Social Science II

Standard IX

Part - 1

Govt.of Kerala
Department of Education

State Council of Educational Research and Training (SCERT), Kerala
2019

NT-459-1-SOC.SCI.-II-9-E-VOL.1

THE NATIONAL ANTHEM

Jana-gana-mana-adhinayaka, jaya he
Bharata-bhagya-vidhata.
Punjab-Sindh-Gujarat-Maratha
Dravida-Utkala-Banga
Vindhya-Himachala-Yamuna-Ganga
Uchchala-Jaladhi-taranga.
Tava shubha name jage,
Tava shubha asisa mage,
Gahe tava jaya gatha,
Jana-gana-mangala-dayaka jaya he
Bharata-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 my parents, teachers and all elders respect, 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.

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Dear students,

You might have got a colourful picture of the diversity of our earth as you went through the geography chapters from class five to eight. The chapters in class nine and ten are an enquiry into the reasons for such diversity. Such enquiries will lead you to more knowledge and the instinct to take an oath to "protect our earth". The knowledge of the relationship between economics and daily life will help you to live in the present day world. Different aspects of economics are incorporated in the textbook for this purpose. The learning activities relentless enquiries, and critical thinking will help you to open the window of knowledge.

The educational portal-Samagra and textbooks with QR code will make class room activities easy and interesting. The Textbook has been revised considering the National Skill Qualifications Frame work (NSQF), the disaster mitigation measures which is of contemporary relevance and ICT possibilities. Let this textbook be a pathfinder for you in becoming good citizens of the future.

With love and regards.

Dr. J. Prasad
Director, SCERT

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;

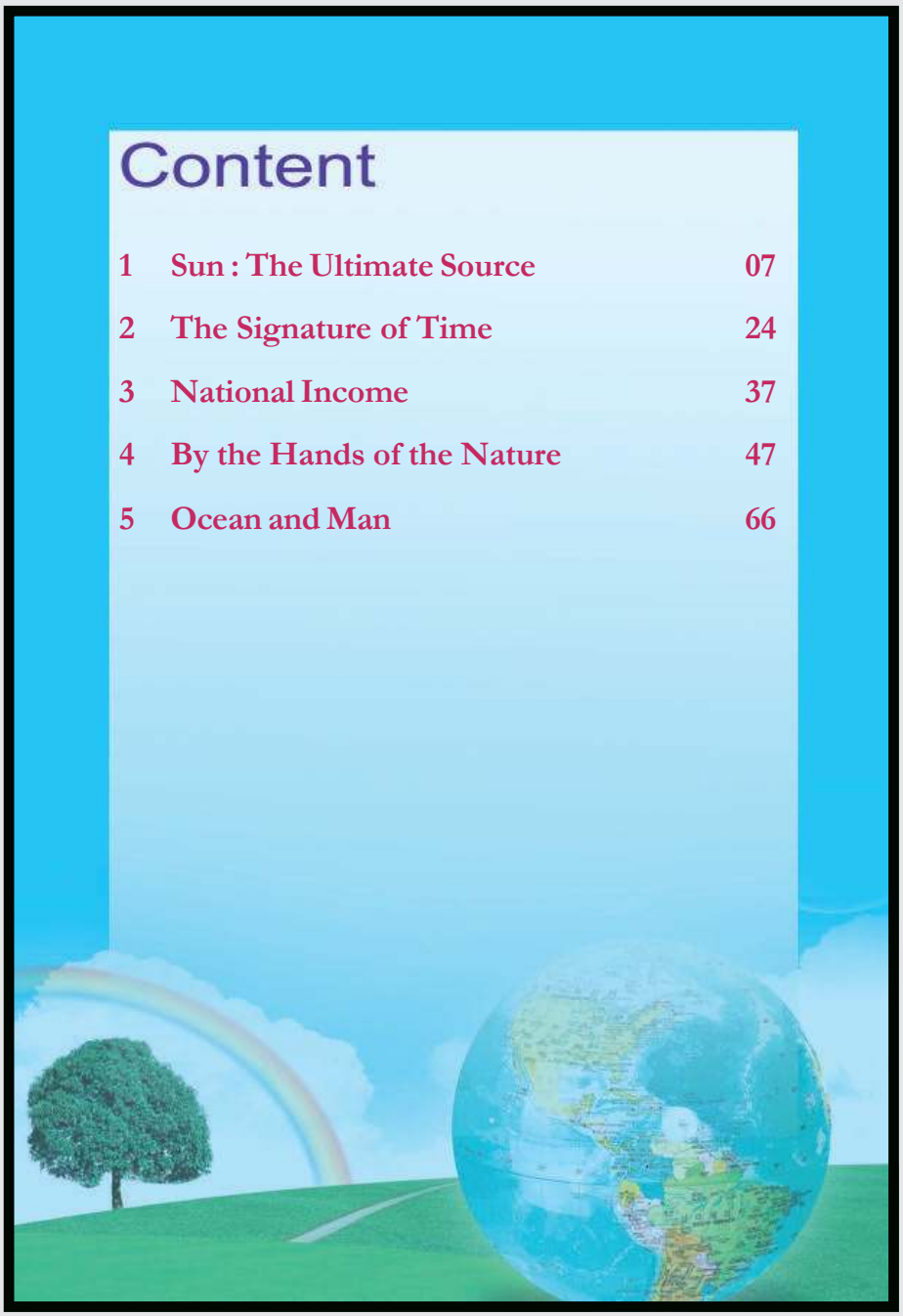
(h) to develop the scientific temper, humanism and the spirit of inquiry and reform;

(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.

Content



Certain icons are used in this textbook for convenience

For further reading (Need not be subjected to assessment)

Questions for assessing the progress

Learning activities

Let us assess

Extended activities

1

Sun : The Ultimate Source

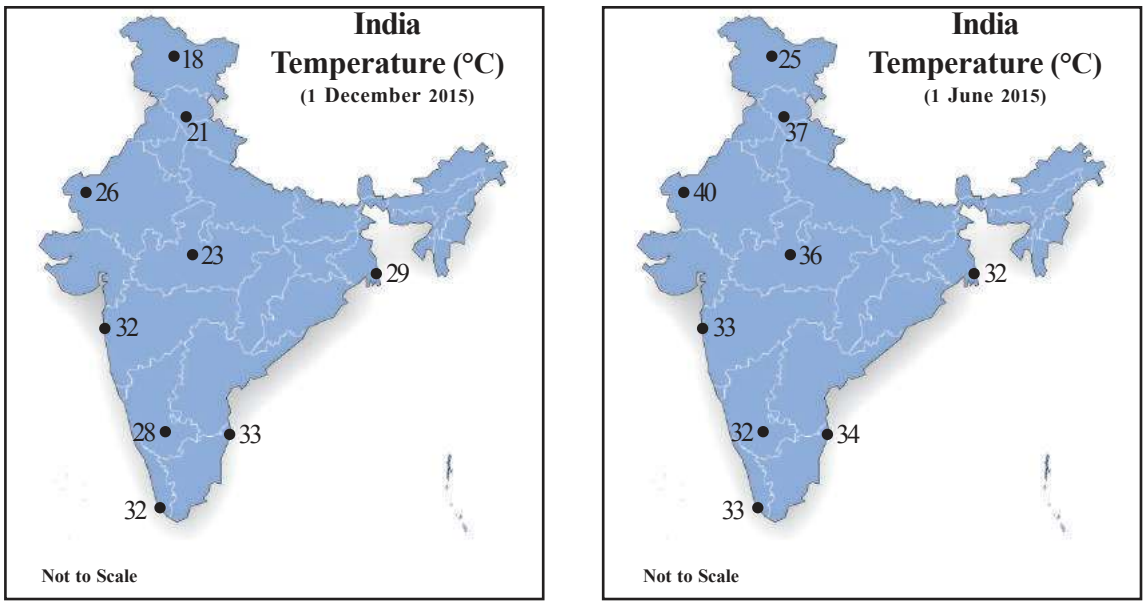


Fig. 1.1

Look at the above maps showing the atmospheric temperatures of a few cities in India (Fig 1.1)

- Is the temperature the same at different places on the same day?
- Is the temperature experienced at a particular place the same in all seasons?

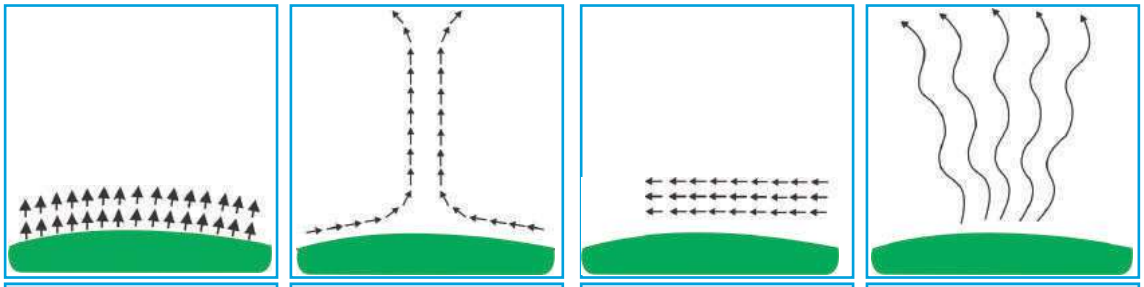
You might have understood that the temperature varies in accordance with place and time. Let us look at the causes and consequences of the varied distribution of atmospheric temperature.

You know that the sun is the sole source of energy for earth. Solar energy reaches earth in the form of short waves. This is called as Insolation.

The earth's surface facing the sun gets heated by this flow of energy, which begins with sunrise and lasts till sunset. The heat is then transferred to the atmosphere from the surface of the earth through various processes.

Processes of heat transfer in the atmosphere

The given diagrams (Fig 1.2) indicate the processes of heat transfer in the atmosphere.



Conduction	Convection	Advection	Terrestrial Radiation
Heat is transferred to that part of the atmosphere close to the hot surface of the earth.	Heated air expands and rises up.	Horizontal transfer of heat by wind.	Heat is transferred from the surface of the earth to the outer space in the form of long waves.

Fig. 1.2

Conduction, convection and advection are confined to the near atmosphere of the earth. The re-radiation of energy from the surface of the earth back to the outer space in the form of long waves is called terrestrial radiation. The atmosphere absorbs the terrestrial radiation.

You have studied in earlier classes that some gases present in the atmosphere can absorb terrestrial radiation.

Which are those gases? What is the consequence of such absorption?

Now you might have understood that the atmosphere is heated mainly by terrestrial radiation.

- Why does terrestrial radiation occur mostly at might?
- What is the difference between insolation and terrestrial radiation?

Heat budget

As you know, the term budget implies the balance between income and expenditure. Similarly, the balance between insolation and terrestrial radiation is called heat budget. Look at the picture (Fig 1.3).

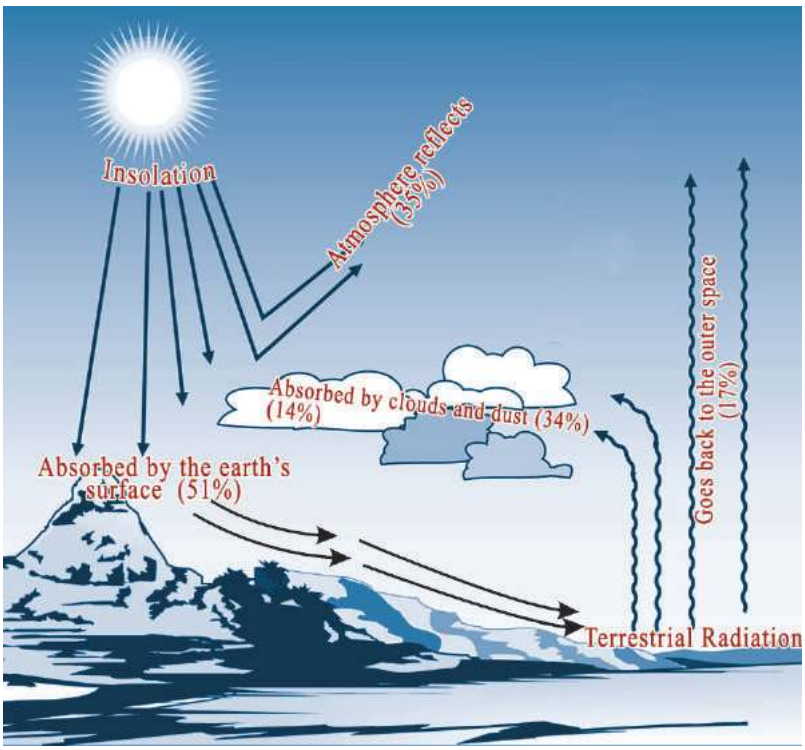


Fig. 1.3

If we consider the total amount of insolation reaching the outer surface of the atmosphere as 100 units, about 35 units of energy are reflected back by the atmosphere. Look at the following table to see how the remaining 65 units of energy are distributed.

Amount of energy reflected by the atmosphere and earth's surface	35 units	Direct terrestrial radiation	17 units
Energy reaching the earth's surface	51 units	Radiation from the atmosphere	48 units
Energy held by the atmosphere	14 units		
Total energy received by the atmosphere and surface of the earth	**65** units	**Total energy radiated back from the earth's surface and the atmosphere.**	**65 units**

Now you might have understood that the entire energy reaching the earth's surface is returned to the outer space through various means. Through this heat balancing process termed as heat budget, the surface temperature of the earth is kept balanced.

What would happen if there was no heat balancing process?

Temperature

You have learnt that the earth's surface as well as its near atmosphere is heated by insolation. Temperature is the degree of hotness of the atmosphere. It is from the weather condition at 2pm that the meteorologists measure the maximum temperature of a day. The minimum temperature is taken just before the sunrise.

Discuss why the maximum and minimum temperatures are being recorded at 2pm and just before sunrise respectively?

Which is the instrument used to measure temperature?

Measure the atmospheric temperature at a fixed time daily and display it in the school notice board or classroom.

Look at the weather information shown in Fig.1.4. The terms 'maximum' and 'minimum' temperatures are usages quite familiar to you since they frequently appear in the media.

The difference between the maximum and the minimum temperatures of a day is called diurnal range of temperature.

Diurnal range of temperature = maximum temperature of the day - minimum temperature of the day

The average temperature of a day is termed 'daily mean temperature'. It can be calculated as follows.

$$\text{Daily mean temperature} = \frac{\text{Maximum temperature of the day} + \text{Minimum temperature of the day}}{2}$$

Calculate diurnal range and daily mean temperature of the places shown in the weather report (Fig 1.4)

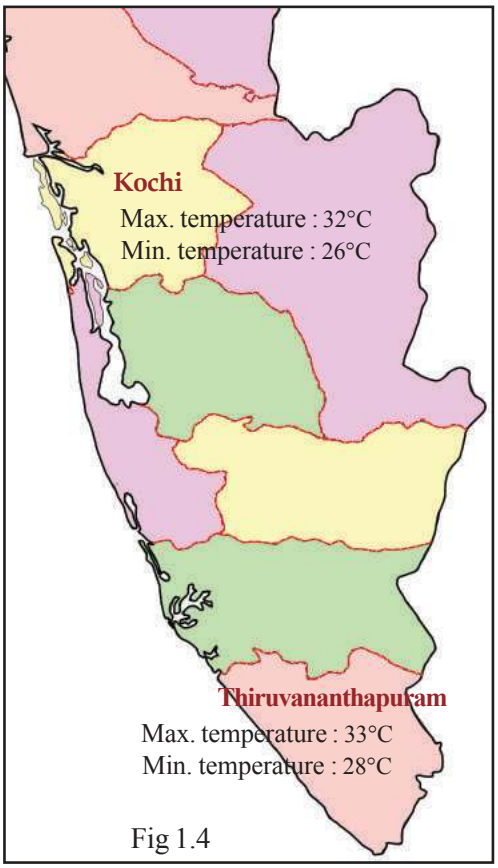
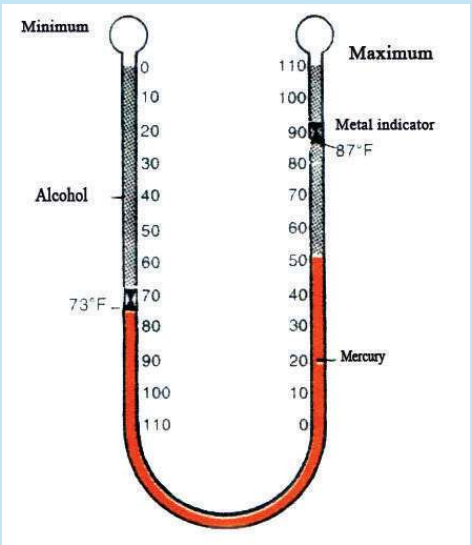
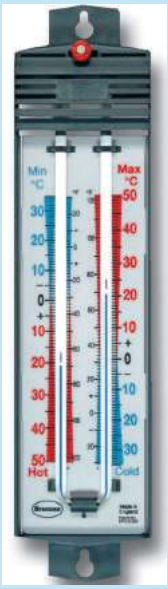


Fig 1.4

Maximum-minimum thermometer



This is the instrument for measuring the maximum and minimum temperature in a day. Here the two thermometers are connected using a U-shaped glass tube. The mercury filled in the maximum thermometer expands with rise in temperature and pushes up the metal indicator. The indicator remains at the position showing the maximum temperature of the day. Thus the maximum temperature can be read at any time during a day. The minimum thermometer has alcohol filled above the indicator. When the temperature falls, the indicator is pushed up as the alcohol contracts. The minimum temperature can be read from the position of the indicator at any time.



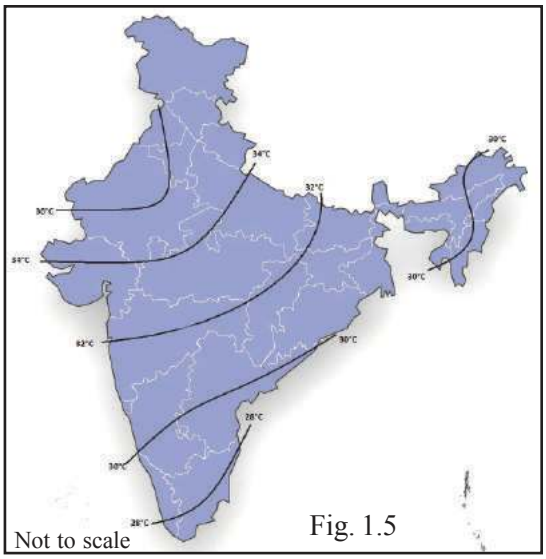

Not to scale

Fig. 1.5

The temperature distribution map can be prepared based on the temperature recorded at different places.

Look at the map (Fig. 1.5). You can see smooth curved lines connecting the places having equal temperature. This is the method used to represent the distribution of temperature in maps. The imaginary lines connecting places having equal atmospheric temperature are called isotherms.

You know that temperature varies from place to place on the earth's surface. Let us find out the reason behind this.

Thermal equator

If isotherms are plotted by connecting the places having the highest temperature on earth, it will run almost parallel to the equator. Such an imaginary line is called thermal equator.

Factors influencing the distribution of temperature

Latitude

You have studied that the sunlight is most intense in the tropical region. The region receives more energy as the sun's rays are almost vertical.

How is sunlight distributed in temperate and frigid zones?

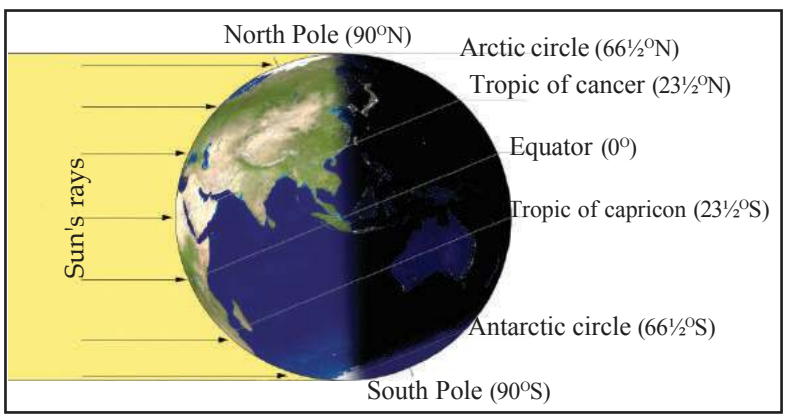


Fig. 1.6

The angle of incidence of the sun's rays becomes more inclined on approaching the poles. There occurs more energy loss as the sun's rays have to travel more through the atmosphere owing to the inclination.

Altitude

You have studied that the temperature in the troposphere decreases at the rate of 1° C per 165 m of altitude.

What is this process called?

The temperature is comparatively low at places situated much above the sea level.

Calculate the approximate temperature at the place marked A in the diagram (Fig. 1.7) assuming the sea level temperature as 30° C.

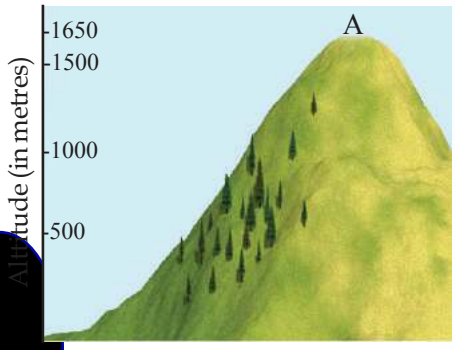


Fig. 1.7

The temperature experienced in places like Idukki and Wayanad is lower than that of the neighbouring districts Ernakulum and Kozhikode respectively. Why?

Nearness of ocean

Examine the table showing the temperature related data of some cities in India.

City	Max. temperature	Min. temperature	Range of temperature
Thiruvananthapuram	33^{0}C	28^{0}C	5^{0}C
Bengaluru	35^{0}C	23^{0}C	12^{0}C
Delhi	38^{0}C	21^{0}C	17^{0}C
Goa	33^{0}C	27^{0}C	6^{0}C

Find the location of the given cities with the help of an atlas. The diurnal range of temperature is very high for Delhi and Bengaluru where as it is very low for Thiruvananthapuram and Goa, isn't it? It can be inferred that the range of temperature will be high at places away from the sea and vice versa. Temperature remains moderate at places close to the sea. This is because the heating of land causes wind to blow from sea to land and cooling of land causes wind to blow from land to sea.

Generally Kerala experiences moderate temperature. Why?

Winds

Hot wind in Delhi: Many sunburnt

Palakkad Burns: Hot wind from Tamilnadu

Cold wind: Snowfall in the valley

Observe the news headlines. The warm and the cold winds can respectively raise or lower the temperature of the places through which they pass.

Discuss in the class the influence of winds in regulating the temperature of a region and prepare notes.

The temperature of a place vary in accordance with its latitudinal location, altitude, nearness to sea, winds, etc.

Global distribution of temperature

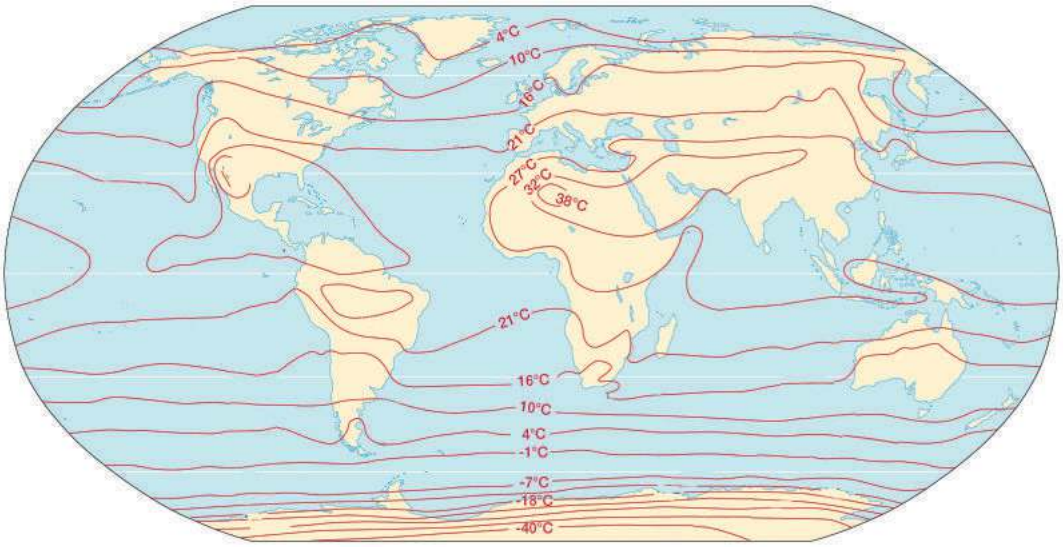


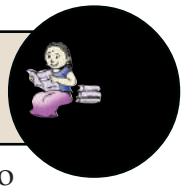
Fig. 1.8

Observe Fig.1.8. The smooth curved lines represent the temperature recorded at different places throughout the earth's surface.

What are these lines called?

Isotherms in the southern hemisphere are almost parallel to the Equator compared to those in the northern hemisphere. Why?

During summer, high temperature prevails over the land compared to the sea and during winter, the condition is reversed. The bending of isotherms is due to the differential heating of land and water.



In the weather maps for summer and winter seasons, the isotherms behave differently. Why?

It is the fluctuation in the atmospheric temperature that leads to the atmospheric phenomena like pressure variations, wind, cloud and precipitation.

Water content in the atmosphere significantly influences the atmospheric phenomena.

What is the role of temperature in bringing water content to the atmosphere?

Water in the atmosphere

Water content in the atmosphere is called humidity.

Is humidity uniform at all places?

List out the factors influencing the amount of moisture in the atmosphere.

- Temperature
-

Humidity varies not only with place, but also with time.

The actual amount of water present in the atmosphere is called absolute humidity. It is measured as the amount of water vapour present per cubic metre volume of air (g/m^3).

There is a limit to the amount of water vapour the atmosphere can hold at a certain temperature. The stage at which the atmosphere is fully saturated with water is termed as saturation level.

Wet and dry bulb thermometer

It consists of two thermometers. One records normal atmospheric temperature. The bulb of the second is kept wet by wrapping it in a wet muslin cloth. This is known as wet bulb thermometer. As the bulb is wet, this thermometer always shows lower temperature than normal. Relative humidity is calculated based on the difference in temperature between these two thermometers. Based on this difference at any particular temperature corresponding relative humidity can be found out from the chart given along with the instrument. Generally the relative humidity will be low when the difference in temperature is high and vice versa.

Relative Humidity (%)

Dry-Bulb Temperature (°C)	Difference Between Wet-Bulb and Dry-Bulb Temperatures (C°)														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	100	81	63	45	28	11										
2	100	83	67	51	36	20	6									
4	100	85	70	56	42	27	14									
6	100	86	72	59	46	35	22	10								
8	100	87	74	62	51	39	28	17	6							
10	100	88	76	65	54	43	33	24	13	4						
12	100	88	78	67	57	48	38	28	19	10	2					
14	100	89	79	69	60	50	41	33	25	16	8	1				
16	100	90	80	71	62	54	45	37	29	21	14	7	1			
18	100	91	81	72	64	56	48	40	33	26	19	12	6			
20	100	91	82	74	66	58	51	44	36	30	23	17	11	5		
22	100	92	83	75	68	60	53	46	40	33	27	21	15	10	4	
24	100	92	84	76	69	62	55	49	42	36	30	25	20	14	9	4
26	100	92	85	77	70	64	57	51	45	39	34	28	23	18	13	8
28	100	93	86	78	71	65	59	53	47	42	36	31	26	21	17	12
30	100	93	86	79	72	66	61	55	49	44	39	34	29	25	20	16

Sublimation

In some instances, due to rapid fall in atmospheric temperature, water vapour directly condenses to solid state (snowflakes). This is called sublimation.

When the atmosphere becomes saturated, condensation begins. You might remember what you have learnt about condensation in earlier classes.

Can you suggest a suitable experiment to demonstrate the condensation process?

The critical temperature at which condensation begins is called dew point.

The ratio between the amount of water vapour present in the atmosphere and the total water holding capacity of the atmosphere at a given termperature is called relative humidity. It is usually expressed in percentage.

