SOCIAL SCIENCE II

Part 2

Standard IX

Government of Kerala

Department of General Education

State Council of Educational Research and Training (SCERT), Kerala

2024

THE NATIONAL ANTHEM

Jana-gana-mana adhinayaka, jaya he
Bharatha-bhagya-vidhata
Punjab-Sindh-Gujarat-Maratha
Dravida-Utkala-.Banga
Vindhya-Himachala-Yamuna-Ganga
Uchchala-Jaladhi-taranga
Tava subha name jage,
Tava subha asisa mage,
Gahe tava jaya gatha
Jana-gana-mangala-dayaka jaya he
Bharatha-bhagya-vidhata.
Jaya he, jaya he, jaya he,
Jaya jaya jaya, jaya he!

PLEDGE

India is my country. All Indians are my brothers and sisters.

I love my country, and I am proud of its rich and varied heritage. I shall always strive to be worthy of it.

I shall give respect to my parents, teachers, and all elders, and treat everyone with courtesy.

To my country and my people, I pledge my devotion. In their well-being and prosperity alone lies my happiness.

SOCIAL SCIENCE II

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Dear Students,

The revised textbook of Social Science II is with you now. The content of this book comprises the concepts in Geography and Economics. Human life in this diverse world is moulded according to the micro-geographic features of the respective habitation of people. Keeping this in mind, this textbook has adopted a regional approach in geography to expound the geography of India. This approach studies the unique characteristics of each region, taking a close but detailed look at it's geographical features and the entwined lives of people living there. A study of this kind will help you adapt to any situation in any part of the world in which you are destined to build your life. This textbook will surely convince you that a scientific study of geography is essential for an individual to develop as a responsible citizen of this world.

You should also have sufficient knowledge of the many possibilities of wealth-generation and distribution that are necessary for everyone to live in this society as a social being. For this, there should be a clear understanding of human resource development, its challenges and also its economic perspective. Hence, we have taken care to include these aspects in the textbook.

An opportunity to recognise the possibilities of production as well as consumption in the context of the economic system, and its basic sectors are also provided to you in the textbook.

Geography and Economics play a significant role in the cultural and social development of human beings. The Social Science II textbook for Class 9 internalises and acknowledges this fact, and has been prepared to welcome a new world order accordingly. Hope you will receive it with open minds, thus expanding your world of knowledge.

With love and regards

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Some symbols are used in this book for ease of study

For additional reading - not for assessment

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THE CONSTITUTION OF INDIA

PREAMBLE

WE, THE PEOPLE OF INDIA, having solemnly resolved to constitute India into a [1]**[SOVEREIGN SOCIALIST SECULAR DEMOCRATIC REPUBLIC]** and to secure to all its citizens :

JUSTICE, social, economic and political;

LIBERTY of thought, expression, belief, faith and worship;

EQUALITY of status and of opportunity; and to promote among them all

FRATERNITY assuring the dignity of the individual and the [2][unity and integrity of the Nation];

IN OUR CONSTITUENT ASSEMBLY this twenty-sixth day of November, 1949 do **HEREBY ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION.**

---

1. Subs. by the Constitution (Forty-second Amendment) Act, 1976, Sec.2, for "Sovereign Democratic Republic" (w.e.f. 3.1.1977)
2. Subs. by the Constitution (Forty-second Amendment) Act, 1976, Sec.2, for "Unity of the Nation" (w.e.f. 3.1.1977)

5

Indian Economy Through Various Sectors

Fig 5.1

Observe the picture 5.1. Don't you notice people engaged in different occupations?. Why are they engaged so? Yes, these occupations give them income. Hence these occupations are part of economic activities.

Categorise the economic activities given in picture 5.1 into their related sectors.

- Agriculture
- Industry and Construction
-

Activities in these three sectors are included in primary, secondary, and tertiary sectors of the economy.

National Statistical Office (NSO)

National Statistical Office (NSO) was formed in 2019 by combining the then existent institutions, Central Statistical Office (CSO) and National Sample Survey Office(NSSO).

NSO, as a government of Indian organization, collects, analyses, and publishes the economic statistical data of India, including national income. This data is utilised to formulate economic policies, plan government projects and monitor the economic growth.

Primary Sector

The end purpose of the primary sector includes all those activities that utilise the natural resources directly. Agricultural activities, animal husbandry and fishing which depend on natural resources, are examples for primary sector activities. Since the primary sector gives more importance to agriculture and allied activities, it is also known as the Agricultural sector.

The NSO, which prepares the economic statistical data of India, indicates the economic activities included in each sector of the economy. Examine the following list of different economic activities and complete the picture (5.2, 5.3, 5.4).

Different Economic activities

- Hotels and Restaurants
- Banking, Insurance
- Agriculture and allied activities
- Construction works
- Industry
- Education
- Livestock rearing
- Real estate
- Health
- Water supply
- Forestry

Complete the diagram related to primary sector.

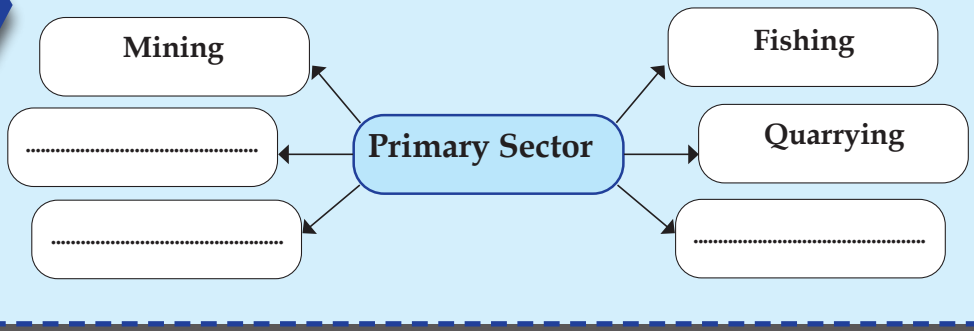


Fig 5.2

- Are we directly using all the products derived from the primary sector?
- Don't we also use other products that are produced utilising the primary sector resources?

By examining the completed diagram, you may realise that from the primary sector we get products which can be directly consumed and also the raw materials utilised for the production of other products.

Secondary Sector

This sector includes the economic activities related to industry and manufacturing. It involves the processing of raw materials from the primary sector into finished products. Since the secondary sector gives more importance to the industries, it is also called the Industrial sector.

Complete the following diagram which includes the various economic activities related to the secondary sector.

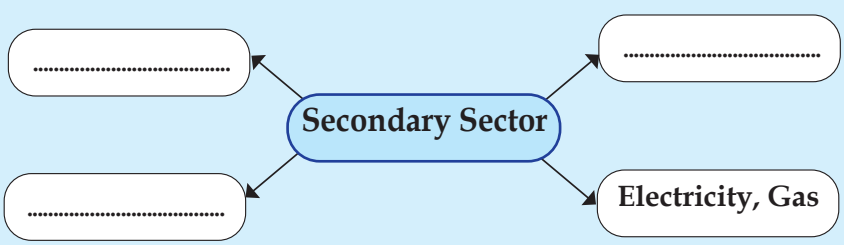


Fig 5.3

Tertiary Sector

The tertiary sector through its activities make more efficient the economic activities related to the storing and marketing of primary and secondary sectors. The tertiary sector also ensures the services of various fields like health and education. Hence it is known as the service sector.

Complete the diagram related to the tertiary sector.

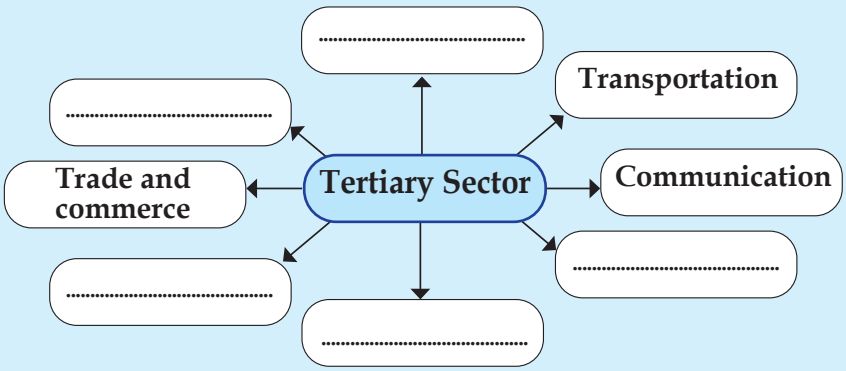


Fig 5.4

We have already seen the categorisation of various economic activities into the primary, secondary and tertiary sectors. The economy grows when these three sectors work in tandem.

Let's see an example. How do the other two sectors help to raise the production of sugarcane in the primary sector?

In order to increase the production of sugarcane	
Receivables from the secondary sector	**Receivables from the tertiary sector**
• Machinery	• Transportation
• Fertilizers	• Financial assistance
•	•
•	•

Table 5.1

Thus, it is the interdependence between the various sectors that completes the production process.

Find out the interdependence between the various sectors by analysing the following picture.

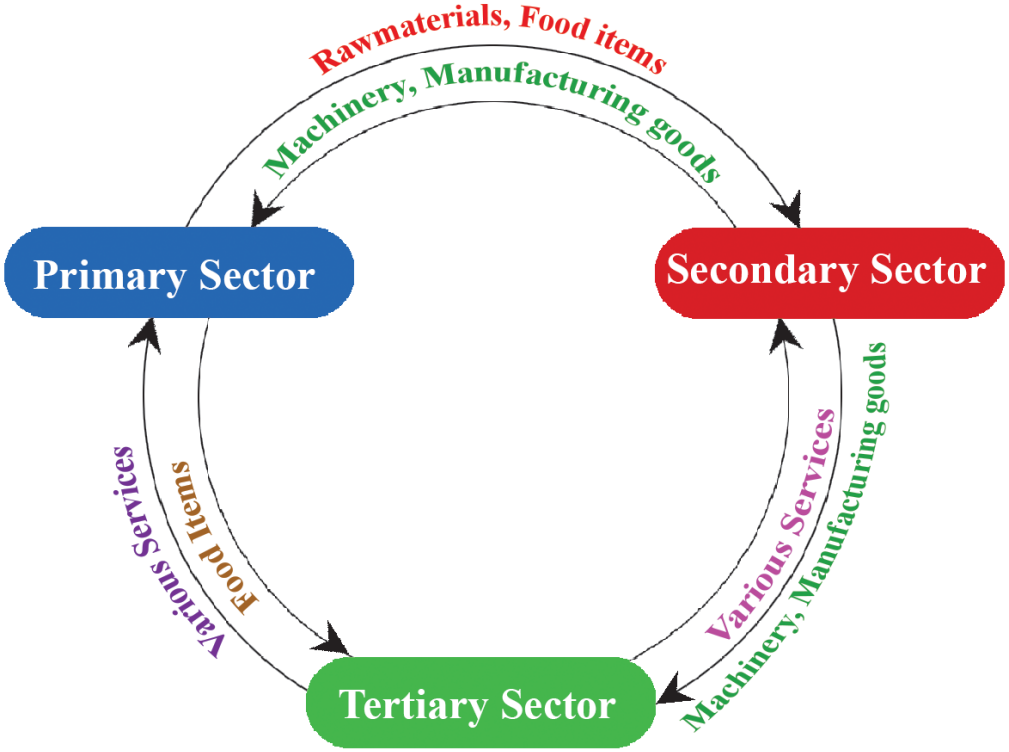


Fig 5.5

Analyse the picture and answer the following questions.

- Which are the sectors helped by the primary sector? What are they? Name them.
- What are the assistance received by the primary sector from the other sectors?
- How are the primary, secondary and tertiary sectors mutually related?

Interdependence between the various sectors is essential for ensuring economic growth. Production, distribution, and consumption are known as the major economic activities

that take place in different sectors. Production is the process of making goods and services by utilising different factors of production. Distribution is the process of allocating produced goods and services or income among different individuals and factors of production. A part of the income thus allocated is used by the consumer to purchase goods and services. The balance is kept as saving. Consumption is the process of utilising goods and services to satisfy various needs and wants. An economy prospers when we boost up economic activities such as production, distribution and consumption.

National Income

Usually we submit the annual household income details to the authorities as a part of social- economic survey. How do we calculate the annual household income? Annual household income is the income derived from different sources such as salary, other occupations, assets and bank deposits. In the same way, National Income is the sum total of the income generated from all the economic activities that have taken place in a year.

The National Income is the sum total of the money value of all final goods and services produced in an accounting year. In India, the financial year commences from 1st April and closes on 31st March.

Final goods are those that can be consumed directly. A product that is used as a raw material to produce another product is known as intermediate goods.

Importance of measuring National Income

The income generated from the primary, secondary, and tertiary sectors is an indicator of the economic growth of a country. Let's examine the importance of calculating national income

- Can understand the economic growth of the country.
- Can assess the contribution of different sectors.
- Can help the government plan and implement various projects.
- Can compare the economic status of countries.
- Can understand different types of investments and expenditure of the people.
- Can understand the strength and weakness of the economy.
-

Methods of measuring National Income

Given below are the three methods we generally adopt for measuring national income. They are based on production, income and expenditure.

- Product Method
- Income Method
- Expenditure Method

Product Method

This method calculates national income by adding the value of all final goods and services produced in the primary, secondary and tertiary sectors of an economy in a financial year. This helps us to identify the contributions made by different sectors towards the National Income and ensure due apportion to each sector.

National Income (NI) = $x_1 + x_2 + x_3 + x_4 ..... + x_n$

$x_1 + x_2 + x_3 + x_4 ..... + x_n$ is the sum total of the money value of all final goods and services produced in the primary, secondary and tertiary sectors of an economy.

Income Method

According to the income method, national income is the sum total of the incomes generated by land, labour, capital and organisation in the form of rent, wages, interest and profit.

That is, National Income NI = r + w + i + p

r = rent, w = wage, i = interest, p = profit

This method helps us to identify the proportion of income of each factor in the National Income. By income method, we are able to calculate the Gross National Income (GNI).

Expenditure Method

In this method, national income is calculated by adding together all the expenses incurred in the purchase of goods and services to carry out various economic activities.

In Economics, investment is also considered as expenditure. This is in addition to the expenditure for the purchase of goods and services. The total expenditure of the economy includes government expenditure as well as net export value besides consumption expenditure and investment expenditure.

Therefore, National Income (NI) = C + I + G + (X-M)

C = Consumption expenditure, I = Investment expenditure

G = Government expenditure,

X-M = Net export where, (X) denotes country's Export and (M) denotes country's Import.

In this way, by expenditure method, we can calculate the Gross National Expenditure (GNE).

We are now familiar with the three methods of measuring national income. Through product method, we get the total money value of the various goods and services produced in primary, secondary and tertiary sectors in the country. Through the income method, we get the Gross National Income and through the expenditure method, we get the Gross National Expenditure. We get the same result when we calculate National Income by any of these three methods.

It means that the value of National Income will be one and the same when we calculate it by anyone of the three methods, namely product method, income method or the expenditure method.

Government Expenditure

Government Expenditure or public expenditure is the expenditure incurred for ensuring the general welfare of the people. Government Expenditure may be divided into developmental expenditure and non-developmental expenditure.

Consumption Expenditure

Consumption Expenditure is the expenditure incurred by the consumer for the purchase of different goods and services for consumption.

Investment Expenditure

Investment Expenditure is the expenditure incurred on capital goods by industrial units, individuals, or institutions. Expenditure incurred for the purchase of land and machinery are some of the examples of investment expenditure.

Net exports

Net exports is the difference between the value of exports and the value of imports of the country.

Gross Domestic Product (GDP) and Gross National Product (GNP)

We have already seen how to find out the economic condition of a nation and its significance. Let's get familiar with some of the important concepts related to the National Income calculation.

GDP is the sum total of the money value of all final goods and services produced within the domestic territory of a country. 'Domestic territory' denotes a region under the jurisdiction of a national government which has absolute freedom for performing economic activity. While calculating GDP, the income received by those who work abroad and the profit earned by enterprises and institutions abroad are not included.

Economic Territory of a Country

Economic territory includes

- Air space, territorial waters
- The embassies and high commissions situated in other countries.
- Zones where a country has exclusive rights, a part of the sea where it has the right to fish, collect fuel and minerals from the seabed.
- Free zones of offshore enterprises under the control of customs.

The embassies and high commissions owned by foreign countries in India are not included under our economic territory.

For example; the economic gain made by an Indian company abroad will not be included in the GDP. GDP is the suitable tool for analysing the contributions made by different sectors of an economy within a country.

