materials like **cotton** being exported. Post-1990, Indian farmers faced challenges competing with **highly subsidized farms in developed nations**. However, **genetic engineering** and **organic farming** (which avoids synthetic chemicals) are transforming production. To thrive, Indian farmers must shift from **cereals to high-value crops**, improving incomes while reducing environmental harm.

IN-TEXT QUESTIONS

1. Multiple choice questions.

(i) Which one of the following describes a system of agriculture where a single crop is grown on a large area?

- (a) Shifting Agriculture
- (b) Plantation Agriculture
- (c) Horticulture
- (d) Intensive Agriculture

Explanation: Plantation agriculture involves growing a single crop (like tea, coffee, or rubber) over a large area with capital-intensive inputs and labour.

(ii) Which one of the following is a rabi crop?

- (a) Rice
- (b) Gram
- (c) Millets
- (d) Cotton

Explanation: Rabi crops are sown in winter and harvested in spring. Gram (chickpea) is a major rabi crop in India.

(iii) Which one of the following is a leguminous crop?

- (a) Pulses
- (b) Jawar
- (c) Millets
- (d) Sesamum

Explanation: Pulses like lentils, gram, and beans are leguminous. They fix atmospheric nitrogen, thus improving soil fertility.

2. Short Answer Questions

(30-40 words)

(I) Name one important beverage crop and specify the geographical conditions required for its growth.

Tea is one of the most important beverage crops grown in India. It grows well in tropical or

subtropical climates, requiring deep, fertile, well-drained soil abundant in humus and organic matter.

(ii) Name one staple crop of India and the regions where it is produced.

Rice is a staple food crop of India. It grows in the plains of north and north-east India, coastal areas and the deltaic regions.

(iii) Enlist the various institutional reforms made by the government to improve agriculture.

Key institutional reforms include:

- Abolition of the Zamindari system
- Land ceiling and consolidation
- Minimum Support Price (MSP)
- Kisan Credit Card (KCC)
- Crop insurance schemes
- Subsidies on seeds, fertilizers, and electricity.

(iv) The land under cultivation has got reduced day by day. Can you imagine its consequences?

Reduced farmland threatens food security, increases prices, causes farmer distress, and raises unemployment. It also leads to environmental degradation and higher dependence on food imports, straining the economy.

3. Answer the following questions in about 120 words.

(i) Suggest the initiative taken by the government to ensure the increase in agricultural production.

The government has launched several initiatives to boost agricultural production:

- **Green Revolution:** Promotes high-yield varieties, organic farming, and precision agriculture.
- **Subsidies:** Provides fertilizers, seeds, and equipment at subsidized rates to reduce input costs.

- **Irrigation Projects:** Schemes like PMKSY improve water availability through micro-irrigation and dam construction.
- **Research & Development:** Institutions like ICAR develop drought-resistant crops and advanced farming techniques.
- **Credit Facilities:** Kisan Credit Cards and low-interest loans enable farmers to invest in modern tools.
- **Extension Services:** Training programs educate farmers on best practices and technology adoption.
- **Market Reforms:** e-NAM and MSP ensure fair prices, incentivizing production. These measures aim to enhance productivity, sustainability, and farmers' incomes.

(ii) Describe the impact of globalisation on Indian agriculture.

The impact of globalisation on Indian agriculture has been felt since colonial times. Raw cotton and spices were important export items from India. In 1917, Indian farmers revolted in Champaran against being forced to grow indigo in place of foodgrains, in order to supply dye to Britain's flourishing textile industry. Thus, globalisation has had its boons and banes for Indian agriculture. Post liberalisation, Indian farmers face new challenges in the form of competition from highly subsidised agriculture of developed nations. This prompts the need for making Indian agriculture successful and profitable by improving the conditions of small and marginal farmers, countering the negative effects of Green Revolution, developing and promoting organic farming, and diversifying cropping pattern from cereals to high-value crops.

(iii) Describe the geographical conditions required for the growth of rice.

Rice cultivation requires specific geographical conditions:

- **Climate:** High temperatures (25°C+) and humidity during growing season; annual rainfall of 150–300 cm.

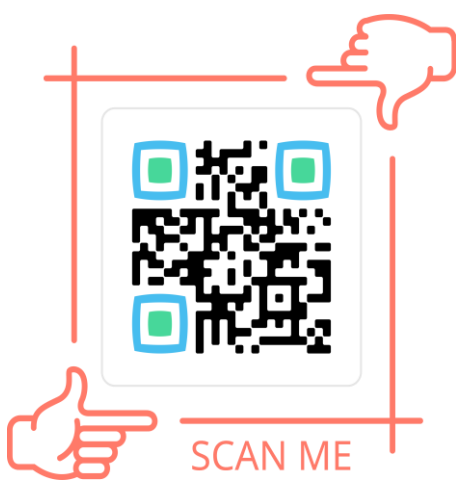
- **Soil:** Fertile, clayey, or loamy soils with good water retention.
- **Water:** Abundant water supply; grown in flooded plains or terraced fields.
- **Land:** Flat or gently sloping land to facilitate flooding and drainage.
- **Regions:** Ideal in river deltas (e.g., Ganga-Brahmaputra), coastal areas, and irrigated regions like Punjab.

In India, Assam, West Bengal, and Tamil Nadu are major rice-producing states due to these conditions.

CHAPTER: V

Minerals and Energy Resources





Minerals & Energy Resources

Minerals and energy resources are essential for a nation's economic development. They are the building blocks of industries, infrastructure, and daily life. Efficient, sustainable utilization of these resources is critical to meet present needs and to preserve them for future generations.

What are Minerals?