For example, if the absolute humidity is half of the total water holding capacity at a particular temperature, then the relative humidity will be 50%. Let us see how it is calculated.

$$\text{Relative humidity} = \frac{\text{Absolute humidity}}{\text{Total water holding capacity of the atmosphere at that particular temperature}} \times 100$$

What will be the relative humidity at saturation level?

Relative humidity is measured using the instrument called wet and dry bulb thermometer.

Forms of condensation

Atmosphere should reach the saturation level for condensation to begin. With further addition of water vapour or due to a considerable fall in temperature, the water vapour in the atmosphere begins to condense.

Look at the different forms of condensation.

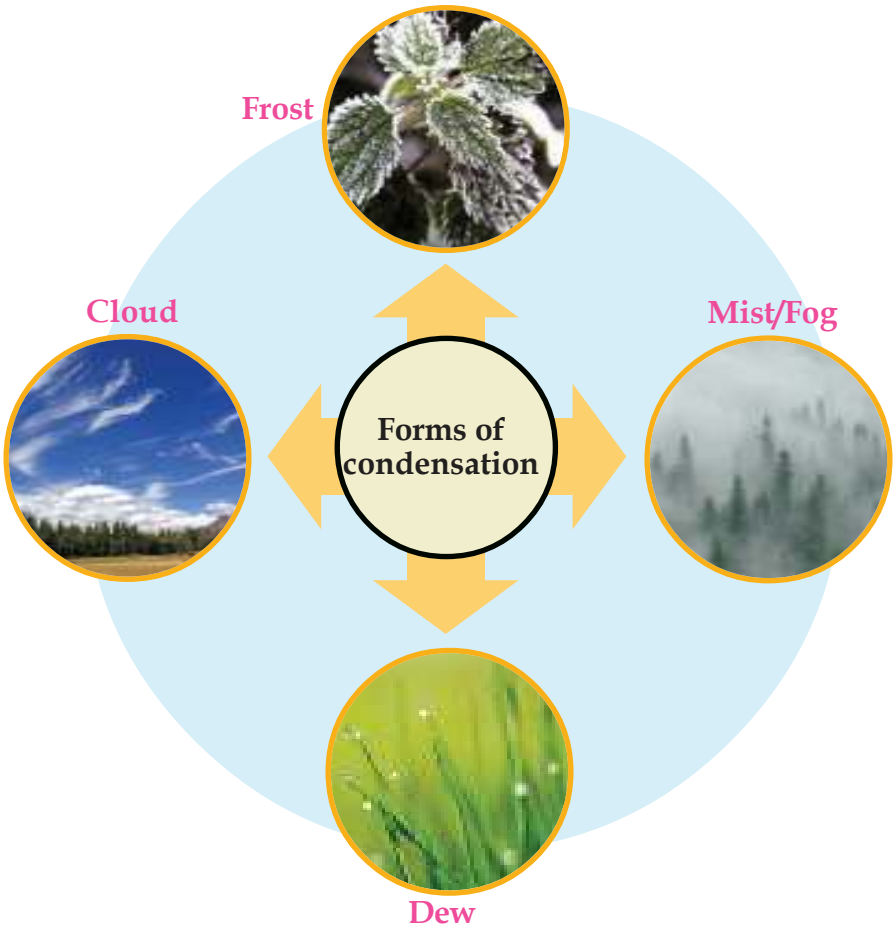


Fig.1.9

Dew

You might have noticed the water droplets clinging on to the blades of grass and leaves early in the morning. This is dew.

The surface of the earth gets cooled during the night and it cools the near atmosphere. This causes the water vapour to condense and the condensed droplets cling on to the cold surfaces on earth.

Dew
Fig 1.10

Dew disappears as the sun rises. Why?

Frost
Fig.1.11

Frost

As you know there are places on the earth were the night temperature falls below 0° Celsius. Instead of dew, tiny ice crystals are formed in such places. This form of condensation is called frost.

Fog/Mist
Fig.1.12

Fog or Mist

See Fig 1.12. You might have experienced similar weather at least during winter seasons. This is called mist or fog. The condensed tiny droplets of water formed by the cooling of air remains suspended in the atmosphere itself. They can very well be described as clouds close to the earth's surface. Fog or mist is the result of condensation around the minute dust particles in the lower atmosphere. This may obstruct visibility. If the range of visibility is less than one kilometre, it is termed fog. If the range of visibility is more than one kilometre, it is called mist. The airports in North India get temporarily closed during winter due to dense fog.

Smog

In industrial regions, smoke and fog occur in combination to cause an atmospheric condition called Smog. This usually causes hindrance to traffic.

Clouds

You have learnt earlier that clouds are formed by the condensation of water vapour around the fine dust particles in the atmosphere. The water droplets so formed are less than 0.001 cm in dimension. That is why they remain suspended in the atmosphere. Haven't you seen different types of clouds in the sky? Clouds can be classified according to their form and height.

Based on form there are mainly 4 types of clouds.

Cirrus clouds : These are feather-like clouds in the upper atmosphere in clear weather conditions.

Stratus clouds : These appear in thick layers in the lower part of the sky.

Cumulus clouds : These clouds resemble huge cotton bundles and are formed due to strong convection currents. They have large vertical extent.

Nimbus clouds : These are dark rain clouds in the lower atmosphere. These clouds appear dark as it does not allow sunlight to pass through due to thick concentration of water droplets.

The clouds mentioned above do not generally occur independently. They are usually seen in combination. For example; the combination of cumulus and nimbus clouds is termed as cumulo-nimbus clouds.

Observe the sky and try to identify the different types of clouds.

The above discussed clouds usually occur at different altitudes. See the four different types of clouds based on altitude.

- High clouds (20000 to 40000 ft)
- Medium clouds (7000 to 20000 ft)
- Low clouds (< 7000 ft)
- Clouds with great vertical extent (2000 to 30000 ft)

You have learnt that clouds are formed by the condensation of water vapour. Let's see what happens to these water droplets thereafter.

Fig. 1.13 Cirrus clouds

Fig. 1.14 Stratus clouds

Fig. 1.15 Cumulus clouds

Fig. 1.16 Nimbus clouds

Precipitation

Continuous condensation causes the droplets in the clouds to grow in size. Being unable to resist the gravitational force of the earth, the water droplets get released from the clouds and fall on the earth in different forms. This process is called precipitation.

Look at the pictures.

Rainfall

Snowfall

Hailstones

These are the different forms of precipitation. The common manifestation of precipitation is in the form of water drops. This is the rainfall.

When the temperature falls below 0° Celsius, precipitation reaches the earth in the form of tiny crystals of ice. This is snowfall.

If the water droplets released from the clouds happen to pass through colder layers of the atmosphere, they may reach the earth in the form of ice pellets. This form of precipitation is called hailstones.

Which form of precipitation is most familiar to you?

Rain occurs differently

Let's see the different types of rainfall.

Look at the diagram (Fig. 1.20). The moisture-laden wind from the sea enters the land and moves upwards along the mountain slopes where it gets cooled and condensed to form clouds. When the windward sides of the mountain receive heavy rainfall, the leeward sides do not receive rainfall due to the descending dry air. This type of rainfall is known as orographic rainfall or relief rainfall. The places situated at the leeward side of the mountains that do not receive any rainfall are referred to as rain shadow regions.

Fig.1.20 Orographic rain

When Kerala receives southwest monsoon rainfall, the western parts of Tamil Nadu remain dry. Why?

You have learnt the characteristics of equatorial climatic region. High temperature and daily afternoon rains are the peculiarities of these regions.

Due to high temperature, air gets heated and rises up.

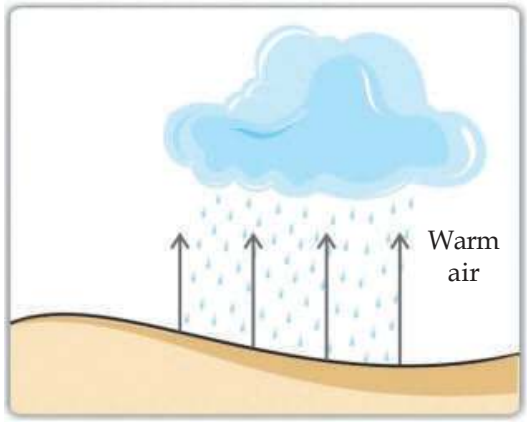


Fig. 1.21 Convectional rain

What is this process of heat transfer called?

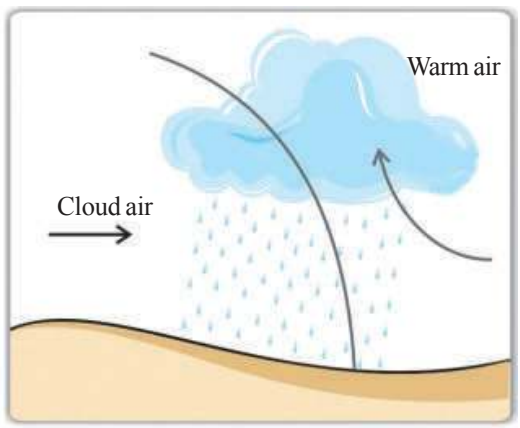


Fig 1.22 Border rain

Cumulus clouds are formed by the cooling and condensation of rising warm air. Rainfall occurs with thunder and lightning. This rain, mostly occurring in the afternoon, does not last long. This type of rainfall is called convectional rainfall. This is a common phenomenon in the tropical regions during summer.

There is always a difference in the atmospheric temperature over land and sea. If the air over the sea comes in contact with the air over the land in the coastal regions, the warm air will be pushed upwards causing cloud formation and rainfall. This type of rainfall is called border rain.

All the functions of our living planet, the earth, are regulated by the sun. The very existence of the biosphere is by direct or indirect dependence on the solar energy. Even the distribution of plants and animals on earth is in accordance with the availability of sunshine. The case of human beings also is not different. All the atmospheric phenomena inevitable for sustaining life on earth are controlled by solar energy. There is a natural mechanism to retain the required amount of energy obtained from the sun and to send back the surplus.

The average surface temperature of the earth will vary with even the slightest variation in the energy flows - insolation and terrestrial radiation. This in turn becomes a threat to the sustenance of life. You have learnt about the human activities that cause changes in the atmospheric temperature. Let 's control such unscientific practices and sustain our earth for the generations to come.

Let us assess

- Explain how latitudinal location influences distribution of temperature on earth.
- The isotherms in the northern hemisphere are more curved while those in the southern hemisphere are almost parallel to the Equator. Why?
- Suppose the relative humidity is 100%. Write your inferences regarding the atmospheric condition.
- Differentiate between
  - (a) Dew and frost
  - (b) Fog and mist

- Illustrate the concept of orographic rainfall with the help of a diagram.

Extended activities

- Illustrate heat budget on a chart paper and display it in the class.
- Mark the temperature of different cities in India on a map and draw isotherms by connecting the points suitably.
- Observe the functions of weather instruments by visiting a nearby weather station.
- Observe the sky and identify the clouds based on their forms.
- Prepare maximum number of objective questions based on this unit and conduct a quiz competition in the class.

2

The Signature of Time

The school social science club decided to conduct an exhibition on the topic 'Earth phenomena' in connection with the observance of the Earth Day. The followings are some of the pictures selected from those received for exhibition.

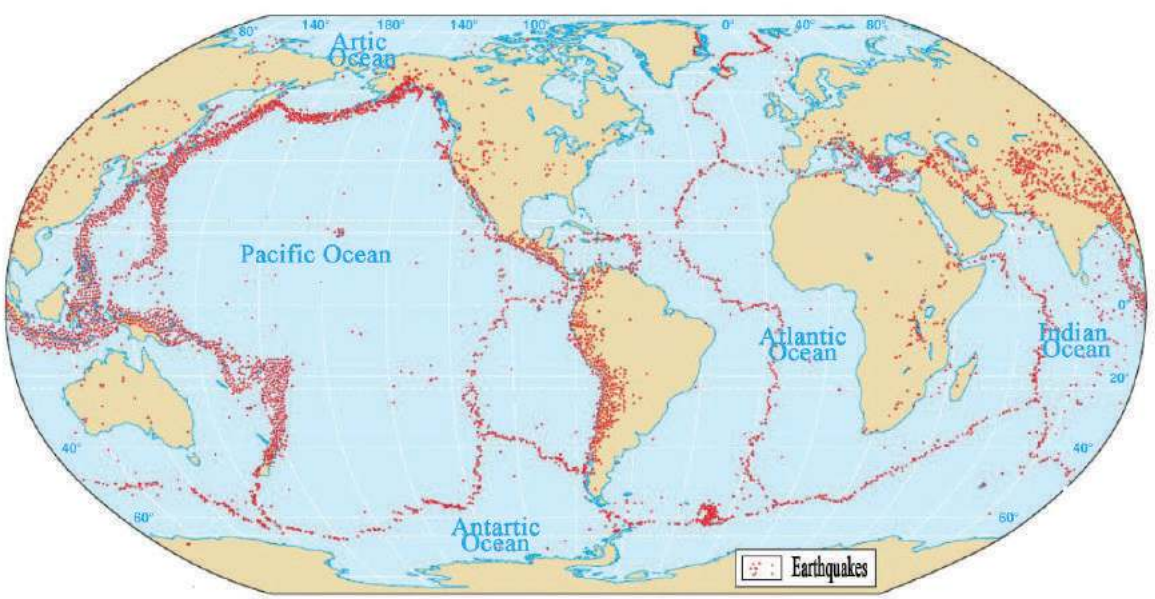


Fig. 2.1
Zones of severe earthquakes

Note: Red dots indicate earthquake zones

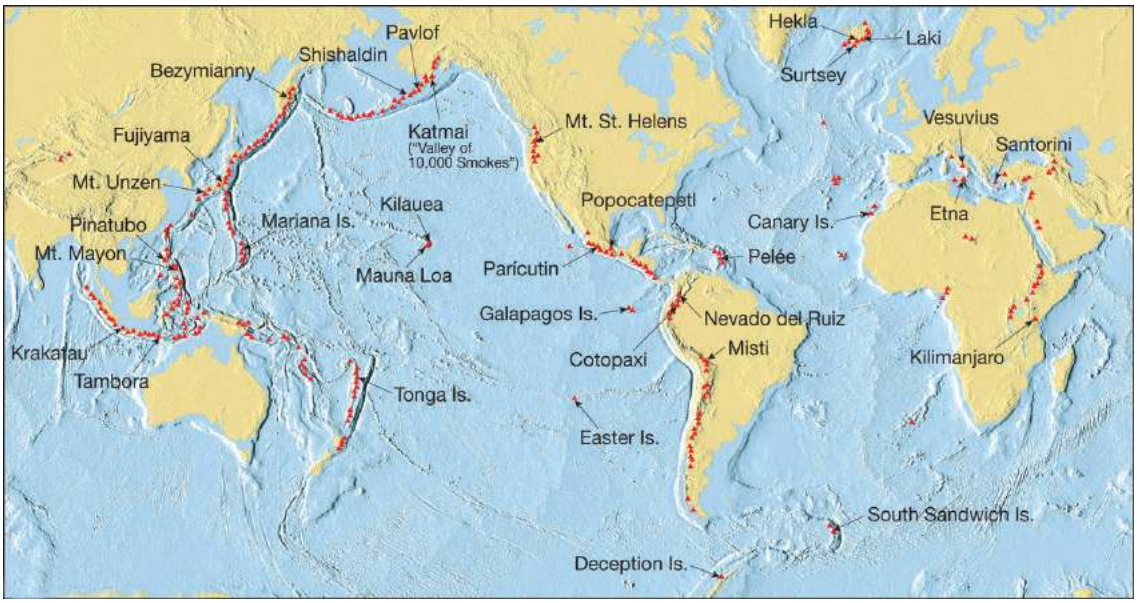


Fig 2.2 : Volcanic zones

Note: Red dots indicate volcanoes.

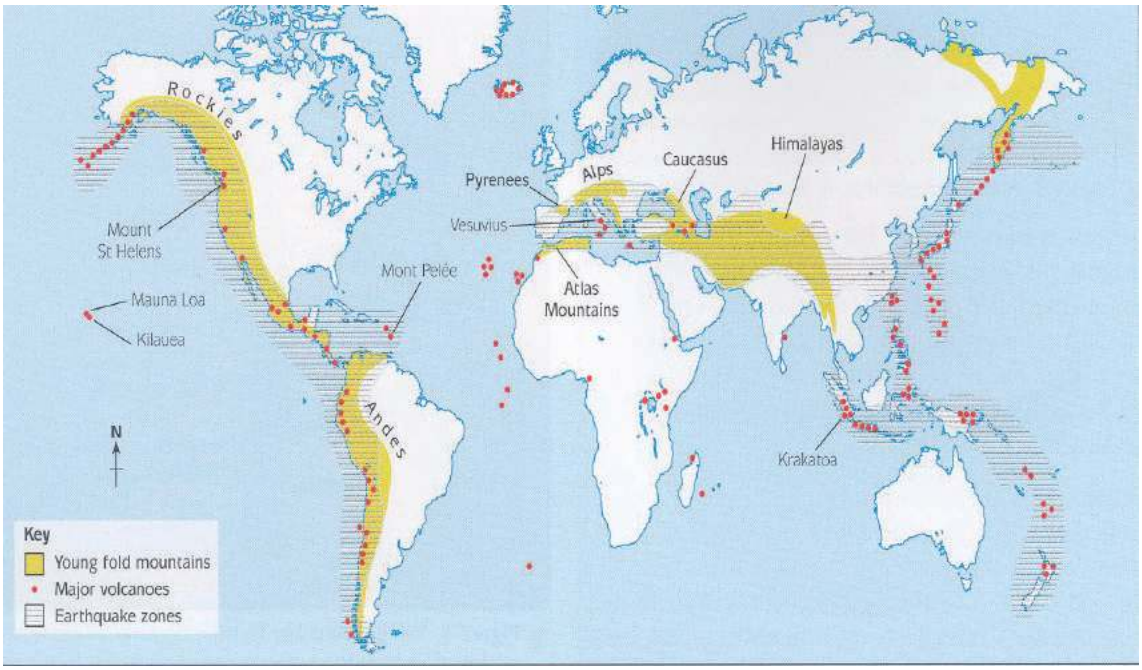


Fig. 2.3 : Major mountain ranges

Indicator: Yellow patches indicate major mountain ranges.

Can you mark the information in each of the above maps in a single map?

Don't forget to use different colours or symbols for each type of feature. You can use the following map(Fig.2.4) for this purpose.

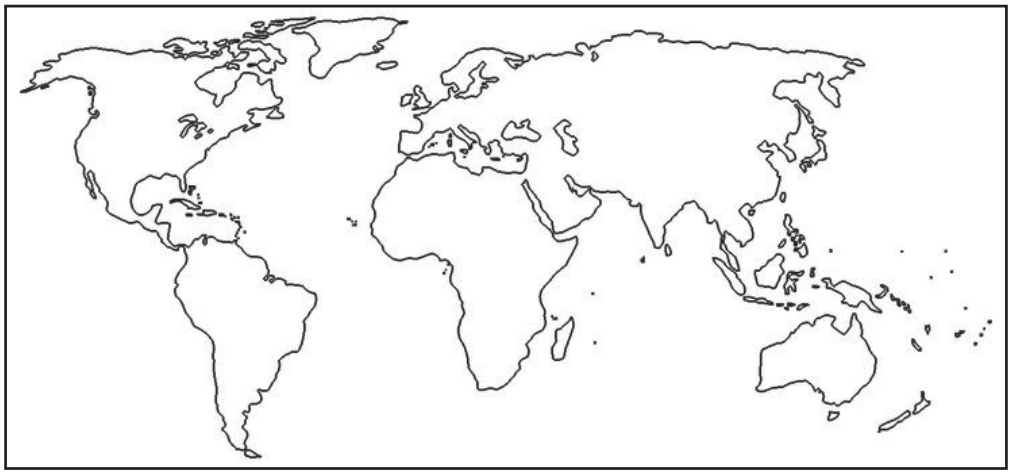


Fig 2.4

On completing this activity, haven't you reached the following conclusions?

Conclusions

- Earthquakes are frequent in certain parts of the earth.
- Volcanoes are more common in certain specific regions.
- There are some peculiarities in the distribution of mountains.
- Earthquake zones and distribution of mountains on the earth's surface more or less coincide.
-

The map you prepared will be somewhat like the following (Fig.2.5)

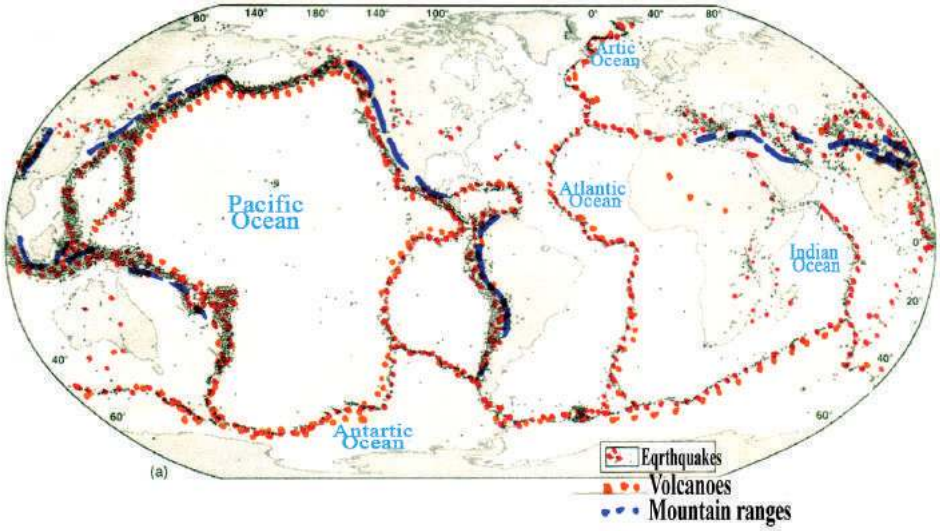


Fig.2.5 Major earthquake zones, volcanoes and mountain ranges.

You have recognized from the map that the earthquake zones, volcanoes, and mountain ranges overlap. Why is this so?

You know that the crust, which is the outermost layer of the earth, is solid. You have also learnt that the crust, together with the upper part of the mantle is known as the lithosphere. The lithosphere exists as several fragments just like the broken shell of an egg. Compared to the thickness of the portion from the crust to the inner core, the lithosphere is very thin. These portions of the lithosphere which are several thousand kilometres wide and roughly 100 kilometres thick are called lithospheric plates. Whether major or minor, each plate may exclusively contain either oceanic crust or continental crust or contain combinations of oceanic and continental crust.

While doing the map-based activity, didn't you notice some natural boundaries on the map? These are the boundaries of the lithospheric plates. Identify and list the different lithospheric plates from the following map.

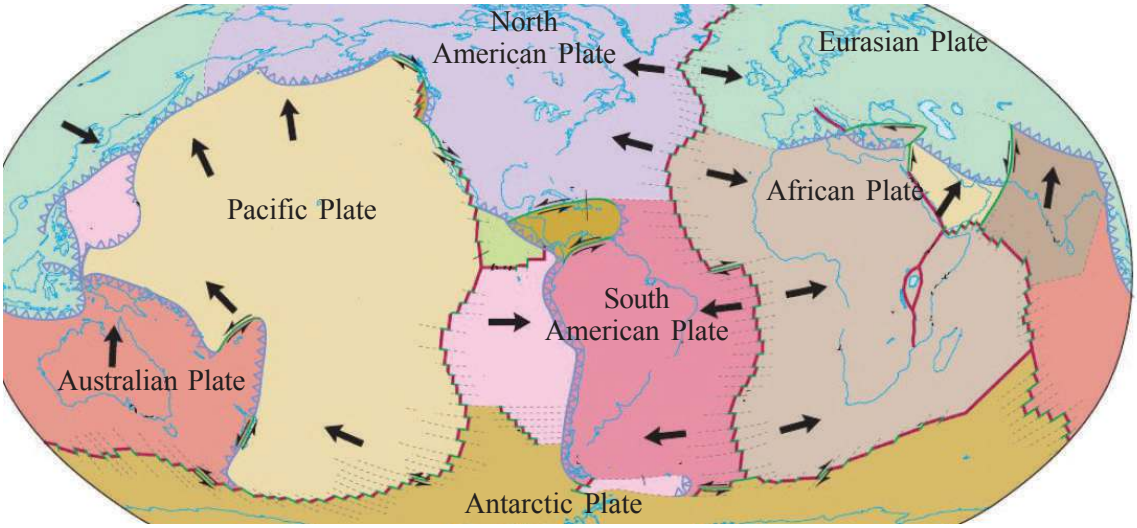


Fig. 2.6 : Lithospheric plates

- Pacific plate
-

Now you know the different lithospheric plates. These can be classified into major and minor plates based on size. Philippine, Cocos, Nasca, Caribbean, Scotia, Arabian etc. are minor plates. There are seven major plates. Of these the Pacific plate is the largest. Pacific plate involves oceanic parts alone.

Plates move

CWCLS8

The lithospheric plates are situated above the asthenosphere which is in a semi plastic state. Magma, which is a part of the mantle remain molten due to the high temperature at the earth's interior and undergoes continuous convection. This causes the movement of lithospheric plates (fig. 2.7).

The plates move at a speed of 2 centimetres to 12 centimetres a year. The speed of this movement has not always been uniform. Studies indicate that the speed of the plate movement was up to 30 centimetres a year about 580 million years ago.

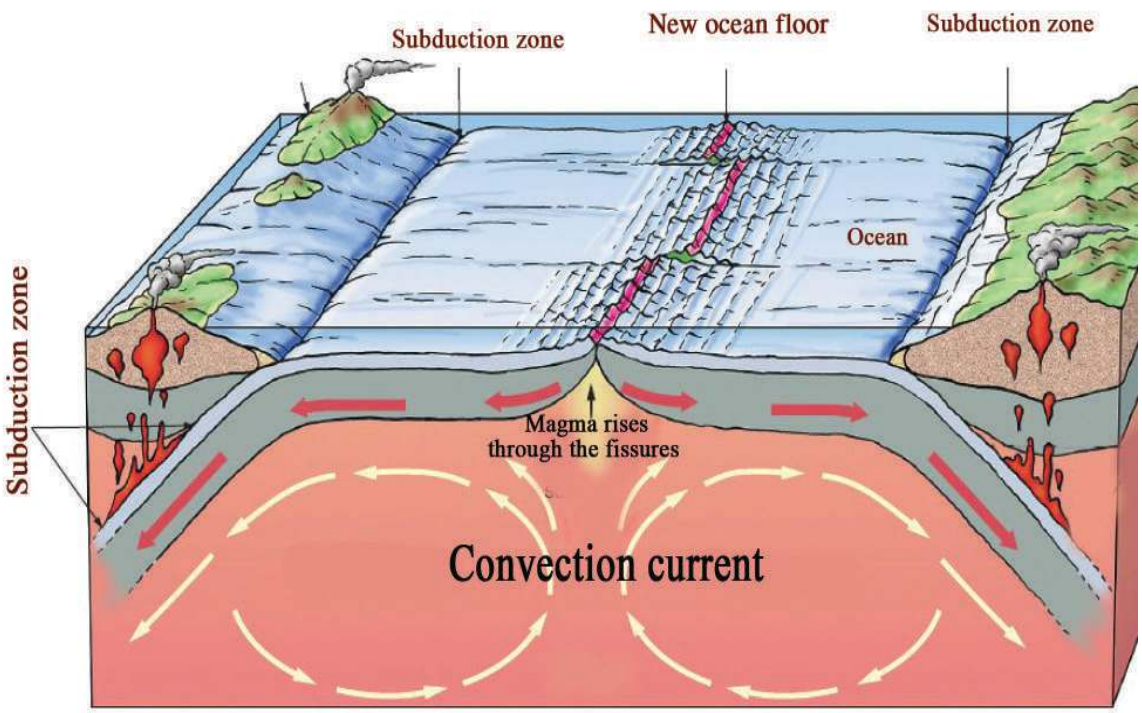


Fig. 2.7

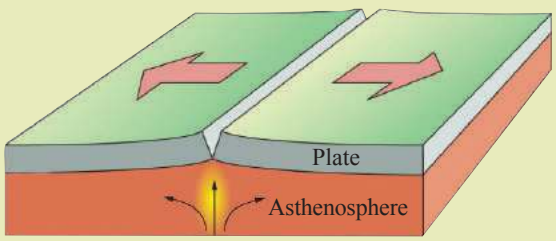
The Continental Drift Hypothesis

Alfred Wegener, a German meteorologist, put forward the idea of continental drift in 1912. He argued that millions of years ago, all the present day continents were a single unit forming supercontinent named Pangea which was encircled by an ocean called Panthalassa. Wegener believed that over millions of years, the continental portions drifted over the ocean floor forming the present continents.