India's GNP is calculated by adding the income of Indians and Indian firms abroad to the GDP. At the same time it excludes the income earned from India by foreign national and foreign firms. Thus, GNP is the sum total of the money value of all final goods and services produced by the residents of a country within the domestic territory and abroad.

How does GNP differ from GDP?

Net National Product - NNP

When we purchase and use a vehicle or machinery, its efficiency comes down every year. Regular use of any object leads to wear and tear and makes it obsolete. The expenses incurred to rectify this wear and tear are called depreciation cost. Depreciation costs are considered while calculating national income. When we deduct depreciation from GNP, we get NNP.

Net National Product (NNP) = GNP - Depreciation cost

What is the significance of calculating NNP?

Per Capita Income - PCI

Per Capita Income is an essential tool used to understand the economic condition of an economy.

It is obtained by dividing the national income by the total population of a country.

$$\text{Per Capita Income (PCI)} = \frac{\text{National Income}}{\text{Total Population}}$$

What will happen to per capita income if the population of a country increases more than the national income?

- What happens to the per capita income when the income of only a small segment of population increases? Discuss the consequences of such a change and prepare a brief note.
- Find out the per capita income of our country and state.

Limitations in measuring National Income

Even though the calculation of national income is essential for understanding the economic condition of a country; this tremendous effort is beset with a lot of practical difficulties and limitations. Let's see what they are?

- Lack of accurate statistical data
- Double counting (The possibility of counting the monetary value of a product in more than one stages of production)
- Non inclusion of goods and services produced for self consumption.
- Not including those products whose monetary value is not determined in the market.
- Value of household work not included.
-

In spite of these limitations, NSO tries its level best to calculate the national income accurately.

While calculating national income, the income generated by different sectors of an economy has a decisive role in determining the total income of a country. Hence we have to empower each and every sector. We have to evaluate the sector-wise contribution of primary, secondary and tertiary sectors towards national income. The contribution made by each sector towards national income not only provides the performance standards of that sector but also indicates the interdependence of other sectors.

Sectoral Contribution to India's National Income

From January 2015 onwards, NSO uses the concept of Gross Value Added to find out the contribution made by different sectors of the Indian economy. Before that, Gross Domestic Product was used to find out sectoral contribution. By the gross value added (GVA) method, the contribution made by each sector can be calculated in a relatively fast and accurate way.

Gross Value Added (GVA)

Gross Value Added is the sum total of the value of goods and services produced in an economy. Gross value added is calculated by subtracting value of intermediate consumption from gross product value.

Gross Value Added (GVA) = Gross Product Value - Value of Intermediate Consumption

Intermediate consumption indicates the consumption of raw materials used to produce a goods or service. While calculating gross value added, only the product value is considered.

Taxes or subsidies on the product are not considered. But while calculating GDP, the difference between product tax and product subsidy is added to GVA.

That is,

GDP = GVA + (Product tax - Product subsidy)

Tax, Subsidy

Tax is a compulsory payment made by the public to the government for enabling the latter to meet the expenses of public interest like welfare measures and developmental activities.

Subsidy is the financial support or assistance provided by the government on goods and services to individuals or institutions on the basis of socio-economic policies.

We can understand the GVA value made by primary, secondary and tertiary sectors in national income for various periods from the graph given below.

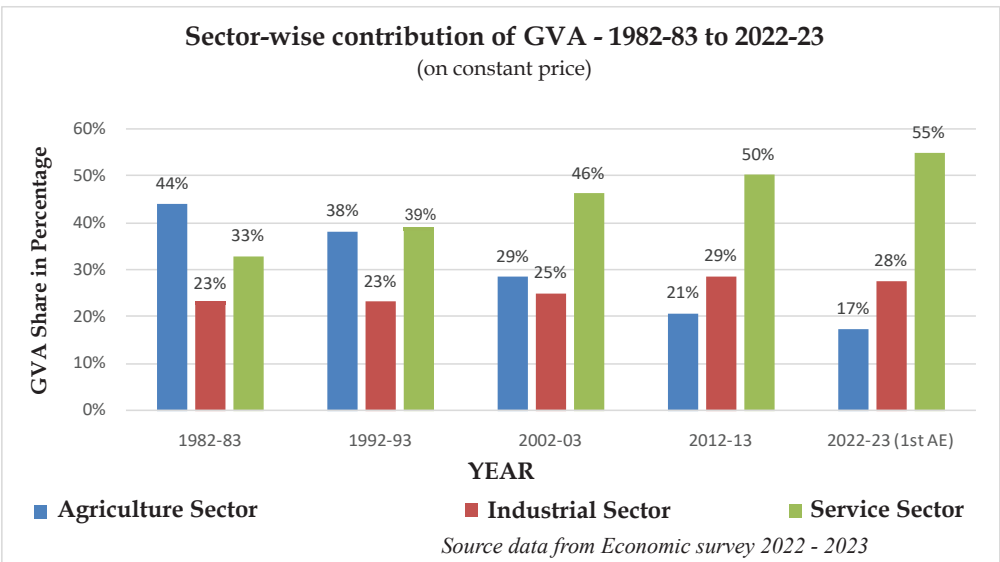


Fig 5.6

Analyse the graph and answer the following questions.

- In your opinion, which sector shows a continuous declining trend as per the above mentioned values of GVA for different periods (1982-83 to 2022-23)
- Which sector shows continuous increase in the share of GVA?
- Analyse various sectors' GVA share during this period and prepare a note.

Gross State Value Added - GSVA

The GSVA of Kerala and its sectoral contribution shows changes over time.

Observe the graph given below and analyse the GSVA of Kerala and the contribution made by its different sectors.

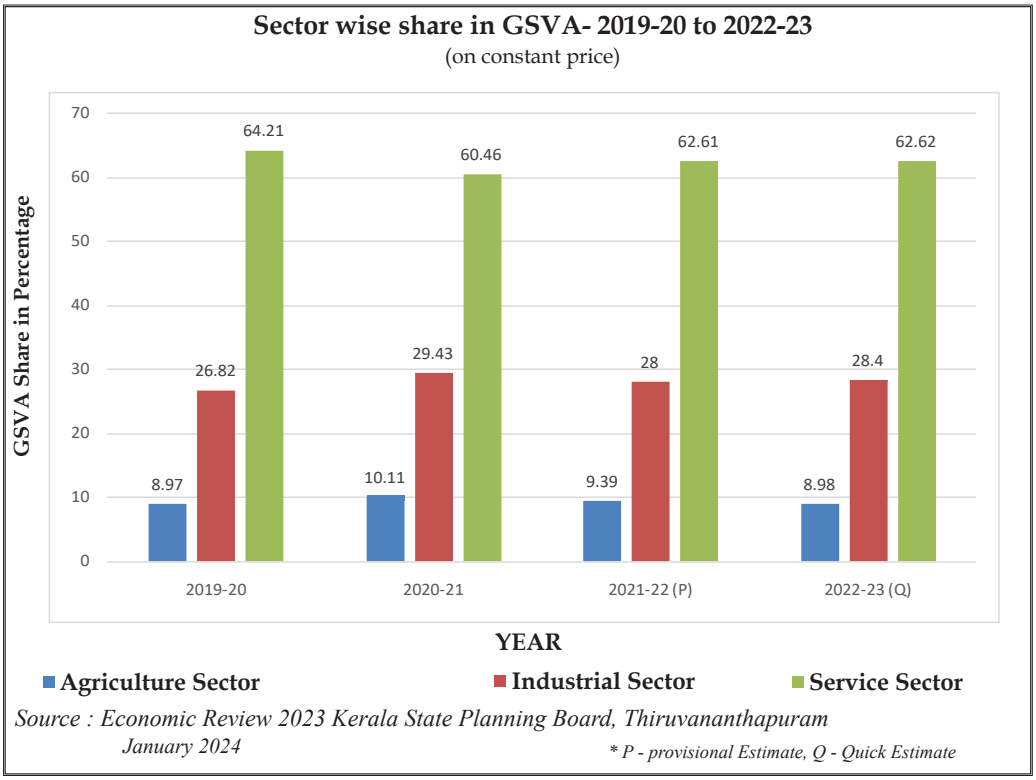


Fig 5.7

- What changes do you observe in GSVA while comparing the contribution of the primary sector from 2019-20 to 2022-23?
- Which sector has made outstanding contribution in GSVA of Kerala during the period 2022-23?
- What changes did you notice in the contribution of the secondary sector while analysing the graph?
- Prepare an analytical note on the contribution of different sectors to Kerala's GSVA.

We have understood that the share of tertiary sector is more compared to other sectors in GVA of India and GSVA of Kerala. Let's examine and find out why. The reasons are

- Programmes implemented for the development of the health and education sector.
- The growth of the banking and insurance sector facilitating the country's trade and commerce.
- Growth of transport and communication sector
- Tourism development
- Growth of knowledge-based industries

All these factors contribute to the growth in the sectoral contribution of the tertiary sector towards GVA.

Growth of Knowledge-based Sector

Human capital refers to the individual traits that are useful in the production process. This includes knowledge, skills, health and education of human resources. Knowledge-based sector effectively utilises knowledge and technology for attaining economic growth. Today, the modern technology and ICT possibilities have elevated the nation into a knowledge economy. Now a days knowledge-based services, as part of the tertiary sector, have momentum. Indian information and communication technology has grown to such an extent that it even provides the software services in the international level. It opens up a great opportunity and possibility for the younger population of India below 35 years, which amounts to 65% of India's total population. Under these circumstances, and as a result of knowledge explosion, it will be possible for India to achieve economic progress and improve social welfare.

Fig 5.8

The Government has given priority to the development of knowledge- based sectors. The Technopark and Infopark established by the government of Kerala are the best examples for this.

There exists a congenial atmosphere for nourishing the knowledge-based sectors in the present day India. Mass of people who can handle foreign languages with ease, improved scientific and technological growth, extensive government-cooperative-private sectors, the ever evolving markets which grow day by day-all these helping the development of a knowledge-based sector and to enhance the contribution of the tertiary sector in national income.

The knowledge-based sector plays an important role in strengthening the tertiary sector. Evaluate the statement.

Employment structure in various sectors

We have seen from the graph given in the picture 5.6 that the service sector has contributed the most to India's national income during 2022-23. There are disparities in the occupational structure in different sectors of the Indian economy. Observe the graph given below (Fig 5.9).

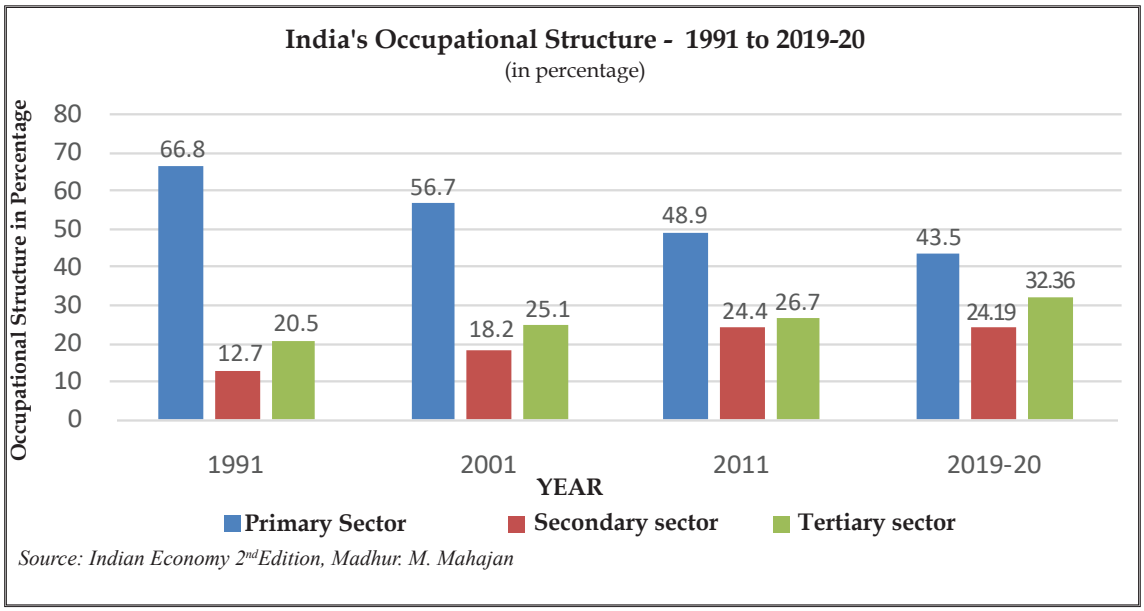


Fig 5.9

Based on the following questions, examine the above graph which explains occupational structures in various sectors of the economy. Record your findings.

- Which sector comprises the largest volume of labourers during the period 1991 to 2019-20?
- What are the changes that can be noted in the occupational structure of secondary and tertiary sectors during this period?
- Analyse the graph (Fig 5.9) and prepare a brief note on employment structures of the various sectors in Indian economy.

During the different phases of economic growth, we may notice a change in the relative importance of different sectors. This is referred to as structural transformation. It implies a change in the contribution made by different sectors and their employment opportunities.

Organised and Unorganised Sectors

The employment sector can be divided into two as organised and unorganised sectors. The organised sector includes various enterprises and activities that function under a proper legal system, assure a safe working atmosphere for labourers and protects their rights. The firms under this employment sector are registered under companies act, factory law, societies act or co-operative act and function under these laws. The employment units under the organised sector are bound to obey the rules stipulated in the law under which they have been registered.

The enterprises under the unorganised sector are neither under any proper legal system nor do they keep any proper accounts.

They are employment sectors that exist informally and do not submit to any specific registration or code of law.

Complete the table by finding more features of organised and unorganised sectors.

Organised Sector	Unorganised Sector
• Registered employment sector	• Unregistered employment sector
• Permanent jobs ensured	• No assurance of permanent job
• Comparatively high salary	• Comparatively low salary
• Job security	• Lack of job security
•	•
•	•

Problems faced by the unorganised sector

The workers of unorganised sector face many problems like unsafe work places, long working hours, and low wages. This hinders the transformation of such employees into excellent human capital. Apart from this, it leads to their lower contribution to national income and widens the socio-economic inequality. Compared to those in the organised sector, the employees in the unorganised sector face many problems such as backwardness and lack of opportunities. This leads to a different types of inequality. The central and state governments have passed various laws to mitigate these problems. Let's familiarise with some important laws among them.

The Unorganised Worker's Social Security Act - 2008

This law empowers the central and state governments to implement various policies to ensure healthcare of unorganised workers, maternity benefits, old age protection, education, housing and various social security benefits.

The Code on Social Security 2020

The Code on Social Security 2020 was formed in 2020 by giving importance to the measures that ensure social security of the employees under organised and unorganised sectors. This law confers various benefits on the self-employed, housekeepers, daily wage workers, workers from other states, and gig platform workers. Various grants given to physically and mentally challenged workers, accident insurance, maternity benefit, free medical benefits and old age protection come under the ambit of this law.

Apart from these laws, various programmes have been implemented by the government to strengthen the unorganised sector such as developing the skills of the workers, making available loans and liberalising the labour laws.

Gig Platform Workers

Code on Social Security 2020 defines a gig platform worker as 'a worker who works outside the conventional employer - employee relationship and earns money from it'.

Features

- Gig platform workers engage formal contracts with companies when needed.
- The jobs are temporary and must be completed in a time bound manner.
- They can work in more than one establishment simultaneously.
- They have the freedom to work according to time and situation.
- Opportunities are provided to test their talent in the areas of their interest.

Gig platform workers have become a major work force of the modern economy. Freelancers, independent contractors, various online food distribution workers, drivers, etc. are the examples for gig platform workers.

The growth of primary, secondary and tertiary sectors of an economy plays a vital role in the development of that country. The growth of national income, which ultimately determines the growth of a nation, depends in turn on the mutual relationships among the primary, secondary and tertiary sectors.

Extended Activities

1. Prepare a chart containing various examples of interdependence among primary, secondary and tertiary sectors which are seen around you. Present it in the class.
2. Find out goods that can be used as final goods and intermediate goods at the same time. Prepare a list.
3. List out the problems faced by the unorganised sector workers in your area and suggest some remedial measures.
4. Conduct a discussion on how a growth in the unorganised sector confers various benefits on the economy and present the report of the same.
5. Find out and prepare notes on policies and programmes that are implemented by the state-central governments to minimise the inequalities that exist in health, education, and employment sectors.

6

Price and Market

Fig 6.1

Observe picture 6.1. We can see, different things here which are helpful in our day to day life to satisfy our needs. Some of these are used to satisfy our basic needs and some others are used to fulfill our wants. Sort and write them in the table given below in an appropriate manner.