A **mineral** is a naturally occurring substance with a definite chemical composition. Minerals can be found in solid form, such as coal, or in liquid form, like petroleum. They are created by geological processes over millions of years and are classified based on their properties and uses.

Types of Minerals

- I. **Metallic Minerals:** Contain metals. Examples: Iron ore, copper, bauxite.
 - a. Ferrous minerals: Contain iron (e.g., iron ore, manganese).
 - b. Non-ferrous minerals: Do not contain iron (e.g., bauxite, copper).
- II. **Non-Metallic Minerals:** Do not contain metals. Examples: Mica, limestone, gypsum.
- III. **Energy Minerals:** Used to produce energy. Examples: Coal, petroleum, natural gas, uranium.

Mode of Occurrence of Minerals

Minerals are found in different types of geological formations:

- In **igneous and metamorphic rocks:** Generally found as veins and lodes (e.g., tin, copper).
- In **sedimentary rocks:** Found in beds or layers (e.g., coal, limestone).
- **Placer deposits:** Minerals accumulated by river action (e.g., gold, tin).
- **Ocean waters:** Rich in minerals like magnesium but expensive to extract.

Distribution of Minerals in India

India is rich in mineral resources but their distribution is uneven.

- I. **Iron Ore:**
 - a. States: Odisha, Chhattisgarh, Jharkhand, Karnataka.
 - b. Type: Hematite (high-grade), Magnetite.
- II. **Manganese:**
 - a. States: Maharashtra, Odisha, Madhya Pradesh.
- III. **Copper:**
 - a. States: Rajasthan, Jharkhand, Madhya Pradesh.
- IV. **Bauxite** (used to make aluminium):
 - a. States: Odisha, Jharkhand, Gujarat, Maharashtra.
- V. **Mica:**
 - a. States: Jharkhand, Andhra Pradesh, Rajasthan.
- VI. **Limestone:**
 - a. States: Andhra Pradesh, Madhya Pradesh, Rajasthan.

Energy Resources

Energy is essential for agriculture, industry, transport, and domestic use.

Types of Energy Resources:

- I. **Conventional Sources:**

- a. Coal
- b. Petroleum
- c. Natural Gas
- d. Electricity (Thermal and Hydroelectric)

II. Non-Conventional Sources:

- a. Solar
- b. Wind
- c. Biogas
- d. Tidal
- e. Geothermal
- f. Nuclear

Coal

- Used in electricity generation and industries.
- Types: Anthracite (best quality), Bituminous, Lignite, Peat.
- Major States: Jharkhand, Odisha, Chhattisgarh, West Bengal.

Petroleum

- Used for fuel, lubricants, chemicals.
- Found in Assam, Gujarat, Mumbai High, Krishna-Godavari basin.

Natural Gas

- Clean and efficient fuel.
- Found along eastern and western coasts and Krishna-Godavari basin.

Non-Conventional Energy Sources

1. **Solar Energy:**
 - Solar panels and cookers.
 - Ideal for remote areas.
2. **Wind Energy:**
 - Wind turbines in Tamil Nadu, Gujarat, Maharashtra.
3. **Biogas:**
 - Produced from organic waste.
 - Common in rural India.
4. **Tidal and Geothermal Energy:**
 - Potential in coastal and geothermal regions but underdeveloped.

5. Nuclear Energy:

- From radioactive elements like uranium, thorium.
- Plants in Maharashtra, Tamil Nadu, Uttar Pradesh.

Conservation of Energy Resources

- Use energy efficiently.
- Promote renewable energy.
- Reduce dependence on fossil fuels.
- Adopt eco-friendly technology.
- Raise awareness and change consumption habits.

INTEXT QUESTIONS

1. Multiple Choice Questions

(i) Which one of the following minerals is formed by decomposition of rocks, leaving a residual mass of weathered material?

- (a) coal
- (b) bauxite**
- (c) gold
- (d) zinc

Explanation:

Bauxite is a sedimentary rock with high aluminium content, formed through the *lateritic weathering* of rocks in tropical regions. It accumulates as a residual deposit left behind after other materials are washed away by rainwater.

(ii) Koderma, in Jharkhand, is the leading producer of which one of the following minerals?

- (a) bauxite
- (b) mica**
- (c) iron ore
- (d) copper

Explanation:

Koderma in Jharkhand is historically known as the

"mica capital of India." It has some of the largest deposits of high-quality mica, used extensively in electrical and electronic industries for insulation.

(iii) Minerals are deposited and accumulated in the strata of which of the following rocks?

(a) sedimentary rocks

- (b) metamorphic rocks
- (c) igneous rocks
- (d) none of the above

Explanation:

Many minerals, including coal, petroleum, limestone, and gypsum, are formed through the accumulation and compression of sediments. These minerals are often found in **bedded or layered forms** within sedimentary rocks.

(iv) Which one of the following minerals is contained in the Monazite sand?

- (a) oil
- (b) uranium

(c) thorium

- (d) coal

Explanation:

Monazite is a mineral-rich sand found especially in the coastal areas of Kerala, Tamil Nadu, and Odisha. It contains **thorium**, a radioactive element used as a fuel in nuclear reactors. India has one of the largest reserves of thorium in the world.

2: Short Answer Questions

(about 30 words)

(i) Distinguish between the following:

Ferrous and Non-Ferrous Minerals
Ferrous minerals contain iron, like iron ore and manganese, and are used in steel-making.

Non-ferrous minerals do not contain iron, like bauxite and copper, and are used in electrical and industrial applications.

(b) Conventional and Non-Conventional Sources of Energy

Conventional energy sources like coal and petroleum are exhaustible and polluting.

Non-conventional sources like solar and wind are renewable, eco-friendly, and suitable for sustainable development.

(ii) What is a mineral?