With the help of your Social Science teacher, watch the animation video of plate movements shown in PhET.in the IT@School Edubuntu.

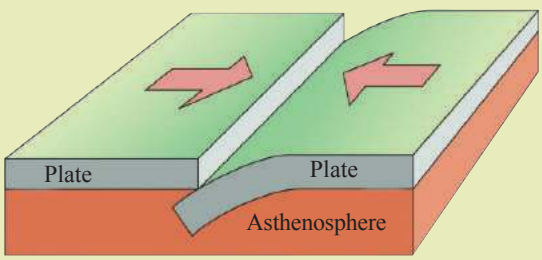
Look at the following diagrams (Fig.2.8 a, b, c) and find out the different types of plate margins created by the movements of the lithospheric plates.

a.



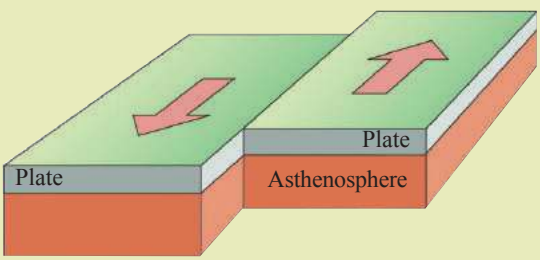
Plates move away from each other : Divergent margin

b.



Plates move towards each other : Convergent margin

c.



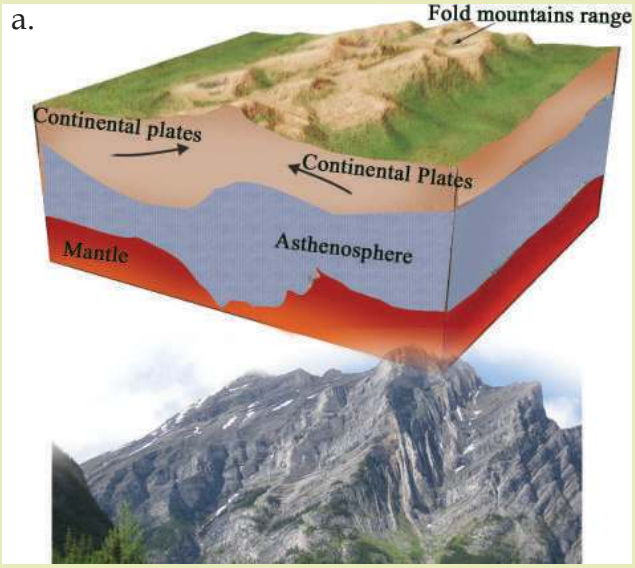
Plates slide past each other : Transform margins (Shear margins)

Fig. 2.8

Diverse landforms are created along the plate margins by the movements of plates.

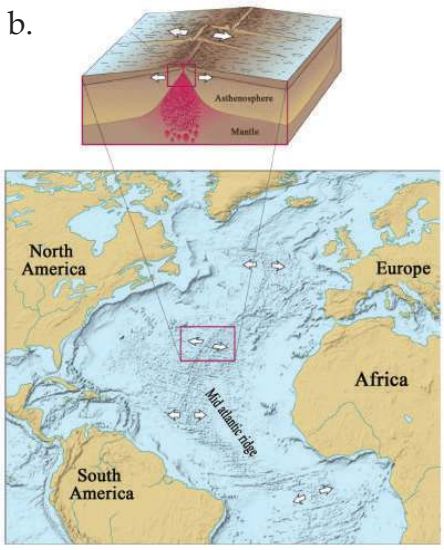
The following are the pictures of some landforms formed due to plate movements (Fig.2.9 a, b).

a.



•Convergent margin
Fig. 2.9 a

b.



•Divergent margin
Fig. 2.9 b

Convergent margins

Fold mountains

The rock layers may undergo folding due to the compression of lithospheric plates along convergent margins. Mountain ranges so formed are called fold mountains. The Himalayas, the Alps, the Andes, the Atlas, etc. are fold mountains.

Haven't you noticed the distribution of fold mountains in Fig.2.9a? Fold mountains are formed along the convergent margins. For example, the Himalaya is a fold mountain range formed between the Indian plate and the Eurasian plate.

Identify the plate margins where the world's major fold mountains are formed?

If there is any difference in density between the plates along a convergent margin, the denser plate will submerge under the lighter one. These zones are called subduction zones. Ocean trenches are developed in subduction zones. The Challenger Deep in the Pacific Ocean is an example. Identify the plates responsible for this.

Divergent margins

Observe the diagram (Fig.2.9b) and identify the type of plate margin between the African plate and the South American plate.

A 14000-km long north-south oriented mountain range has been formed in the Atlantic Ocean. This mountain range known as the Mid-Atlantic Ridge has been formed as a result of the divergence of the above mentioned plates. Magma comes out through the gap formed due to the divergence of plates and solidifies to form mountains. These types of mountains are known as Mid Oceanic ridges.

Sea floor spreading and the age of the rocks

New ocean floor is continuously being created as a result of magma that comes out through the divergent margins and solidification along the edges of the plates. This results in the phenomenon known as sea floor spreading. This is the reason that, rocks older than 200 million years are absent along the seafloor. But it has been discovered that most of the continents are older than 2000 million years.

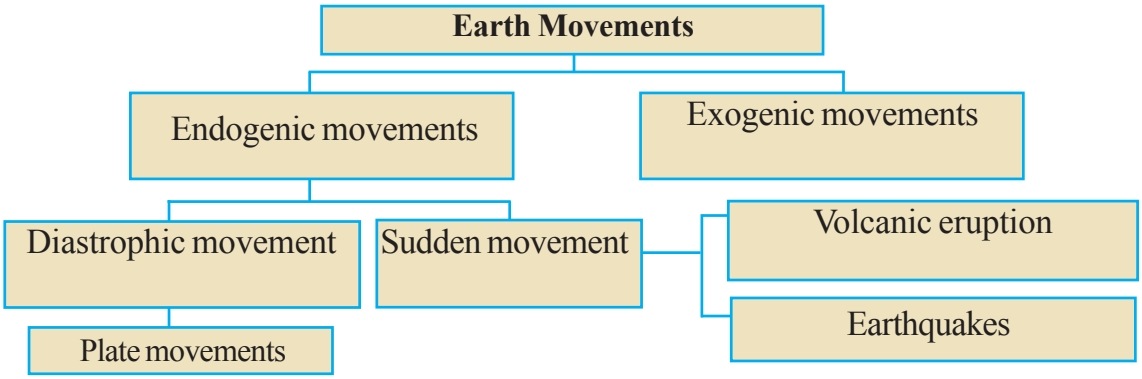
Transform margins

Landforms are not generally created along the margins where the plates slide past each other. But such margins are fault zones. The San Andreas Fault Zone in North America is an example (Fig.2.9 c).

As these plate margins are weaker than other areas, such margins are generally vulnerable to earthquakes, volcanoes, and faults.

The major relief features on the earth's surface such as the fold mountains, plateaus, and volcanoes are the result of plate movements. Let's see the other forces that bring about changes on the earth's surface.

Fig. 2.9 c



Most landforms on the earth's surface are the result of such earth movements. As a result of the earth movements, some regions on the earth's crust are either raised or lowered. Raising of the crustal portions are called uplift and lowering of the crust are called subsidence.

Earthquake

It was 25 April 2015. I was walking along the streets of Kathmandu with my friend. Suddenly the huge buildings in front of us began to collapse. The ground beneath us sank like a swing. It was difficult to escape from the shower of bricks and dust from the collapsing buildings. Trenches developed in the road making it impossible to run away. The hotel complex where we stayed previous day had turned into a heap of bricks. I realized that these are the rare moments between life and death.

My eyes were witnessing the unbelievable. Within a few moments the roads of the city have turned into trenches. Heaps of debris have formed in many parts of the city. The moment I thought I was going to faint, a stranger came through the dust and debris and held me in a tight embrace, smiled at me and walked away without uttering a word- the smile of suffering and survival.

What you have read is the earthquake experiences of Mr. Tshering Dorji, a traveller in Nepal.

You have understood that most of the earthquakes concentrate along plate margins.

What is an earthquake?

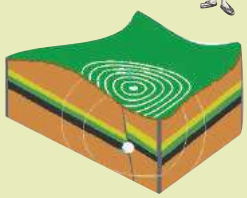
Rocks in the deeper part of the earth undergo displacement and faults due to plate movements and other causes. Under such situations, severe pressure is exerted on the earth's lithosphere and seismic waves are generated just like waves in a pond spreading in all directions when a heavy object falls into it. These waves create tremors on the earth's surface. These tremors are experienced by us as earthquake.

Apart from plate movements and faulting, earthquakes occur due to other reasons as well. These are

- Collapse of the roofs of mines
- Pressure in reservoirs
- Volcanic eruptions

The deep points inside the earth where the earthquake occurs are known as focus and the point vertically above it on the earth's surface is known as epicentre.

- *Identify and mark the focus and the epicenter in the given diagram.*
- *Collect the details of earthquakes that have occurred since 2005 and mark their epicenters on a world map.*



Three types of waves are produced from the focus during an earthquake: primary waves, secondary waves and surface waves. The surface waves are the most destructive ones. The seismic waves are recorded by an instrument called seismograph.

The Richter scale measures the intensity of energy released at the time of an earthquake. The earthquake that occurred in Chile has been the most severe one. It recorded an intensity of 9.5 in the Richter scale.

Tsunami

Tremour waves originating due to earthquakes, volcanic eruptions, meteor impact. etc. in the ocean floor generates huge sea waves rising to several metres. Such waves are called Tsunamis. It is the

Life Saved by Geography lessons

Hundreds of lives were saved by the 10 year old British girl named Tillysmith, who came with family to Phucat beach in Thailand for recreation.

Don't you want to know more?

The tourists in the beach eagerly crowded along the coast seeing the recession of sealevel. On seeing this phenomenon, Tillysmith thought about the giant Seismic sea-waves which she learnt from the geography class two weeks before. She immediately told her mother about this. She proclaimed that this is the phenomenon before the forthcoming Tsunami and that strong waves capable of washing out the coast would come soon. She warned the crowd to escape soon. As everybody ran away from there, it is the learning experience of Tillysmith helped in preventing a severe disaster.

coastal regions mainly affected by the disastrous effects of Tsunamis. The visible impact of Tsunami is the damage and destruction to life and property caused by it. Kerala coast was also affected by Tsunami on 26 December 2004. This Tsunami which havoced India and Srilanka was caused by the intense earthquake waves originated from Sumatra in Indian Ocean.

Tsunami surveillance and warning systems are widely in operation today. This system aims to identify the areas prone to Tsunami and also to extend warning to the coastal areas so as to prevent loss of life.

On behalf of the National Oceanic and Atmospheric Administration (NOAA), a real time Tsunami monitoring system named Dart (Deep ocean Assesment and Reporting of Tsunami) has been established at various locations. Satellite communication systems are being utilised for the purpose.

What are the measures we can take to mitigate the impact of Tsunamis?

- Recession in sea level may be an indicator of Tsunami. If so, move on to safer locations.
- Take official warnings seriously.
- Don’t arrive at self conclusion that the dangerous situation is over, wait for official declaration.
- Once trapped by Tsunami waves try to escape holding any floating materials firmly.

NCC, Red corss and other voluntary organisations has important role in disaster management activities in Tsunami affected regions. You can also participate in such disaster management operations.

Volcanoes

You have learnt that the plate margins are active with volcanoes. Look at the picture (Fig.2.12).

Haven't you noticed the hot molten rock that comes out through the fissures on the crust? Volcanoes are formed by such molten rock material coming out through the fissures along the plate margins.

Nearly 80% of the world's volcanoes are situated around the Pacific Ocean. This zone containing more than 452 volcanoes is known as 'the Pacific Ring of Fire'.

You know that volcanoes pose serious threats to life. But they are also useful in many ways.

Don't you want to know how they are useful to man?

- The soil formed by the weathering of lava rocks is fertile. Example : the black soil of the Deccan plateau.
- Volcanic ash is a good manure.
- Geysers are formed in many volcanic regions. Such regions are being developed as tourist centers. Example: the Old Faithful Geyser, Yellow Stone National Park - North America.

Is there any chance of Volcanic eruptions in Kerala?

Refer the publications and websites of Disaster Management authorities for the precautions to be taken during volcanic eruptions.

Let us assess

- Identify the different plate margins. Which are the associated landforms?
- Answer the following questions based on earthquakes.
  - How do earthquakes occur?
  - Which are the different types of seismic waves?

- Which one of the seismic waves cause maximum destruction on the earth's surface?
- Which is the scale used to measure the intensity of earthquakes?

- What do you mean by 'the Pacific Ring of Fire?
- How are volcanoes useful to mankind?

Extended activities

- Collect from Internet the maps showing the movements of lithospheric plates and include them in the digital album.
- Prepare a map of the 'Pacific Ring of Fire' and include it in the digital album.
- Collect information on the most destructive volcanic eruptions and earthquakes on the earth.

National Income

Given above are some news headlines related to national income. National income indicates the economic condition of a country. A higher national income implies economic progress of a country. Let us analyse in detail the important concepts related to national income and how it is calculated in India.

National income

In the previous classes we have learnt about the income of individuals and families as well as the source of their income. The amount of income earned by the members of a family through different sources during a year is the annual income of that family. Likewise, the total income received by a country in one year is its national income. It is the amount earned from the production of goods and services in a country during a year. This is received mainly from three sectors:

- Agriculture sector
- Industrial sector
- Service sector

Adding up the income from these three sectors, we get National Income. When we calculate the money value of goods and services produced in a country during a particular year, we get the National Income of the country for that year.

Why do we calculate national income?

National income is helpful in calculating the economic growth of a country and to compare the economic growth of different countries.

Country	National Income (in billion dollars)		
	2010	2013	2014
USA	16663.20	17348.10	17968.20
China	9490.80	10356.50	11384.80
Japan	4919.60	4602.40	4116.20
Germany	3746.50	3874.40	3371.00
United Kingdom	2678.40	2950.00	2864.90
France	2811.10	2833.70	2422.60
India	1875.20	2051.20	2182.60
Italy	2137.60	2147.70	1819.00
Brazil	2391.00	2346.60	1799.60

(Source : IMF world Economic Outlook, October 2015)

The above table shows the national incomes of a few countries during three years.

- *Find out the countries which have the highest and the lowest national income in 2014.*
- *Compared to 2013, which countries have achieved economic growth in 2014?*
- *Compared to 2013, which countries have failed in achieving economic growth in 2014?*

From this table, it is clear that compared to 2013, India has achieved better economic growth in 2014.

What are the other objectives of calculating national income?

- To assess the contribution of different sectors in the economy
- To study the problems faced by the economy
- To help the government in planning and implementing different projects.
- To find out the limitations and advantages of economic activities like production, consumption, and distribution.
-

Some important concepts of national income

We have discussed what national income is and the need for calculating it. Now, let us see a few concepts related to national income.

Gross National Product - GNP

Gross National Product is an important concept of national income. It is calculated on the basis of the final goods and services produced in a country. The products that are available for consumption are called the final product. For example, we manufacture shirts using raw materials such as cloth, thread, and buttons. Here, the shirt is the final product for consumption. The money value of final products is taken into account for calculating the Gross National Product. While calculating the money value of the shirt, the value of raw materials such as buttons and clothes are included. Thus, the money value of final goods and services produced is the gross national product. The GNP of a country is calculated for a particular financial year. In India, a financial year is from 1 April to 31 March.

Gross National Product considers only the final product. Find out more examples.

Gross Domestic Product - GDP

Gross Domestic Product is the most suitable concept of national income to analyse the contribution of sectors in an economy. The GDP of a country is the total money value of the final goods and services produced within the domestic territory during a financial year. The income of people working abroad and the profit of institutions and firms operating abroad will not be included while calculating the Gross Domestic Product. For example, suppose an Indian firm operates in America. The profit of that institution will be included in the Gross Domestic Product of America but in the Gross National Product of India. That is to say, while calculating the GDP of India, such income will be excluded.

Net National Product - NNP

If you purchase a computer and sell it the next year, will you get the same amount that you spent while purchasing it? Why? Similarly, with time, machinery and other things suffer from wear and tear. The cost incurred to remedy this wear and tear is termed as depreciation charges. The depreciation charges are taken into consideration while calculating the national income. When we deduct depreciation charges from the Gross National Product we get the Net National Product. Technically, the Net National Product is considered as national income.

Net National Product =
Gross National Product - Depreciation charges

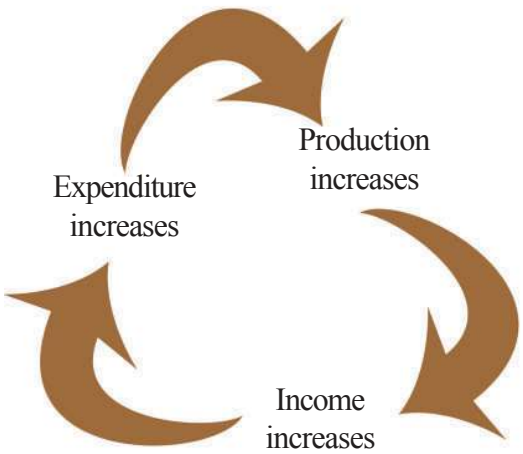
Per capita income

When we divide the national income by population, we get per capita income. It helps to know the economic position of a country and to compare it with other countries.

$$\text{Per capita income} = \frac{\text{National income}}{\text{Total population}}$$

How to calculate the national income.

The economic condition of a country is calculated on the basis of national income. It is necessary to increase production for economic prosperity. When production increases, the rewards of factors for production like land, labour, capital, and organisation also increases. The increase in rewards such as rent, wages, interest, and profit results in increased consumption and investment.



Production, income, and expenditure are interrelated. There are three methods for estimating national income:

- Product method
- Income method
- Expenditure method

Product method

Under the product method, the national income is calculated by adding up the money value of goods and services produced by the primary, secondary, and tertiary sectors. It is useful for assessing the contribution of each of these sectors towards the national income. It is also used to analyse which sector contributes the most to national income.

Income method

You know that income is the reward received for the factors of production. In income method, national income is calculated based on rent, wages, interest, and profit, which are the rewards for factors of production. This method is helpful in analysing the contribution of each factor of production to the national income.

Expenditure method

The expenditure method is used to estimate the national income by calculating the expenditure incurred by individuals, firms and government in a particular year. In Economics, just like consumption expenditure, investment is also considered as an expenditure. The summation of consumption expenditure, investment expenditure and government expenditure, gives the total expenditure.

Estimation of national income using any of the above three methods will give the same results.

Difficulties in calculating national income of India

The Central Statistical Office (CSO) is the official agency that estimates the national income of India. The estimation is done mainly for the purpose of planning and development activities of the government. It also helps to understand the nature of the employment sectors and the types of employment the people are engaged in. In India, we make use of the product, income, and expenditure methods to estimate the national income.

The assessment of national income is a tough job that is challenged by practical and ideational issues. Let us examine a few of them.

- Lack of reliable statistical data creates difficulty in estimating national income
- There is a chance of calculating the money value of goods and services more than once (double counting) while they pass through different stages of production.
- Services of housewives is not included in national income.
- The production of goods for self consumption is not included in the estimation of national income. Example - vegetable garden at home
- Ignorance and illiteracy of the people create problems in collecting statistical data.
- The practical difficulty in assessing the money value of services impede the correct estimation of national income

- Consumers seldom maintain records of expenditure incurred by them.

Attempts are being made to overcome these difficulties so that national income can be calculated more accurately.

Sectoral contribution to India's national income

The sum of income received from the primary, secondary, and tertiary sectors constitutes the national income of a country. The table below provides information about the share of these sectors to the Gross Domestic Product of India.

Share of different sectors in India's GDP (in %)			
Sector	**2015-16**	**2016-17**	**2017-18 (PE)**
Primary Sector	20.10	20.35	19.56
Secondary Sector	27.42	26.88	26.59
Teritiary Sector	52.48	52.77	53.85
Total	**100**	**100**	**100**

(Source : Central Statistical Office)

Answer the following questions based on the above table.

- *Which sector has made the highest contribution to India's GDP in 2015- 2016? What is the contribution of the same sector in 2017 - 18?*
- *Which sector has contributed the least to national income in 2016-2017 and 2017-18?*
- *What is the position of the industrial sector in 2015-16, 2016-17, and 2017-18?*

What other information can be drawn from the table?

The recent trends in the contribution of various sectors to the national income of India show an increase in the growth of the service sector. The secondary and teritary sectors have come to contribute more to the national income than the primary sector.

It is clear from the above table how much growth has taken place in the tertiary sector when compared to the other two sectors. As

a part of development, the rise in the establishment of educational institutions and hospitals along with the advancement in banking, insurance, and telecommunication have helped the growth of the teritary sector. With economic growth, people are more willing to partake in transport and tourism. Development of knowledge based industries has also helped in the growth of the tertiary sector.

Growth of knowledge sector

The knowledge sector is the sector which efficiently uses knowledge and technology to attain economic growth. Today, modern technology and information & communication possibilities have grown and developed into knowledge economy. Education, innovation, and Information & Communication Technology (ICT) form the basis of knowledge economy. In knowledge economy, production and consumption of intellectual capital take place.

Intellectual capital is an invisible asset. It is the collective knowledge of all the people in an enterprise or a society.

Today, as a part of the tertiary sector, growth of services based on knowledge is happening on a large scale. People giving expert advice on shares and taxes, software experts, etc. are a part of this sector. Top business executives, researchers, scientists, expert policy makers, economic experts, etc. strengthen to this sector. The government also gives priority to the development of the knowledge sector. Initiatives of Govt. of Kerala like the Infopark and Technopark are examples.

India has achieved immerse progress in information and communiction technology, so much so that today we are a global service provider in the field of software technology. As a result of this 'knowledge boom', India can enhance the welfare of the people through an increase in economic growth.

Some favourable factors which can help India grow further in this sector are:

- Human resource including technical experts who are well versed in the English language.
- Wide domestic market
- Strong private sector
- Development of science and technology

If all these possibilities are made use of, India can develop knowledge economy and thereby increase its national income.

Let us assess

- Which among the following is not an important objective in estimating national income?
  a. To study the economic problems
  b. To help in formulating government plans
  c. To calculate the population of a country
  d. To analyse the contribution of different sectors
- Which among the following concepts of national income considers the domestic territory of a country?
  a. GNP b. GDP c. Per capita income d. NNP
- Write short notes on the following
  1. Main concepts of national income
  2. CSO
  3. Knowledge economy and India
- Explain the main methods of estimating national income
- Write four limitations in estimating the national income of India.

Extended activities

- With the help of reading materials and the Internet, find out the different institutions in India that contribute to the knowledge economy. Analyse how they helped in increasing India's national income.
- Prepare a report on the growth of national income of world nations with the help of the Economic Survey 2014-15.

4

By the Hands of the Nature

Fig. 4.1

Observe the pictures (Fig 4.1). Sky-scraping mountains, extensive plains, uninterrupted waterfalls, scorching deserts, extensive plateaus

with hard rock terrain, various big and small valleys...how diverse the earth's surface is! The mountains, valleys, plains, plateaus, waterfalls, etc. forms the various landforms on earth. Most of them have evolved through millions of years. Let us examine the various landforms, the forces behind their formation, and their characteristics in detail.

CWVDVI

Landforms

You might remember the mention in the previous chapter that internal forces and external forces can make changes on the earth's surface.

River

Glacier

Seawave

Wind

The processes that help in the formation of landforms are called geomorphic processes. Varied landforms are created by the continuous processes carried out by external agencies like running water, wind, glaciers, sea waves, etc. Hence these agencies are often called geomorphic agents.

Glaciers

Thick masses of ice slowly move downhill in snow -clad regions. Such slow moving masses of ice are called glaciers.

Geomorphology

Geomorphology is the branch of geography which deals with the study of origin and evolution of landforms.

Observe the diagram (Fig 4.2).

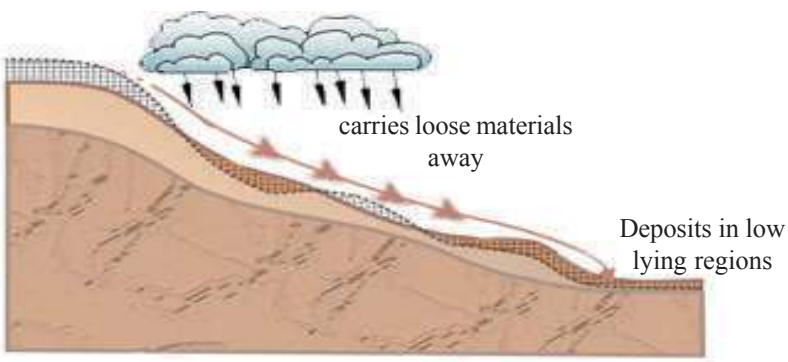


Fig. 4.2

Haven't you seen how rainwater carries away the loose rock particles from elevated regions and deposits elsewhere? (Fig 4.2)

What changes take place on the surface of the earth as a result of both the processes mentioned above?

You have learnt about the weathering processes causing the weakening of surface rocks on earth.

What are the different processes of weathering?

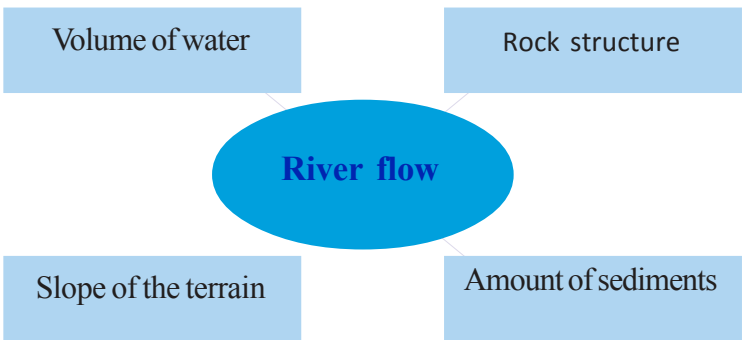
The transfer of rock particles formed by physical, chemical or biological weathering processes from one place to another by external agencies such as running water, wind, glaciers, sea waves etc. is called erosion. These materials will be deposited in low lying regions and this process is called deposition. Now you might have realised that external forces cause both erosion and deposition.

The erosion as well as deposition carried out by external agencies create varied landforms. Let us go through the various landforms created by such processes.

Along the river banks...

Rivers originate from the springs at high altitudes. Rills formed by rainwater may join together to form streams. A river develops through the merging of numerous such streams. The place of origin of a river is called its source and the place at which it discharges into the sea or to a water body is called the river mouth.

Let us see some factors determining the flow of a river.



The course of a river can generally be divided into three stages based on the difference in slope from its source to mouth.

- Upper course
- Middle course
- Lower course

Upper course is that part of the river where it rapidly flows down along steep slopes from the place of origin. The intensity of erosion is severe in this course.

Middle course is that stage of the river where it flows through gently sloping foothills. As the velocity of the flow decreases, the intensity of erosion declines and deposition begins.

Lower course is the stage where the river flows through the plains. The rate of deposition will be higher due to the slow pace of the river and the increase in the amount of sediments during this stage.