Fulfills Basic Needs	Fulfill Wants
• Food • •	• Vehicle • •

Needs such as air, food,water, cloth and shelter are essential for human life. So these are included in the basic needs or primary needs. There are other needs which help to make our life happy. This kind of needs, which help in achieving life aspirations but not essential to our survival, are generally considered as wants. The needs and wants of persons are different from one another. A person can fulfill such desires depending on the available economic resources only.

It is clear that modern man has a lot of needs and wants such as food, cloth, shelter, education, health and entertainment. How are these goods and services, which help to fulfill needs, produced? Producers recognise our needs and produce goods and services accordingly.

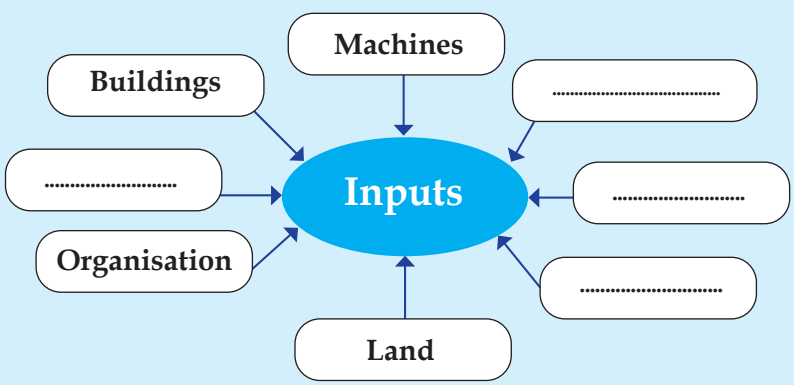
For example, notebook is very essential for a student. The production process of a notebook is completed by using various materials.

Observe picture. Try to understand different materials used for the production of notebooks.

Raw Materials Factory Product

For making notebooks, we use raw materials such as bamboo and wood pulp along with machines, fuel, buildings, land and labour. Such factors which are used in the production process are called inputs and goods produced by using these inputs are called outputs. The process of converting input into output is called production. All products that we consume are made through production process.

Complete the following word sun by including more inputs.



Production Function

If the demand for a product is high then its production also has to be increased. For this, what are the different possible methods used by the producers?

- Quantity of inputs can be increased.
- Better technology can be used.
- Productivity of factors of production can be increased.

In these ways, the quantity of the commodities produced as per requirements can be increased or decreased. Quantity of output depends on the quantity of inputs used for its production and their productivity.

Production function is the technical relationship between inputs used in the production process and the produced outputs within a specific period of time.

Let's write this relationship in the form of an equation. Let the factors of production land, labour, capital and organisation be indicated as N,L,K,O and consider the total output as Q, production function can be written as follows:

Q = f (N,L,K,0) (Q is the function of N,L,K,O)

Q- Total quantity of output

N- Land

L-Labour

K-Capital (technology, buildings, tools, financial capital etc.)

O - Organisation

Fixed Inputs and Variable Inputs

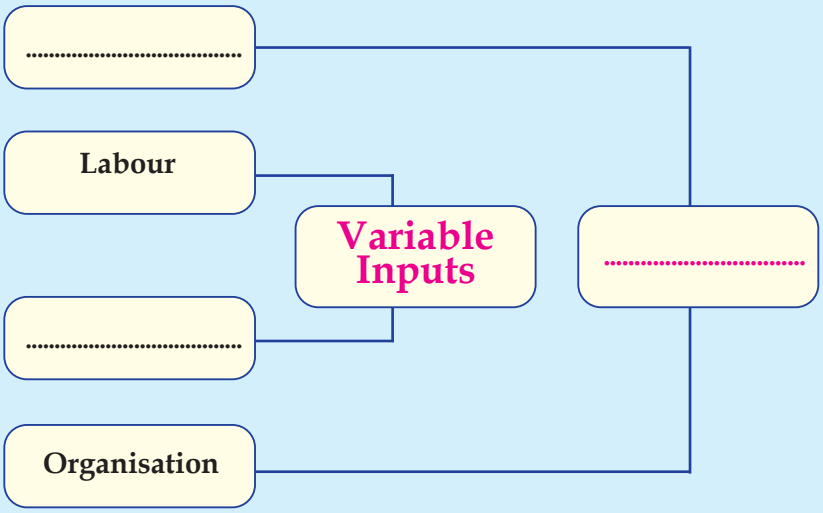
It is possible to produce desirable quantity of output using different amounts of inputs. Can we increase the quantity of all inputs? It is not possible to change the quantity of all inputs within a short period. Such inputs which cannot be changed in a short period of time are called fixed Inputs. Land, Organisation etc are examples of fixed inputs.

But in a short period, quantity of output can be increased by changing the quantity of labour, capital etc. Such inputs the quantity of which can be changed within a short period of time are called variable inputs.

Short-run and Long-run production function

Production function is defined differently in the short-run and long-run. The situation in which at least one input is fixed in the production process is called short-run production function and the situation in which all inputs are variable is called long-run production function.

Complete the following diagram by including the features of short-run inputs.



Consumption, Consumer

People use the goods and services produced through the production process to meet their needs. Such buying and using of goods and services to fulfill one's needs is called consumption.

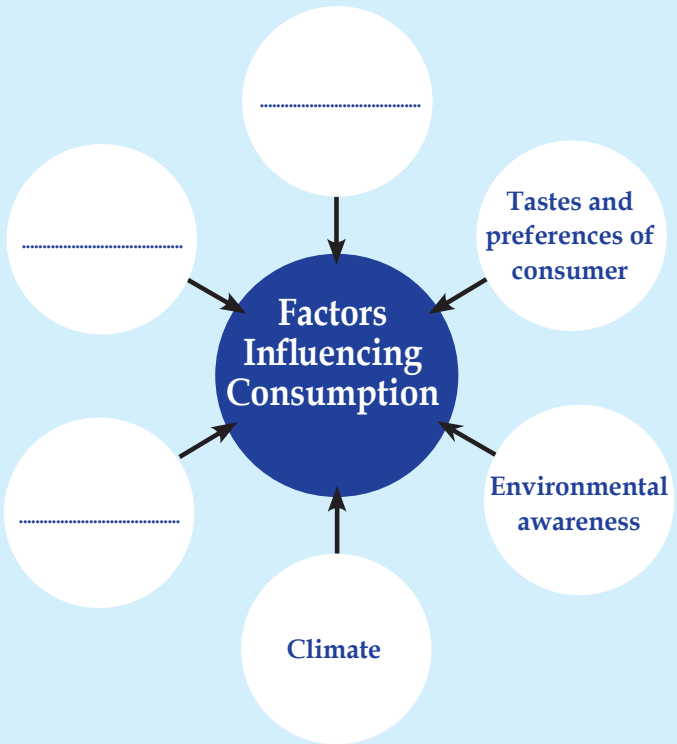
A Consumer is a person who buys and uses goods and services either by paying its price or by agreeing to pay for it. Satisfaction of a consumer is the main aim of all economic activities. Financial capacity of a consumer to buy goods and services is the main factor influencing consumption.

Factors Influencing Consumption

The amount of money spent on the various needs by each individual in our society is not the same. Consumption pattern indicates how to utilise a person's or a family's total income for different needs and wants such as food, cloth, shelter, transportation, health, education and entertainment. Consumption patterns vary from person to person. Many factors influence this.

What may be the factors, other than one's income, that influence consumption?

The following diagram shows factors influencing consumption. Find out more factors and complete the diagram.

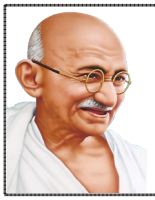


Besides individuals and families, the government, various institutions and organisations also make consumption to meet various needs. The major challenge faced by today's economic system is the conflict between unlimited human needs and wants and limited resources. Increasing population is another major reason for exploitation and mismanagement of resources. Resources have to be scientifically utilised considering the needs of future generations.

Sustainable Consumption

Consumption of goods and services which minimises environmental impact is called sustainable consumption.

Use and reuse of resources considering future generations is the aim of sustainable consumption. The concept of sustainable consumption shares many common features with sustainable production and sustainable development. The twelfth of the sustainable development goals of the United Nations points to the need to ensure sustainable consumption and sustainable production. This is the key to sustaining livelihoods for the present and the future generations.



"Earth has enough resources for everybody's needs but not for anybody's greed."

- Mahatma Gandhi

Sustainable Production

The primary goal of sustainable production is to produce goods and services with minimum exploitation or misuse of natural resources and raw materials. Other goals of sustainable production are given below.

- To reduce environmental impacts through efficient use of resources.
- To maximise the renewable possibility of resources.
- To deliver all the necessary items to people as much as possible through production and recycling of products.
- To ensure maximum energy conservation
- To ensure safe workplace environment and safety of workers.

Agencies like the United Nations have cautioned about the need to develop Eco-friendly consumption culture and production techniques. Eco-friendly production and consumption practices are to be followed to enrich sustainable development.

Discuss and make notes on the importance of sustainable production and sustainable consumption pattern in the modern world.

Sustainable Development

Various development activities aiming at the economic growth and progress of the nation lead to exploitation of natural resources and destruction of environment. Development activities lead to economic development of the country and favourable changes in the standard of living of the people. At the same time they may cause various socio-ecological problems, too.

Find out the changes in your surroundings due to development activities and write them below.

- Rocks and hills are levelled for constructing buildings, roads etc.
-
-
-

Development activities are essential for the progress of the society. But what may be the impact of such activities on the environment and living creatures, including humans? Write them.

- Adversely affects the local climate.
-
-
-

In what ways can the development activities be made possible by minimising such environmental problems? Discuss and consolidate your suggestions.

Sustainable development is when the needs of the present generation are met without compromising the needs of future generations.

Sustainable development is ' development that meets the needs of the present without compromising the ability of future generations to meet their own needs'.

- United Nations - Brundtland Commission

Sustainable Development Goals

The collection of 17 goals set by the United Nations is known as sustainable development goals. The United Nations aims to achieve these goals (which were announced in 2015) by the year of 2030. Sustainable development goals set forth a model for everyone to achieve a better and sustainable future.

Sustainable Development Goals

1. No poverty
2. Zero Hunger
3. Good health and well-being
4. Quality Education
5. Gender Equality
6. Clean water and sanitation
7. Affordable and Clean Energy
8. Decent Work and Economic Growth
9. Industry, Innovation and Infrastructure
10. Reduced Inequalities
11. Sustainable Cities and Communities
12. Responsible Consumption and Production
13. Climate Action
14. Life Below Water
15. Life on Land
16. Peace, Justice and Strong Institutions.
17. Partnerships for the Goals

What we need is a development approach that does not make negative impact on environment and species. Such development is the vision put forward by sustainable development. Sustainable development generally refers to the development that is achieved by controlling over exploitation of resources and reducing environmental impacts.

Prepare a seminar paper on 'Sustainable Development and National Progress' based on the indicators given below. Present the seminar report.

Indicators

- Sustainable production, sustainable consumption, sustainable development
- Importance of sustainable consumption and sustainable production in formulating sustainable development vision.
- Your responsibility as a student.
- Challenges faced by sustainable development and suggestions for solving them.

Relationship between Producers and Consumers

Observe the Fig 6.2 and identify the relationship between producers and consumers in an economic activity.

Consumers depend on producers to meet their needs and producers also depend on consumers to meet their needs. Producers produce goods and services according to the needs of the consumers and deliver to them. Consumers purchase the goods by paying the product value (price). When consumers supply labour for the production process, producers give wages to the consumers as rewards.

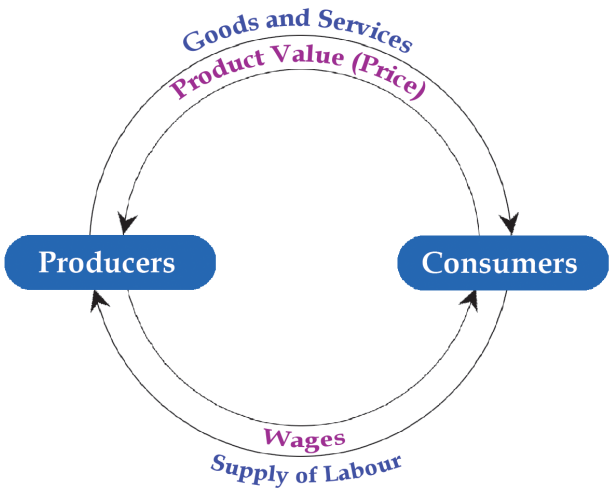


Fig 6.2

The interrelationship between consumers and producers becomes possible through the market.

Observe Fig 6.2 and prepare an analysis report based on the interrelationship between producers and consumers on economic activities.

Market

Marketing is a process through which the goods and services made through the production process are delivered to the consumers directly or through sellers. Markets are the mechanism through which exchange of goods and services between sellers and consumers take place. Markets make trading easy by ensuring proper distribution and utilisation of resources.

Fig 6.3

Look at Fig 6.3.This is a market. What are the features of market you can see here?

- Goods are being sold.
- There are people who buy goods (buyers).
-
-

General characteristics of a market

- There will be buyers and sellers of products.
- The price of goods is determined.
- Buyers and sellers have equally importance.
- There is an opportunity to select goods.
- There will be marketing techniques.
-

Price determination in Market - Demand, Supply, Equilibrium Price

We have to pay a price for buying any goods in the market. How is the price of goods determined? The price of each product depends on the demand of the consumer and the availability of the product.

Demand

> Demand is the desire for a commodity backed up by the willingness and ability to pay.

Demand is more than just a desire or interest for a product. The main factors determining demand are the ability to pay for that product and the willingness to buy that product.

Price of the Product (in Rupees)	Quantity demanded (in Kilogram)
5	50
10	40
15	30
20	20
25	10

Table 6.1

Demand Schedule

Demand schedule is a table that shows the quantity demanded of a product at different price levels. We can understand from table 6.1 that if the price of the product increases, the quantity demanded of the product decreases and if the price of the product decreases, its quantity demanded increases.

How much quantity is the consumer willing to buy when the price of the product is Rs. 5 and Rs. 25 respectively?

Demand Curve

When a demand schedule is presented as a graph, it is called demand curve. Demand curve can be illustrated as shown in Fig (6.4). In the figure the OX axis shows the quantity

demanded of a product. The OY axis shows the different price level. The points a, b, c, d and e indicate the quantity demanded of a product at different price levels. When we join these points we get the demand curve DD.

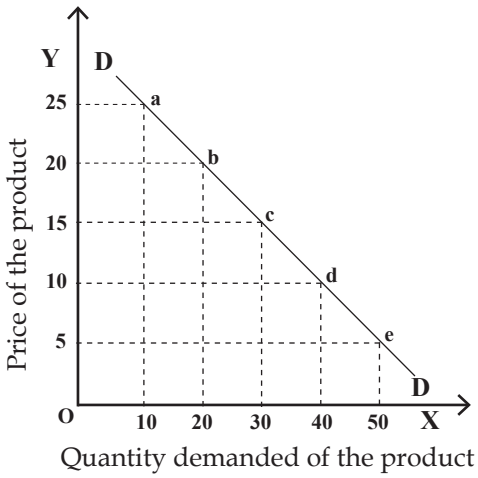


Fig 6.4

- The demand curve slopes downwards from left to right.
- This shows the inverse relationship between price and quantity demanded of a product.

Based on the table (6.1) given above and the graph (Fig 6.4), answer the following questions:

- How much is the quantity demanded when the price of the product increases from Rs. 5 to Rs. 10?
- Specify the relationship between quantity of the product and its price in the demand curve.

Supply

Producers or sellers make available goods and services in the market according to the needs of consumer. The quantity of goods and services made available in the market by the sellers is called supply.

The supply of a commodity is its quantity ready to be sold in the market at a given price for a specific period of time.

Price of the Product (in Rupees)	Quantity Supplied (in Kilogram)
5	10
10	20
15	30
20	40
25	50

Table 6.2

Supply Schedule

Supply schedule is a table which shows the quantity supplied at different price levels over a specific period of time. It is understood from the table (6.2) that when price increases supply of the product increases and when price decreases supply also decreases.

What was the quantity the producer was willing to sell when the price of the product was Rs.5 and Rs. 25 respectively?

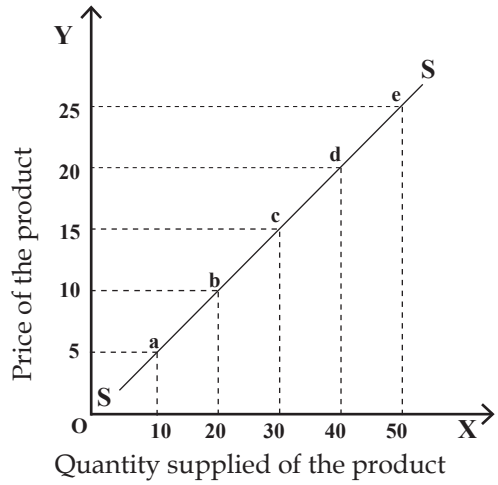


Fig 6.5

Supply Curve

When a supply schedule is presented as a graph, it is called supply curve. In the Fig 6.5 quantity supplied is marked along the OX axis and different price levels are marked along the OY axis. The points a, b, c, d and e indicate the quantity supplied of the product at different price levels. The supply curve SS is obtained by joining these points.