A mineral is a naturally occurring substance with a definite chemical composition and crystalline structure. They form through geological processes and are found in earth's crust or rocks.

(iii) How are minerals formed in igneous and metamorphic rocks?

In igneous and metamorphic rocks, minerals form when molten magma cools or when rocks are subjected to intense heat and pressure. They appear as veins and lodes in rock fissures.

(iv) Why do we need to conserve mineral resources?

Mineral resources are limited and non-renewable. Overuse can lead to depletion. Conservation ensures their availability for future generations and reduces environmental degradation due to mining.

3: Long Answer Questions

(about 120 words)

(i) Describe the distribution of coal in India.

The main sources of metallurgical coal in India are from the **Gondwana period** and are mostly found in the **northeastern part of the Peninsular** region. The **Damodar Valley**, covering areas in West Bengal and Jharkhand, has rich coal reserves, with important coalfields like **Raniganj, Jharia**, and **Bokaro**-contributing about one-third of the country's coal production. Other significant coal regions include the valleys of the **Godavari, Mahanadi, Son**, and **Wardha**, with key mines in Korba

(Chhattisgarh), Singrauli and Pench-Kanhan (Madhya Pradesh), Talcher (Odisha), Kamptee and Chandrapur (Maharashtra), and Singareni (Telangana).

Tertiary coal is found in the northeastern states such as Meghalaya, Assam, Arunachal Pradesh, and Nagaland; however, **lignite reserves are found in Neyveli in Tamil Nadu**

(ii) Why do you think solar energy has a bright future in India?

India receives abundant sunlight [300+ sunny days] throughout the year, making it ideal for solar energy.

- It is a **clean, renewable source** that reduces dependence on polluting fossil fuels.
- Government initiatives like the **National Solar Mission** promote solar power through subsidies and infrastructure.
- Solar energy is especially useful in **remote and rural areas** where grid electricity is absent.
- Falling solar panel costs and technological improvements make it economically viable.
- It contributes to **energy security**, reduces import bills, and creates employment in the renewable sector.
- **Government Initiatives:**
 - a) National Solar Mission** (target: 500 GW renewable energy by 2030).
 - b) Subsidies for rooftop solar panels.**

Given India's climate and increasing energy demands, solar energy has vast potential for sustainable development.

CHAPTER: VI

Manufacturing Industries





Manufacturing is the process of producing goods in large quantities after processing raw materials into more valuable products. It involves the use of tools, machines, and labour, and is part of the secondary sector of the economy. Over the past decade, the manufacturing sector has grown at an average rate of 7% per year.

Importance of Manufacturing

Manufacturing plays a key role in the economic development of a country for the following reasons:

- **Modernizes agriculture** by supplying tools, machines, and fertilizers.
- **Reduces the heavy dependence on agriculture** for employment.
- **Creates jobs** in secondary and tertiary sectors.
- **Boosts export** and earns valuable foreign exchange.
- **Enhances national income** and living standards.
- **Leads to regional balance** by reducing disparities through industrial development in backward areas.

Industrial Location: Why Are Industries Set Up in Certain Places?

The industries are set up based on the availability of:

Physical Factors:

- Availability of **raw materials**
- **Power supply**
- **Water**

- **Climate**
- **Topography**

Human Factors:

- **Labor availability**
- **Market access**
- **Transport and communication**
- **Capital**
- **Government policies**

Industries often cluster in regions where these factors are favourable, creating industrial regions.

Types of Industries

Based on Raw Materials:

- **Agro-based:** Use plant and animal-based materials (e.g., cotton, jute, sugar).
- **Mineral-based:** Use mineral ores (e.g., iron and steel).

Based on Ownership:

- **Public Sector:** Owned by the government (e.g., BHEL).
- **Private Sector:** Owned by individuals or companies (e.g., TISCO).
- **Joint Sector:** Owned by both government and private firms (e.g., Maruti Suzuki).
- **Cooperative Sector:** Owned and operated by producers or workers (e.g., Amul).

Based on Size:

- **Large Scale:** Require large investment and workforce (e.g., steel plants).
- **Small Scale:** Limited capital and technology (e.g., handloom).

Major Manufacturing Industries

1. Agro-Based Industries

(a) Cotton Textile Industry

- Oldest and most important industry in India.
- It has a wide geographical presence due to availability of raw cotton, cheap labor, and market demand.
- Main centers: Mumbai, Ahmedabad, Surat, Kanpur, Coimbatore.

(b) Jute Textile Industry

- India is the largest producer of raw jute.
- Concentrated in West Bengal near the Hooghly River.
- Faces competition from synthetic substitutes.

(c) Woollen Industry

- Based in northern states like Punjab, Haryana, and Rajasthan.
- Uses wool from sheep; seasonal industry.

(d) Silk Industry

- India is second only to China in silk production.
- Main states: Karnataka, West Bengal, Jammu & Kashmir.

2. Mineral-Based Industries

(a) Iron and Steel Industry

- Backbone of all industrial development.
- India ranks among the top producers globally.
- Major plants: Bhilai, Durgapur, Rourkela, Bokaro.
- Challenges: Low productivity and outdated technology.

(b) Aluminium Smelting

- Uses bauxite; needs high energy input.
- Lightweight, corrosion-resistant, recyclable.
- Plants in Odisha, Maharashtra, Chhattisgarh.

(c) Chemical Industry

- Both inorganic and organic.
- Covers a wide range from fertilizers to plastics.
- India is a leading producer in Asia.

(d) Fertilizer Industry

- Vital for modern agriculture.
- Based near gas fields and markets.
- Main producers: Gujarat, Maharashtra, Uttar Pradesh, Punjab.

(e) Cement Industry

- Requires limestone, silica, and gypsum.
- Located near limestone reserves.
- India is the second-largest cement producer in the world.