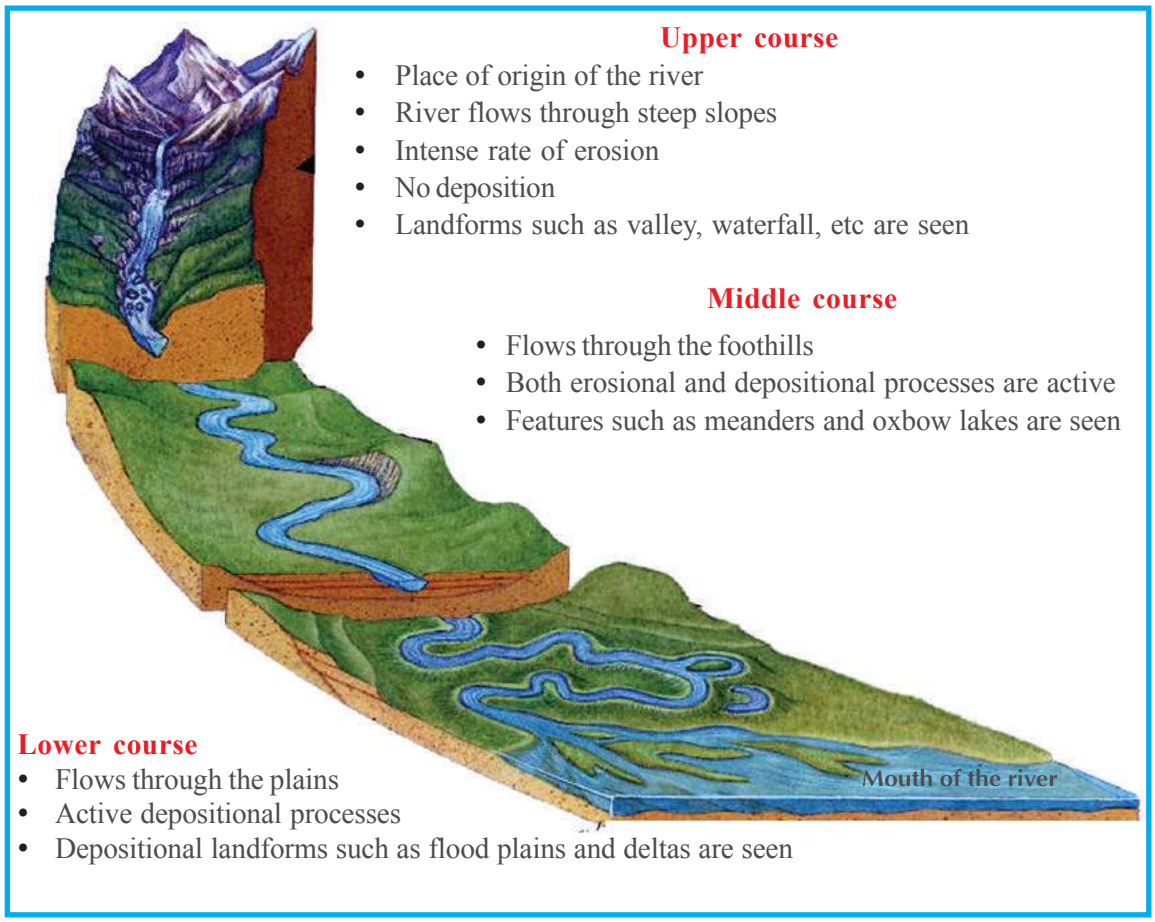


Fig. 4.3

Varied features are seen in the river course at every stage. Observe the diagram (Fig 4.3) and answer the following questions by analysing the features of these three courses.

- *In which stage is the intensity of erosion more?*
- *Which process results the landforms developed in the lower course?*

You have learnt the characteristics of a river right from the source to the mouth. The landforms created at different courses of a river are different in nature. Let us familiarise with a few erosional and depositional processes and the resultant landforms.

River erosion

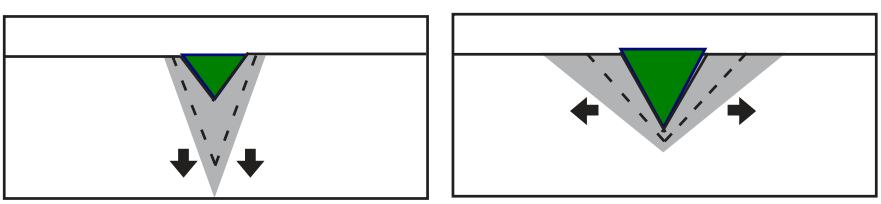
Velocities of water flow, slope of the terrain, and rock structure are the factors affecting the intensity of river erosion.

The rock particles like gravel, sand, pebbles, etc. carried by the river rub against the rocks along the bed and both the sides of the river. This results in the wearing down of rocks. Such erosion is known as abrasion or corrasion. Through these processes the river can polish even the hard rocks along its course.

You might have seen the pebbles as shown in the picture (Fig 4.4) along river courses. What could be the reason behind their round shape and polished surface?

Fig. 4.4

Fig. 4.5 indicates how the erosion alters the bed and valleys of the river



Erosion along the bed Erosion along the valleys

Fig. 4.5

River bed erosion is more prevalent in the upper course of the river.

To the landforms created by river...

See the picture (Fig 4.6). It is a deep gully formed as a result of erosion caused by running water.

Fig. 4.6

Why are such gullies formed along steep slopes?

Deepening of rivers occurs through intense erosion resulting from an increase in the velocity of water flow. The valleys take a distinct shape as a result of the intensity of erosion along the river bed. Look at the shape of a valley formed in this manner (Fig 4.7). Such valleys are called V-shaped valleys.

Fig. 4.7

Landforms created by the erosion and depositional activities of rivers are called fluvial landforms.

Fig. 4.8

Look at the given picture (Fig 4.8) of a waterfall. Waterfalls are generally formed at the upper course of rivers as a result of erosion. Soft rocks are easily eroded in the valleys where soft and hard rocks are found intermingled. This results in the formation of waterfalls.

The rate of erosion along the river bed decreases as the river leaves the upper course. However, lateral erosion dominates. The river flowing through comparatively gentle slopes takes deviation when the sediments or rockforms create obstruction to the flow. Such bending course of a river is shown in the picture (Fig 4.9). The sinuous curves formed along the river course are called meanders. Meanders are usually formed in the middle and lower courses of wide rivers.

Fig. 4.9

Observe the transformation happening to the meanders through further erosion and deposition (Fig. 4.10). Meanders may further curve through continuous erosion and deposition. Finally the river takes a straight course. Due to deposition the curves may get detached from the main river form isolated water bodies. Such water bodies are called oxbow lakes (Fig.4.11)

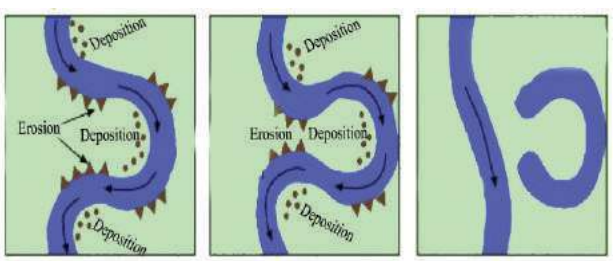


Fig. 4.10

Fig. 4.11

Fig. 4.12

Observe the pictures (Fig 4.10 and 4.11) to understand how oxbow lakes take birth from meanders.

Are flood plains a boon?

You might have seen the rivers overflowing their banks during rainy seasons. Flood water may cover extensive areas on both sides of the river. The deposition of alluvium along both the flooded banks may cause the formation of plains. Such plains are called flood plains (Fig 4.12).

Many of the famous civilizations have taken birth along such flood plains.

Flood plains are very significant as they are suitable for agriculture.

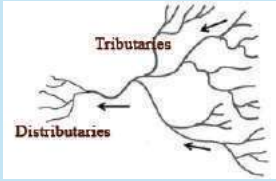
Prepare notes by discussing the agricultural importance of flood plains.
Hints: Soil, water availability, physiography

Alluvial plains of North India

The North Indian plains, known as the back bone of Indian agriculture, is one among the extensive alluvial plains of the world. The Ganga plain is the most extensive portion of this plain which occupies three main divisions- the Indus plain, the Ganga plain, and the Brahmaputra plain. Crops such as wheat, maize, pulses, sugar cane, jute, etc are cultivated here. This region, inhabited by a significant proportion of the total population of India, is the depositional plain formed by the North Indian rivers.

Tributaries and Distributaries

The streams and rivulets flowing into the main river are called its tributaries.



Absence of slope and large amount of sediments close to the river mouth cause the river to bifurcate into various branches. These branches are called distributaries.

You have learnt that the velocity of the river decreases when it nears the river mouth. Most rivers branch out to distributaries at this stage where the volume of both water and sediments is high. The sediments brought by the river are deposited between these distributaries forming almost triangular shaped landforms called deltas (Fig 4.13). These features are called deltas as they resemble the Greek alphabet Δ (Delta).

Fig. 4.13

Sundaris in the Sundarbans

The Sundarbans in West Bengal is the largest delta in the world. This delta region is formed by the deposition by the rivers Ganga and Brahmaputra. This delta is known as Sundarbans after the mangrove vegetation type 'Sundari' found over here. This region covered with mangrove forests is a major biodiversity hotspot in India.

Complete the table based on what you have learnt about the landforms created by rivers.

Landforms	Course of formation	Erosional/Depositional
• Waterfall	• Upper course	• Erosional
•	•	•
•	•	•

What you have seen till now is the erosional and depositional landforms created by running water on the surface of the earth. You know that a portion of the surface runoff gets percolated down the soil to form underground water.

Why is water called as universal solvent?

Most of the minerals present in the rocks get dissolved as water pass through them. This process is called solution. Erosion by underground water and the subsequent formation of landforms are the result of solution. Let us see how this takes place.

Landforms created by underground water

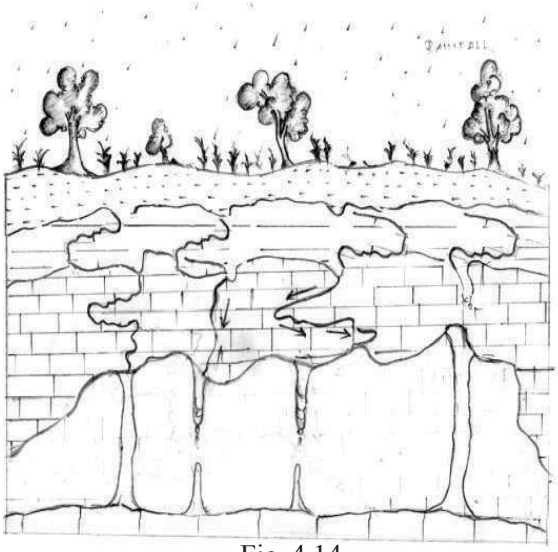


Fig. 4.14

Rocks like limestone easily dissolve in rainwater which percolates to form underground water. Hence the erosional and depositional landforms of underground water are mainly confined to limestone regions. Such landform features are generally called Karst topography. Let us look at a few landforms created by underground water.

Given diagram (Fig 4.14) is the sketch of a cave formed by the solution of limestone in underground water. The water with dissolved limestone in it drips from the roof of such caves. A portion of this mixture remains on the roof of the caves itself. This deposit of lime grows upside down due to this long continued process. They are called stalactites.

The deposit of lime on the floor of the cave also grows upward as a result of the deposition from above. These are called stalagmites. Stalactites and stalagmites do merge together with to form pillars.

Identify the landform created by the merging of stalactites and stalagmites from the picture (Fig 4.15).

Now you might have understood that the limestone caves are formed by erosion, whereas stalactites, stalagmites, and limestone pillars are formed by deposition.

The picture given (Fig 4.15) is the interior of a limestone cave. Collect more pictures of this kind with the help of the Internet.

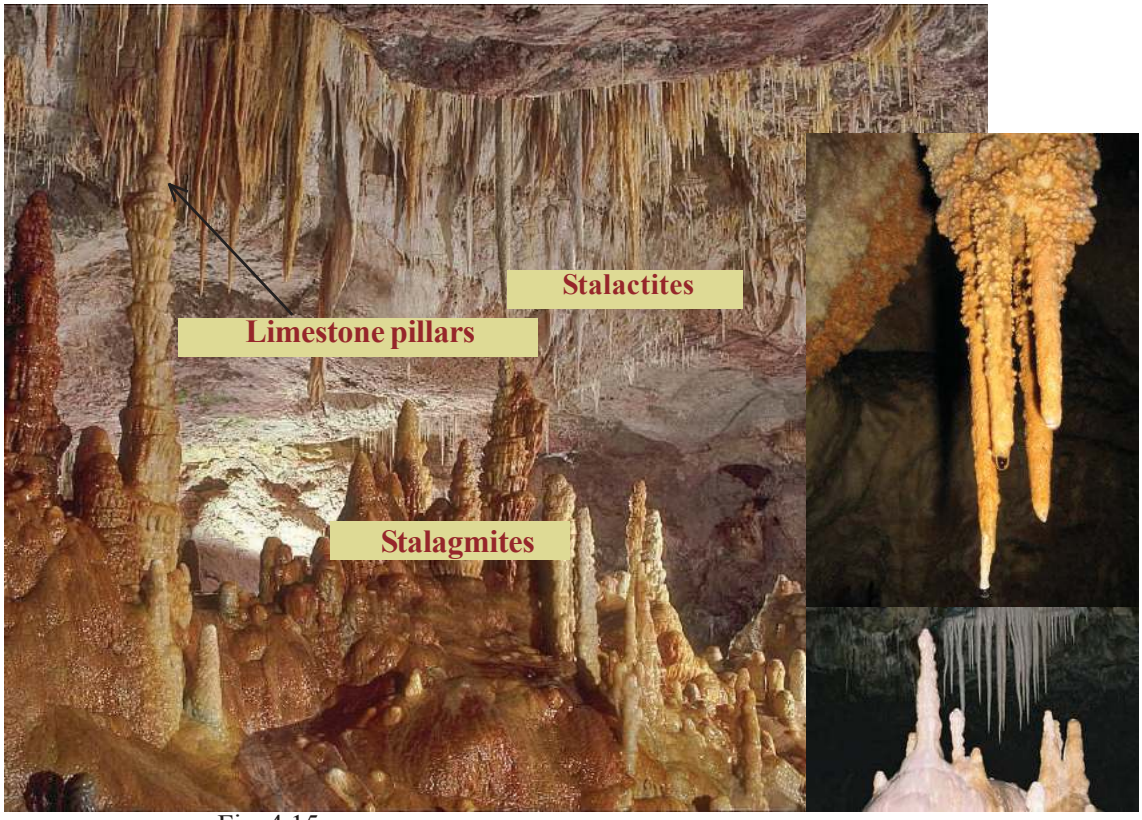


Fig. 4.15

The Borra caves near Vishakapatanam in Andhra Pradesh is an example for lime stone caves (Fig 4.16). The wonderful landforms have made the caves a tourist hotpot.

Fig. 4.16

Some coastal scenarios

Coastal landforms are created by the erosional and depositional processes carried out by waves.

Let us take a look at some landforms along coastlines.

The steep hillocks facing the sea are called sea cliffs. These steep structures are formed by the crumbling of the sea-facing slopes

Fig. 4.17

due to wave erosion. Picture (Fig 4.17) given is that of a sea cliff at the Varkala beach in Thiruvananthapuram district.

The strong blast of sea waves on the rocky coasts causes the wearing down of rocks. As a result of such abrasion by waves, isolated rock pillars are formed from coastal rocks. Such pillar like rocks standing upright along the coastline are called stacks. Picture (Fig. 4.18) given is that of stacks found along the coast of Thalassery in Kannur district.

Fig. 4.18

How do these stacks withstand the strong wave erosion?

Fig. 4.19

Beaches are formed as a result of the deposition by waves. Beaches are depositional landforms along the coastlines formed with sand, gravel, etc. (Fig 4.19).

You might be aware of the tourism prospects of a few prominent beaches in Kerala like Kovalam, Sanghumugham, Varkala, Cherai, Kozhikode, Muzhappi-langad etc.

Locate the districts in which the beaches of tourism importance found in Kerala. Collect pictures of the same from the Internet and include them in your geography picture collection.

Try to get first hand experience of the diversified coastal landforms along the extensive coastline of Kerala during your study tour.

Along the sandy stretches...

Look at the picture (Fig 4.20). List the features that distinguish deserts from other places.

Fig. 4.20

- High temperature
-
-

Which is the major geomorphic agent creating landforms in deserts?

Landforms created by wind are mostly seen in deserts.

Observe the picture (Fig 4.21). You can see the removal of sand particles by strong winds. The strong whirl winds carry away the dry desert sands from one place to another. This process of wind erosion is called deflation.

Fig. 4.21

As a result of the continued erosion caused by sand and other rock particles carried by strong winds, rocks in deserts get worn down. This process of wind erosion is called abrasion. Fig. 4.22 shows here is of a rock formed in this manner. Such

Fig. 4.22

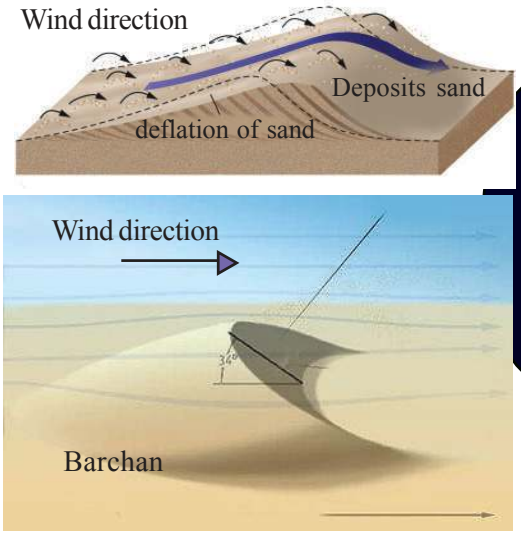


Fig. 4.23

rocks seen in deserts resembling mushrooms are called mushroom rocks.

What could be the reason for the increased erosion at the bottom of the rocks as shown in Fig. 4.22?

The sand dunes formed in the deserts are a result of the deposition by wind. The sand dunes commonly formed in crescent shapes are called barchans (Fig 4.23).

Illustrate the change in orientation of the barchans if the wind blows from the opposite direction.

Think and find out...

Find out from the Internet the only continent where the deserts are absent.

The above mentioned landforms are not seen in our state, even though we get regular winds. Why?

On the snow - clad mountains...

An extensive snow field is shown in the picture (Fig 4.24) Such snow fields are formed by continuous snowfall extending over years. The snow-covered mountains extend over vast areas and have kilometre-thick massive ice sheets. These slowly crawl down from the regions of their formation. Such slow

Fig. 4.24

moving mass of ice is called a glacier. Sand and other rock particles are also carried down by these moving masses of ice. The rock particles spiked to the bottom of these glaciers rub against and polish the surfaces over which they move. This causes the formation of various glacial erosional landforms.

Glacial landforms are generally confined to the high mountain ranges and the poles.

The movement of a glacier along the mountain slope is depicted in the given picture (Fig 4.25). Observe the changes occuring to the valley at different stages. Different types of valleys as shown in the pictures are formed by glacial erosion (Fig 4.26 and Fig 4.27). Arm chair like valleys so formed are called cirques (Fig 4.26).

The erosion caused by the continuous movement of glaciers along the valleys carves out steep sided and flat bottomed U-shaped valleys (Fig 4.27).

The sediments carried down by the glaciers will be deposited in various parts of the valley. These depositional features by glaciers are called moraines.

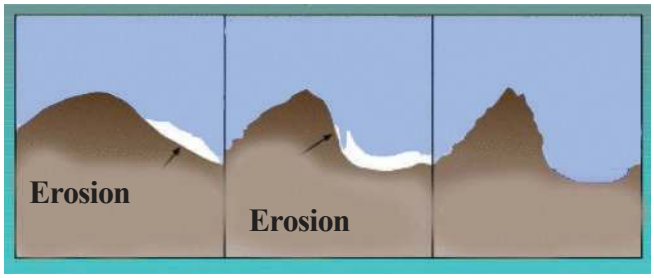


Fig. 4.25

Fig. 4.26

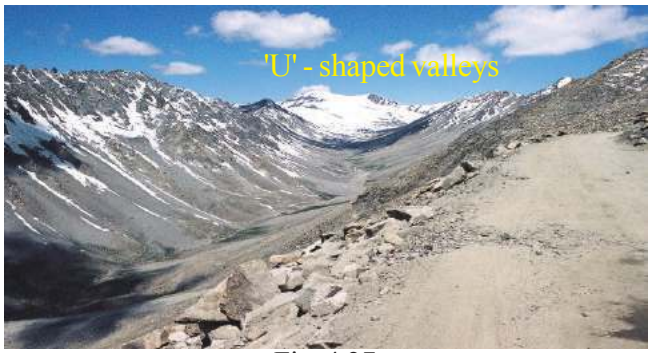


Fig. 4.27

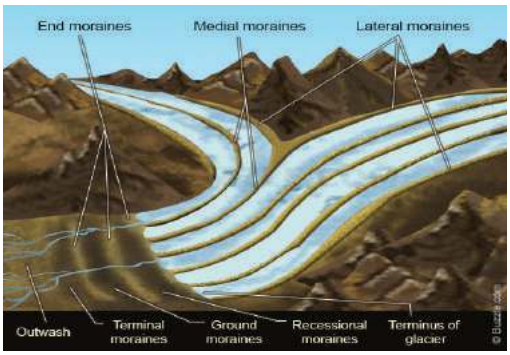
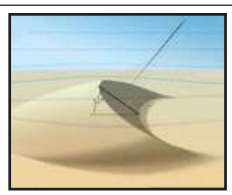


Fig. 4.28

Observe the diagram (Fig 4.28) and identify the various portions of the valley in which moraines are formed.

- Along the sides of the valley
-
-

Complete the given worksheet in the light of the information gathered from this chapter.

Pictures	Name of landform	Geomorphic agent	Process of formation (erosional/ depositional)
			
			
			
			
			
			

The landforms you have familiarised are those created by erosional or depositional work by external forces. There are a number of other landforms as well on the earth's surface.

Fig. 4.29

The elevated regions are levelled down by erosion and low lying regions are filled by deposition. These processes are called degradation and aggradation respectively. The processes together are generally called gradation as both level the surface of the earth.

The surface of the earth is subjected to continued changes due to various external forces. Some of these changes occur rapidly while some occur slowly. The results of slow movements can be perceived only through observations over a long period of time.

Look at the pictures (Fig 4.29). You might be familiar with such activities. These pictures indicate the role of human activities in bringing changes to the earth's surface. List such activities.

- Reclamation of agricultural fields
-
-

Are these natural gradation processes?

Conduct a seminar on the topic 'The role of human activities in changing the surface of the earth.'

Points to be included are:

- Unscientific construction practices
- Consequences
- Local examples

You have learnt from the unit that the surface of the earth is subjected to continuous changes. The role of human beings in

Let us conserve our surroundings for future

Hills and mountains are sources of fresh water - Protect them

bringing about changes on the earth's surface is significant. The impact of man on environment is ever increasing with the improvement in technology. Let us retain the harmony of nature that encompasses the soil, humans, trees and all for the future generations as well.

Let us assess

- Describe the characteristics of different stages in course of a river.
- Compare the V-shaped valleys with U-shaped valleys based on processes of formation.
- List out the agricultural and environmental significance of deltas and flood plains with examples.
- Illustrate the formation of mushroom rocks with the help of a diagram.
- Explain the formation of any two erosional landforms created by glaciers (with the help of diagrams)
- Prepare a table showing the erosional and depositional landforms created by any three external forces.
- 

A

B

Identify the landforms shown in the pictures and explain how they are formed.

Extended activities

- Identify the various fluvial and coastal landforms during the study tour and include it in your tour report.
- Prepare a geographical picture album by including the pictures of various landforms, geomorphic agents, artificial gradation processes, etc. from the field or from the Internet.
- Draw diagrams of various landforms on chart papers and display them in the classroom, along with explanatory notes on each of them.

5

Ocean and Man

What you see are a few glimpses of human life. There is hardly anyone who does not depend on the oceans in one way or the other.

When viewed from the space, the earth looks like a vast expanse of water. The continents appear as landmasses projected in between. Nearly 71% of the earth's surface area is covered with water. Land is confined

to the remaining 29%. Oceans occur between the land masses. The major oceans are the Pacific, the Atlantic, the Arctic, the Antarctic and the Indian Ocean.

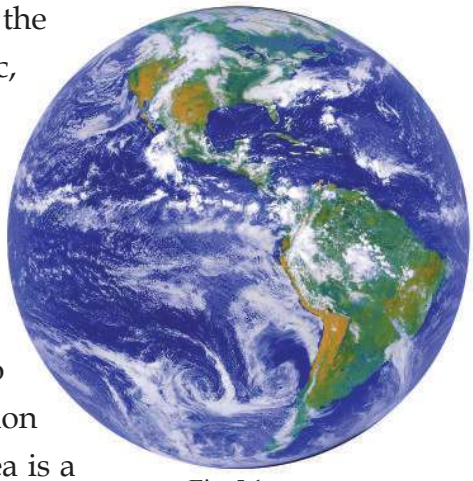


Fig. 5.1

Each of the above oceans contain bays, straits and several seas. The portion of the sea surrounded by land on three sides is called a bay. The narrow stretch of sea between two landmasses is kown as strait. Sea is the portion of an ocean close to the land. The Arabian Sea is a part of the Indian Ocean.

Oceans at a glance

Ocean	Basic information
The Pacific Ocean	• Total area: 165.2 lakh sq.km. • Average depth: 4280 m. • Challenger Deep is the deepest point in the Pacific Ocean (11034m).
The Atlantic Ocean	• Total area: 82.4 lakh sq.km. • Average depth: 3700 m. • Deepest point: Puerto Rico trench (8618 m) • A 14000 km long mountain range known as the Mid Atlantic ridge exists along the middle of this ocean.
The Indian Ocean	• Total area: 73.4 lakh sq.km. • Average depth: 3960m. • Deepest point: 7725 m (Warton trench)
The Arctic Ocean	• The smallest ocean • Total area: 14.09 lakh sq.km. • Deepest point: 5180 m
The Antarctic Ocean	• The ocean surface is frozen • Also known as the 'southern ocean' • Total area: 32 lakh sq.km.

Identify the location of each ocean from the world map.

List the straits, bays, and the seas of each ocean with the help of an atlas.

Islands and peninsula

Islands are land surrounded by sea on all sides. The landmasses surrounded by sea on three sides are called peninsula.

The following table contains the names of some major islands and peninsulas in the world. With the help of an atlas find out the names of the oceans to which they belong.

Islands	Peninsula
Sri Lanka, Japan, Philippines,	Indian Peninsula
Madagascar, Maldives, Victorian Islands,	Arabian Peninsula
British isles, Greenland, Iceland,	Alaska Peninsula
Sumatra, Newfoundland, New Guinea,	Labrador Peninsula
Baffin, Cocos	Scandinavian Peninsula

Temperature, salinity, and density are the important characteristics of sea water. These are not uniform in all oceans. Let us find out the reasons for this.

Distribution of ocean temperature

Temperature varies in accordance with latitude. The highest temperature is recorded between 10° latitudes on either side of the equator. The average temperature here is about 27°C. As you move away from the Equator, temperature decreases considerably. The temperature falls to about 10°C in the mid latitudes and up to -2°C in the polar regions. What is the reason for the variation in temperature over different latitudinal zones?