- The supply curve moves upwards from bottom left to top right.
- This shows the direct relationship between quantity supplied and its price.

Based on the table given above (Table 6.2) and graph (Fig. 6.5), try to answer the following questions.

- How much was the quantity the producer was ready to sell when the price of the product changed from Rs.5 to Rs. 10?
- Specify the relationship between the quantity supplied and the price in the supply curve.

Equilibrium Price

We have understood that when the price of a product increases its demand decreases and when the price decreases demand increases. On the other hand, when price increases, supply increases and when price decreases, supply also decreases.

> The price of a product is determined by the forces of demand and supply in the market.

With the help of the table given below, let's understand how price is determined in the market.

Price in Rupees	Quantity Demanded (in Kilogram)	Quantity Supplied (in Kilogram)	Relation between Demand and Supply
5	50	10	Demand > Supply
10	40	20	Demand > Supply
15	30	30	Demand = Supply
20	20	40	Demand < Supply
25	10	50	Demand < Supply

Table 6.3

In the table, what is the price which equals to the quantity demanded and quantity supplied?

> The price at which demand and supply are equal is called the equilibrium price.

Based on the table given above (6.3), observe the graph (Fig 6.6) that shows how equilibrium price is determined.

In the graph Fig 6.6 demand and supply of the product is marked along the OX axis and different price levels are marked along the 0Y axis. Observe and answer the following questions.

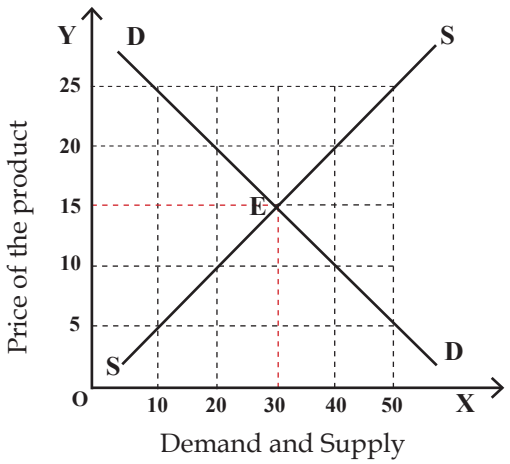


Fig 6.6

- What do the DD and SS curves indicate?
- What are the equilibrium price and the equilibrium quantity at Point E?
- Is there any other situation at which demand and supply are equal in the figure?

In Fig 6.6, demand and supply curves intersect each other at Point E. Demand and supply are equal at this point. The condition in which demand and supply are equal is called equilibrium. Price at which demand and supply are equal is called equilibrium price and the determined quantity is called equilibrium quantity. Markets always try to maintain equilibrium. In this way, the price of a product is determined due to the mutual interaction of demand and supply.

- Does equilibrium condition always exist in the market?
- Is there any situation where demand and supply are not equal?

How do the following situations influence the market?

What may be the changes in the market in a situation where the demand for the product decreases and the availability (supply) increases?

- The price of the product decreases
-
-

What may be the changes in the market in a situation where the demand increases and the availability (supply) decreases?

- The price of the product increases
-
-

The condition in which demand and supply are not equal in the market is called disequilibrium.

If such disequilibrium exists in the market for a long period, it will adversely affect the economic activities in the market. When the demand for a product is more than its supply, the producers try to make more profit by increasing the price of the product. This kind of price increase will decrease the purchasing power of the consumers. As a result the producers will be forced to reduce the price of the product. This leads to a reduction in the price of the product. Thus the market reaches equilibrium which is acceptable to both consumers and producers. In this way market will always try to maintain equilibrium.

Marketing Techniques

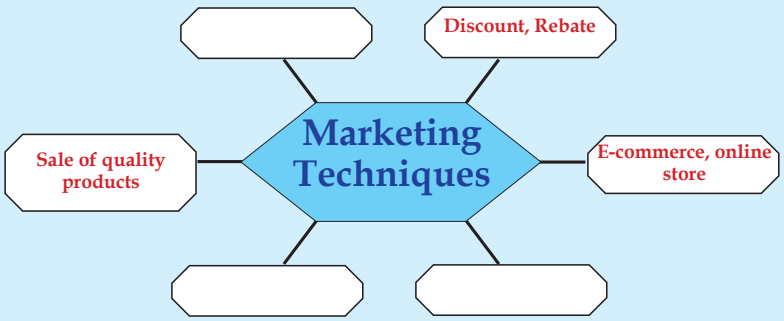
A decrease in the price of goods and services in the market is good for the consumers. But this situation adversely affects the survival of producers. Producers adopt various marketing techniques to get the credibility of consumers and to make maximum sale through which they can make profit and capture the market. Marketing technique is a plan to achieve sales targets of producers by understanding the needs of customers.

Observe Fig 6.7. Haven't you seen similar boards in the markets you have visited? Why are such boards displayed?

- To attract customers
- To increase sales

Fig 6.7

Given below are some marketing techniques that can be seen in the market. Observe and find out more and add them.



Entry of new technology and tough competition in the market have induced producers to adopt different marketing techniques. Producers are able to make huge profits by using an innovative methods that will help to reduce production cost and by supplying a wide variety of products to the markets. The goal of producers is to capture the market by making technologically sound and affordable products based on new trends and ideas and making them available at market.

Price control in market

Fig 6.8
Public Distribution Centre

Rising prices of products cause inconvenience to the consumers. Increasing prices of essential goods adversely affect their standard of living. So governments have an important role to play in controlling the price of essential goods.

The government distributes essential goods in limited quantities at a price lower than the market price through the public distribution system for the welfare of the public. In Kerala we have establishments such as Public Distribution Centres, Fair Price Shops and Supply-co which aim at public welfare. Similarly have you noticed news related to fixing the support price for agricultural products like rubber, coconut and paddy?

It is the government that fixes support prices for agricultural products to control the market price. Fixing the highest and the lowest price for goods and services by the government is known as price control. The primary objective of price control is to intervene in the market, enable exchange at a reasonable price and to protect the interests of both producers and the consumers.

Support Price for Agricultural Products

Minimum price fixed by the government on agricultural products is called Minimum Support Price. Farmers may face losses when the market price is lower than the total cost of production. To avoid this kind of loss and to provide the support to farmers, the government intervenes in the market and declares minimum support price. The government takes measures to protect farmers from production loss by collecting and storing products directly from farmers and by fixing the minimum support prices for agricultural products. This acts as a safety net for farmers.

How do the price controls by the government influence the producers and consumers? Discuss and prepare a note.

Digital Marketing

Marketing of goods and services with the help of digital channels by using information technology is called digital marketing. It is an advanced digital system that uses the internet extensively. Due to the increase in the internet users and digital devices, consumers started selecting and buying products according to their needs, through online shopping instead of buying directly from sellers or by directly approaching the market. The marketing system has become more developed due to the development of information technology.

The term digital marketing was first used in the 1990s. Digital marketing is also known as Online marketing, web marketing, and internet marketing.

Features of digital marketing

- This is a type of marketing which uses Internet (online) based technology.
- Customers do not need to visit the market place. Products can be selected from any part of the world through digital platform.
- Saves time; diverse products; attractive
- Digital platforms create new job opportunities.
-

Prepare a seminar report based on the topic "Advantages and limitations of digital marketing".

Economic activities like production, consumption and distribution play an important role in making our economy dynamic. A sustainable development vision for an economy is possible only by balancing limited resources and increasing needs. Price determination and price control should be implemented in the market only by giving equal consideration to the interest of both producers and consumers. New marketing techniques and digital marketing will uplift a country's market to the global level.

Extended Activities

1. Visit a production centre (firm) and find out its production activities. Examine how far these activities go along with the concept of sustainable production? Prepare a note based on your observation and give suggestions.
2. Need of the hour is to cultivate a consumption culture committed to social and environmental responsibilities. Evaluate the statements.
3. Many features can be seen in digital marketing that are different from traditional markets. Find out more information about new digital marketing system and prepare a report.

7

Through the Sandy Expanse

"The atmosphere was red. There was only dust in the air. I couldn't see anything ahead. It was sand everywhere. We were almost waist deep in sand. More than that what amazed one was the fact that the sand mountain in front of me had moved ahead as if a map had been redrawn in front of us"

Goat Days - Benyamin (2008)
Tr. Joseph Koyippalli

You have read an excerpt from the novel 'The Goat Days' written by the well-known novelist Benyamin. The story of the novel is related to the real-life story of a young man who migrated to the Middle East in search of a job, got stranded in a desert, and was forced to live there for a long period of time. You might have seen such expansive, dry deserts with scanty vegetation in pictures and videos. Aren't these barren lands providing a unique ecosystem, different from the surroundings we live in?

Write the features of such deserts that make them stand out from other parts of the world?

- **Arid Climate**
-

What are deserts?

Deserts are generally the places that receive an annual rainfall of less than 25 cm. Do all deserts have the same characteristic features?

Look at the following pictures 7.1 and 7.2.

Fig 7.1
Cold Desert

Fig 7.2
Hot Desert

The two places featured in each photograph are deserts. Generally, deserts are of two types.

- Cold deserts
- Hot deserts

The cold deserts are the places with permanent snow cover where we experience extreme cold throughout the year. They are found in polar regions, mountains and high plateaus of temperate regions.

Identify the important cold deserts of the world and understand their locations with the help of an Atlas.

The hot deserts are arid places generally found between 15 Degree and 30 Degree latitudes along the western margins of the continents. They are characterised by very high temperatures during the daytime and very low temperatures at night.

The word 'desert' is derived from the Latin word 'desertum', which means 'abandoned place'. The study of deserts is called Eremology.

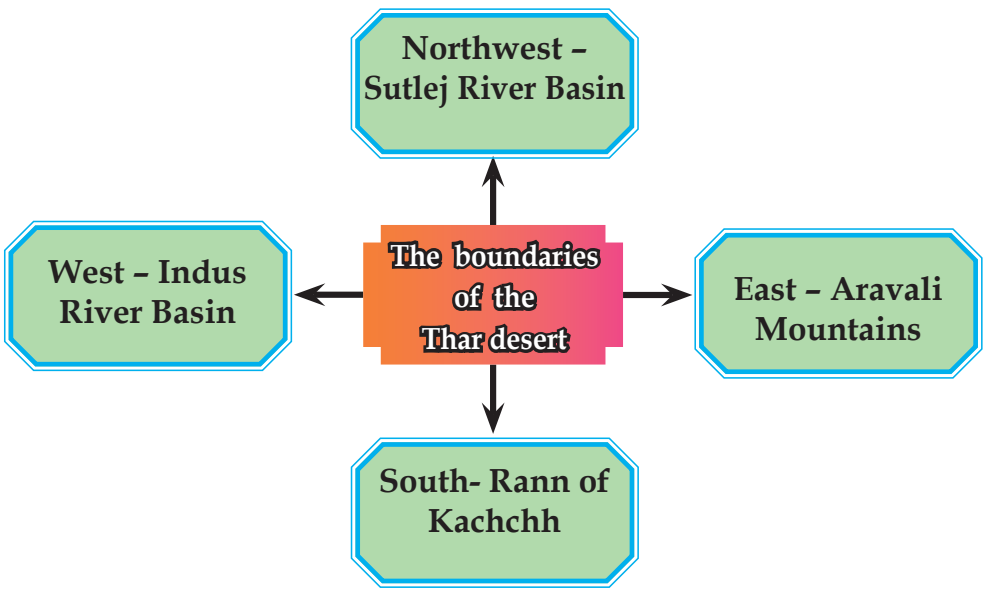
The diurnal range of temperature is very high in hot deserts. Find the reason.

Identify the important hot deserts of the world and understand their locations with the help of an Atlas.

Haven't you seen that there is a hot desert in India, too? Let's now discuss the features of this expansive hot desert named Thar Desert or The Great Indian Desert.

The diagram showing the natural boundaries of the Thar Desert is given below.

The natural boundaries of the Thar Desert



Identify the natural boundaries of the Thar Desert by observing the map provided below (Fig 7.3).

Mark them on the outline map of India and include it in 'My Own Atlas'.

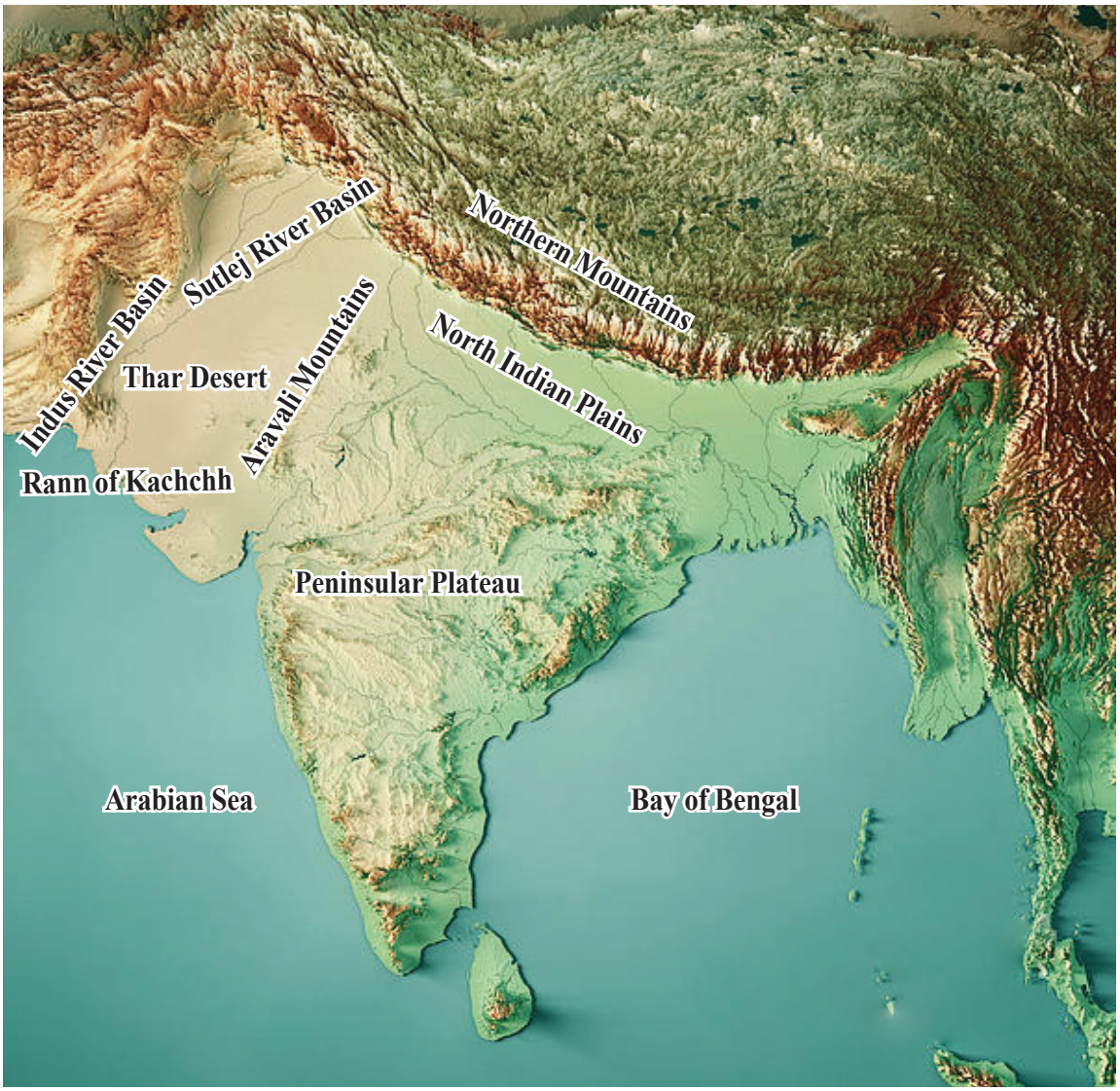


Fig 7.3

The Thar Desert is an expansive arid region located in the northwestern part of the Indian Subcontinent. This desert spans an area of around 200,000 square kilometers, of which 175,000 square kilometers are located in India. About Two-thirds of the Thar Desert in India is situated in the state of Rajasthan and the remaining portion extends over to the neighbouring states of Haryana, Punjab, and Gujarat. The desert also extends into the Punjab and Sindh provinces of Pakistan.