(f) Automobile Industry

- Rapid growth since liberalization.
- Major centers: Pune, Chennai, Gurgaon, Mumbai.
- Produces cars, scooters, trucks, buses.

(g) Information Technology and Electronics

- High-tech, fast-growing sector.
- Major centers: Bengaluru, Noida, Hyderabad, Pune.
- Produces computers, chips, mobile phones.

Industrial Pollution and Environmental Degradation

Types of Pollution:

- **Air Pollution:** From smoke and gas emissions.
- **Water Pollution:** From untreated industrial waste dumped into rivers.
- **Noise Pollution:** From heavy machinery.
- **Thermal Pollution:** Hot water discharged into rivers harms aquatic life.

Controlling Environmental Degradation

Industries can reduce environmental damage by:

- Switching to cleaner fuels like **CNG and electricity**
- Using **energy-efficient processes**
- Treating wastewater before release
- **Recycling and reusing waste**
- Creating **green belts** around factories
- Enforcing **pollution control laws**

IN-TEXT QUESTIONS

1. Multiple choice questions.

(i) Which one of the following industries uses limestone as a raw material?

(a) Aluminium

(b) Cement

(c) Plastic

(d) Automobile

Explanation: Cement manufacturing uses limestone as the main raw material, along with silica and gypsum.

(ii) Which one of the following agencies markets steel for the public sector plants?

(a) HAIL

(b) SAIL

(c) TATA Steel

(d) MNCC

Explanation: SAIL (Steel Authority of India Limited) is a public sector enterprise that markets steel produced by government-owned plants.

(iii) Which one of the following industries uses bauxite as a raw material?

(a) Aluminium Smelting

(b) Cement

(c) Paper

(d) Steel

Explanation: Bauxite is the primary ore of aluminium. It is refined to produce alumina and then smelted to make aluminium.

(iv) Which one of the following industries manufactures telephones, computers, etc.?

(a) Steel

(b) Electronic

(c) Aluminium Smelting

(d) Information Technology

Explanation: The IT industry deals with the manufacturing of devices like computers and telecommunication tools and provides software solutions.

2. Short Answer Questions

(within 30 words)

(i) What is manufacturing?

Manufacturing is the process of converting raw materials into finished goods using labour, machinery, and tools. It adds value to products and belongs to the secondary sector.

(ii) Name any three physical factors for the location of an industry.

1. Availability of raw materials
2. Access to water and power
3. Suitable climate and topography

(iii) Name any three human factors for the location of an industry.

1. Skilled labour
2. Transport and communication facilities
3. Proximity to markets and favourable government policies

(iv) What are basic industries? Give an example.

Basic industries supply raw materials to other

industries.

Example: The iron and steel industry is a basic industry as it provides inputs to various other sectors.

(v) Name the important raw materials used in the manufacturing of cement.

The main raw materials used are **limestone, silica, alumina, and gypsum.**

**3. Long Answer Questions
(approx. 120 words each)**

(i) How are integrated steel plants different from mini steel plants? What problems does the industry face? What recent developments have led to a rise in the production capacity?

Integrated steel plants are large-scale facilities that handle the entire process from processing raw materials (like iron ore) to producing finished steel. Examples include plants in Bhilai, Durgapur, and Rourkela.

In contrast, mini steel plants are smaller units that use electric furnaces to recycle scrap steel into finished products. They are more flexible and energy-efficient.

The steel industry faces several challenges:

- High input costs (raw materials, energy)
- Outdated technology
- Low labor productivity
- Limited domestic demand
- Environmental pollution

Recent developments that have boosted capacity include:

- Foreign direct investment (FDI)

- Modernization and automation
- Government initiatives like “Make in India”
- Privatization of public-sector plants

(ii) How do industries pollute the environment?

Industries contribute significantly to environmental pollution:

- **Air Pollution:** Emission of smoke, dust, and toxic gases from factory chimneys (e.g., SO₂, CO₂).
- **Water Pollution:** Discharge of untreated industrial waste into water bodies contaminates drinking and irrigation water.
- **Noise Pollution:** Use of heavy machinery, transport vehicles, and construction leads to harmful noise levels.
- **Thermal Pollution:** Release of hot water from thermal plants and factories into rivers harms aquatic life.
- **Solid Waste:** Dumping of industrial byproducts like fly ash, slag, and sludge.

Such pollution not only harms human health but also affects ecosystems and contributes to climate change.

(iii) Discuss the steps to be taken to minimise environmental degradation by industry.

To minimize environmental degradation, industries must adopt the following steps:

- I. **Adopt Cleaner Technologies:** Use energy-efficient and low-emission machinery and fuels like CNG or electricity.
- II. **Effluent Treatment Plants (ETPs):** Treat wastewater before discharging it into water bodies.

- III. **Reuse and Recycle:** Recycle industrial waste and reuse water in production processes.
- IV. **Install Pollution Control Devices:** Use scrubbers, filters, and noise barriers to reduce emissions.
- V. **Green Belts and Tree Planting:** Plant trees around industrial areas to absorb pollutants and improve air quality.
- VI. **Regulation Compliance:** Strictly follow environmental laws and standards set by government agencies.
- VII. **Public Awareness and Monitoring:** Encourage responsible industrial behaviour through awareness and inspections.

CHAPTER: 7

Lifelines of National Economy





Transport, communication, and trade are the true lifelines of any modern nation. They help link different parts of the country, support economic development, and connect India with the rest of the world. Just like veins in our body carry blood to different organs, transport and communication systems carry people, goods, and information across the country and beyond.

Means of Transport in India

Transport is essential for the movement of people and goods. India's transport network is made up of:

- Roadways
- Railways
- Pipelines
- Waterways
- Airways

These transport systems contribute to national growth and facilitate internal and international trade.