Variation in the amount of insolation received on the earth is the major reason for this. The ocean currents and winds also influence the temperature of sea water. Analyze the variation in temperature

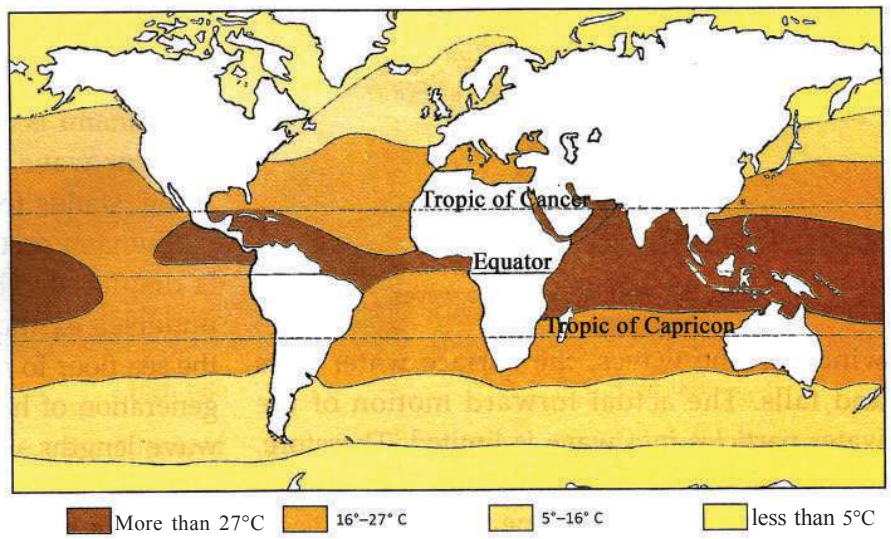


Fig. 5.2

along different latitudes from the Fig. 5.2.

Salinity of sea water

Sea water is salty. The average amount of saltiness of sea water is 3.5%. This water can be purified by separating the salt from it.

The concentration of salt content in sea water is known as salinity. It is expressed as the grams of salt present in 1000 grams of water. The average salinity of sea water is 35 parts per thousand and is recorded as $35\,^{0}/_{00}$. This means that 35 grams of salt is present in 1000 grams of sea water. Salinity is not uniform across oceans.

Chemistry of sea water

Major portion of the saline water contains sodium chloride (common salt). It also contains magnesium chloride, mangnesium sulphate, calcium sulphate, potassium sulphate, calcium carbonate etc. Most of them can be commercially extracted. But some of these occur in only rare quantities and hence their cost of extraction is expensive.

The conditions leading to variation in salinity are given below:

- Salinity will be more in land-locked seas.
- Salinity increases in areas of high evaporation.
- Salinity decreases in areas where snow melt water reaches in large quantity.
- Salinity decreases at river mouths.
- Heavy rainfall leads to reduction in salinity.

Salinity varies from ocean to ocean and at different depths.

The equatorial regions record high salinity as compared to the polar regions. Why?

Why does salinity increase in land - locked seas?

Why is salinity less at river mouths?

Density of sea water

The density of sea water is not uniform everywhere. This is due to the variations in salinity and temperature of sea water. Density decreases as temperature increases; and it increases as salinity increases. You have understood that the temperature, salinity and the density of sea water are not uniform everywhere. These variations lead to movements of sea water. Let us look into the movements of sea water and the reasons thereof.

Movements of sea water

Waves, tides, and ocean currents are the movements of sea water.

Waves

Look at Fig. 5.3. The up and down motion of the water along the surface of the sea is called sea waves.

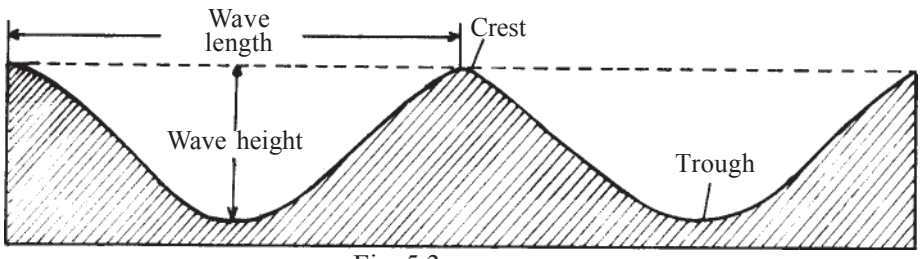
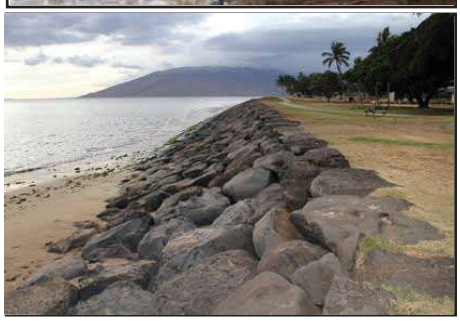


Fig. 5.3

The summit of the wave is known as wave crest and the bottom part is known as wave trough. The distance between two adjacent crests is the wave length and the vertical distance between the crest and the trough is the wave height.



The friction exerted by winds on the ocean surface is the reason for waves. As the speed of the wind increases, the strength of the waves also increases. Strong waves generated as a result of severe winds such as cyclones cause shelving of shores. You might have read the news in dailies regarding the sea surges during the south west monsoon season. These sea surges cause severe damage along the shores. Some measures are taken to prevent damage and to protect the lives of people living in the coastal areas.

- Depositing boulders along the seashore.
- Construction of interlocking concrete structures (*Pulimuttu*)
- Planting of mangroves.

The sand moved back and forth by the waves is deposited as sand bars due to the particles being blocked by each other. This is the solution by nature to protect the shores from sea surges. You have heard of the tsunami

waves that hit the Kerala coast in 2004. The earthquakes and volcanoes on the ocean floor generate monstrous waves that are disastrous. Such sea waves are known as seismic sea waves or tsunami waves. These waves move at a speed of up to 800 km per hour.

Mud bank (*Chakara*)

Mud bank is a phenomenon that develops in the Arabian Sea during the onset or at the end of the monsoon season. Planktons grow luxuriantly in the turbulent muddy water along the seashore during the monsoon rains. Schools of fish such as shrimp, sardine, and mackerel arrive to feed on the planktons and the mud, giving fishermen a good catch. This phenomenon is known as mud bank.

Tides

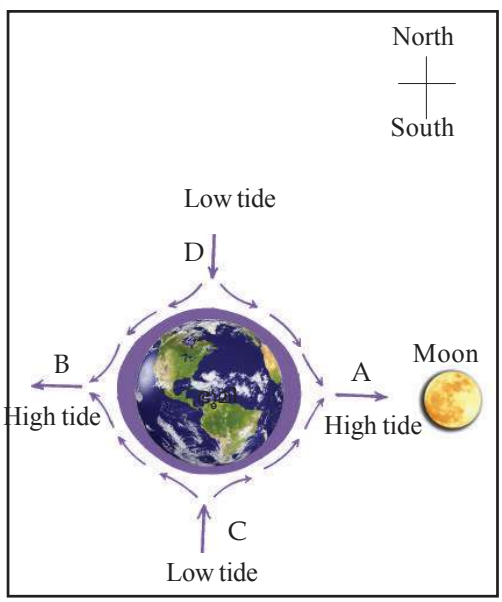


Fig 5.4 **Tides**

Tides are the periodic rise and fall of water level in the ocean. The rise in the level of ocean water is the high tide and the lowering of the water level is known as the low tide.

Let us look into the reasons for tides. Tides are formed as a result of the gravitational pull exerted by the moon and the sun along with the centrifugal force due to the earth's rotation.

Look at Fig.5.4. The water level on the part of the earth facing the moon rises. The rise in water level due to the gravitational pull exerted by the moon leads to high tide. You might have noticed that the water level at the opposite side also has risen. The centrifugal force due to the earth's rotation is the reason for the rise in water level here. It can be seen that the water level goes down at places located 90° away from the places of tidal influence. This is due to the draining of water towards the tidal regions. The phenomenon of fall of water level is known as low tide.

In addition to the gravitational pull of the moon, the gravitational pull exerted by the sun also causes tides. Though the moon is smaller than the sun, its attraction is more powerful than that of the sun, since it is closer to the earth.

Spring tides and neap tides

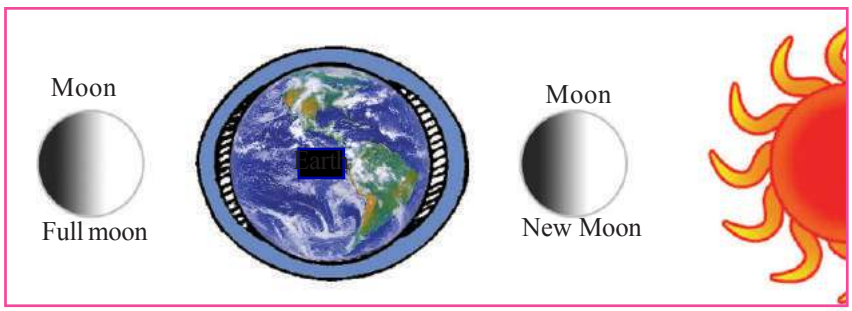


Fig. 5.5

Look Fig.5.5. The sun, moon, and earth come in a straight line on full moon and new moon days. The tidal force will be intense due to the combined influence of sun and moon. As a result the tides formed on these days will be stronger. These are known as spring tides. The moon and the sun will be at an angular distance of 90° from the earth after seven days from the full moon and new moon days. As the sun and the moon attract the earth from an angular distance of 90° the tides caused are weak. Such weak tides are known as neap tides. Note the positions of the earth, moon, and sun in the given diagram (Fig.5.6).

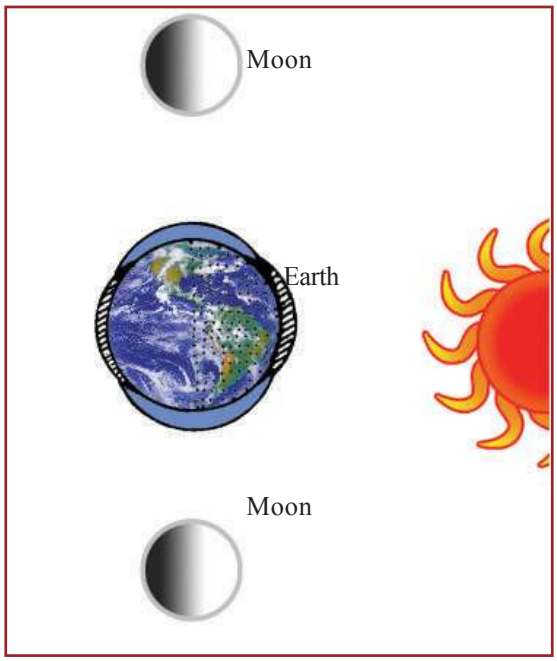


Fig. 5.6

Effects of tides

High tides and low tides have many effects. Let's have a look at them.

- The debris dumped along the sea shores and ports are washed off to the deep sea.
- The formation of deltas is disrupted due to strong tides.
- Brackish water can be collected in salt pans during high tides.
- The fishermen make use of the tides for going and returning from the sea in catamarans.
- Tidal energy can be used for power generation.
- Ships can be brought to shallow harbours during high tides.

Ocean currents

CX59X6

Ocean currents are the continuous flow of sea water from one direction to another. They can be classified as warm currents and cold currents. Warm currents are the currents that flow from the tropical or subtropical regions towards the polar or sub polar regions. Similarly cold currents are the currents that flow in from the polar or the sub polar regions towards the tropical or sub tropical regions.

The temperature and salinity of sea water varies from ocean to ocean. This difference leads to density differences in sea water. The difference in density is one of the factors that cause ocean currents.

Currents of the Pacific Ocean

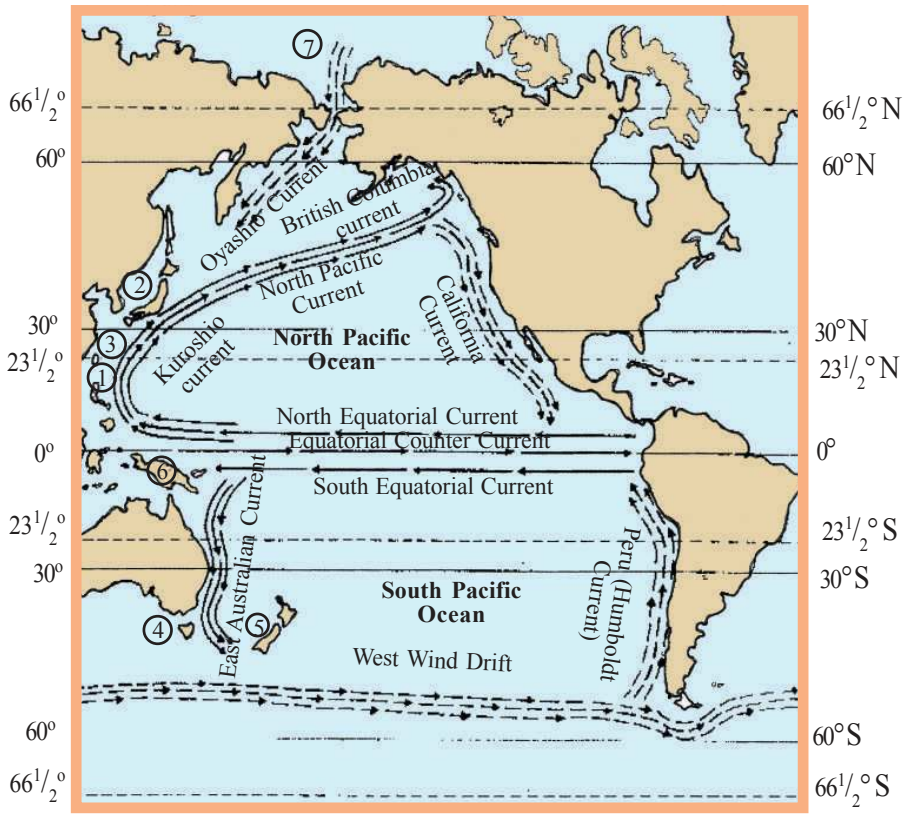


Fig. 5.7

Warm Current

Cold Current

1. Philippine Islands
2. Japanese Islands
3. Taiwan Island
4. Tasmania
5. New Zealand
6. New Gunea Island
7. Bering Strait

Complete the table using Fig. 5.7

Warm currents	***Cold currents***
• *North equatorial current*	• *California Current*
•	•
•	•
•	•

Currents of Atlantic Ocean

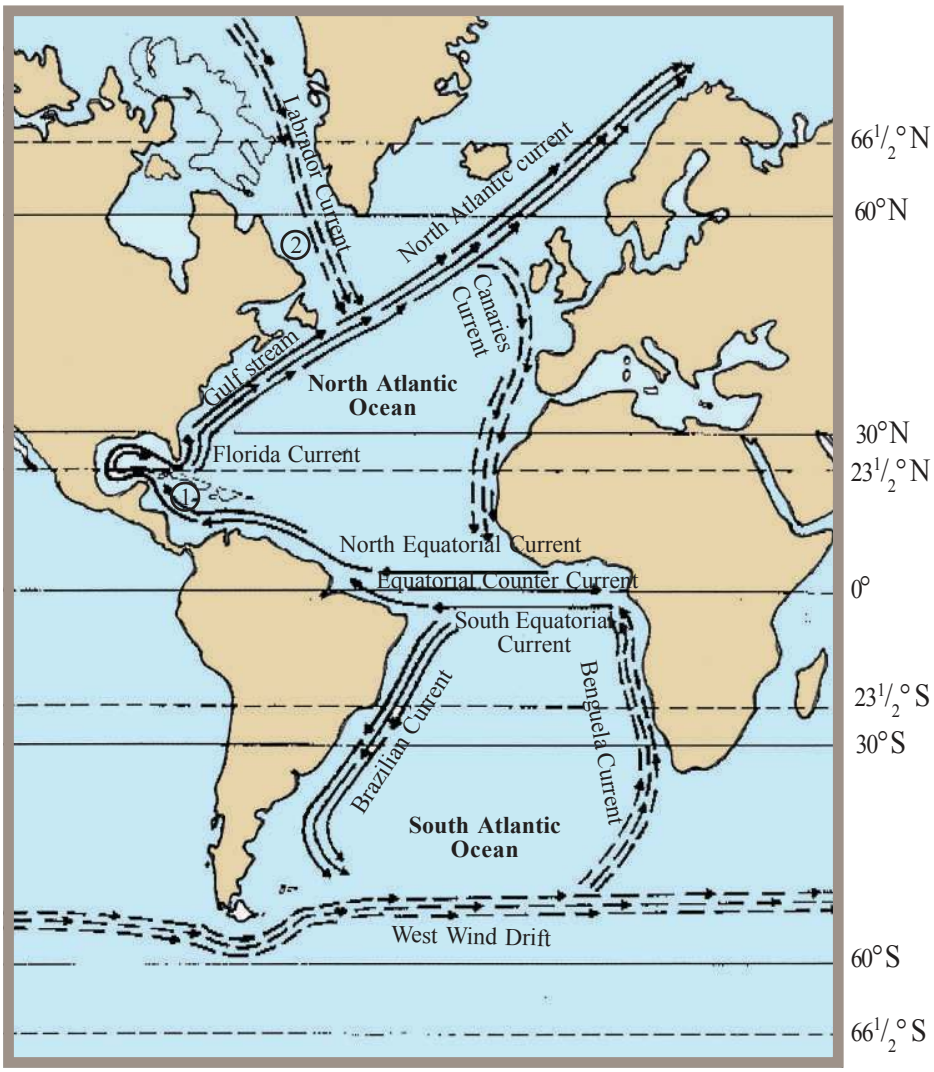


Fig. 5.8

Warm Current
Cold Current

1. West Indies
2. Newfoundland Island

List the warm and cold currents of the Atlantic Ocean.
Identify the continents near which they flow and prepare notes.

Currents of the Indian ocean

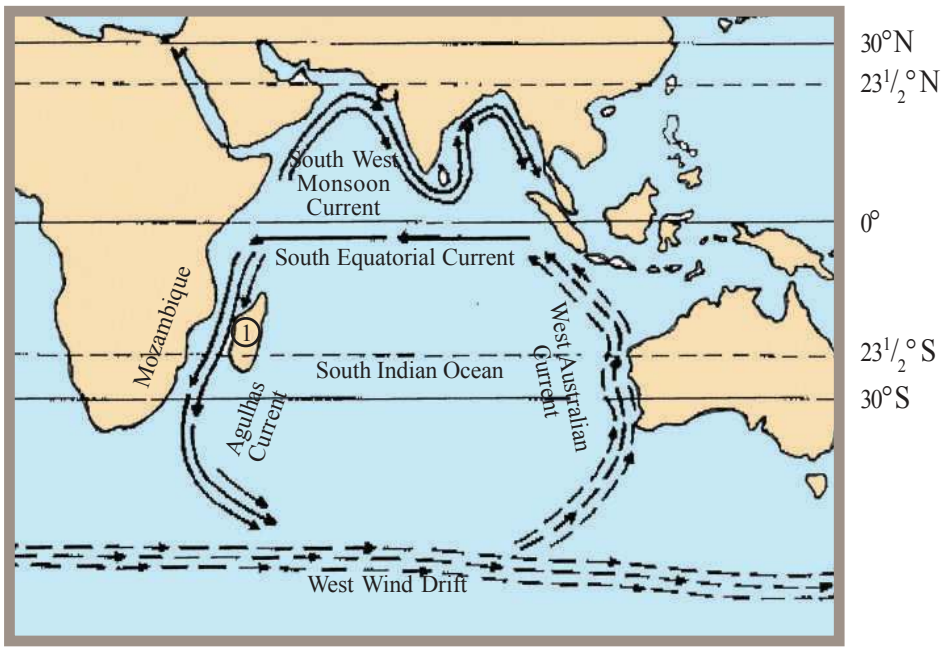


Fig.5.9

Warm Current
Cold Current

1. Madagascar

Complete the following table based on the currents of the Indian ocean.

Currents	*Warm/cold*	*Direction*
• *South equatorial current*	• *Warm*	• *From east to west*
•	•	•
•	•	•

Effects of ocean currents

- Influence the climate of coastal regions.
- Fog develops in the regions where warm and cold currents meet.
- The regions where the warm and cold currents meet provide favourable conditions for the growth of fish.

Grand banks

The Grand Banks are among the major fishing grounds in the world. It is situated on the shores of Newfoundland to the east of North America. As it is the meeting place of the warm Gulf Stream current and the cold Labrador current, it provides suitable conditions for the growth of planktons which in turn attracts fishes of many kinds.

Hope you are convinced of the importance of sea water movements in human life. Oceans are useful to man in different ways. Let us look at them.

Climate

Oceans have a decisive role in controlling the climate along the coastal regions. The sea breeze during the day and the land breeze in the night regulate the temperature over the coasts. Oceans play a part in the formation of weather phenomena like rain, wind, and cyclones. Generally the coastal regions have moderate climate, whereas severe summer and winter prevail in regions away from the sea.

Mineral deposits

Most of the minerals found on land are also found in the oceans. Apart from the deposits of common salt, bromine, magnesium chloride etc, the oceans contain iron ore, coal, petroleum and natural gas. Extraction of petroleum and natural gas from the oil field in the Arabian Sea about 162 km to the west of Mumbai shore started in 1974. This oil field is known as Mumbai High.

Power generation

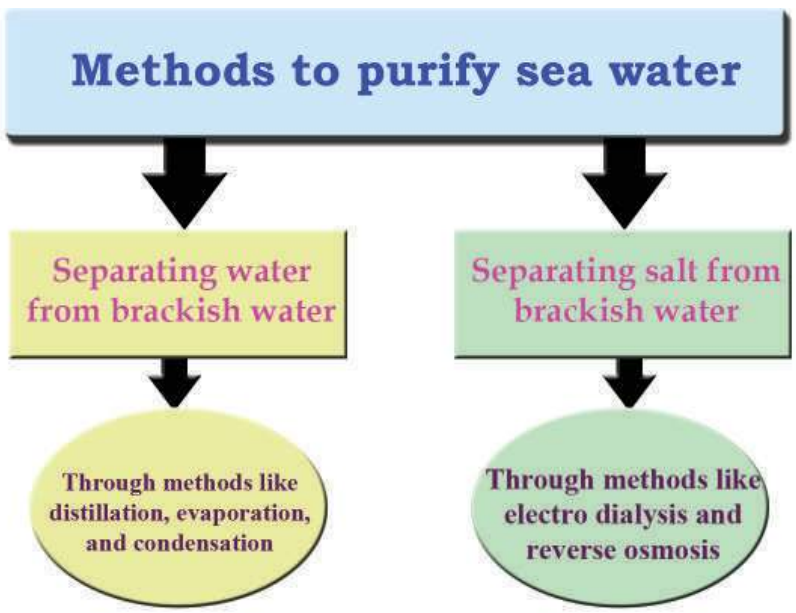
Waves and tides are used for the generation of electric power. The waves that strike the turbines on the shores produce electricity by turning them. Sometimes reservoirs are constructed for storing sea water. Seawater that enters the reservoir at high tides is released during low tide. The turbine moves at both instances and electricity is generated.

Oceans as a source of food

Fish is an important item of food. Japan, Peru, China, Norway, and the United States of America are the leading fishing nations. Marine organisms are the source of many medicines. They are used for the production of antibiotics, steroids, and vitamins.

Drinking water from the sea

We can purify sea water for drinking purposes. Which are the methods to purify sea water? Look at the following chart.



The ocean water is purified through distillation in some places in India. The people of Lakshadweep use water obtained through this process.

The following are the other uses of oceans to man. Find out more.

- Provide several job opportunities in various sectors like fishing, its processing, and marketing.

- Possibilities for tourism.
- Ocean transport is ideal for the transportation of heavy goods at cheaper rates from one continent to another.

You have learnt the uses of oceans. Conduct a seminar on the topic 'Influence of oceans in human life'.

Let us assess

- Which among the following statements is not related to the Indian Ocean?

  a. The southern part of this ocean extends up to the Antarctic Ocean.

  b. The average depth is more than that of the Atlantic Ocean.

  c. The Puerto Rico trench is situated in this ocean.

  d. It ranks third in area.

- Which among the following places record the least salinity? Why?
  - Land- locked sea.
  - Areas of heavy rainfall.
  - Areas of high evaporation.
- Is there any relation between the intensity of waves and the wave length? Sustantiate.
- High tide occurs twice a day. Explain this statement.
- Explain spring tides and neap tides with the help of diagrams.
- Oceans play an important role in human life and the environment. Justify.

Social Science II

Standard IX

Part - 2

Govt.of Kerala
Department of General Education

State Council of Educational Research and Training (SCERT), Kerala
2019

NT-813-1-SOC. SCI.-II-9-E-VOL.2

THE NATIONAL ANTHEM

Jana-gana-mana-adhinayaka, jaya he
Bharata-bhagya-vidhata.
Punjab-Sindh-Gujarat-Maratha
Dravida-Utkala-Banga
Vindhya-Himachala-Yamuna-Ganga
Uchchala-Jaladhi-taranga.
Tava shubha name jage,
Tava shubha asisa mage,
Gahe tava jaya gatha,
Jana-gana-mangala-dayaka jaya he
Bharata-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 my parents, teachers and all elders respect, 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.

State Council of Educational Research and Training (SCERT)
Poojappura, Thiruvananthapuram 695 012, Kerala
Website : www.scertkerala.gov.in, *e-mail* : scertkerala@gmail.com
Phone : 0471 - 2341883, Fax : 0471 - 2341869
Typesetting and Layout : SCERT
Printed at : KBPS, Kakkanad, Kochi-30

Dear students,

You might have got a colourful picture of the diversity of our earth as you went through the geography chapters from class five to eight. The chapters in class nine and ten are an enquiry into the reasons for such diversity. Such enquiries will lead you to more knowledge and the instinct to take an oath to "protect our earth". The knowledge of the relationship between economics and daily life will help you to live in the present day world. Different aspects of economics are incorporated in the textbook for this purpose. The learning activities relentless enquiries, and critical thinking will help you to open the window of knowledge.

The educational portal-Samagra and textbooks with QR code will make class room activities easy and interesting. The Textbook has been revised considering the National Skill Qualifications Frame work (NSQF), the disaster mitigation measures which is of contemporary relevance and ICT possibilities. Let this textbook be a pathfinder for you in becoming good citizens of the future.

With love and regards.

Dr. J. Prasad
Director, SCERT

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.

Content

Certain icons are used in this textbook for convenience

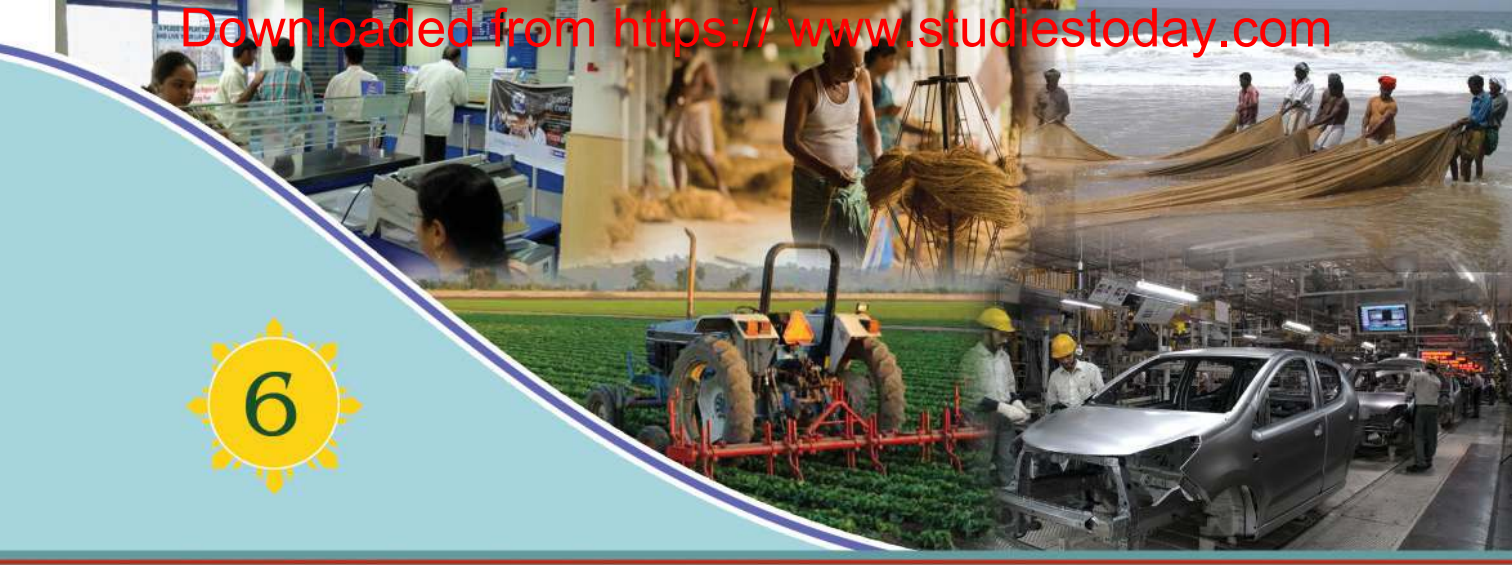
For further reading (Need not be subjected to assessment)

Questions for assessing the progress

Learning activities

Let us assess

Extended activities



6

Economic Growth and Economic Development

We have already discussed economy. Have you noticed the changes that happen in an economy? One of the noticeable changes is the increase in the agricultural output of the country. Likewise, other changes can also be found.