You have understood the location and the extent of the

Thar Desert. Now, let's examine the conditions that led to the formation of the Thar Desert. Rainfall in western part of the Rajasthan is very scanty throughout the year. Do you know why? You know that primarily the southwest monsoon winds bring rain to India. The Arabian branch of these winds enters Gujarat through the western coastal plain and passes parallel to the Aravali mountains without entering the interior parts of Rajasthan. Since these rain-bearing winds do not get into the interior of Rajasthan, the likelihood of receiving rainfall from these monsoon winds in the northwestern part of India, particularly in the western part of Rajasthan, is very low.

You have understood the movement of the southwest monsoon winds in the previous chapter through map study (Fig 2.17)

Observe the map (Fig 2.17) and identify the movement of the Arabian branch of the southwest monsoon through Rajasthan as well as the location of the Aravali mountains.

Now, let's examine the movement of the Bay of Bengal branch of the southwest monsoon winds. These winds blow parallel to the Himalayan Mountains from east to west. The movement of these winds is checked by the Aravali mountains in north western part of India. Consequently, the Thar desert and adjoining places do not receive rain from the Bay of Bengal branch of the monsoon winds.

Furthermore, the high rate of evaporation and the arid winds in these areas reduce the possibility of rainfall. A region with the same atmospheric conditions for millions of years would naturally become a desert. These are the factors that contributed to the formation of the Thar Desert.

Is the Thar Desert a rain shadow region? If so, based on which branch of the South west monsoon winds is the Thar Desert said to be a rain shadow region?

Prepare an analytical note on the role of Aravali mountain ranges in the formation of the Thar Desert and present it in the class room.

Granites

Granites are coarse-grained rocks that form when magma solidifies before reaching the Earth's surface.

Gneiss

Gneiss is the metamorphosed form of granite rocks formed due to high temperature and high pressure.

Schist

Schist is formed mainly due to the metamorphism (high temperature and high pressure) of sedimentary rocks.

Geographically, the Thar Desert can be categorised into two regions.

Let's see what they are.

- **The Marusthali (The Arid Plain or the Desert Proper)**
- **The Rajasthan Bagar (The Semi-arid Plain)**

The Marusthali

Marusthali is a vast sandy expanse with a few outcrops of bedrock, composed of gneisses, schists and granites. The bedrocks in this region prove that, geologically, it is the northwestern extension of the Peninsular Plateau. The average elevation of this region is between 200 and 250 meters above mean sea level.

In general, the eastern part of the Marusthali is rocky while its western part is covered by shifting dunes locally known as Dhrian.

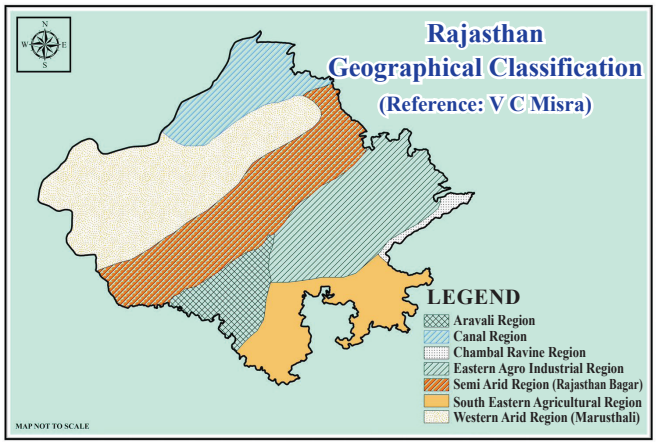


Fig 7.4

The Rajsthan Bagar

The eastern part of the Thar desert, up to the Aravali range is a semi-arid plain which is known as the Rajasthan Bagar. It is drained by several short seasonal rivers originating from the Aravali. These rivers make agriculture possible in some

patches of fertile tracts called *Rohi*. Even the most significant river in this area, the Luni, is a seasonal river which flows towards the Rann of Kachchh.

The sandy plain to the north of the Luni River is called *Thali*.

Fig 7.5
Farm lands along the banks of River Luni

Identify and locate River Luni on a map and include it in 'My Own Atlas'.

River Luni

River Luni originates from the Aravali mountain range near Ajmer. It is a non-perennial river. River Lilri, River Sukri, and River Jawai are its major tributaries. The river takes its name from the Sanskrit word 'Lavanavari', meaning 'salt river'. After flowing a distance of around 482 km, this river disappears in to the Rann of Kachchh.

Fig 7.6
River Luni

The Rajasthan Bagar region has several salt lakes. The most significant and the largest among them is the Sambhar Lake, which is situated about 65km west of Jaipur. It occupies an area of about 225 sq km during the rainy season but shrinks considerably in the dry season. The Didwana, the Sargol and the Khatu are the other important lakes in this region. These lakes are used extensively for salt production.

Fig 7.7
Salt Pan in Sambhar Lake

Identify and locate the major salt lakes other than Sambhar Lake in Rajasthan on a map using information technology and include it in 'My Own Atlas'.

The salinity in the water bodies of the Thar Desert is high, Why?

Look at the pictures (7.8) given below. They depict the different types of landforms found in the Thar Desert. These types of landforms are common in hot deserts. Let's examine how these landforms are formed.

Deflation Hollows
Fig 7.8 a

Caves
Fig 7.8 b

Mushroom Rocks
Fig 7.8 c

Sand Dunes
Fig 7.8 d

Fig 7.8
Different land forms in deserts

As depicted in the picture (7.9), it is common in a hot desert that strong wind blows off sand grains. The strong whirlwind lifts up and moves dry sand from one place to another place. The type of erosional process through which the sand is blown away by wind is called deflation. When winds blow strongly and persistently in one direction, shallow depressions are

formed through deflation. These shallow depressions are called Deflation Hollows. Caves are also formed in rocks as a result of continuous deflation over a period of time.

Strong desert winds carry sand grains and other rock particles. These rub strongly against the numerous rock outcrops and wear them down. This erosional process is called Abrasion.

The wind can lift rock particles only up to a certain height depending on their size. Therefore, the rate of abrasion on rocks in the desert is high up to a certain height. The portions of the rocks subjected to high rates of abrasion wear out considerably more. As the rocks wear out in this manner, mushroom-like landforms are formed. These landforms are called Mushroom rocks (Fig. 7.8 c).

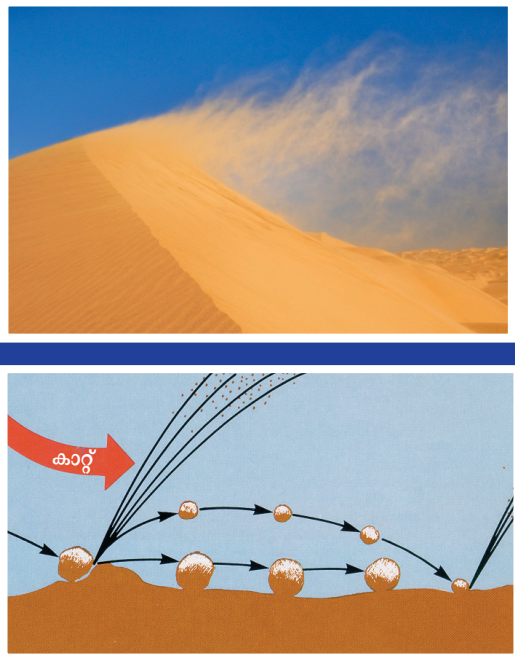


Fig 7.9
Winds, depending on the respective speed (velocity) displace sand and rock particles of different shapes, by blowing or rolling them.

These types of landforms are formed through erosion over a long period of time. As time passes, mushroom rocks undergo further abrasion and consequently acquire different shapes.

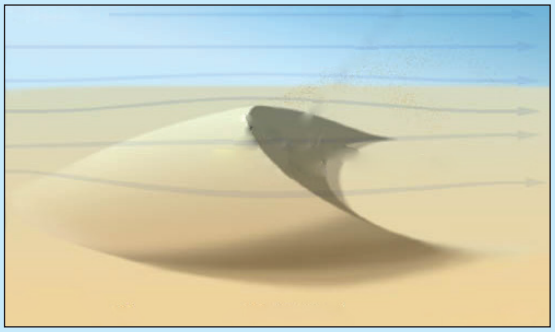
Using IT, collect the pictures of different landforms formed through abrasion in desert and include them in the digital album.

Now let's examine the landforms which are formed through the process of deposition by wind.

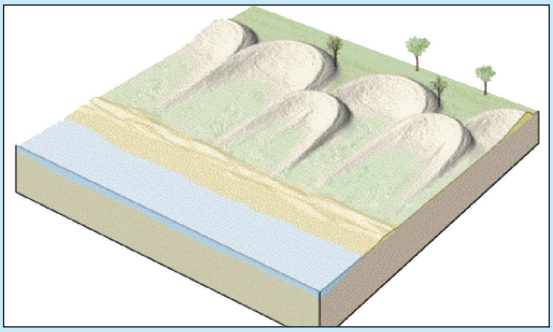
With the help of Fig 7.9, You have understood that depending on its velocity, the wind sorts out sand grains according to their size and carries them away. When the velocity of the wind decreases or the movement of the wind is checked, the sand grains carried away by the wind are deposited. These deposited sand grains

gradually pile up and form various depositional landforms of different sizes and shapes. These landforms are Sand dunes.

In deserts, sand dunes of different sizes and shapes are formed. Sand dunes are loose mound of sand formed due to depositional process of wind. Below are the pictures of different types of sand dunes formed in the Thar Desert. Observe the pictures.

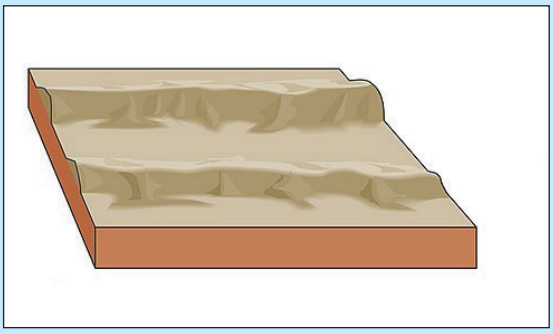


Barchans
(Crescent shaped sand dunes)

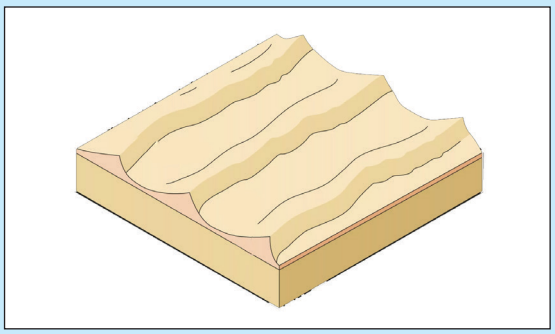


Parabolic sand dunes

Sief dunes



Longitudinal dunes



Linear sand dunes

Transverse dunes

Fig 7.10
Different types of sand dunes

The location of the sand dunes changes depending on the direction and velocity of the wind.

Collect the pictures and details of different landforms formed in deserts through depositional process by wind and prepare a digital album using information technology.

The moment we hear the word 'desert', the picture that comes to our mind is often an arid sandy expanse, isn't it? But fertile patches of farmland can also be found in certain places in deserts. Observe the Fig 7.11. It shows an oasis.

Fig 7.11
Oasis

The Oases

Oases are the fertile patches in deserts formed because of the presence of a fresh water source. They originate either at natural springs or at other ground water sources. Oases vary in size.

Cotton, citrus plants, fruit plants, wheat and corn are commonly cultivated in many oases.

Climate

Summer becomes severe, hot winds in Rajasthan Desert strengthened, scarcity of drinking water

June 4

Strong dust winds in the Thar Desert interrupted traffic for hours

Rajsthan May 28

Phalodi in Rajsthan freezes at 5.6 Degree Celsius

January 10

Haven't you read newspaper headlines about the climate of Rajasthan? What are the characteristics of the climate of Rajasthan that you can identify from these news headlines?

- Severe drought and water scarcity are experienced during the summer
-
-

Fig 7.12
Summer in the Thar Desert

Observe the Fig 7.12. It is a scene from the Thar Desert during the summer season.

Summer season which is very hot and dry begins in March. The daytime temperature in Bikaner and Jaisalmer of Western Rajasthan increases from 40 Degree Celsius to 45 Degree Celsius. During this period, the atmospheric humidity is very low. Hot winds called 'Loo' and dust winds are characteristic features of the summer season. The summer season ends by June.

Don't you remember that we have discussed the features of the hot wind called Loo? Collect more details about this wind and prepare a note on it.

The rainy season in the Thar Desert is experienced from July to September. Though the southwest monsoon causes rain, the region experiences comparatively very low annual rainfall. While the eastern part of the Aravali mountains receives an annual rainfall of about 76.2 cm, the Thar Desert in the west receives an annual rainfall of less than 25 cm.

Why does the Thar Desert receive a very less amount of rainfall? Write your answer based on the following indicators.

- Availability of rainfall
- Movement of the monsoon winds
- Location of the Aravali mountains

During the retreating monsoon season (in the months of October and November), rainfall in Rajasthan decreases considerably. During this period, almost all places in the Thar Desert receive little to no rain.

The winter season in the Thar Desert begins in December, with mean minimum temperatures ranging from 5 Degree to 10 Degree Celsius. Clear skies, low atmospheric temperatures, low humidity, and gentle breezes are the characteristic features of winter. Extreme cold is experienced here in January. The night time temperature often falls below 0 (zero) Degree Celsius in places like Bikaner, Churu and Sikar. Winter ends by February.

Soil

Identify the major soil type found in the Thar Desert by observing Map 2.25

The Desert Soil (The Arid Soil)

Fig 7.13
Arid Soil

Most parts of the Thar Desert are a vast sandy expanse, but certain places have soils composed mostly of sand. This soil type is called desert soil or arid soil and is characterised by a sandy structure and brown colour. The soil has high salinity due to the high rate of evaporation caused by high temperature and arid climate experienced in this region. With scanty rainfall, the soil in this region tends to be alkaline in nature. Although this soil is generally not suitable for most crops, crops suited to this soil type and climate can be cultivated in many places with sufficient irrigation.

Vegetation

Fig 7.14
Cacti

Look at the Fig 7.14.

Can't you see some thorny shrubs with fleshy stems and no leaves. They are one of the major plant types in the Thar Desert.

Thorny plants and shrubs are the major vegetation types that generally grow in the Thar Desert. Drought-resistant plants like Gum arabic acacia and Euphorbia grow in these areas, particularly in the Eastern Hills.

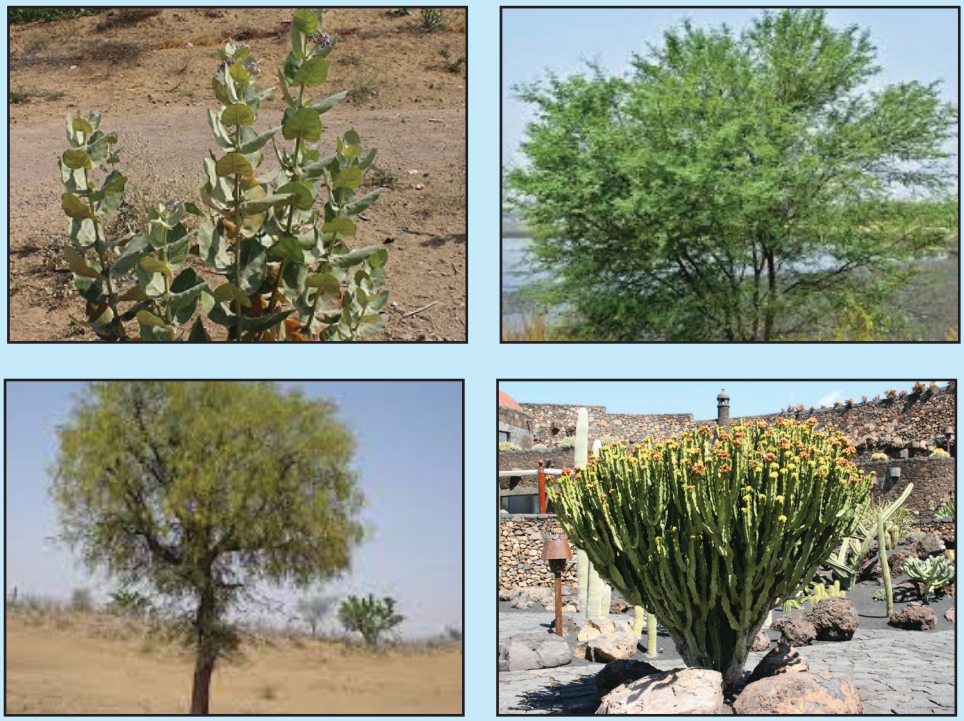


Fig 7.15
Plant diversity in the Thar Desert

Fauna

Look at the picture (7.16).