Roadways

India has one of the largest road networks in the world. Roads are classified based on their construction and function.

1. Golden Quadrilateral Super Highways

- Connects: Delhi, Mumbai, Chennai, Kolkata.
- Built under: National Highways Development Project (NHDP).
- Purpose: Reduce time and distance between major cities.

- Includes: North–South and East–West Corridors.

2. National Highways

- Main roads that connect major cities across the country.
- Built and maintained by the Central Public Works Department (CPWD).

3. State Highways

- Connect state capitals with district headquarters.
- Managed by state governments.

4. District Roads

- Connect district headquarters to towns and villages.

5. Other Roads

- Include rural roads under Pradhan Mantri Gram Sadak Yojana.
- Help link rural areas to urban centers.

6. Border Roads

- Constructed in strategic areas along borders.
- Managed by: Border Roads Organisation (BRO).

Classification of Roads on the basis of the type of material used

Type of Road	Material Used	Commonly Found In
Metalled Roads	Cement, concrete, or bitumen of coal	Urban and well-developed areas
Unmetalled Roads	Mud and gravel	Rural areas

Importance of Roads

- Suitable for short and medium distances.
- Easier and cheaper to build than railways.
- Ideal for transporting perishable goods.

Road Density and Transportation Issues

- Road Density refers to the length of roads per 100 square kilometres of area.
- It varies across states -for example, it is as low as 10.04 km in Jammu and Kashmir and as high as 532.27 km in Uttar Pradesh.
- The national average road density in India is 125.02 km.

Problems in Road Transportation

- Nearly half the roads are unmetalled, making them difficult to use during the rainy season.
- National Highways are not sufficient to meet the growing demand.
- Urban roads face heavy congestion, especially during peak hours.
- Many bridges and culverts are outdated and narrow, causing traffic delays and safety concerns

Railways in India

- Railways are the main mode of transport for carrying both goods and passengers across India.
- They enable various activities such as business travel, tourism, pilgrimage, and long-distance goods transport.

As of March 2011, the Indian Railways had:

- 7,133 stations
- A total route length of 64,460 km

A fleet consisting of:

- 9,213 locomotives
- 53,220 passenger coaches
- 6,493 other coaches
- 2,29,381 wagons

The railway network is divided into 16 zones for efficient management.

- The distribution of railways is influenced by landforms, economic activity, and administrative planning.
- Among all transport systems, railways contribute the most to India's national economy.

Problems in Railway Transport

- Ticketless travel is still a major issue, leading to loss of revenue.
- Theft and damage to railway property continues to be a concern.
- People often unnecessarily pull the emergency chain or stop trains, which causes delays and harms railway operations.

Pipelines

- **Pipeline transport** is a relatively new mode of transportation in India.
- Pipelines are mainly used to transport crude oil, petroleum products, and natural gas.
- They carry these resources from oil and gas fields to refineries, fertilizer plants, and large thermal power stations.

Major Pipeline Networks in India

Assam to Kanpur Pipeline:

- Starts from oil fields in Upper Assam and goes to Kanpur (U.P.) via Guwahati, Barauni, and Allahabad.

Branch lines extend:

- From Barauni to Haldia (via Rajbandh)
- From Rajbandh to Maurigram
- From Guwahati to Siliguri

Salaya to Jalandhar Pipeline:

- Begins at Salaya in Gujarat and reaches Jalandhar in Punjab, passing through Viramgam, Mathura, Delhi, and Sonipat.

Has branches to:

- Koyali (near Vadodara, Gujarat)
- Chakshu and other locations

Hazira to Jagdishpur Gas Pipeline:

- Starts from Hazira in Gujarat and goes to Jagdishpur in Uttar Pradesh, via Vijaipur in Madhya Pradesh.

Branches reach:

- Kota (Rajasthan)
- Shahjahanpur, Babrala, and other areas in Uttar Pradesh
- .

Waterways

- Waterways are the cheapest mode of transport, especially ideal for heavy and bulky goods.
- They are fuel-efficient and environmentally friendly.
- India has 14,500 km of inland navigable waterways.

National Waterways

(Declared by the Government)

I. National Waterway No. 1 (N.W. 1):

- Ganga River between Allahabad and Haldia
- Length: 1,620 km

II. National Waterway No. 2 (N.W. 2):

- Brahmaputra River from Sadiya to Dhubri
- Length: 891 km

III. National Waterway No. 3 (N.W. 3):

- West-Coast Canal in Kerala, including Kottapuram-Kollam, Udyogamandal, and Champakkara Canals
- Length: 205 km

IV. National Waterway No. 4 (N.W. 4):

- Stretches of Godavari and Krishna Rivers, and Kakinada to Puducherry Canal

- Length: 1,078 km

V. National Waterway No. 5 (N.W. 5):

- Brahmani and Matai Rivers, Mahanadi and Brahmani delta channels, and East Coast Canal
- Length: 588 km

Role in Foreign Trade

- India's foreign trade is mainly carried through coastal ports.
- 95% of the country's trade by volume, and 68% by value, is handled through sea routes.

Major sea Ports of India:

- India has a long coastline of 7,516.6 km, along which there are 12 major ports and 187 notified minor or intermediate ports.
- The major ports handle about 95% of India's foreign trade.