- Growth in construction sector
- Increase in industrial output
-

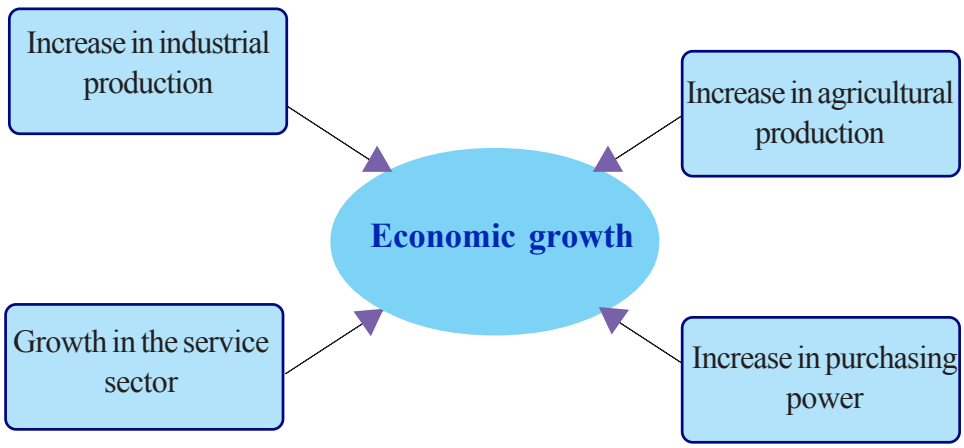
The above mentioned changes indicate economic growth.

Economic growth

An increase in the production of goods and services in an economy is called economic growth. Increase in the output of goods and services implies an increase in the national income of a country. In short, economic growth means an increase in the total output of a country compared to that of the previous year.

Let us see an example of economic growth. Assume that the production of paddy during 2016-2017 was 100 quintals. In the

year 2017 -18, the production of paddy increased to 110 quintals. It can be seen that there has been an increase of 10 percent in the production of paddy during 2017-18 compared to the previous year. This indicates economic growth. With economic growth, the country's capacity to fulfil the needs of the people also increases. Let us observe the following chart and understand how economic growth takes place.



It is generally believed that progress in the production sector creates more employment opportunities in a country. The income earned by the workers through employment increases their purchasing power. This improves the standard of living of the workers.

What changes can be found in an economy as a result of economic growth?

Economic growth rate

We have learnt about economic growth. Now, let us see how economic growth can be calculated. A measure called economic growth rate is used for this. Economic growth is calculated on the basis of increase in national income. Economic growth rate is the rate of increase in the national income during the current year as compared to the previous year.

Economic development

It cannot be claimed that economic growth alone improves the standard of living of the people. For an improvement in the standard of living, several other living conditions should be made available along with an increase in national income. What could they be?

- Availability of nutritious food for all
- Better health care facilities for all
- Educational facilities for all
- Availability of clean water for all
-

When improved living conditions are available to all, the standard of living of the people improves. Economic development takes place when the standard of living improves with economic growth. A country is said to have attained economic development when there is economic growth, and the benefit of which is accessible to all.

Economic development = Economic growth + Better standard of living

Some statements relating to economic growth and development are given below. Classify them into economic growth and development:

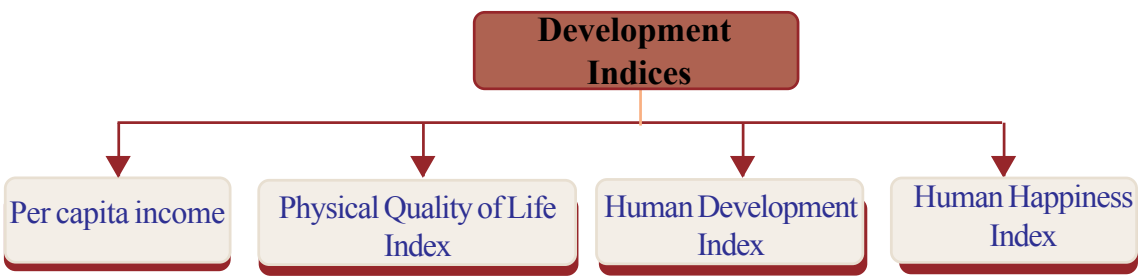
- *National income increased*
- *Production of wheat increased to 150 crore tonnes*
- *National Highways were developed into four lanes*
- *Skill training was provided to the labourers*
- *Implemented modern facilities in the health sector*
- *Basic facilities of educational institutions were improved.*

We have learnt that economic growth and economic development are interrelated concepts. At the same time there are some differences between the two. Some of the differences are given in the following table:

Economic growth	Economic development
• Increase in income and production	• Improvement in the quality of life
• Measured in terms of increase in national income	• Measured in terms of various indices such as Physical Quality of Life Index, Human Development Index, etc.
• Quantitative measure	• Qualitative measure
• Emphasis is purely on the economic factors	• Emphasis on socio - economic factors
• Growth happens in a short term	• Economic development happens over a long period of time

Development indices

Countries are classified into developed and developing nations. What is the basis of this classification? How can we identify whether a country has developed? There are certain recognised indices used to measure and assess economic development. Some of the important development indices can be identified from the chart given below:



Per capita income

Among development indices, per capita income was considered the simplest and was popularly used in the past. This is a conventional index of development. Per capita income is calculated by dividing the national income by population.

As per this index, two aspects must be analysed in order to find out whether a nation has achieved economic development.

- Growth rate of national income
- Population growth rate

Per capita income increases only when the growth rate of national income is more than the population growth rate. Increase in per capita income is an index of development. Per capita income helps in assessing the economic growth of a country as compared to the previous year. It is also useful in comparing the economic growth of different countries. Per capita income as a development index has certain limitations:

- Per capita income is an average income. For example, assume that the per capita income of a country is Rs. 40,000. This does not mean that each individual of the country receives an income of Rs. 40,000. It includes the population earning crores of rupees as well as those with very low income. So, this is merely a numerical calculation.
- While calculating economic development on the basis of per capita income, it cannot be claimed that improvement in the quality of living has been attained if the rich-poor disparity persists.
- Per capita income as a development index ignores factors like education, availability of nutritious food and health care facilities that improve the quality of living.
- Concerned only with economic growth, per capita income as a development index does not take into account social welfare and the equitable distribution of income.

Physical Quality of Life Index - PQLI

Physical Quality of Life Index came into use in 1979, when an index more scientific than the per capita income was found necessary.

Instead of using per capita income as a single criterion for development, the Physical Quality of Life Index takes into consideration the following three factors:

- Life expectancy
- Infant mortality rate
- Basic literacy

Physical Quality of Life Index views development in a different perspective. For example

- Increase in healthcare facility leads to better standard of living and economic development

- Introduction of new educational facilities improves quality of education and standard of living.

Though the Physical Quality of Life Index is a better measure of economic development than the per capita income, the fact that it ignores per capita income is a major limitation.

Human Development Index (HDI)

The Human Development Index is based on human development.

Let us see how human development has been defined by the United Nations Development Programme (UNDP). "Human development is the expansion process of opportunities that helps the people to improve their human resource".

There are various factors that help in attaining human development. Let us see a few:

- Improved educational facilities
- Better healthcare facilities
- Increased training

All the above mentioned factors contribute to human development. The attainment of human development helps in economic development.

Let us see a situation:

Better educational facilities

↓

Increase in the number of people receiving education

↓

Increase in employment opportunities to educated people

↓

Increase in income and purchasing power

↓

Better standard of living

Complete the following flow chart :

Establishment of new hospitals

Human Development Index is prepared on the basis of three main components. They are

- Per capita income
- Literacy and gross school enrolment rate
- Life expectancy

The value of Human Development Index lies between 0 and 1. While 0 indicates least development, 1 depicts the highest level of development. On the basis of the values of Human Development Index, countries are classified into three. Observe the table below:

Human Development Index values Index values	Category
0.8 - 1.0	High human development
0.7 - 0.799	High human development
0.550 - 0.699	Medium human development
0.550 and below	Low human development

It is the United Nations Development Programme (UNDP) that prepares and publishes the Human Development Index by classifying the countries on the basis of these values. Every year, since 1990, the UNDP publishes the Human Development Report.

Human Development Index values of some of the countries in 2014 are as follows. List them under the three categories of human development.

- *India - 0.624*
- *Haiti - 0.493*
- *Japan - 0.903*
- *Mali - 0.442*
- *Norway - 0.949*
- *Sri Lanka - 0.766*
- *Brazil - 0.754*
- *Bangladesh - 0.579*

9K55NN

The Human Poverty Index was developed by the United Nations Organisation (UNO) complementary to the Human Development Index. Its first report was published in 1997. Human Poverty Index is calculated on the basis of three components. They are longevity, knowledge, and a decent standard of living.

Human Happiness Index

Apart from the above mentioned development indices, the United Nations Organisation has recognised the Human Happiness Index as well. This index was originally developed by Bhutan and was later recognised by the United Nations Organisation (UNO).

Nine indicators are considered for the calculation of Human Happiness Index. They are as follows:

- Health
- Standard of living
- Conservation of nature and biodiversity
- Social life and neighbour relations
- Good governance
- Cultural diversity
- Education
- Effective use of time
- Mental health

India ranks 133 among the world nations, in the Human Happiness Index, 2018. The countries that rank first, second and third are Fintland , Norway and Denmark respectively.

Challenges faced by development in India

Development in India face several challenges. Among them, the most important is poverty. According to the Rangarajan Panel Report prepared for the Planning Commission of India in 2011 - 12, 29.5% of people were poor . Apart from poverty there exist other problems like illiteracy, malnutrition, economic inequality, death by starvation and unemployment in developing and developed countries.

Poverty in India

In India, poverty is measured on the basis of calorie intake. In rural areas, if the income is not sufficient to purchase food supplying 2400 calories per day then the person is said to be poor. In urban areas, this is 2100 calories. In India, states such as Uttar Pradesh, Bihar, Uttarakhand, Chattisgarh and Odisha have more than 35 % of population living in poverty.

Unemployment is another challenge faced by India. For more than 20 years, the trend seen is that inspite of an economic growth rate of 8-9%, the employment growth rate still remains at 1% or less. This means that economic growth of 8 - 9%, does not create employment opportunities.

Another challenge faced by development is the problem of inequality. There are three types of inequality:

- Economic inequality
- Inequality in income
- Regional inequality

All these types of harsh inequalities prevail in India. Economic inequality is measured on the basis of the share of the people in the total wealth of a country. Inequality in income, on the otherhand is based on the people's share in the income generated in a nation.

Regional inequality is the third type of inequality. For example, majority of the population in metropolitan cities have access to employment, better hospitals, good roads, clean drinking water, transport system, schools, colleges, industries, etc. But certain rural areas in states like Bihar, Uttar Pradesh, and Odisha lack these facilities. In those regions, there exist death by starvation, unemployment, lack of good roads and telecommunication

facilities, etc. Regional inequality signifies such a disparity in development among different regions.

Sustainable development

We have understood that the main goal of any economy is economic development. As the result of economic development, many changes take place around us. For example,

- Good transportation facilities
- Rapid urbanisation
- Increase in industrial units
-

It is clear that such changes improve the standard of living of people and economic condition of nations. However, the greed of human beings remains. It leads to over exploitation of resources and degradation of nature. Observe the pictures that depict some ill effects of urbanisation and commercialisation of agriculture.

Observe the pictures and identify the impact of man's greed on nature. Try to add more.

In the quest for economic growth, human intervention often results in the depletion of natural resources and degradation of environment. In order to construct buildings and roads, quarries are made and hills are levelled. This adversely affects the human life and local weather conditions. Though these activities lead to economic growth, they create problems for certain sections of the society.

What we require is a humane development approach which does not impact the environment. In other words, we need sustainable development.

The Brundtland Commission appointed by the United Nations Organisation has defined sustainable development as "development which meets the needs of the present without compromising the ability of future generations to meet their own need".

This view ensures social justice while utilising the natural resources.

The essence of this concept is that natural resources are not to be enjoyed by one generation alone. The future generation too has the right to use them. Sustainable development has three main goals.

- Environmental goals
- Economic goals
- Social goals

Observe the environment around you and identify the activities that challenge sustainable development. Add more points to the following list.

- Reclamation of paddy fields
- Intensive use of pesticides
- Polluting and wasting clean water
-
-

9KE1QB

All the above activities hamper sustainable development. Can you make a few suggestions for economic development that ensure availability of natural resources for future generations as well?

- Rain water harvesting
-
-
-

Let us assess

- Write down the differences between economic growth and economic development.
- Explain in detail, the limitations of per capita income as a development index.
- What are the components of Human Development Index?
- What is sustainable development? Write down a few suggestions to achieve sustainable development.
- What are the challenges faced by modern development initiatives?

Extended activities

- Prepare a report on the activities that hinder the sustainable development of India with the help of newspaper articles, the internet, etc.
- Identify the factors that hinder the economic development of your locality and suggest remedies.
- Collect newspaper articles and Internet resources related to India's HDI value, ranking and changes in the last 5 years.

7

For a Safer Future

What a rain ! Started at dusk and continued till dawn. Clouds rampaged in groups cross the sky. The facade of hills and forests darkened.

The isolated trees that stood atop Brahmagiri grew monstrous. The wind exploded shattering the clouds. Ice pellets showered like pebbles.

The cucumber, pumpkin and other creepers that had started to bloom were all destroyed...

This is the plight of Wayanad. Rain comes as soon as the crops begin to grow. Hailstones ruin everything. Winds also wreek havoc. Not even a single plantain will be left.

The fertile black water, coming from the heart of the forest, flow through the fields and compounds, before merging into Bavali.

- P Valsala

Nellu

(A translation)

The renowned novelist P Valsala describes Wayanad in these lines.

Cold and misty environment reign along the eastern regions of Kasaragod such as Ellukochi, Rajapuram and Ranipuram; the hilly regions of Kannur such as Iritty, Peravoor and Aralam; and places such as Kattappana, Nedumkandam, and Udumbanchola in Idukki. These places are home to large scale cultivation of tea and spice crops.

Apart from climate, topography, soil, agriculture, plants and animals, man is also a part of the environment.

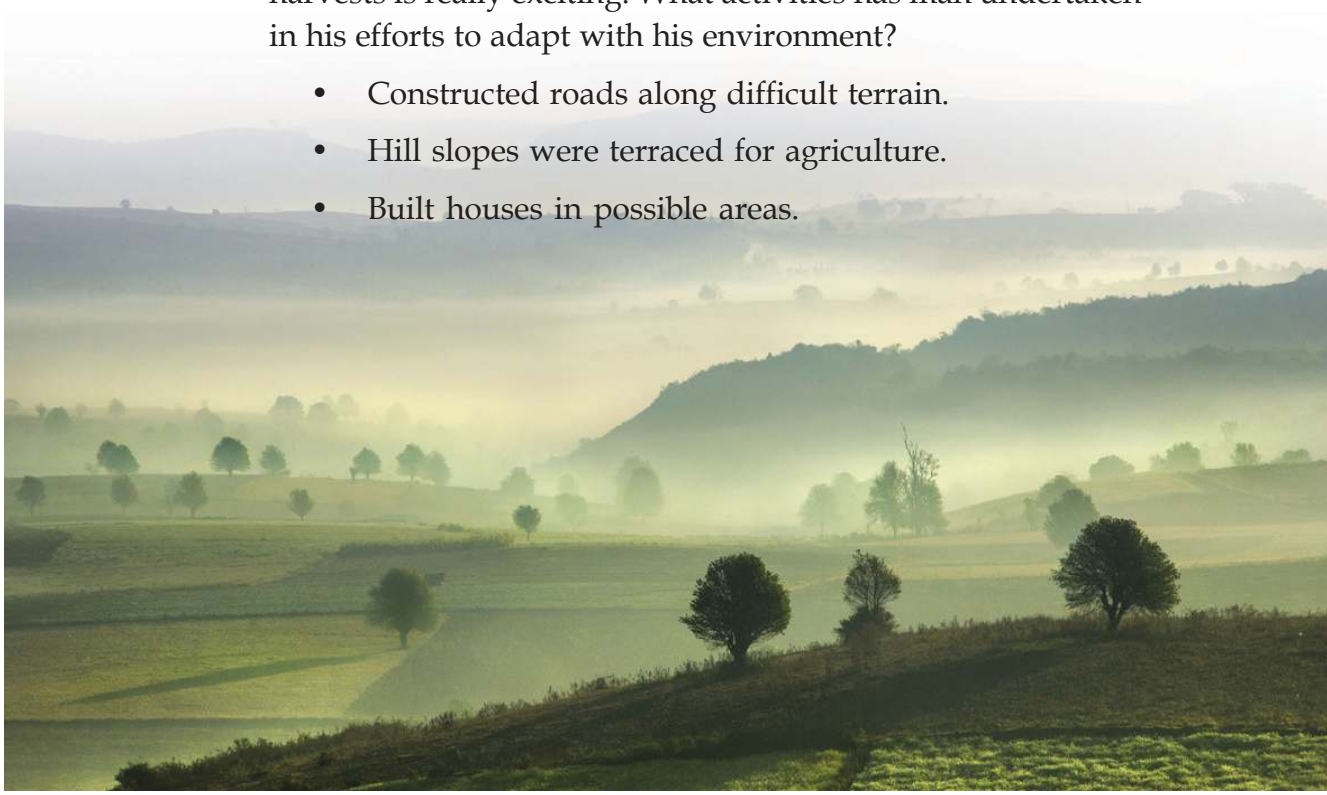
You have learnt that environment includes all living and non-living elements in the nature.

How far has the environment influenced the human life in the above places?

- Provides cool climate
- Determines the crops that can be cultivated

The tale of the people who cleared the jungles, fought the wild animals and diseases such as malaria, and reaped golden harvests is really exciting. What activities has man undertaken in his efforts to adapt with his environment?

- Constructed roads along difficult terrain.
- Hill slopes were terraced for agriculture.
- Built houses in possible areas.



Diversities in environment

Is the environment the same all over the earth? Look at the following pictures.

How is the human life in the deserts where dusty winds blow continuously? The style of dressing of the people of the Arabian deserts have close relation with the climate of that region. As water is scarce, agriculture is generally poor. Yet the region is densely populated and is quite prosperous as well. This is due to the rich petroleum deposits.

Fig. 7.1

Have you heard of places situated below sea level? Our Kuttanad (Fig.7.2) is an example for this.

Fig. 7.2

Such topography is very rare even in the world. People living amidst the backwaters and other water logged areas have reclaimed the land through immense toil. This lifestyle is centred on duck farming, paddy and coconut cultivation, etc. Today, tourism has also become an important activity in the life of these people.

Fig. 7.3

Didn't you see the picture (Fig. 7.3) of the snow-covered Siberian region? Limited resources and hostile climate are the factors that prevent human habitation here. Yet people live there. These examples might have convinced you that people set their life in accordance with the environment.

But over-exploitation and unscientific interventions will cause imbalances in nature.

Given below are a few questions related to the resource utilization in the above-mentioned environments. Record your inferences on them.

- *What if the petroleum in the Arabian region gets exhausted due to over-exploitation?*
- *The delicate balance of the environment in Kuttanad is on the verge of destruction. What will be the possible consequences?*
- *What are the measures adopted by the people of Siberia for their life?*

Environmental protection : What? Why?

Man is just one among the numerous organisms on earth. No other organism on earth depends on other organisms so much for its sustenance. The plants and animals in the environment provide us food, clothing, shelter, medicine, fuel, etc. Like air and water, soil is also important for survival. You have already learnt about ecosystem and food chain. Man is the last link in the continuous process of evolution in nature. The interventions of man in nature with selfish motives will have adverse effects. Interaction in nature without disturbing its diversity is an important aspect in the conservation of the environment. Conservation of the environment and its diversity is a must for the healthy sustenance of not only man but all life forms as well.

Gentle stroke and severe strike

The march of seasons is astonishing. Thunder and lightning that convoy the rainy season, snow fall at some places… where wind blows continuously-from a light breeze to cyclones that destroy everything. Landslide occurs in the hilly terrain during rainy seasons; and flood in the lowlands. Natural phenomena turn destructive at times. Natural phenomena that are hazardous to life, property and environment are known as natural hazards. The names of a few natural phenomena are listed on the board. Identify natural hazards from the list.

When natural phenomena turn hazardous

Look at Fig.7.4

The pictures feature two places with landslide possibility. In which of these places will it be a disaster in the event of a landslide? Why?

Many a time natural hazards do not affect humans.

They become disasters when they turn out dangerous to mankind. If an iceberg breaks in Antarctica or an earthquake occurs in an uninhabited desert, it will not be considered as a disaster, however much be the severity. But if such a phenomenon occurs in a populated valley, it will become a disaster.

Disasters occurring due to natural causes are termed as natural disasters.

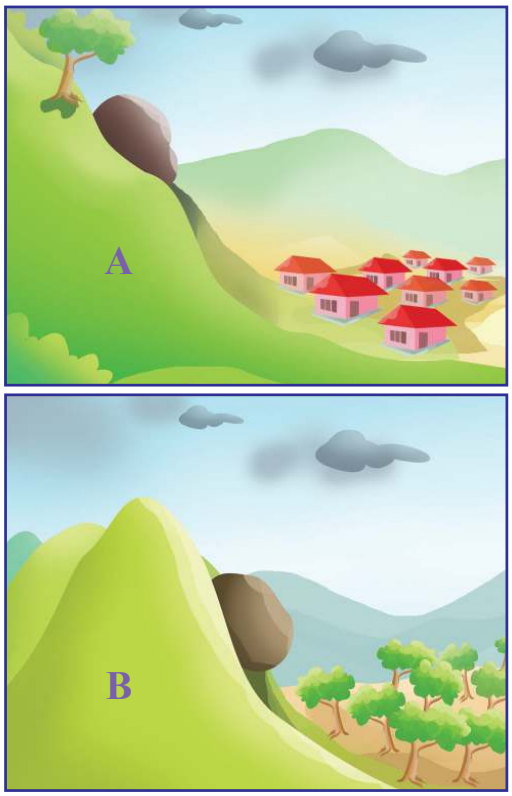


Fig. 7.4

Natural disasters in India

In India several people are either killed or seriously wounded in natural disasters every year.

How will be the life of those who get seriously wounded in these natural disasters? The following is the list of the natural disasters occurring in India.

- Cyclone
- Earthquake
- Landslide
- Hailstorm
- Drought
- Lightning
- Tsunami
- Flood
- Avalanche
- Frostbite

Ministry of Home Affairs, Govt. of India

Possibilities of natural disasters in Kerala

Don't you remember the physiography of Kerala you learnt in the previous classes? Expanse of backwaters bordered by the slanting coconut trees..... lush green midland... cool mountain slopes in the east. The scenic beauty of Kerala is world famous. However, at times the beautiful, charming visage of our land turn wild when natural calamities cause extensive damage. Kerala is one of the states prone to natural calamities.

Identify the natural disasters that wreck havoc in Kerala.

- *Identify the most widespread natural disaster in Kerala.*
- *Which physiographic unit in Kerala experiences landslides the most? Why? Record your inferences in the class room discussion based on the following indicators.*
  - *Topography*
  - *Rainfall*

Disasters that pour in

Landslides are the most threatening disasters in Kerala. Some places in the eastern hilly regions face the threat of landslides as the monsoon clouds accumulate over Kerala. Occasionally, the midlands also experience landslides along slopes during this season.

Fig. 7.5

Look at Fig. 7.5.

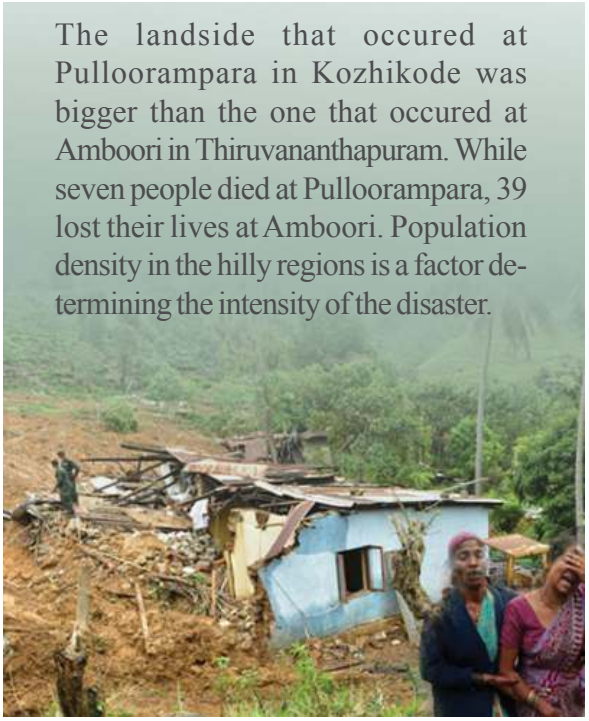
It depicts the recent landslide at Pulloorampara in Kozhikode district.

What information could you gather from this picture?

-
-

"All were in deep sleep. Were woken up by an ear shattering noise. By then it was all over…. Myself and a wall alone were left behind. Everything was washed out… dear and near… all.. forever."

What you read is the experience of a landslide survivor. In fact all landslides speak of the sufferings of many such people.



The landside that occured at Pulloorampara in Kozhikode was bigger than the one that occured at Amboori in Thiruvananthapuram. While seven people died at Pulloorampara, 39 lost their lives at Amboori. Population density in the hilly regions is a factor determining the intensity of the disaster.

National Centre for Earth Science Studies has identified that places with slope above 20° are prone to landslides.

What is landslide?

During severe rains, large quantity of water seeps into the soil. This exerts pressure on the pores in the soil. Due to the pressure of water, the soil under the loose rocks will move downwards. Due to gravity, the whole or part of the area will collapse with great noise. This phenomenon is known as landslide. Following this, the water that is stored in the soil starts flowing down as streams. Many a time this flow will last only for a few days. But on some occasions these may become permanent streams. Many of the streams in hilly terrains are formed in this manner. The valleys formed by the continuous erosion by streams will grow in area in course of time. The scientific world believes that such formation of streams is a part of the landform evolution.

9KMWRY

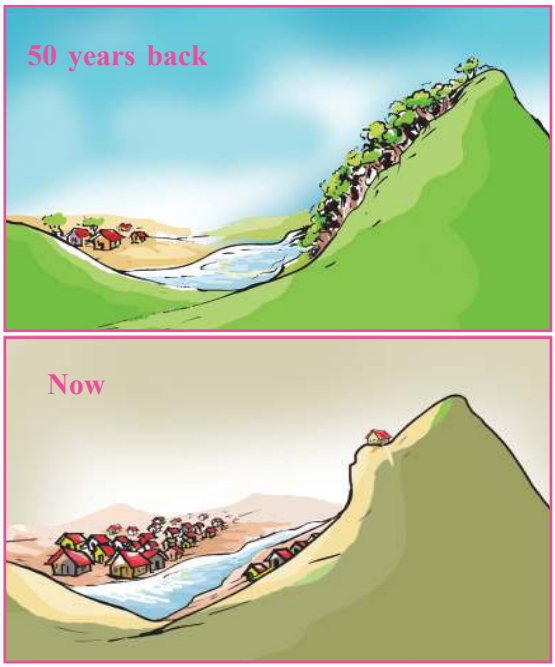


Fig. 7.6

Many a time the unscientific interventions of man are identified as the case occurrence for landslides.