The camel, often referred to as the 'ship of the desert,' is one of the major animals in this region. The Thar Desert is the abode

of many birds, reptiles and wild animals. The flora and fauna of this region are adapted to survive the climatic conditions that prevail here.

A wide variety of reptiles, scorpions, mongooses, red foxes, chinkara (the Indian gazelle), falcons, and Indian spotted eagles belong to the fauna of the Thar Desert. The Indian bustard, a bird species swiftly disappearing from other parts of India, as well as blackbucks and wild cats, are also seen here.

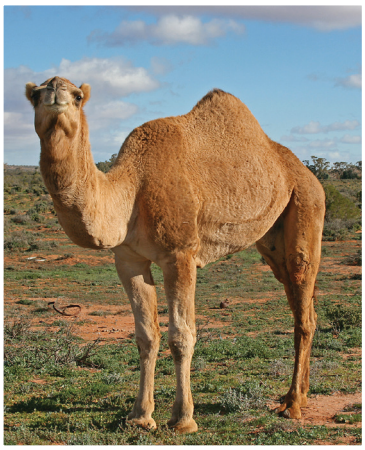


Fig 7.16

Fig 7.17
Diverse fauna in the Thar Desert

Human life in the sandy expanse

The Thar Desert is a sparsely populated region. Human life in most of the region is difficult. People inhabit only those places conducive to living. Most of the people live in rural areas. When droughts become severe, many groups migrate as nomads to other places suitable for human habitation.

Let's discuss how human life is made possible in sandy expanses by overcoming the challenges posed by the desert.

Agriculture

Fig 7.18
Agriculture in Rajasthan

Generally, the Rajasthan desert, where an arid climate prevails, does not provide conditions favourable for agriculture. Only the crops that require a minimal amount of water for their growth are mostly cultivated here. But crops are cultivated even on commercial scale in many possible areas by using irrigation facilities. Major crops include bajra, jowar, wheat, corn, millets, groundnut and cotton.

Indira Gandhi Canal Project is an important irrigation project in this region where irrigation is particularly significant.

Indira Gandhi Canal Project

Indira Gandhi Canal has been constructed for irrigation through Thar Desert in Rajasthan. Formerly known as the Rajasthan Canal, it was renamed as Indira Gandhi Canal in honour of Indira Gandhi, the former Prime Minister of India. The canal system originates from the Harike Barrage and supplies water to Sri Ganganagar, Bikaner, and Jaisalmer. The Indira Gandhi Canal gives drinking water to eight districts in Western Rajasthan. Through this project, agricultural production has increased considerably. Likewise, industries associated with agriculture have also flourished. The availability of fodder has significantly helped in livestock rearing.

Fig 7.19
Indira Gandhi Canal

Pastoralism

In the desert, farming is limited to certain places only, as most of the regions in the desert are either arid or semi-arid. As a result, the number of people who engage in cattle rearing is comparatively large. It is estimated that Rajasthan accounts for around 10 percent of the total livestock of the country. Goats, buffalo, sheep, cows and camels are primarily reared here.

Fig 7.20
Cattle rearing in the Thar Desert

Mining

Have you ever noticed the advertisements of the marble shops in our area? Most of the marble used in Kerala comes from the Rajasthan desert.

Makrana marble from Rajasthan is world-famous. Every year, metric tonnes of marble are mined from here. This region also has significant deposits of lead, zinc, silver, copper, tungsten, manganese, iron, gypsum, lignite, and limestone.

Fig 7.21
Mining of marble

Did you know?

The Taj Mahal, one of the wonders of the world, is made of Makrana marble.

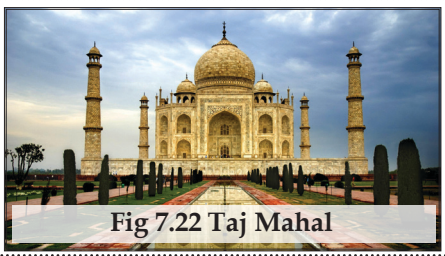


Fig 7.22 Taj Mahal

Handicrafts Industry

Beyond the fact that the vast desert in Rajasthan is an arid region, many villages in this area boast of skilled labourers

Fig 7.23
Handicrafts outlets

who create exquisite handicrafts. Renowned for leather products, artisans here use camel hides to craft items such as lampshades, pouches, sandals, and more. Traditional indigenous musical instruments made of leather are a specialty of this region.

Energy Generation

Look at Picture 7.24

The picture shows wind turbines that harness the kinetic energy of strong winds to generate electricity. A large number of windmills (Wind Parks) like these are installed in various parts of Thar Desert for generating electricity. Solar panels are also widely used here for energy generation. This energy is primarily used for desalination of water.

Fig 7.24
Wind park in Jaisalmer

Fig 7.25
Ranakpur Jain Temple

Tourism

Tourism is a major source of income for the Thar Desert. The national parks in this region attract many tourists. Places of attraction in this region include Hawa Mahal, Ajmer Fort, Dilwara Jain Temple, Ranakpur Jain Temple and more. Tourism in the desert provides locals with numerous employment opportunities. It's common to see tourists travelling on camel back, through the desert in this region, with local guides.

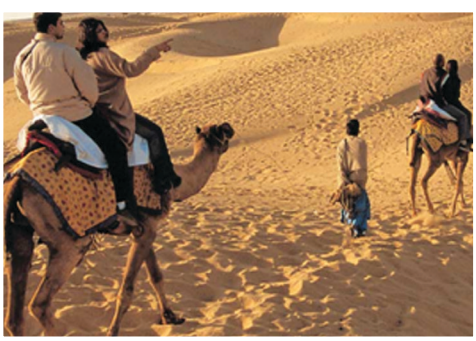


Fig 7.26
Camel safari in the Thar Desert

Using IT, create a digital pictorial album showcasing major tourist destinations in the Thar Desert.

Harsh physical conditions in the Thar Desert like absence of rain, extreme heat and strong winds make human life challenging in that region.

The extreme temperatures in the Thar Desert make survival difficult for humans, animals, and plants. Temperatures reaching up to 50 Degree Celsius during summer lead to acute water scarcity.

A good network of roads is not possible in the desert. The strong winds blowing across the road and the melting of tar due to extreme heat often obstruct transportation. The communication facilities available here are also inadequate.

Even though numerous such harsh conditions prevail here, what we see in this desert is the people making survival possible by living in harmony with nature. This chapter is a reminder for every one of us in Kerala that a more sustainable way of life involves conserving and protecting the nature and natural resources in our state, which is rich in natural resources compared to deserts.

Extended Activities

1. The northwestern part of India experiences dry climate through out the year. Conduct a discussion based on it.
2. Write an essay on the topic 'The role of tourism in the life of people in the Thar Desert'.
3. Prepare a pictorial description on 'The famous Pushkar Fair in Rajasthan' using IT and present it in the class room.
4. Conduct a seminar on 'The challenges faced by the agricultural sector of Rajasthan'.

8

Along the Coasts

On the following day having stood off during the night the captain-major again approached the land but the Western Ghats were wrapped in clouds, and it rained heavily, so that the pilot failed to identify the locality. The day after, however, the 20th of May, having passed Monte Formosa; he recognised the lofty mountains above Calicut, and in the evening of that day the little fleet was riding at anchor about five miles off Capocate, or Capua, a small town only seven miles to the north of the much-desired city, which was pointed out to the expectant Portuguese (P.48). Soon afterwards Vasco-da-Gama took up a position right front of that city; but on May 27th a pilot of the Zamorin guided him to an anchorage off pandarani, thirteen miles to the north, on the ground of its greater safety, and at that anchorage the Portuguese remained no less than 88 days, until August 23rd, when Vasco-da-Gama once more took up a position four leagues to the leeward of calicut. From that time to the day of his final departure, in the afternoon of August 30th he hovered about that city, standing off and on, as the state of the weather or the exigencies of his relation with the Zamorin required.

The above passage is an excerpt from a very old and valuable book "A Journal of the First Voyage of Vasco-da-Gama," published by the Hakluyt Society, which collects and publishes records related to marine expeditions and voyages. This voyage of Vasco-da-Gama Gama gave the Europeans a new sea route to Malabar Coast and with this the entire Kerala in general, and the Malabar Coast in particular, underwent many changes. The arrival of Europeans through this beautiful and natural resource rich coast re-wrote the history of India.

India has a coastline of about 7517 km including the coasts of Lakshadweep and the Andaman and Nicobar Islands. Let's delve into this geographically and historically significant coastal area.

The coastal plain, one of the physiographic units of India, is densely populated due to the abundant factors suitable for settlement. Write down these factors.

- Plain land
- Favourable climate
- Availability of water
-

On the basis of location and physiographic characteristics, the coastal plains of India can be divided into two.

Observe the Map (8.1). Identify and list their location.

- The Western coastal plain
-

Depict the coastal plain in the outline map of India and include it in 'My own Atlas'.

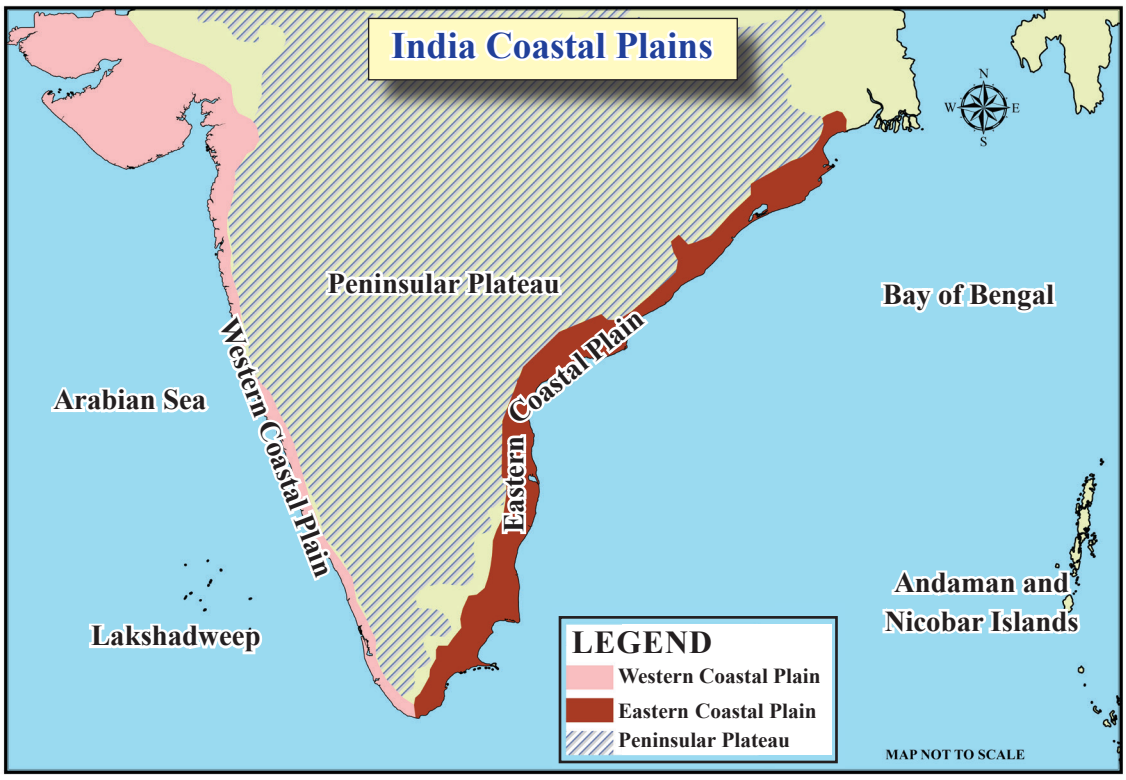


Fig 8.1

Let's examine the characteristics of Indian coastal plains.

Western Coastal Plain

Observe the Map (Fig. 8.1). Did you understand that the Western coastal plain is a narrow strip of land lying between the peninsular plateau and Arabian sea. This coastal plain stretching from Kachchh in Gujarat to Kanyakumari for about 1840 km, having width between 10 and 15 kms. It is a submerged coast.

Emerged coast and submerged coast

In coastal regions the coastal land rises and the sea level falls due to some tectonic activities like uplifment. As a result emerged coasts are formed.

When tectonic activities like subsidence take place, the coastal land subsides and the sea level rises. As a result, submerged coast is formed.

River deposits are less along the Western coast – find out the reasons.

Another characteristic feature of the Western coastal plain is the backwaters found along the coasts, which are also called Kayals.

The Western coastal plain can be divided in to three:

- Gujarat Coast
- Konkan Coast
- Malabar Cost

Observe Map 8.2. Identify the three divisions of Western coastal Plain and depict on the outline map of India. Add the same to My Own Atlas.

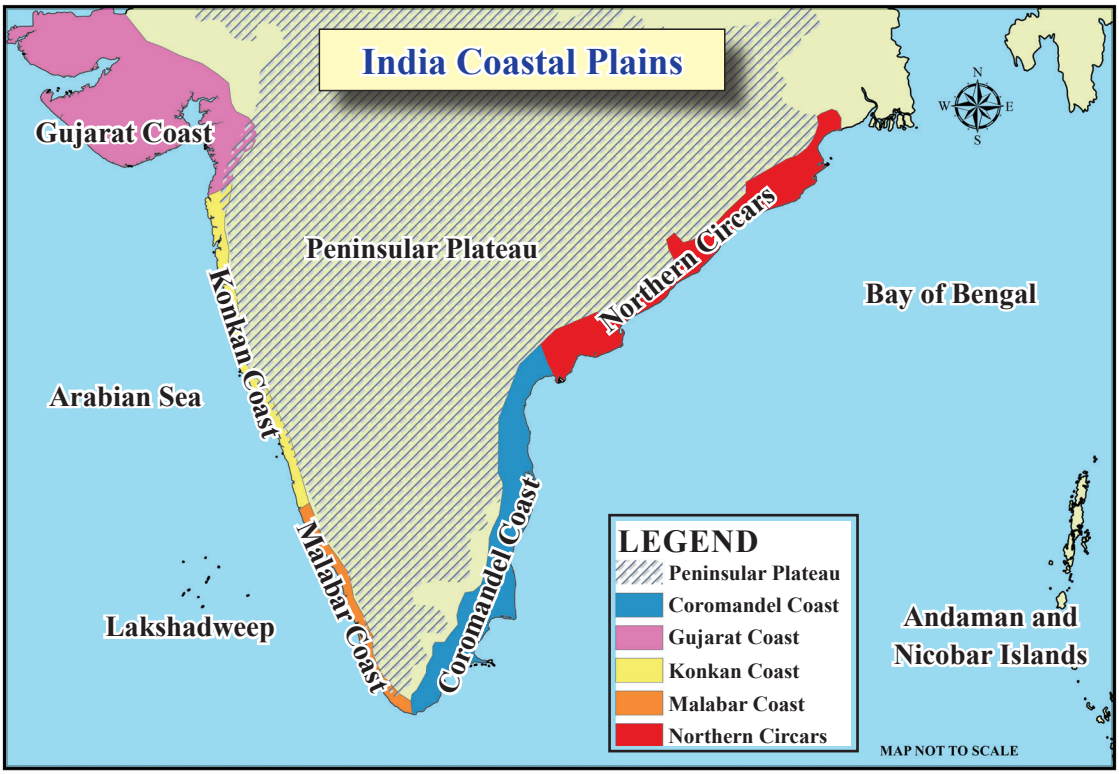


Fig 8.2

You have identified the three divisions of the Western coastal plain. Now let's discuss the features of each of them.

Gujarat Coastal Plain

The Gujarat coastal plains includes the marshland, Rann of Kachchh, the coastal areas of Kachchh and Sourashtra region, Union Territories of Daman and Diu and Dadra Nagar Haveli. This coastal plain is formed as the result of alluvial deposition by rivers like Mahi and Sabarmati. Small to large islands, peninsulas, straits, marshes, tidal creeks and hills are the main features of this region.

Alang, the coast known as the graveyard of ships, centres of cotton textile industry such as Surat and Vadodara, fishing harbours of Veraval, historically significant Dandi beach, and numerous salt flats are all signatures of human life in the coastal plain of Gujarat.

Fig 8.3
Ship dismantling centre at Alang coast

Collect images of the above mentioned places with the help of IT and prepare a digital album.