Classification of Major Sea Ports

Ports on the Western Coast:

- Kandla Port – Located in Gujarat
- Mumbai Port – The largest natural harbour
- Jawaharlal Nehru Port (Nhava Sheva) – A modern and high-capacity port near Mumbai
- Marmagao Port – Located in Goa, known for iron ore export
- New Mangalore Port – Situated in Karnataka

Ports on the Eastern Coast:

- Tuticorin Port – Located in Tamil Nadu
- Chennai Port – One of the oldest ports on the east coast
- Visakhapatnam Port – Major port in Andhra Pradesh, also handles iron ore
- Paradip Port – Located in Odisha
- Kolkata Port – A riverine port on the Hugli River
- Haldia Port – A supporting port to Kolkata, also in West Bengal

Airways

Airways are the fastest, most comfortable, and prestigious means of transportation.

- They are capable of covering challenging terrains like mountains, deserts, forests, and vast oceans efficiently.

Air transport in India was nationalised in 1953.

Domestic air services are provided by:

- Indian Airlines, Alliance Air, various private scheduled airlines, and non-scheduled operators.

Pawan Hans Helicopters Ltd. offers services to:

- The Oil and Natural Gas Commission (ONGC) for offshore operations.
- Remote and inaccessible terrains.

India has two types of airports:

- International Airports
- Domestic Airports

Communication

Communication connects people and regions by transmitting information.

Communication can be divided into two categories:

1. **Personal Communication – Includes:**
 - Postcards, letters, telegrams, telephones, and emails
 2. **Mass Communication – Includes:**
 - Magazines, newspapers, radio, television, press, and films
- **India's postal network is the largest in the world.**
 - **First-class mail:** Transmitted by both land and air; includes cards and envelopes.
 - **Second-class mail:** Sent through surface transport (land and water);

includes book packets, registered newspapers, and periodicals.

- **India has one of the largest telecom networks in Asia.**
- **Mass communication not only entertains but also spreads awareness about national programs and policies:**
 - **Radio:** All India Radio (Akashvani) broadcasts in various languages and regions.
 - **Television:** Doordarshan is India's national channel and one of the largest terrestrial networks globally.
 - **Print Media:** A vast number of newspapers and magazines are published every year.
 - **Films:** India is the largest producer of feature films in the world.

International Trade

- Trade refers to the exchange of goods between people, states, or countries.
- A market is the place where this exchange occurs.
- When trade occurs between nations, it is called international trade, and it can happen via sea, air, or land.

Balance of Trade:

- The difference between export and import value.
- Favourable: Exports exceed imports.
- Unfavourable: Imports exceed exports.

Tourism as a Trade

- In 2010, there was an 11.8% increase in foreign tourist arrivals compared to 2009.
 - This contributed approximately Rs. 64,889 crore in foreign exchange.
- Over 15 million people are directly employed in the tourism sector.

Importance of Tourism:

- Enhances national integration.
- Supports local crafts and cultural activities.
- Promotes international understanding of India's rich heritage and culture.
- **Domestic:** Air India, Indigo, SpiceJet, etc.
- **International:** Connects India with other countries.

Advantages:

- Time-saving
- Ideal for emergencies and high-value cargo

IN-TEXT QUESTIONS**1. Multiple choice questions:**

(i) Which two of the following extreme locations are connected by the east-west corridor?

- (a) Mumbai and Nagpur

(b) Silchar and Porbandar

- (c) Mumbai and Kolkata
(d) Nagpur and Siligudi

Explanation: The East-West Corridor connects Silchar in Assam (eastern India) with Porbandar in Gujarat (western India).

(ii) Which mode of transportation reduces trans-shipment losses and delays?

- (a) Railways
(b) Roadways

(c) Pipeline

- (d) Waterways

Explanation: Pipelines carry liquids like petroleum and natural gas directly from source to destination, reducing losses and delays associated with handling and transfers.

(iii) Which one of the following states is not connected with the H.V.J. pipeline?

- (a) Madhya Pradesh

(b) Maharashtra

- (c) Gujarat
(d) Uttar Pradesh

Explanation: The Hazira-Vijaipur-Jagdishpur (HVJ) pipeline transports natural gas from Hazira in Gujarat to Jagdishpur in Uttar Pradesh, passing through Madhya Pradesh. However, Maharashtra is not on this route, so it is not connected to the HVJ pipeline.

(iv) Which one of the following ports is the deepest land-locked and well-protected port along the east coast?

- (a) Chennai
(b) Paradwip
(c) Tuticorin

(d) Vishakhapatnam

Explanation: Vishakhapatnam is India's deepest land-locked port and is naturally protected by surrounding hills.

(v) Which one of the following is the most important mode of transportation in India?

- (a) Pipeline

(b) Railways

- (c) Roadways
(d) Airways

Explanation: Railways play a major role in transporting goods and people over long distances across India efficiently.

(vi) Which one of the following terms is used to describe trade between two or more countries?

- (a) Internal trade

(b) International trade

(c) External trade

(d) Local trade

Explanation: Trade between different nations is called international trade, involving both imports and exports

2. Short Answer Questions

(About 30 words each):

(i) State any three merits of roadways.

- Roads are economical for short-distance travel.
- They provide door-to-door services.
- They are flexible, especially in hilly areas and remote regions.

(ii) Where and why is rail transport the most convenient means of transportation?

Rail transport is most convenient in the northern plains of India due to flat terrain, dense population, and agricultural and industrial development. It efficiently connects long distances and supports heavy cargo.

(iii) What is the significance of the border roads?

Border roads improve accessibility in strategic and remote areas, especially near India's international boundaries. They support national defence and promote economic development in border regions.

(iv) What is meant by trade? What is the difference between international and local trade?

Trade is the exchange of goods and services.

- **Local trade** happens within a city or region.
- **International trade** takes place between countries and involves import and export of goods.

3. Long Answer Questions

(About 120 words each):

(i) Why are the means of transportation and communication called the lifelines of a nation and its economy?