Look at the pictures (Fig.7.6).

These pictures feature the transformation of a place over a period of fifty years.

What changes could you identify in this region?

- *The population increased*
-
-

Activities of man such as deforestation and unscientific activities along hill slopes weaken the slopes.

What are the unscientific activities along hilly terrains?

- Demolishing hillsides for soil.
- Cultivation of crops that need frequent tillage along steep slopes.
- Construction of houses and other buildings along steep slopes.

9KHSTL

Such activities of man aggravate the chances for landslides. Lack of space is one of the crucial problems that Kerala faces. Besides more than 30% of the total land area of Kerala consists of slopes also.

Hence it is very essential that land utilization should be scientific.

Scientific land use practices

9QI31C

- Hill sides may be transformed into terraces in order to reduce the slope.
- The course of the natural streams in the hilly terrain should not be blocked.
- Construction activities along steep slopes should be avoided.

25 April 2015. Time 11.41 IST. Majority of the people of Barpak village were engaged in their work; some in the basmathi fields, some in the tea plantations, and a few in the workshops of the streets ... everyone was busy on a warm day that came after month-long cold.

Suddenly, without any warning, the whole surface of the earth shivered. The buildings shook violently like ships in tempest, then collapsed like a house of cards. Bridges collapsed and electric posts toppled. Even the century old buildings were not spared.

What you read is about an earthquake and the havoc it caused. There were 40 aftershocks within 24 hours of this incident. By that time, the places within 200 kilometre radius of the city of Kathmandu were severely damaged. The earth scientists identified that the focus of this earthquake which took the death toll to over 10000 was 30 kilometres below the meeting point of the latitude 28°15' North and longitude 84°7' East.

9QRY2Z

Locate the above focus with the help of an atlas.

The picture (Fig.7.7) shows the quake shattered Nepal.

You have read the description of the Nepal earthquake. Each earthquake speaks of the sufferings of several people.

You remember what you have learnt about earthquakes, earthquake-prone regions, and the reasons behind it. Try to recollect them.

Fig. 7.7

The disaster intensity of earthquakes in India

Observe the map showing the intensity of earthquake disaster in India (Fig.7.8).

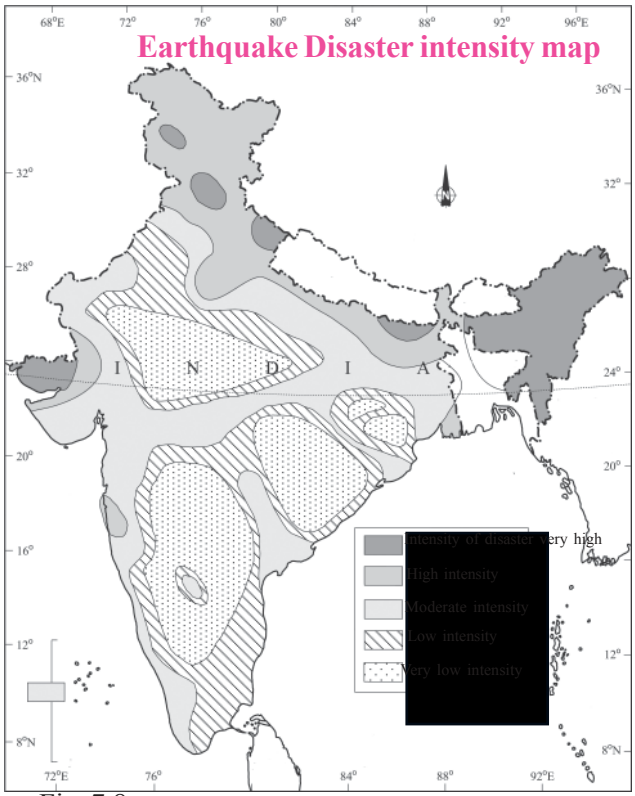


Fig. 7.8 *Source : NCERT Textbook Class XI*

Answer the following questions by referring the map.

- Identify the states/ regions that come under very high intensity earthquake disaster zone.
- How intense is earthquake disaster in Kerala?
- Identify the states/regions with least earthquake disaster intensity.

Earthquake disaster intensity in Kerala

The map shows that Kerala also is not free from earthquake disaster. Kerala is considered as a region with moderate earthquake disaster intensity based on the recent increase in the number of disasters associated with earthquakes.

It means that we need to be cautious. The construction of large buildings in seismically active zones should be avoided.

Precautions

It is impossible to prevent earthquakes. But the severity of the havoc can be reduced by scientific measures. Observe the picture (fig.7.7). The heavy damage is due to the fact that the buildings could not withstand the impact of earthquake. Most people die or get severely injured by the collapsing buildings. Hence,

- Adopt seismic resistant construction.
- Light roofs are comparatively safe.
-

The flood hazard

Kerala is home to 44 rivers that originate from the slopes of the Sahyadri. They flood for a

To ensure stability

Many died in the Latur earthquake; several were injured. Majority of this happened due to the collapse of buildings. But in Japan where earthquakes are frequent, such accidents are comparatively less. They follow quake-resistant construction practices for buildings.

Shouldn't we concentrate on the strength of our houses instead of their beautification?

Flood: A few old documents

The earliest known records of flood that was believed to have occurred in Kerala is that of C.E.371, Flood occurred following the earthquake of C.E.1341 along the Kerala coast as well. Greek scholar Pliny(Sr.) has recorded this event in his book 'Natural History'.

The memories of a flood that still remain in the minds of the eldest surviving generation in Kerala is that of 99; that is, Malayalam Era 1099. As per the English calendar it is C.E.1924.

Massive flood 2018

The massive flood occurred in Kerala in 2018 August caused widespread damage to life and property. Unexpected severe rainfall was the cause for the flood. About ten districts like Alappuzha, Pathanathitta, Idukki, Ernakulam, Kottayam etc., were severely affected by the flood. The devastating effect of the flood was controlled by the timely interference of the different wings of defence, voluntary organisations, fishermen etc., under the leadership of the Government of Kerala. It was the success of the unity among the Keralites found in distress relief operations.

9R1U4M

few days during the rainy season. When a large quantity of water flow into the rivers during the rainy season, the river will not be able to hold the excess water and it overflows. This is known as flood. Floods occur in the Himalayan rivers especially in the Brahmaputra valley. This is due to the fact that the catchment areas of these rivers generally receive heavy rainfall. Floods occur not only in the valleys but in the hilly terrain as well. The phenomenon of sudden rise of water level following heavy rain is known as flash flood. The recent flood in Uttarakhand is an example. This phenomenon occurs in deserts also owing to the rare rains.

Collect news and pictures of flood.

To avoid the threat of flood

The following precautions may be adopted in order to avert the danger of flood.

- Do not build houses on the river banks.
- Do not reclaim the paddy fields. They are the natural sinks for rain water.
- Construct bunds on the river banks.

Prepare posters explaining the measures to mitigate the possibility of natural disasters and exhibit them in public places.

Disaster management- mitigation measures

It is impossible to prevent natural disasters. But we can reduce their impact and bring the people back to normal life through properly planned interventions. Such actions can generally be called disaster mitigation measures.

Let us tackle the natural disasters

The flow chart lists on the various steps to be followed in the event of natural disasters.

Flood

- People residing along river banks should move to higher grounds as fast as they can.
- Do not step into rivers in torrent.
- Disconnect electricity if water enters your home.

Landslide

- Settle down in areas away from steeper slopes
- Be more cautious during the rainy seasons

Lightning

- Disconnect electricity.
- Sit on wooden planks or wooden cot without touching the ground.
- If outside, sit with chin on your knee.
- Move away from isolated trees.

Tsunami

- Move away from the coast if you notice anything strange happening in the sea or get some warning in this regard.
- Keep life-jacket or inflated tube with you.

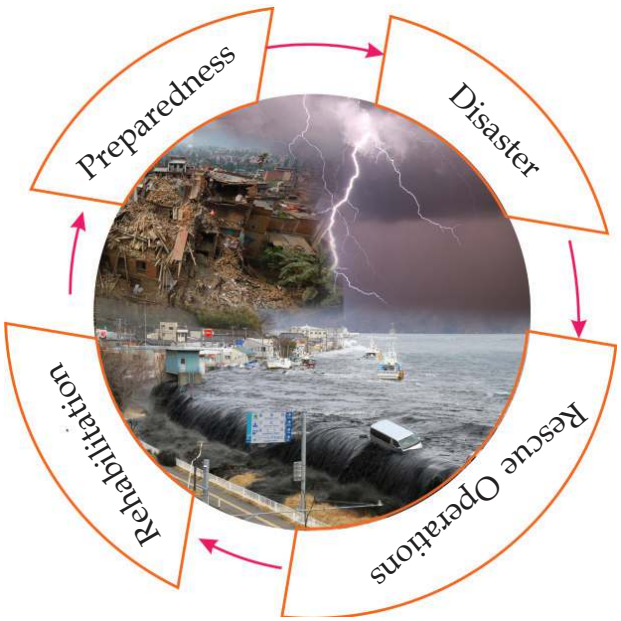
Earthquake

- Move away from buildings or hoardings that may fall.
- As there are chances of aftershocks do not return home until formal directions are received.
- Open spaces are safe.
- Do not use lifts.
- The inner corners are the safer areas inside the house.
- Keep away from windows.

General measures

- Provide immediate medical aid to the injured.
- Do not believe or spread rumours.
- Keep only precious items or documents along with you.
- Drink boiled water only.
- Keep the necessary medicines with you.
-

There are mainly three stages for disaster mitigation measures. The following flowchart explains these.



Role of children in disaster management

Won't you help the elders in rescue operations in the event of a disaster in your locality?

You can take up several activities that would be helpful to the nation and society.

A few among these are:

- Prepare and circulate pamphlets and exhibit notices in public places explaining the steps to be adopted by the people in emergency situations.
- Organize orientation programmes on scientific landuse practices.
-

Let's find out the safe spots

What you see (Fig.7.10) is a sketch of safe areas prepared by the students in connection with the disaster management activities in a school. We need to ensure our safety in the event of natural hazards such as earthquake, landslide, etc. otherwise

these may turn into disasters. For that the safe spots of the school have to be identified in advance. Areas away from the buildings preferably the middle of the play ground will be the safest. This is because of the fact that even if the building collapses the debris might not fall here. Decide the path for ambulances and other rescue vehicles to the school campus. Do not make any modification in the campus obstructing this. The safe spots may be marked clearly for everyone's knowledge. Mock drills to tackle disaster situations may be carried out at intervals.

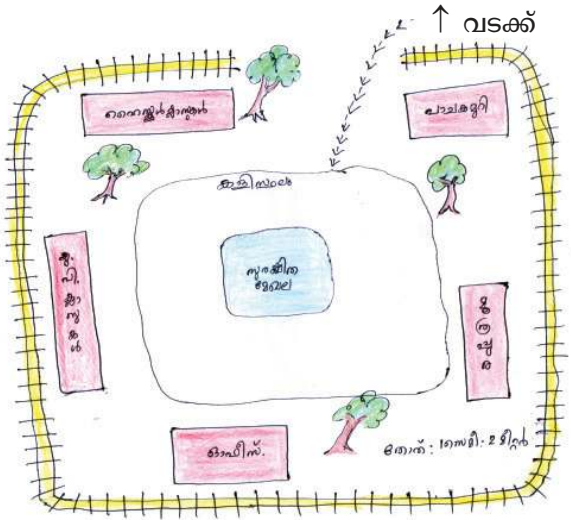


Fig. 7.10

Government mechanism for disaster management

The Kerala State Disaster Management Authority (KSDMA) is entrusted with the task of coordinating the disaster mitigation measures in Kerala. Under the authority, the State Emergency Operations Centre (SEOC) supervises the disaster mitigation measures in the various districts. It issues warnings of disaster possibility and measures to be adopted in the event of emergency situations. District Emergency Operations Centre (DEOC) is responsible for the disaster management activities of a particular region. Warnings to people are issued through these centres. Their mission is to coordinate the actions of various government departments such as health, law and order, fire force, and public works in disaster management activities. Visit the web site www.sdma.kerala.gov.in for more information.

Towards a safer tomorrow

Man is the last link in the 4.5 crore year long history of events on earth. Fresh air, pure water, wealth of soil, and lush greenery are available to us because the organisms that lived before have saved them for us. If we try to grab these solely

for ourselves, severe will be the loss. It is our duty to conserve these natural resources not only for us but for the generations of multitude of organisms that are yet to come.

Let us assess

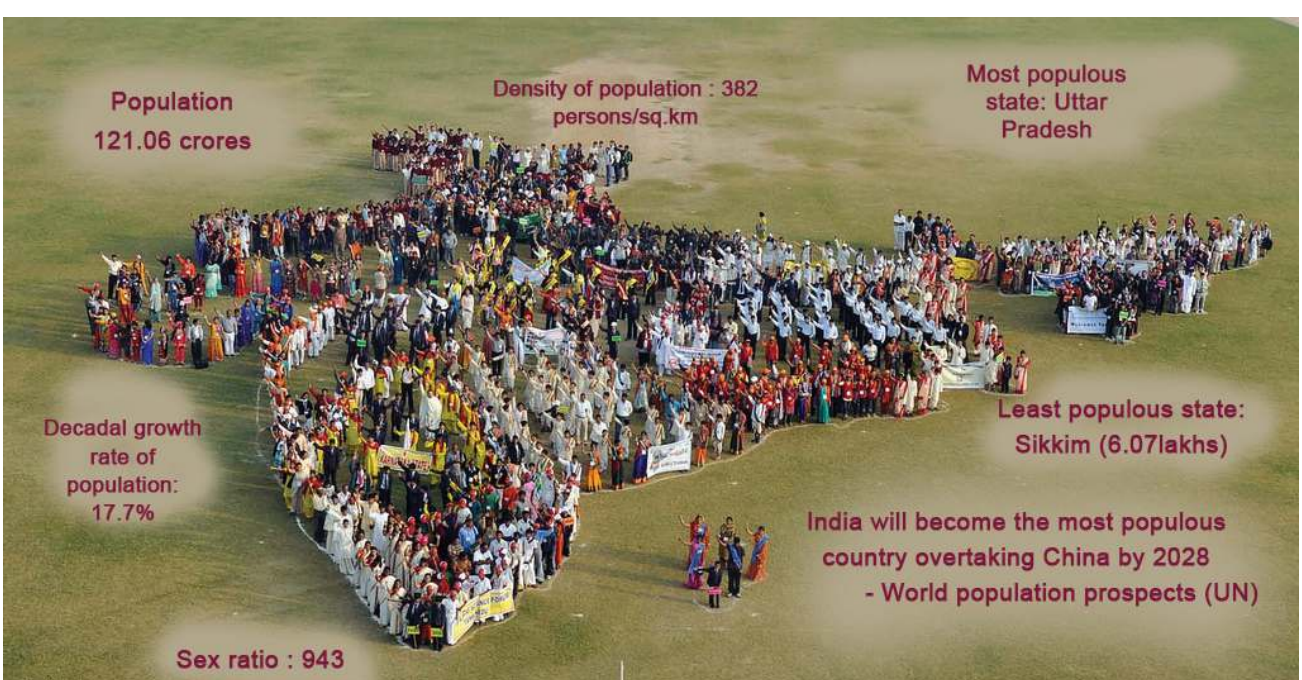
- What precautionary measures are to be adopted in the event of a flood?
- What are the general steps to be adopted in the event of natural disasters?

Extended activities

- Prepare charts and pamphlets explaining scientific landuse practices. Exhibit these in public places.

8

Population, Migration, Settlements



Haven't you noticed the information regarding the population of India as per 2011 census? What is population? What is the significance of studying information regarding population? Is population uniform everywhere? What are the factors influencing the distribution of population? How far do the geographical factors influence this? What are the causes and consequences of increase or decrease in population?

Population statistics are highly significant in resource planning and resource utilisation of a country. We can understand it by finding the answers to the above questions. Let us go through this chapter for the same.

The number of people dwelling at a place during a particular period of time is called population. A country is known by its people. This is because it is the people who productively utilise the country's resources and formulate policies. Thus the human resource is the real wealth of nations.

Human welfare is the basis for development. Food, cloth, shelter, employment, and other basic amenities are to be ensured for this purpose. Efficient planning of developmental activities by proper utilisation of available resources is possible only by analysing the population related information of the country.

List the areas that require analysis of population related information.

- For planning the food grain production
- To generate employment opportunities
-

Is an uncontrolled increase in population beneficial for the development of a country?Why?

Distribution of population

Look at the map (Fig 8.1) showing the distribution of population in India. Can you distinguish the regions having high concentration of population and very low concentration of population from this?

- *Which are the states having high population?*
- *Which are the states with very low population?*

Let us compare the population map of India with the map showing the physical divisions of India.

- Population is largely concentrated in the northern plains of India. Why?

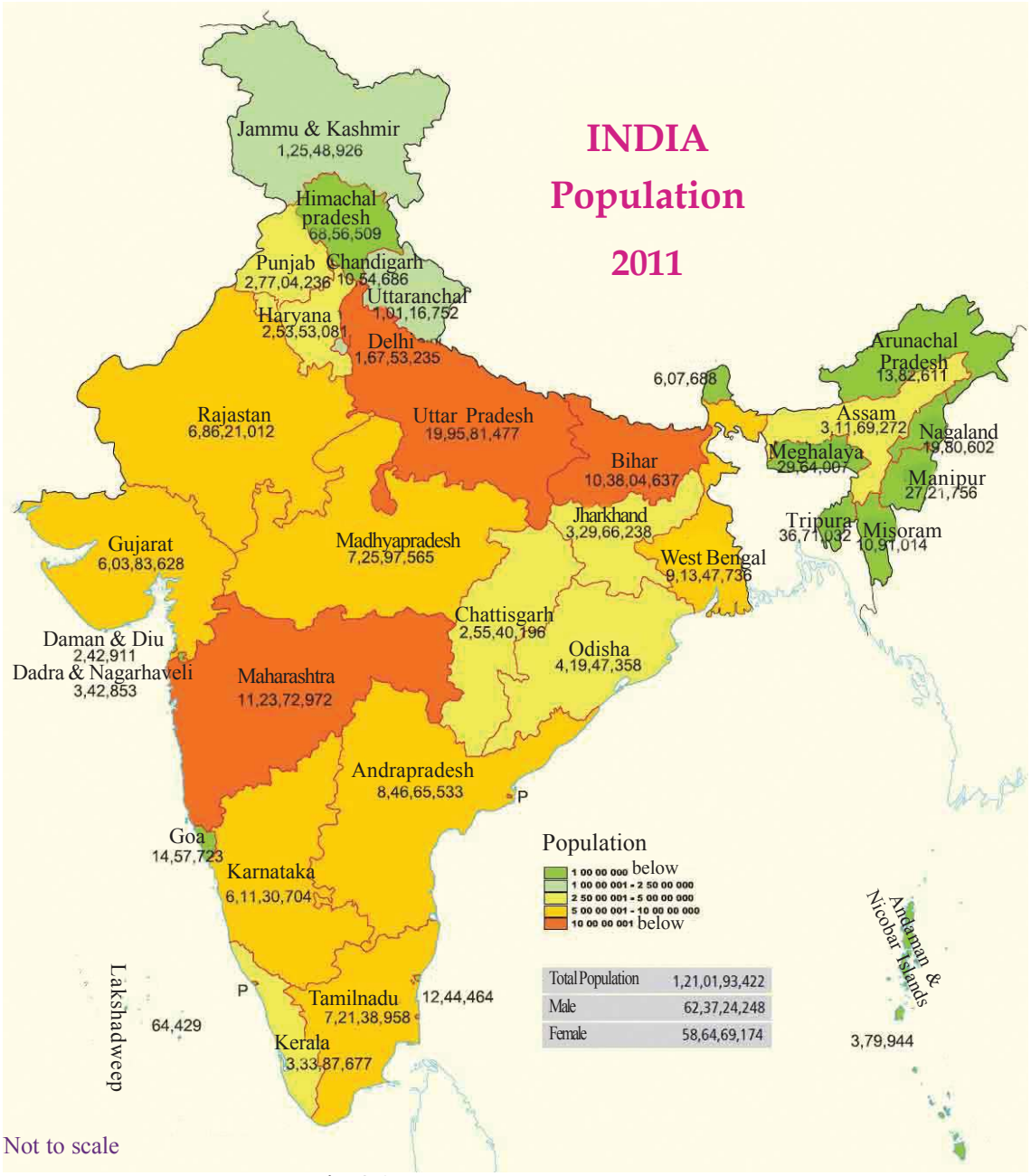
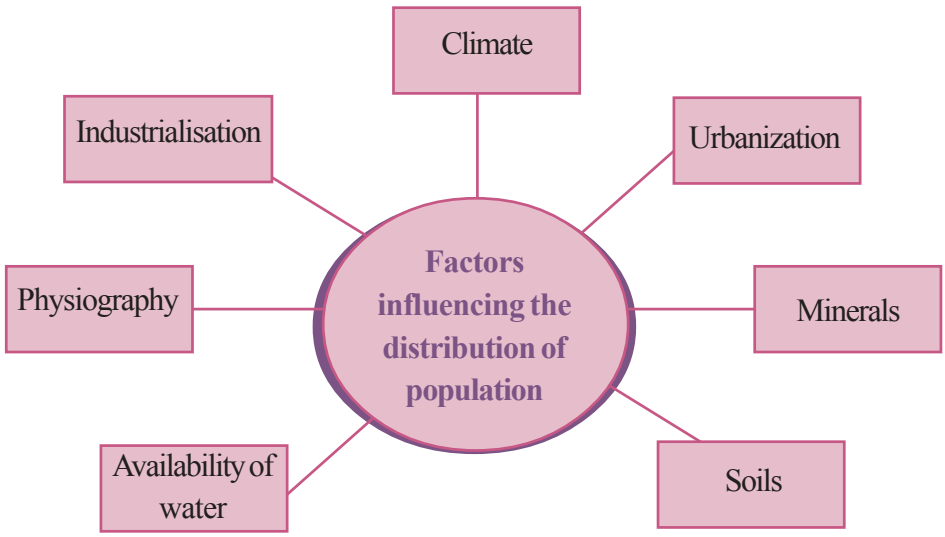


Fig. 8.1 Source : India Census 2011

- Throughout the peninsular plateau the population is moderate. This is because of the lack of conditions favouring agriculture as well as inaccessibility. But mining, mineral based industries etc., make some regions of the peninsular plateau populous. The development in transport and communication has also accelerated this.

What is the pattern of population in the mountainous states? Why?

Now you might have understood the influence of physiography in the distribution of population. See what all factors influence its distribution.



Discuss and make notes on how each of the above mentioned factors influences the distribution of population.

The total land area of India is 3.28 million square kilometres. That is about 2.5% of the total land area of the world. But India accommodates 17.5% of the total population of the world. From this it can be estimated that 328 people occupy each square kilometre area of land. This is the density of population of India. The average population of every square kilometre is called as density of population. Density of population can be calculated by dividing the total population by the total land area.

$$\text{Density of population} = \frac{\text{Total population}}{\text{Total land area}}$$

The density of population of China is less than that of India, even though China is the most populous country. Why?

India stands third in population density after Bangladesh and Japan. There is wide regional variation in the density of population within India. As per the census 2011, Arunachal Pradesh with just 17 persons per square kilometre is the least

densely populated and Delhi with 11297 persons per square kilometre is the most densely populated. Among states Bihar (1102) is the most densely populated.

What may be the cause of high density of population in Delhi?

Observe the map (Fig 8.2) and get to know the state-wise population density in India.

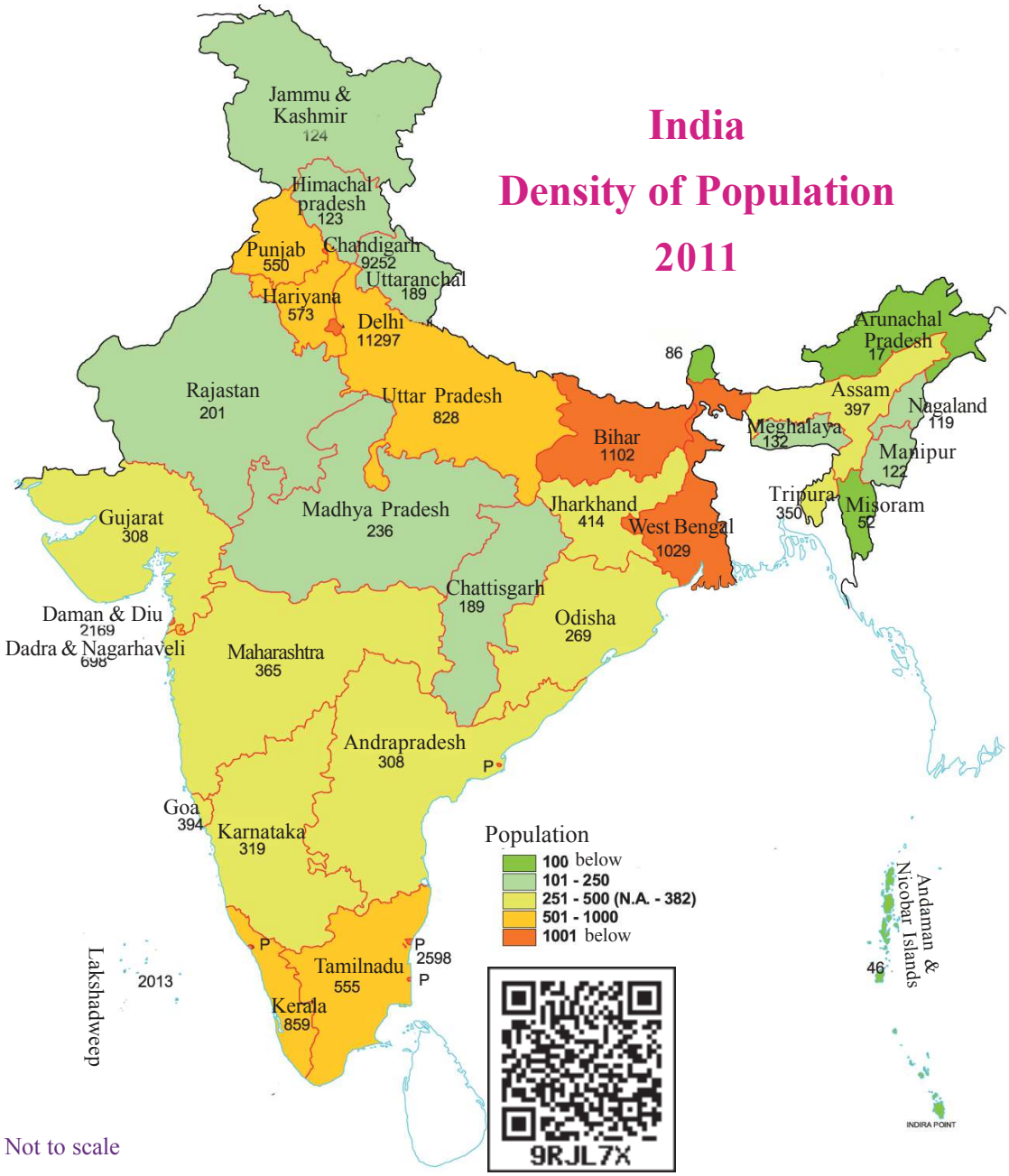


Fig. 8.2 (Source : India Census 2011)

Classify the states in India based on population density in the given format.

Density of population	Category	States
Less than 100	Very low density	
101 to 250	Low density	
251 to 500	Moderate density	
501 to 1000	High density	
Above 1000	Very high density	

Haven't you understood that the density of population is different in different states?

- What is the density of population in Kerala as per Census 2011?
- What is the rank of Kerala among the states with regard to population density is considered?

The high density of population in certain places is mainly due to factors like level topography, moderate climate, fertile soil favouring agriculture are availability of fresh water, etc. Other than these, the increasing employment opportunities in the mineral rich and industrial regions and also the attractive infrastructure and services provided by urban areas also cause high density of population in such regions. Now you might have understood the cause for imbalance in population density and also the significant influence of geographical factors on the same.