Rann of Kachchh

Ran of Kachchh is a salt marsh in the India – Pak border region of Kachchh. 'Rann' in Gujarati means desert. They become water-logged marshes during rainy season, and turn in to dry salt desert area later. The Rann of Kachchh with white salty sand is a salt desert. This marshland covering an area about 26,000 sq.km has two parts, Greater Rann and Little Rann. Rann Utsav is their main festival which lasts from November to February.

Ran of Kachchh - Salt marsh

Konkan Coast

Coastal plain that stretches from Daman to Goa located at the South of Gujarat coastal plain is the Konkan coast. Its length is about 500 km. The coastal plain here is narrower in width

Fig 8.4
Cliff on Ratnagiri coast

as the Western Ghats runs parallel to the coast. The northern part of Konkan coast is sandy and southern part is rocky. Coastal landforms like cliffs, islands and beaches are found here. Goa, one of the major tourist destinations in India, has many beaches.

Humid climate with abundant rainfall makes the Konkan coastal plain rich in biodiversity.

Konkan coastal plains receives high rainfall. Why?

Pillar Rocks of St. Mary's Island

Hexagonal Rocks

St. Mary's Island is an uninhabited small island in the sea, off the coast of Malpe in Udupi District of Karnataka. The island is full of hexagonal-shaped pillar-like rock formations. They are believed to have been formed by the cooling of lava released by the volcanic eruption that occurred about 88 million years ago. This geologic rock pattern is called 'columnar joints'. It is also a major tourist destination.

Natural harbours such as Nhavasheva (Navi Mumbai), Mormugao, fishing harbour of Malpe, shipyards, tourism centres and industrial centres make the Konkan coast a vibrant area of economic activities.

Identify the major ports located along the Konkan coast and include in it 'My Own Atlas'.

Malabar Coast

The Malabar Coast stretching from Mangalore to Kanyakumari is about 580 km long. This coast is wider than

the Konkan coast. Coastal landforms such as cliffs, sea stacks, beaches, estuaries and sand bars are also seen in malabar coast. Another feature of this coast is the kayal (backwaters). Vembanad Lake is an important one among them. Here backwaters and lakes are inter-linked by canals to facilitate water transport. It has been made navigable from Kottapuram to Kollam, which is one of the major National Waterways of India (NW3).

Fig 8.5
Vembanad Lake

In areas like Varkala, Ezhimala, and Bekal, the coast is found elevated. Landforms like cliffs are also seen here.

Beaches such as Muzhuppilangad, Chavakkad and Kovalam attract a large number of tourists. From the map, find the locations of major beaches in the Malabar coast.

Collect images of the major beaches in Kerala with the help of IT and prepare a digital album.

Generally coastal wetlands and backwaters are breeding grounds for migratory birds. Bird sanctuaries such as Kadalundi, Kumarakom and Pathiramanal are shelters for migratory birds.

Rice fields of Nanjinad, Kuttanad and Kole Lands etc and fishing harbours like Neendakara, Munambam, Ponnani and Baypore are the centres of economic activities.

Location, extent, subdivisions and geographical characteristics of Western Coastal Plains have been discussed. Now let's examine the characteristics of the Eastern Coastal Plains.

Eastern Coastal Plain

Didn't you realise that the Eastern coastal plain is a relatively wider coastal area lying between the Eastern Ghats and the Bay of Bengal. The Eastern coastal plains from Mahanadi delta region to Kanyakumari having length about 1800 km was formed as a result of the depositional processes by peninsular rivers like Mahanadi, Godavari, Krishna and Kaveri. It is an Emerged Coast. This coastal plain consists of the deltas of Mahanadi, Godavari, Krishna and Kaveri rivers. Don't you remember our discussion about delta and delta formation in the previous chapter?

Observe Map 8.2. Identify and list the two divisions of the Eastern coastal plains. Find their location and add to 'My own Atlas'.

Northern Circars

The Coastal Plain that extends from Mahanadi Delta to Krishna Delta is the Northern Circar Coast. It includes the coastal areas of Odisha and Andhra Pradesh. It is known as Utkal Plain in Odisha and Andhra Plain in Andhra Pradesh. This plain mainly consists of deltaic deposits by rivers such as Mahanadi, Godavari and Krishna. Chilka Lake located South of Mahanadi delta is one of the largest lakes in India. Kolleru Lake in Andhra Pradesh is another important lake on the Circar coast. Compared to the Western coast, ports are less in the Eastern coast. Vishakhapatanam and Masulipatanam are the major ports.

Fig 8.6
Chilka Lake

Rice fields such as Srikakulam, East Godavari and West Godavari, fishing harbours of Vishakhapatanam and Masulipatanam stand tall as the centres of economic activity of the coastal population.

Ports are less along the Eastern coast. What may be the reasons?

Coromandel Coast

It is the coastal plain extending from Krishna river delta to Kanyakumari. Kaveri river delta is also part of this plain. The fertile deltaic alluvium makes this region suitable for rice cultivation. Pulikat Lake is one of the important lakes of Coromandel coast. India's rocket launching station Sriharikota, is located on the shores of Pulikat Lake. Bird sancturies like Pulikat Lake, Point Calimere and Mangroves of Pichavaram are some centres of biodiversity found along this coastal plain. Nagappattinam and Cuddalore are the main fishing harbours here. Marina Beach on the Chennai Coast is a famous tourist centre.

Fig 8.7
Marina Beach (Chennai)

With the help of an Atlas, find the major ports on the coastal regions of India and include in 'My Own Atlas'.

Islands

Apart from the small islands near the coasts, two other important island groups are the part of India.

Observe Map 8.2. Identify the island groups and complete the table.

Island	Sea
Lakshadweep	.....
.....	Bay of Bengal

Fig 8.8
An Island of Lakshadweep

Didn't you understand the islands located in Bay of Bengal and Arabian Sea? Let's see their characteristic features.

Lakshadweep

The Lakshadweep Islands formed by coral reefs are located about 280 to 480 km away from the Kerala coast in the Arabian Sea. These islands are generally a few meters high above sea level.

Out of the 36 islands in Lakshadweep only 10 are inhabited. Kavarati Island is the capital of Lakshadweep, which is a Union Territory of India. Androth is the largest island among them. Coral sand beaches and lagoons are the main attraction of these islands.

Lagoons

Lagoons are shallow water bodies along the coasts that are separated from the sea either by sandbars or coral reefs.

Fig 8.9
Agatti island and the Lagoon around it

Fishing is the major occupation and the main fish caught is tuna. Fish is processed to make various value added products. 'Mass' made of dried Tuna is famous.

Coconut is the main agricultural crop. Copra (dried coconut) making and coir making are two other traditional occupations along with fishing. The fast growing tourism is developing as a modern occupational sector taking advantages of the lagoons, beaches and coral reefs. Adventure tourism such as scuba diving is also an upcoming job sector.

Coral Islands

Coral reefs are formed by the accumulation of dead remains of small marine organisms called coral polyps. Calcium carbonate secreted by coral polyps helps in the formation of coral reefs. It takes hundreds of years to form coral reefs. Coral islands are formed by the growing of coral reefs on the submarine mountain peaks above the sea level. Coral which are alive found in different colours such as orange, yellow and green. Coral reefs are also the habitat for a variety of fishes and marine organisms.

A coral reef of Lakshadweep

Coral reefs grow in shallow seas with clear water along the coast in the tropical regions. In India, apart from Lakshadweep, coral reefs are generally found in Gulf of Kachchh (Gujarat), Gulf of Mannar (Tamilnadu) and the Andaman and Nicobar Islands.

Andaman and Nicobar Islands

Haven't you identified the location of Andaman Nicobar Islands in Bay of Bengal?

These are volcanic islands. The sea portion separating Andaman Islands from Nicobar Island is called 10 Degree Channel. Barren Island, the only active volcano in India, is part of the Nicobar Islands. Out of about 572 small and large islands, only 38 islands are inhabited. Most of the islands are inhabited by indigenous tribes. Port Blair is the capital of the Union Territory of Andaman and Nicobar Islands. Southern most point of India, the Indira Point, is in the Great Nicobar Island. Almost 4 meters of the area had submerged in the sea during the Tsunami of 2004.

Fig 8.10
Rose Island in North Andaman

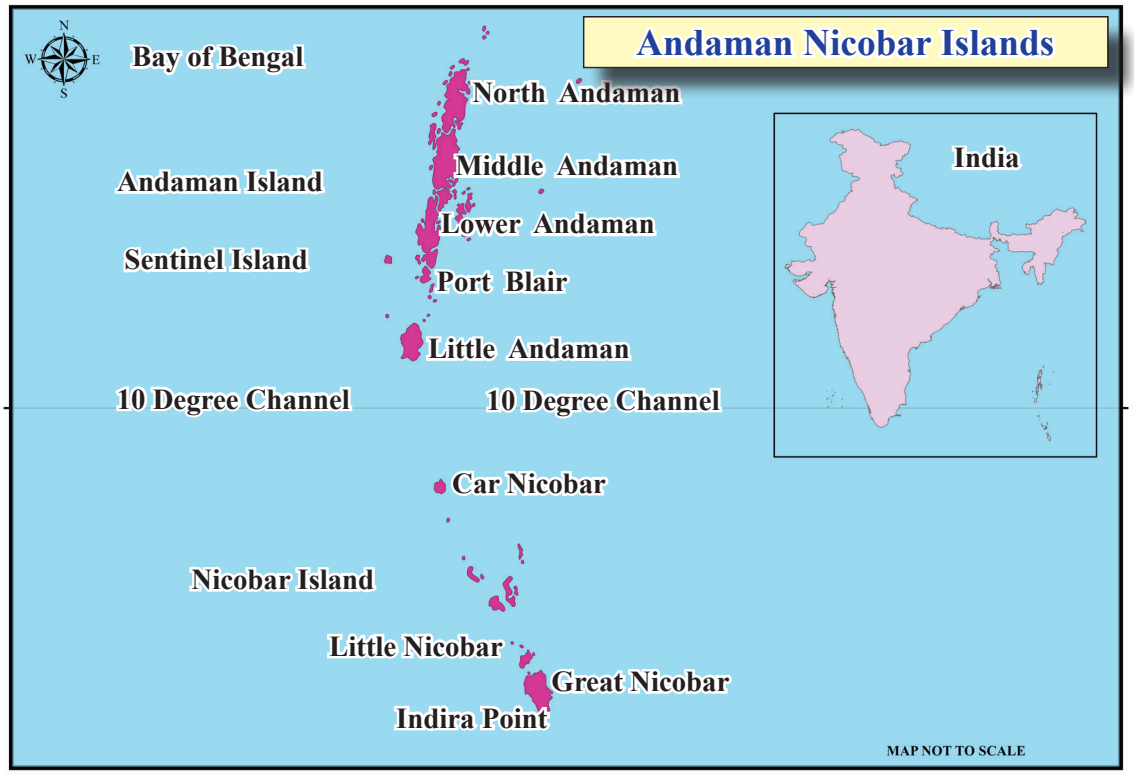


Fig 8.11

Fig 8.12
Sea Arch - Neil Island
(North Andaman)

Sandy beaches, rocky outcrops, sea arches, cliffs, and tidal creeks are the geomorphic features found here.

Tropical Evergreen Forests are abundant in Andaman and Nicobar Islands due to high rainfall. The Andaman and Nicobar Islands with its coral reefs and beaches and limestone caves, is a major tourist destination.

Coastal Land forms

We can see different landforms in each geographical area. You might know that these landforms are created by different geomorphic agents. We have discussed the land forms created by various geomorphic agents such as river, glaciers and wind in the previous chapter.

Sea waves are the important geomorphic agents in the coastal regions.

Let's look into the landforms produced by erosional and depositional process of sea waves. Look at Fig. 8.13. Don't you see the steep-sided land rising above the sea level? These are cliffs. When sea waves hit continuously against the rocks in coasts, coastal rocks are removed by erosion. As a result, steep land surfaces are formed. Such landforms are called cliffs. Similarly as a result of erosional process by waves, small holes develop in the coastal rocks. These holes get enlarged over a period of time and forms the sea caves.

Due to wave erosion, sea caves develop from both the sides of coastal rock that protrudes into the sea. As the erosion continues, both the caves subsequently merge to form an arch shaped landforms. This is the sea arch.

When the roof of a sea arch collapses through continued erosion, then the seaward part of the arch stands detached from the shore and remains as a pillar. This is called the sea stack.

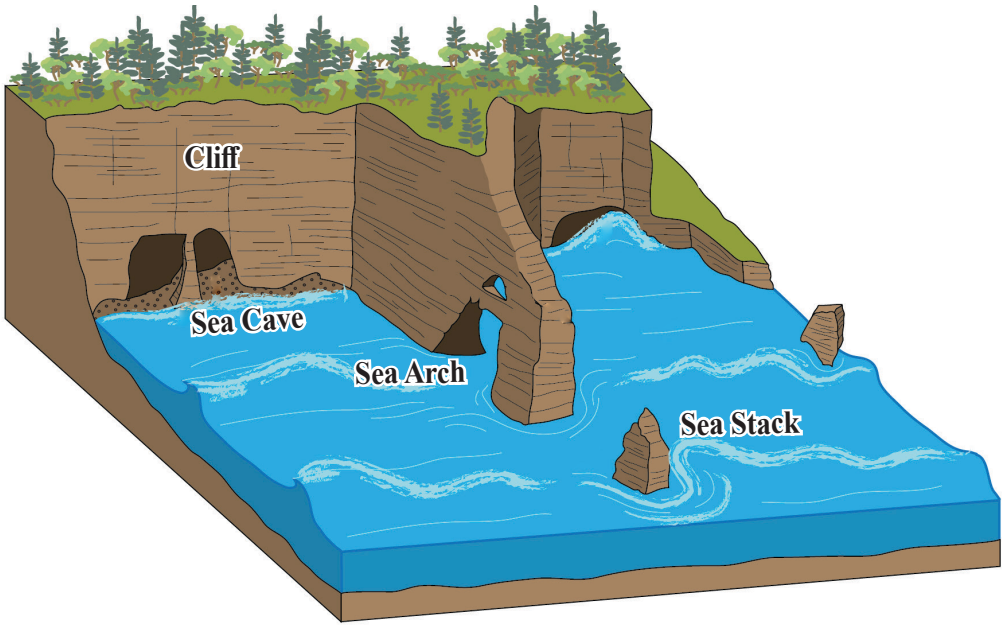


Fig 8.13

Understand the features of sea arches and sea stacks, observing the figure.

Various depositional landforms also develop due to the waves' action. Let's check what they are.

Beaches are the temporary deposits of sand and gravel deposited between the limits of the high tides and low tides by the action of waves.

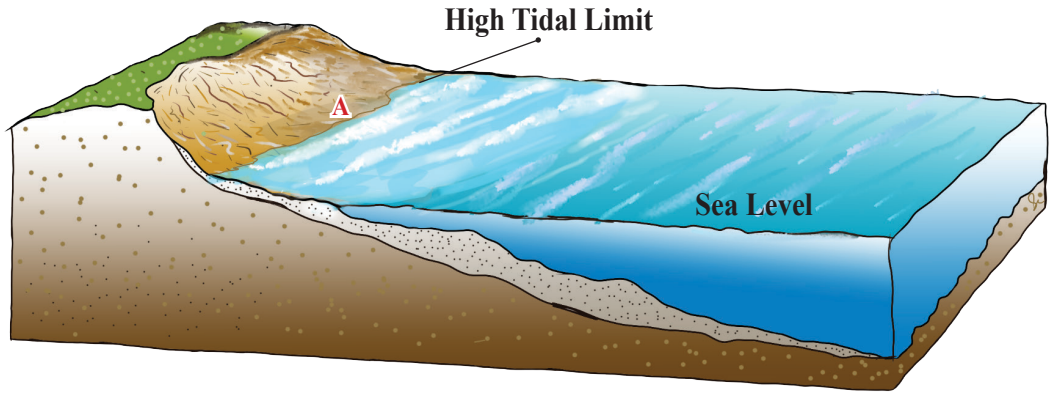


Fig 8.14 a

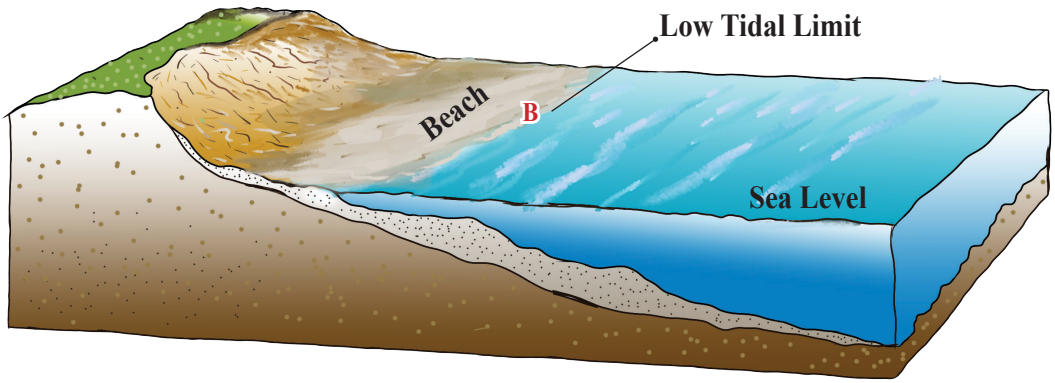


Fig 8.14 b

Observe Fig 8.14 a and 8.14 b. Identity the high tidal limit and the low tidal limit. High tidal limit is indicated as A and low tidal limit is indicated as B. Beaches are formed by the depositional process of waves in the area between high and low tidal limits.