Transportation and communication are called lifelines because they connect people, markets, and industries. They support trade, tourism, and the movement of goods and services. Roads, railways, airways, and waterways help move raw materials to factories and finished goods to markets. Communication systems like mobile networks, the internet, newspapers, and television spread information quickly. These systems strengthen national unity, support economic activities, and help in administration. Without them, economic and social development would be slow and uneven. They are essential for integration and modernization in a diverse country like India.

(ii) Write a note on the changing nature of international trade in the last fifteen years.

Over the last fifteen years, India's international trade has expanded significantly. Earlier, India mainly exported agricultural products. Today, manufactured goods, engineering products, petroleum, chemicals, and IT services form a large part of exports. Liberalization, globalisation, and advancement in transportation and communication have made international trade faster and more efficient. The share of imports like crude oil, electronic goods, and

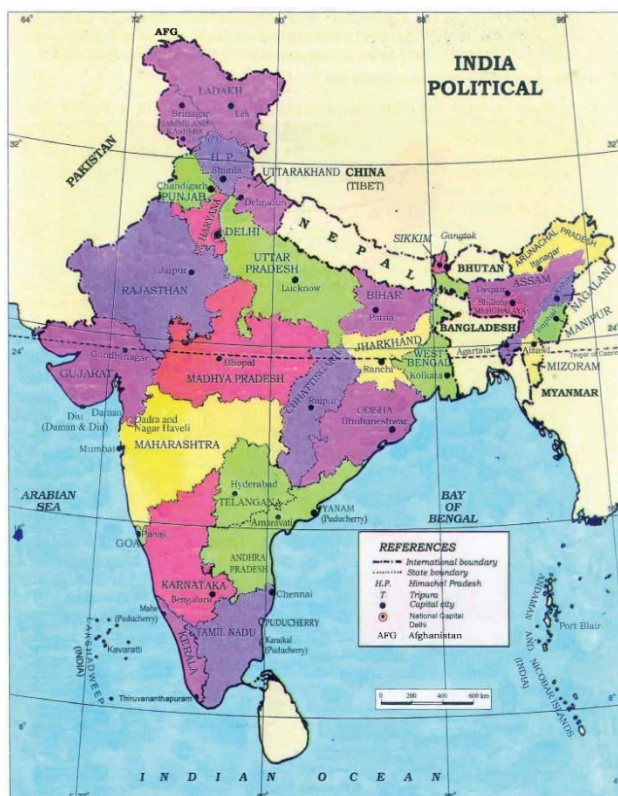
machinery has also increased. India now trades with over 200 countries. Digital platforms have made global commerce easier. Thus, trade has become more diverse, technology-driven, and service-oriented. Tourism too has added to India's upgraded position in international trade. In 2004, there was a 23.5% increase in foreign tourist arrivals as against the number in 2003. Thus, international trade for India has undergone a cognisable change in the past fifteen years.

Appendix-I

Important Maps



Political Map of India



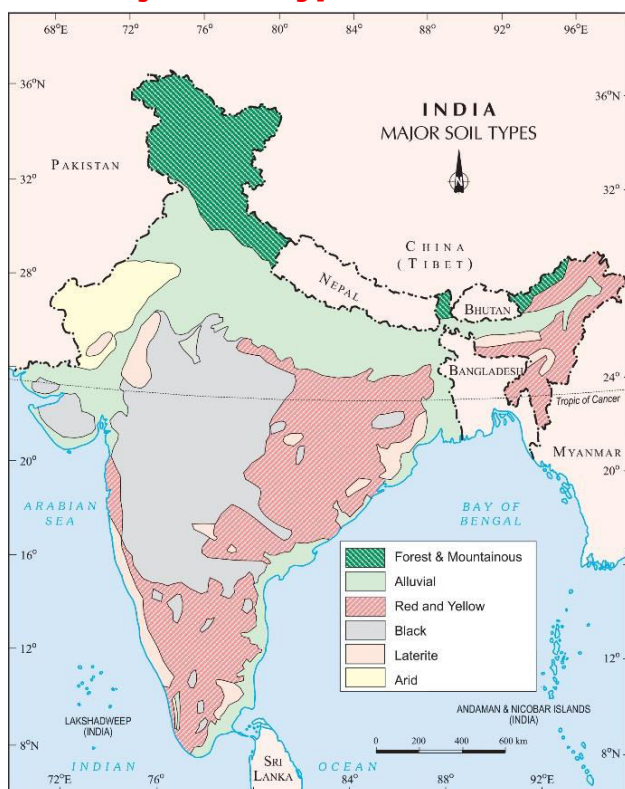
https://bhuvan-app1.nrsc.gov.in/mhrrd_ncert/images/image-en/Political.jpg

Major Rivers of India



https://bhuvan-app1.nrsc.gov.in/mhrrd_ncert/images/image-en/Water.jpg

Major Soil Types of India



https://bhuvan-app1.nrsc.gov.in/mhrrd_ncert/images/image-en/Soil.jpg

Important Minerals



https://bhuvan-app1.nrsc.gov.in/mhrrd_ncert/images/image-en/Minerals.jpg

Rice Producing Areas



https://bhuvan-app1.nrsc.gov.in/mhrd_ncert/images/image-en/Agriculture.jpg

Textile Industries



https://bhuvan-app1.nrsc.gov.in/mhrd_ncert/images/image-en/Textile.jpg

National Highways



https://bhuvan-app1.nrsc.gov.in/mhrd_ncert/images/image-en/National highways.jpg

Railways



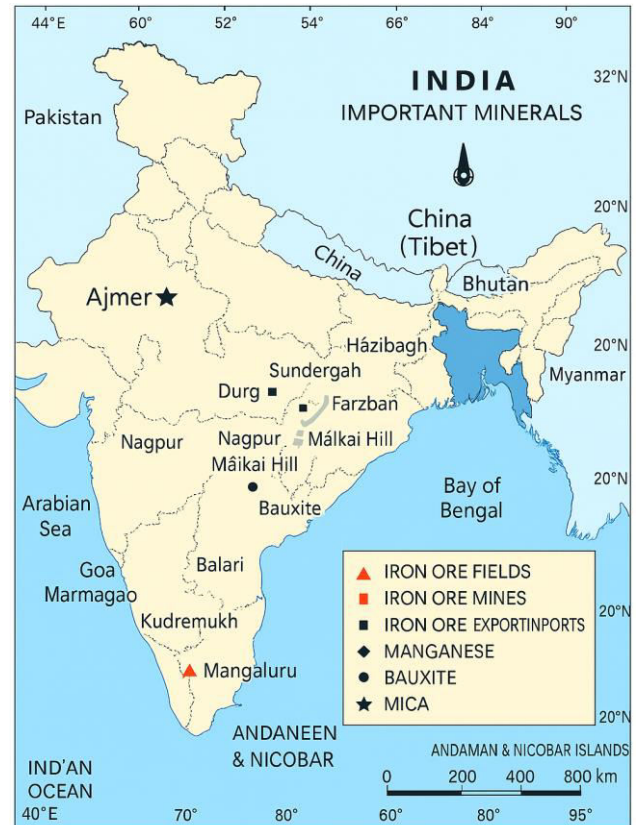
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Seaports of India



https://en.wikipedia.org/wiki/File:India_location_map_3.png

Important Minerals



Appendix-II

Model Paper



MODEL QUESTION PAPER FOR CLASS X

SUBJECT: SOCIAL SCIENCE

CLASS: 10TH

TIME: 3 HRS

M. MARKS: 80

SECTION-A

1 Mark x 20 = 20 Marks

1. Do as directed:

i) When did German Unification take place?

a) 1869 A.D b) 1871 A.D c) 1873 A.D d) 1875 A.D

ii) Which Indian city is associated with Jallaiwalla Bagh Tragedy?

a) Agra b) Kanpur c) Amritsar d) Delhi

iii) Tea cultivation is an example of agriculture.

iv) The Congress split at Surat in:

a) 1905 b) 1907 c) 1909 d) 1910

v) The Constitution of Jammu and Kashmir was adopted inyear.

vi) Which one of the following is not a Kharif Crop?

a) Wheat b) Rice c) Maize d) None of these

vii)..... was the literary journal of Cultural Congress.

viii) When was the first Jute Mill established in India?

a) 1854 b) 1914 c) 1855 d) None of these

ix) Democracy is based on the ideas of:

a) Freedom b) Negotiation c) Deliberation d) Both a) and b)

- x) SAIL is a public sector industry. (True/False)
- xi) What is the main problem in the present industrialization of India?
a) Rural b) Capital c) Transfer d) None of these
- xii) Which country in South Asia never had a democratic government?
a) Bhutan b) India c) Sri Lanka d) Myanmar
- xiii) What is the full form of SDRF?
- xiv) The Jammu Region is also known as land of:
a) Temples b) Gompas c) Scenic beauty d) Chota Kashmir
- xv) NDMA stands for.....
- xvi) Which of the following is not a natural disaster?
a) Floods b) Earthquake c) Fire d) Landslide
- xvii) administers the UT of Jammu and Kashmir.
- xviii) MSME stands for.....
- xix) How many states are there in India?
a) 27 b) 28 c) 29 d) 30
- xx) Dal Lake is situated in.....



Section-B

3 Marks x 10=30 Marks

2. Why Gandhiji decided to withdraw the Non-Cooperation Movement.
3. What is meant by Bretton Woods Agreement?

Or

Why did industrial production in India increase during the First World War?

4. Explain the consequences of Great Depression.

Or

Why did some industries in 19th century Europe prefer hand labour over machines?

5. What steps can be taken to control soil erosion in the hilly areas?
6. Describe the important features of rice cultivation.
7. Classify the following subjects under the union, state and concurrent lists:
Defence, Police, Agriculture, Atomic energy, Marriages, Banking, Trade
8. What are the various challenges faced by the political parties?
9. How employment potential in Jammu and Kashmir can be increased?
10. What should be the approach to help a fire burnt patient?
11. Mention different aspects of life in which women are discriminated in India.

SECTION-C

5 Marks x 5=25 Marks

12. What steps did the French revolutionaries take to create a sense of collective identity among the French people?
13. Write in detail different types of soil found in India.
14. Define Minerals. What are various metallic and non-metallic minerals found in Jammu and Kashmir?
15. Discuss different forms of power sharing in modern democracies? Give an example of each of these.
16. Read the extract and answer the questions:

Print culture has popularized the ideas of enlightenment thinkers. The writings of these thinkers such as Thomas Paine, Voltaire and Rousseau were widely printed and read during the times. Collectively, their writings provided a critical commentary on tradition, superstition and despotism. They argued for the rule of reason rather than custom and demanded that everything

be judged through the application of reason and rationality. They attacked the sacred authority of the church and the despotic power of the state, thus eroding the legitimacy of a social order based on tradition. The writings of Voltaire and Rousseau were read widely; and those who read these books saw the world through new eyes, which were critical and rational.

Questions:

- (a) Discuss in brief the effectiveness of print culture.
- (b) Do you agree that scientific ideas were circulated through print, if yes, discuss.
- (c) To what extent did the print culture has paved the way for French revolution.

SECTION-D

5 Marks

(Map Based Question)

17.a) Indicate the following in a given outline map of India:

Port Kandla, North-South Corridor, Railway line from Delhi to Kolkata

b) On the outline map of the world shade and label any two non-federal countries.



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