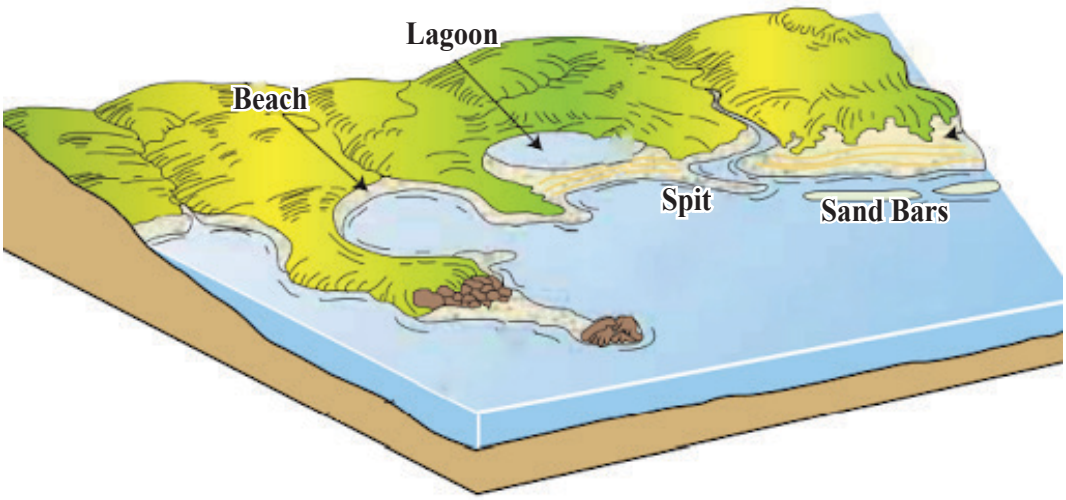


Fig 8.15

Sand bars are the temporary embankments of sand deposited parallel to the coast waves.

The sand bar that extends from land to sea is called spit.

Collect images of landforms created by wave action and prepare a digital album using IT.

Climate

Coastal regions experience unique climate unlike other physiographic regions. Although they belong to the Tropical Zone, the coastal regions of India have a moderate climate. It does not experience too hot or too cold a condition here. This is due to the maritime effect by the proximity to the sea.

Land and sea respond differently to the insolation. Land gets heated and cools quickly, while ocean gets warm and also cools slowly. This results in the formation of land and sea breeze. These winds play a major role in moderating the coastal weather.

Sea Breeze and Land Breeze

In coastal regions, the land heats up quickly during day time. As a result, the air above the land rises up and develops low pressure, whereas the sea is comparatively cooler than the land and a high pressure is developed over the sea. Hence air blows from the high pressure area of sea to the low pressure area of land. This is the sea breeze (Fig A). In contrast to this, during night time, due to the relatively rapid cooling high pressure develops over the land. But because the sea is relatively warmer than the land, it will develop low pressure. Then the wind blows from the high pressure area of land to the low pressure area of the sea. This is called land breeze (Fig B).

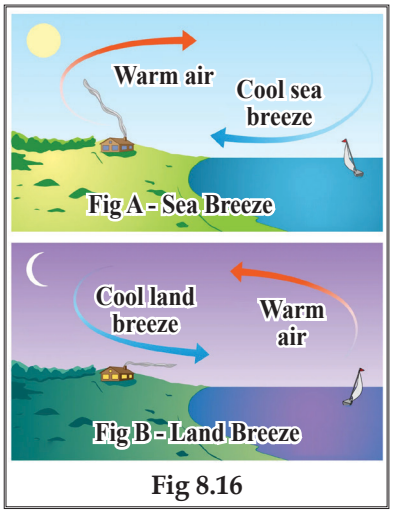


Fig 8.16

Monsoon winds is another factor influencing the coastal climate. You know that it is the Southwest monsoon winds that give rainfall all over India. Monsoon winds reach islands and coasts first. Southwest monsoon winds coming through Arabian Sea hits the Western Ghats and give high amount of rainfall in the Western coastal plains.

Observe the Map (Fig 2.17) from the previous chapter and identify the direction of monsoon winds over the Coastal Plains.

What is the reason for getting high amount of rainfall in the Western coast during Southwest monsoon?

Eastern coast especially the Coromandel coast, receives rainfall during the months of October and November. This is the season of retreat of monsoon winds. During this season Kerala also receives some rain. It is called 'Thulavarsham' in Kerala.

Observe Map 2.18 in the previous chapter and identity the direction of Northeast monsoon winds.

Eastern coast also receives rainfall from cyclones developed in the Bay of Bengal.

Coromandel coasts receive rainfall from the Northeast monsoon winds. Find reasons.

Soil

Depositional soil formed by the depositional activity of rivers and waves are generally found in coastal regions. Sandy soil, yellow and red laterite soil, black clayey soil and peaty soil are found on the Western coasts.

Alluvial soil is commonly found in the Eastern coastal area. Sandy laterite soil and black soils are also found in some places.

Alluvial soil is found mostly in the Eastern coast. Why?

Examine the table given below. Identity the soil types in the coastal areas and the islands. Prepare notes after gathering additional information and present it in the class room.

Coast	Soil type
Gujarat Coast	Black soil, Coastal alluvial soil, Saline soil
Konkan Coast	Black soil, Laterite soil
Malabar Coast	Alluvial soil, Peat soil
Eastern Coast	Coastal Alluvial soil, Delta alluvial soil
Lakshadweep	Coral sandy soil
Andaman & Nicobar Island	Marine sandy soil and Alluvial soil

Find out the reason for the development of different types of soils on each coast.

Natural Vegetation

Owing to its tropical location and proximity to sea, climate is also almost similar in the coastal regions of India. Hence vegetation types are also almost similar.

Examine the flow chart given below and identify the major vegetation types in coastal regions.

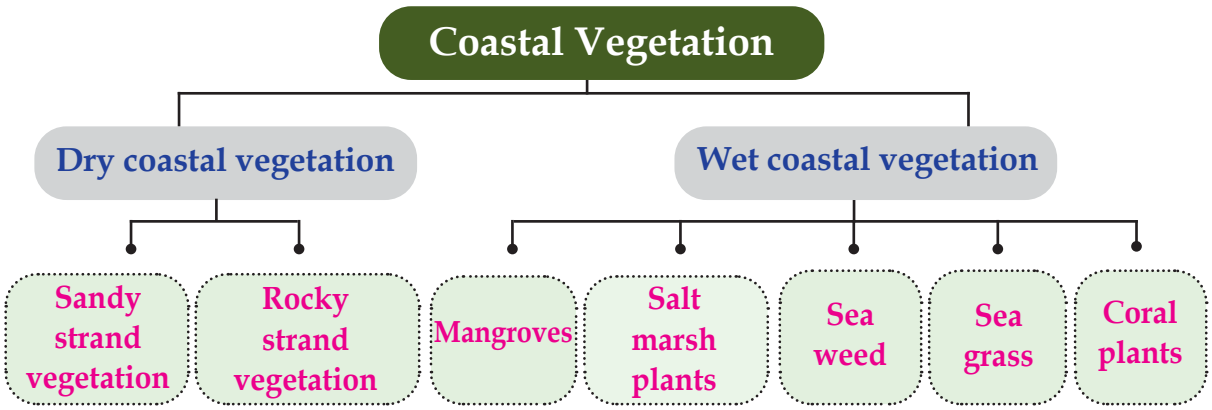


Fig 8.17

Most of the coastal plains have been extensively converted into agricultural lands and crops such as coconut, banana, rice and vegetables are cultivated here.

Mangroves: the Lungs of the Coasts

Mangroves are plants growing in salt water marshes of tropical coasts. Mangroves are found in about 380km along the coastal regions of India. The Sundarbans on the Ganga deltaic region of West Bengal is the largest mangrove forest in India. Mangroves are breeding grounds for various species of fish and other marine life and the habitat for various organisms. Mangroves protect coastal land and coastal people from natural disasters like cyclone and Tsunami. They are an important factor influencing the existence of coastal ecosystem. International Mangrove Day is observed on 26th July for the conservation of mangroves.

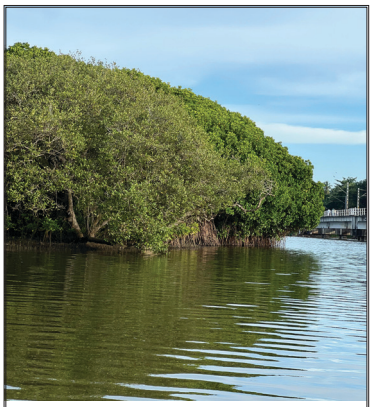


Fig 8.18
Mangrove
(Dharmadam, Kannur)

Mineral Deposits

Indian coastal regions have large deposits of metallic and non metallic minerals of industrial value. Iron ore, manganese, bauxite are the main minerals found in the coastal plains. Rare earth minerals such as monocyte, which is an ore mineral of

atomic fuel Uranium is also found in the coastal black sand. Black sand depositions are found in Chavara in Kollam District and some beaches of Odisha and Tamilnadu.

Population and Human Life

Indian coastal region is densely populated as most of factors influencing population distribution are favourable. Factors such as equitable climate, plains suitable for agriculture and the development of transportation, employment opportunities like agriculture, fishing, tourism, availability of water, mineral deposits and industries make the coastal plain densely populated. Apart from Delhi, three metro cities of India (Mumbai, Chennai and Kolkota) had developed on the coastal plains. Lakshadweep Islands have higher density of population than the national average but in the Andaman and Nicobar Islands the population density is low.

Population density is low in the Andaman and Nicobar Islands. Find out the reason.

Economic Activities

Agriculture and fishing are the main economic activities of people living in the coastal region. In addition to this, there are various mineral-based industries, ship building, fish processing and salt manufacturing industries in coastal regions. Tourism is an important employment sector in the coastal region, which has a great potential and is expanding day by day.

Ports play an important role in the economic development of a coastal region. Exports and imports of industrial products and raw materials are carried out through the ports.

Challenges Faced by Coastal Region

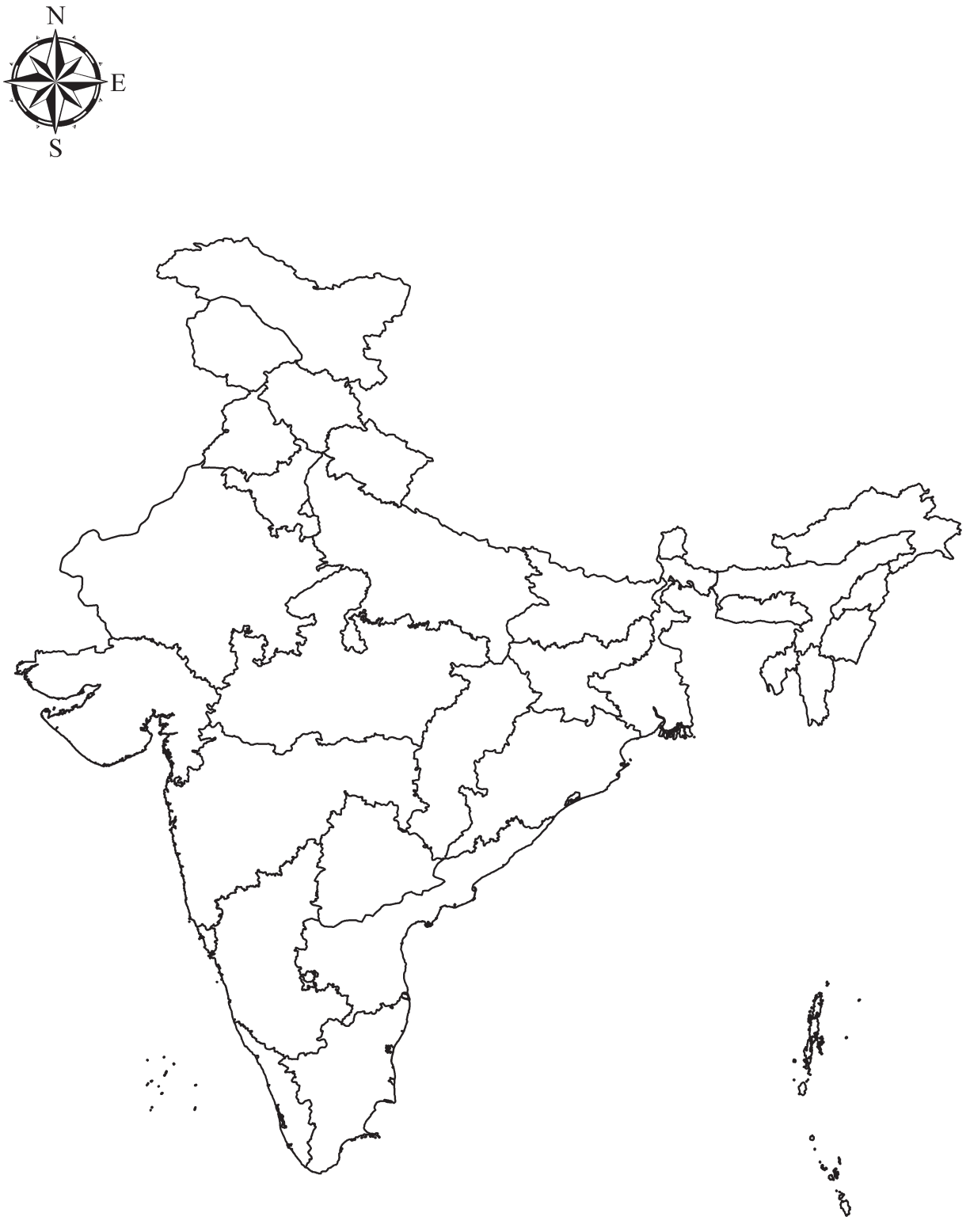
Coastal region has many potentials like topography suitable for settlements, pleasant climate, availability of water, agriculture, and industries. Even though it has several conditions to its advantage, coastal area and its people are facing many challenges. Natural disasters like Tsunami and cyclone, sea level rise due to global climate change, coastal erosion and sea turbulence make the life of the coastal people challenging.

People living in coastal regions are constantly striving to adapt their social life to such adverse conditions of nature.

Issues related to climate change in the coastal area and the possibility of natural disasters need to be monitored. For this it is necessary to enforce timely warning and preparedness with the participation of local community, taking advantage of modern scientific technology. Appropriate resource planning and conservation strategy is necessary for sustainable utilisation of coastal resources and to get its benefits to the local people. Sustainable development is possible only when each of us joins hands together in such activities.

Extended Activities

1. Visit your nearest coastal area and find out how coastal landscape characteristics influence human life. Prepare a questionnaire for data collection.
2. Collect pictures of different coastal landforms across Indian coastal area by using information technology and prepare a digital album.



MAP NOT TO SCALE

CONSTITUTION OF INDIA

Part IV A

FUNDAMENTAL DUTIES OF CITIZENS

ARTICLE 51 A

Fundamental Duties- It shall be the duty of every citizen of India:

(a) to abide by the Constitution and respect its ideals and institutions, the National Flag and the National Anthem;

(b) to cherish and follow the noble ideals which inspired our national struggle for freedom;

(c) to uphold and protect the sovereignty, unity and integrity of India;

(d) to defend the country and render national service when called upon to do so;

(e) to promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional or sectional diversities; to renounce practices derogatory to the dignity of women;

(f) to value and preserve the rich heritage of our composite culture;

(g) to protect and improve the natural environment including forests, lakes, rivers, wild life and to have compassion for living creatures;

(h) to develop the scientific temper, humanism and the spirit of inquiry and reform;

(i) to safeguard public property and to abjure violence;

(j) to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievements;

(k) who is a parent or guardian to provide opportunities for education to his child or, as the case may be, ward between age of six and fourteen years.