Let us see how the population of a place vary.

Population growth

Population growth is the change in population of any particular place over a particular period. This is usually assessed in percentage. The decadal growth rate of population in India is 17.7%.

This means that there has been a population increase of 17.7% in 2011 compared to the population of 2001. Such a change in

population is called positive growth of population.

There are situations where the population of a place declines. This is termed as negative growth of population.

See the causes for change in population.

- Birth rate
- Death rate
- Migration

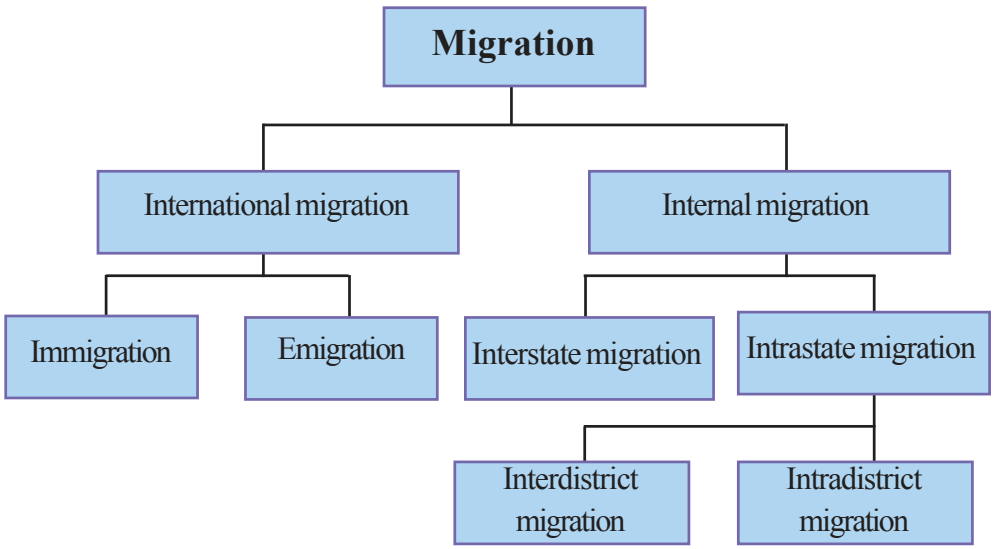
Birth and death rates are the natural causes that influence population change. High birth rate and low death rate may cause an increase in population. An increase in death rate also causes a fall in population.

What may happen if the birth and death rates of a country are equal?

Migration is a major factor influencing population change in modern times.

Migration

Permanent or temporary shifting of residence of people from one place to another is called migration. The different levels of migration are shown in the flow chart.



Migration across international boundaries is called international migration. The inward movement of people to a country is called immigration and the outward migration of people from one country to another is called emigration.

Fig.8.3

Keralites working abroad is the best example for international migrants. (Fig 8.3)

There are three international airports in Kerala. What might be the reason for so many airports in this small state?

Migrations within the country are called internal migrations and are done mainly for employment opportunities. People tend to migrate to places within the country for better employment and wages.

Fig. (8.4) labourers from other states

Recent spurt in the number of North Indian labourers in the construction sector of Kerala is an example for such migrations. (Fig 8.4)

What may be the cause for this large scale migration of people to Kerala?

This kind of migration from one state to another is termed as interstate migration.

Migration of people within the state due to various reasons is termed as intrastate migration. Migrations across the district boundaries can be called inter district migrations.

Large scale migration of farmers to Malabar from Central Travancore in the first half of the 20th century can be cited as an example for inter district migration. The migrations within a district caused by marriage, education, etc. can be called intra district migrations.

All the above discussed migrations may take place in four major ways.

- Rural to rural migration
- Rural to urban migration
- Urban to urban migration
- Urban to rural migration

Discuss and find out more examples for various types of migrations.

Why do people migrate?

You know that a large number of people from our state have migrated to foreign countries as well as to urban regions with in India. Such migrations are mainly due to employment opportunities in the developed regions of the world. The employment opportunities created by widespread mining of petroleum in the west Asian countries during the second half of the 20th century is the major attraction for migrants to the Gulf region.

Find out the pull factors other than employment opportunities that cause migration.

- Higher education facilities

Rushing migrants to Europe

Tel Aviv: 10th September 2015

Europe is witnessing waves of immigration of the kind which has never occurred before. Thousands have reached Europe in the recent days. This movement is to escape the fierce civil war in Syria.

Haven't you seen the news clipping? Thousands in search of a secure life are migrating to Europe following the civil war in Syria. This is a push factor for migration.

Find out the other push factors causing migrations.

- Resource scarcity
- Political unrest
- Unemployment
- Natural calamities

The migrations caused by pull factors of certain regions are called voluntary migrations. The migrations provoked by push factors are called forced migrations.

Consequences of migration

The reorganisation of human resource takes place through migration. This may cause crucial changes in the social, cultural, and economic sectors of both the source regions and destination of the migrants.

Look at the effects of migration.

- Helps in the sharing of human resource
- Helps in the flow of foreign currency to the parent country
- Leads to overpopulation in certain regions
- Causes scarcity of resources
- Facilitates exchange of technology
- Creates more employment opportunities
- Weakens social ties among people
- Causes the formation of slums
- Causes spread of communicable diseases
- Gets opportunities for higher education
- Causes imbalances in the sex ratio
- Country looses the service of the educated and the youth
- Result in exploitation of resources.
- Increases the intensity of environment pollution

Discuss in class and classify the above mentioned consequences of migrations into positive and negative in the given format. You can add more.

Positive consequences	Negative consequences
•	•
•	•
•	•

Work sheet

A few major migrations are mentioned in the table. Put a tick mark (✓) in the appropriate columns by identifying the types of migration you have familiarized.

Migrations	International migration	Internal migration	Forced migration	Voluntary migration
• Migration of Europeans to India	✓			✓
• Migration of farmers to Malabar from central Travancore				
• Migration of labourers from other states to Kerala				
• Migrations to India following the civil war in Srilanka				
• Migration of IT experts from the cities of Kerala to Bengaluru				
• Migration of Keralites to Gulf countries				
• Migration following marriages in Kerala				
• Migrations following the civil war in Syria				
• Rehabilitation of people from Tsunami affected regions in India				

Settlements

It is estimated that man started agricultural practices about 12000 years back. As a result habitats started to emerge near the farmlands.

Later, different types of human habitats developed due to various human activities and migrations. The clusters of permanent or temporary human habitats of different sizes are termed settlements.

Is the distribution pattern of settlements the same everywhere?

List the major factors considered for the location of settlements.

- Favourable climate
- Availability of water
-
-

Human settlements can be classified into two types based on population as well as their major economic activity.

- Rural settlements
- Urban settlements

Rural settlements

Places with comparatively low population where the people largely depend on agriculture for their livelihood is called rural settlements. Houses are usually constructed using locally available raw materials.

Types of rural settlements

Fig. 8.5 Nucleated settlements

Based on their distribution pattern, there are two types of rural settlements.

Look at the pictures (Fig 8.5 and 8.6). What difference can you notice in spacing of habitats? In places with favourable conditions, houses are seen in close vicinity of each other. Such places of human habitation are called nucleated settlements (Fig. 8.5). This kind of settlement is formed

in the fertile river valley plains. Well - knit social relationships and identical nature of employment are the characteristics of such settlements.

Fig. 8.6 *Dispersed settelements*

The settlements where houses are located farther apart as seen in Fig.8.6 are called dispersed settlement. Undulating topography and other unfavourable conditions result in the people living in isolation. In such settlements the people are brought together by places of worship, markets etc.

Does your home beong to nucleated settlement or dispersed settlement?

There are some places where the settlements are neither fully nucleated nor dispersed. Such settlements are called semi-clustered settlements.

Due to high population and lack of space it is difficult to distinguish the rural settlements in Kerala as mentioned above.

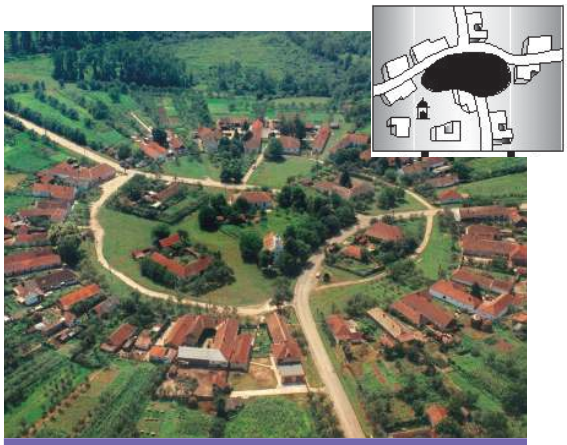
Patterns of rural settlements

Based on the favourable factors such as accessibility, availability of water etc. nucleated settlements take different shapes. Different patterns can be seen by aerial observation of a group of settlements. Observe the pictures (Fig 8.7) to understand a few such patterns.

Based on the situations, rural settlements may also develop in shapes such as rectangular, triangular, etc.

Linear pattern

- Settlement pattern that develops parallel to features such as roads, rivers, coastlines, etc.

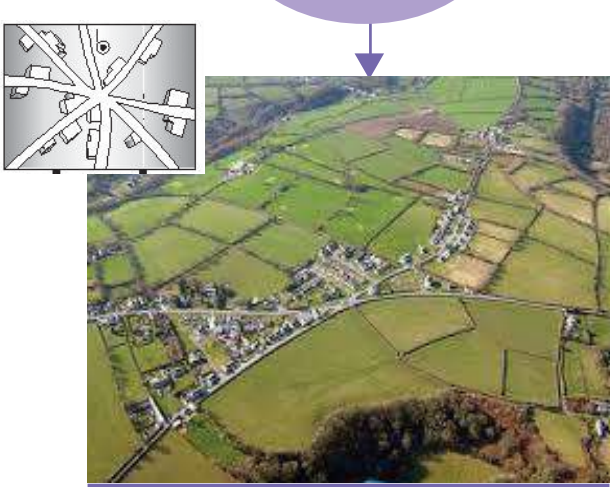


Circular pattern

- Settlement pattern that develops around features such as water bodies, pastures, places of worship, etc.

Settlement patterns

(Fig. 8.7)



Star pattern

- Settlement pattern that develops at places where different roads converge

Urban settlement

The settlements that generally have a high population which is

mostly dependent on non-agricultural sectors are called urban settlements. Urban settlements are mostly nucleated settlements. The economic and cultural characteristics of urban settlements are entirely different from that of rural regions.

The transition of population from rural agrarian economy to urban industrial and service sector economy is termed as urbanisation. The urban population is ever increasing through urbanisation.

The urban population of India is 31.16% as per the 2011 census. The proportion of urban population is different in different states of India. Goa with 62.17% urban population is the most urbanised state and Himachal Pradesh with 10.04% is the least urbanised state. The urban population of Kerala is 47.72%. The urban population of Delhi, the national capital territory is 97.50%. The urban population is generally high in the union territories.

In India, a settlement is designated as urban based on the following criteria:

- Population above 5000.
- Density of population above 400 per square kilometre.
- 75% or more of the population should be engaged in non agricultural activities.

In addition, urban administrative headquarters like municipalities and corporations, and military cantonments are also designated as urban irrespective of other criteria.

Classification of urban centres based on population

The urban centres of India are classified in to six types based on population. Observe the table to understand them.

Urban class	Population
Class I town	Above 1 lakh
Class II town	50000 to 1 lakh
Class III town	20000 to 50000
Class IV town	10000 to 20000
Class V town	5000 to 10000
Class VI town	Below 5000

(Source : Census 2001)

Based on the size of population, urban centres are known by different names.

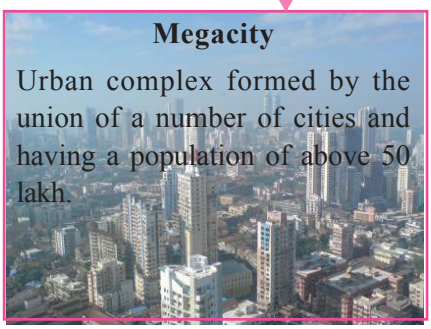
Urban centres

Town

Small urban centres having a population of less than 1 lakh.

Megacity

Urban complex formed by the union of a number of cities and having a population of above 50 lakh.



City

Urban centres having population between 1 lakh and 10 lakh

Metropolis

Big cities having a population of more than 10 lakh.

Observe the given map (Fig 8.8) and identify the metropolitan cities in India. Which among them can be designated as mega cities? Arrange the mega cities in the hierarchy of the size of population.

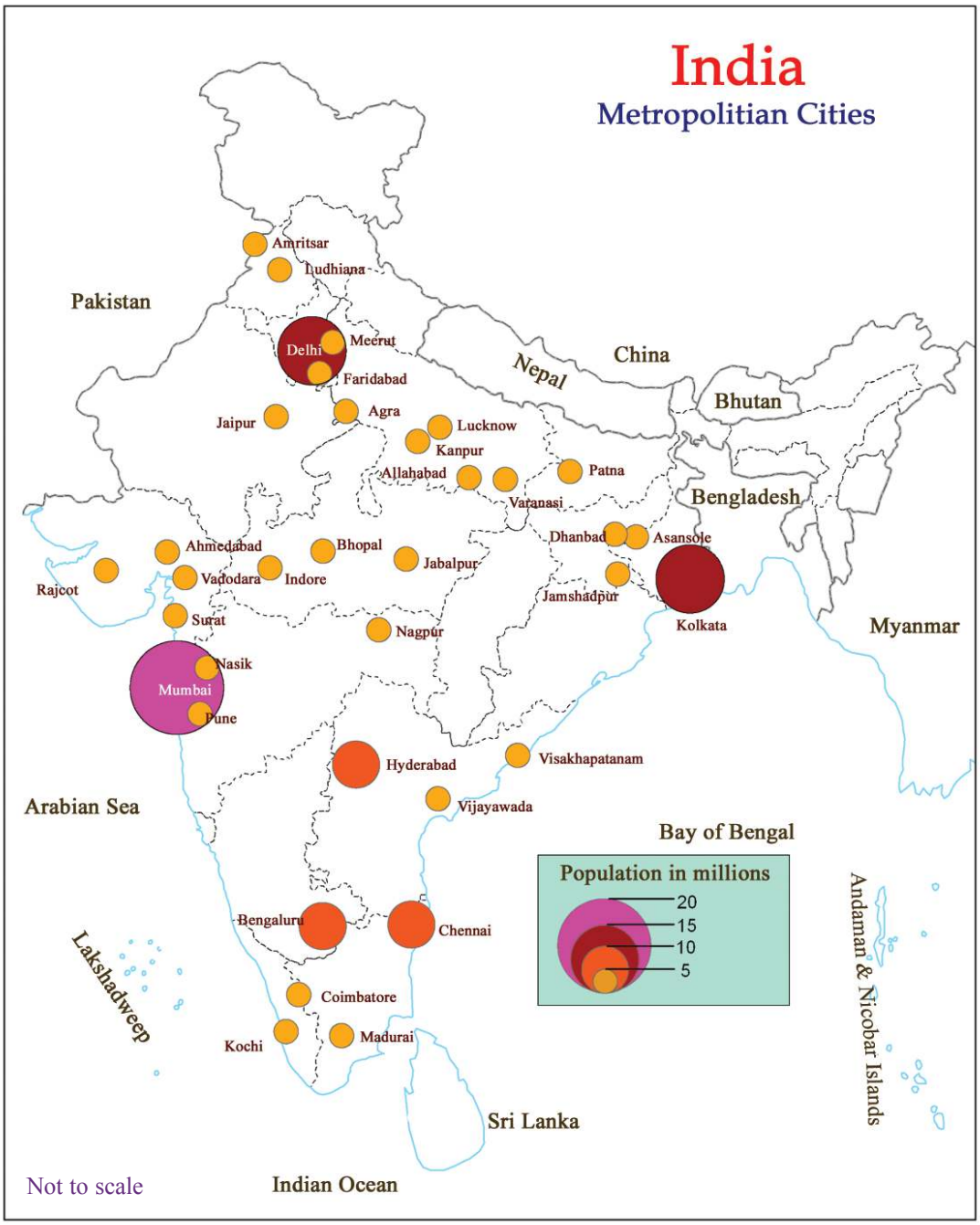


Fig. 8.8

Classification of urban centres based on functions

Urban centres can also be classified based on their major functions. Identify the different categories of towns in India from the given table and write more examples for each category after discussing in the class.

Cities/Towns

↓

Function

Administration	Industry	Education	Tourism	Religion/Culture
• Gandhinagar	• Hugli	• Aligarh	• Nainital	• Haridwar
• Srinagar	• Coimbatore	•	• Shimla	• Madurai
•	•	•	•	•
•	•	•	•	•

Problems faced by urban centres

There has been a manifold increase in the migration from rural to urban areas. The population of big cities is more than what they can provide. Urbanisation causes various problems. Let us examine them.

Look at the pictures (Fig. 8.9) that depict a few problems faced by the urban areas. Find out more problems of this kind and add to the list.

- Slums
- Traffic problems
- Pollution
-

The rate of urbanisation is very rapid in developing countries including India. You might have understood the problems of urbanisation. Can't we control these problems at least to some extent? Suggest remedial measures.

Fig. 8.9

- Urban planning
- Waste management
-

Prepare a seminar paper on 'The problems faced by urban settlements and their remedial measures' and present in it the class.

Now you might have understood the significance of population data. Human development can be made possible only by sustaining the harmonious relationship between man and nature.

Let us assess

- 'Physiography has decisive influence in the distribution of population'. Substantiate the statement based on the distribution of population in India.
- Elaborate with examples the causes for voluntary migrations.
- Classify the following cities based on their dominant functions.
  - Thiruvananthapuram
  - Varanasi
  - Hugli
  - Madurai
  - Coimbatore
  - New Delhi

Extended activities

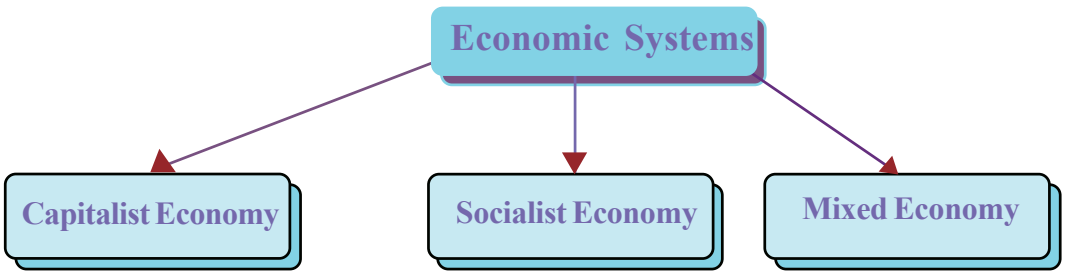
- Conduct a poster exhibition by collecting pictures related to the problems faced by urban centres.
- Analyse the Census 2011 report and prepare graphs, maps, and tables of various aspects of population.

9

Economic Systems and Economic Policies

The above pictures represent land, factory, transport, technology, etc. which are the means by which goods and services are produced and distributed. Have you ever thought about the ownership of these means of production? It differs from country to country. In some countries, the

ownership lies primarily with private individuals. In some other countries, it lies primarily with the public sector. There are also countries where the ownership lies with both the private and public sectors. On the basis of the ownership of means of production such as land, capital, raw materials, etc., economic systems can be classified into three.



Let us analyse the features of these economic systems.

Capitalist economy

Capitalist economy is the economy in which the ownership of means of production is with private individuals who work with the motive of making profits. Other features of capitalist economy are as follows:

- Freedom for the entrepreneurs to produce any commodity
- Right to private property
- Profit motive
- Transfer of wealth to legal heir
- Free market with no control over price
- Consumers sovereignty
- Competition among entrepreneurs to sell products

There is very little government intervention in the economic activities in a capitalist economy. The main functions of the nation are to maintain law and order and to defend the country from foreign invasion. Such nations are known as 'police state'.

We have learnt about the basic problems of an economy in the previous classes. It is through price mechanism that the basic problems in a capitalist economy such as what to produce, how to produce and for whom to produce are solved.

When the price of goods and services increase, the producers will have a tendency to make profit through an increase in production. But as price increases, demand falls and thus the producers will have to reduce the production. Likewise, as the price of goods and services fall, producers try to reduce the output. But with a fall in price, demand increases and this will induce the producers to increase the production.

Thus, the rise and fall in the price influence the producers and consumers and consequently control the availability of goods and services. This is called price mechanism.

Find out examples for producers increasing production as a result of rise in price and reducing production as a result of fall in price.

Many features of the capitalist economy create certain problems as well. For example, the transfer of property to legal heirs and the right to ownership of private property result in the accumulation of wealth in the hands of a few. This results in increased the economic disparity in the society.

Prepare a note on the advantages and disadvantages of capitalist economy.

We have now understood that capitalist economy has certain drawbacks. The socialist economy came into existence in order to overcome these drawbacks.

Socialist economy

Socialist economy is an economic system in which the means of production are owned by the public sector. This economic system works on centralised planning. Let us analyse other features of a socialist economy:

- Activities aimed at social welfare
- Absence of private entrepreneur
- Absence of private ownership of wealth and transfer of wealth to legal heir
- Economic equality

It is through planning that the basic problems of an economy are solved by the socialist economy. Planning regarding what to produce, how to produce, and for whom to produce is done to ensure social welfare. Goods and services are produced and distributed accordingly. The amount of goods and services required for the society is calculated and production is done accordingly. Price mechanism does not have any role in the socialist economy as the price is pre-determined.

The socialist economy is also not free from drawbacks. The public sector's investment potential is less and this affects economic growth adversely. In the absence of private ownership of wealth and transfer of wealth to the legal heir, people are less likely to work hard. Moreover, the consumers have only a limited choice of products.

Make a note comparing the features of the capitalist and the socialist and economies.

Mixed economy

Mixed economy is the economy that has certain features of both the capitalist economy and socialist economy. India has adopted mixed economy. Let us analyse some of the features of a mixed economy.

- Existence of both private and public sectors.
- Economy works on the principle of planning
- Importance to welfare activities
- Existence of both freedom of private ownership of wealth and economic control

In a mixed economy the features of both the capitalist and the socialist economies are included. Substantiate.

Pure form of capitalist or socialist economies cannot be seen anywhere today. There is government intervention in capitalist economies like those in the United Kingdom and the United States of America. Private ownership of wealth and freedom of market have been permitted in socialist countries like China and Cuba.

That is, we can say that certain changes are taking place in the economic policies of every nation.

Changing economic policies

Currently, the private sector is encouraged in almost all countries in order to achieve economic growth. Governments are willing to take certain measures to welcome private entrepreneurs and to attract foreign investors. As a result of such economic policies, there has been a large scale transfer of capital, goods and services, and technical know how across the border. Various new products are made available in the market. For example, earlier, only a few models of cars were available in the Indian market. But now the market is flooded with varieties of models from different companies. Identify other examples through discussion.

Different types of phones in the market

Though India used to maintain a strong public sector and controlled foreign trade, of late, the economic policies have undergone a change. Measures to attract foreign capital and to strengthen foreign trade have been taken. The measures which started officially in 1991, resulted in liberalisation, privatisation, and globalisation. Let us analyse each one of them.

Liberalisation

Liberalisation implies the relaxation of government control and influence over the economic activities in a country. The process of liberalisation was started in India in 1985. Mentioned below are the changes that were brought about as a result of liberalisation.

- Relaxation of control in setting up industries
- Reduction of import tariff and tax
- Changes in foreign exchange rules

- Abolition of market control
- Permission of foreign investment in many sectors
- Reduced the role of government in the basic industries and basic infrastructure development.

Apart from this, government intervention in some sectors has declined as a part of liberalisation. This has resulted in an increased significance of the private sector.

Foreign currency crisis

Every country has a reserve of foreign currency. Foreign currencies such as American Dollars, Euro, and Pound required for international trade are maintained as reserve fund. Generally, foreign currency reserves sufficient to carry out the trade for about ten to twelve weeks are maintained by every country. However, in 1991, India's foreign currency reserve was sufficient only for two weeks. The Government of India tried to overcome this crisis by attracting foreign capital, accepting foreign loan, and strengthening foreign trade.

Privatisation

In India, many public sector enterprises have been privatised since 1991. Maruti Udyog Limited, Modern Food Industries Limited, etc. are examples of enterprises that have been privatised. The shares of many public sector enterprises were sold off. In India, privatisation of public sector enterprises and trading of their shares are handled by the Department of Disinvestments under the Ministry of Finance.

The private sector has been given access to several areas which were earlier under the control of the government. The presence of the private sector can be actively felt in roads, electricity, communication, basic industries, etc. The working of private sector can be seen through methods like BOT and PPP. Privatisation strengthened as a result of many new sectors being brought into the market.

BOT (Build Operate and Transfer)

The private sector initiates the construction of infrastructure such as roads, bridges, etc and then reclaims the investment through tolls which are later transferred to the government.

PPP (Public Private Partnership)

Certain undertakings are initiated under the partnership of both private and public sectors. The profit is shared proportion to the amount invested. Example: Cochin International Airport Limited (CIAL)

A tolbooth on the National Highway

Cochin International Airport

Have you seen the toll being collected from vehicles travelling along the main roads? Who collects them and why?

Globalisation

As a part of liberalisation, the measures to remove the controls on foreign capital investment attracted foreign entrepreneurs. As a result of this, the influx of capital increased worldwide. Free trade agreement on reduction of import tariff and taxes among nations made imports and exports easy. Globally, there has been an increase in the free flow of labour and transfer of technology. Subsequently, all the goods and services of all countries have become available in all markets. It has to a situation where world has become a single market. Market friendly economic policies led to better relations among countries.

Thus, globalisation is the economic integration and interdependence of nations as a result of free flow of capital, labour, goods and services, and exchange of technology irrespective of boundaries.

Towards the end of the twentieth century, developments in computer, mobile phones, Internet, etc helped in improved communication. Container ships, flights, bullet trains, etc. contributed to the fast means of transportation These changes helped globalisation.

Foreign capital investment

It is the investment of the capital of one country in another country's land, company, share, bond, bank deposits, etc.

Even when globalisation strengthened, many developing countries could not enjoy its benefits owing to insufficient capital and technology. As a result, the governments of such countries were willing to reduce their control to a large extent so as to attract foreign capital investment. The new economic policies which completely disregard government control are known as neo liberalisation. International financial institutions such as the World Bank and the International Monetary Fund (IMF) play a significant role in enforcing globalisation policies. The growth of multinational companies and the formation of the World Trade Organisation has strengthened globalisation.

World Trade Organisation (WTO)

Efforts were made to find ways to do away with the restrictions in the world trade. These efforts strengthened with the establishment of the World Trade Organisation headquartered in Geneva on 1 January 1995. India is one of the founding members of WTO. There are 161 member nations in the World Trade Organisation according to April 2015 data.

WORLD TRADE ORGANIZATION

The emblem of the World Trade Organisation

World Bank and IMF

The World Bank and IMF were established as a result of the decision taken at the Brettonwoods conference in 1944. The headquarters of these institutions are at Washington. Countries facing economic crisis approach these institutions for availing assistance.For availing the loans, the countries have to agree and implement the conditions put forth by the World Bank and IMF. These conditionalities also strengthen globalisation.

Patent

Rights granted for the protection of the invention of new technology, products, and production methods for a specific period is termed patent.

All the controls in the global trade were removed after the establishment of the World Trade Organisation. Main guidelines of the trade agreements formed through the WTO are as follows:

- Phase by phase reduction of import duty.
- Reduction of subsidies
- Modification of patent laws
- Permitting foreign investment in service sectors such as media, telecommunication, banking, insurance, etc.
- Extention of the consideration given to domestic investments to foreign investments.

These policies strengthened liberalisation and globalisation.

Multinational companies

Multinational companies are those companies registered in the home country but operating in many countries. These companies with high technology and huge capital viewed neo liberalisation as an opportunity. Instead of producing goods in a country and exporting it to other countries, the multinational companies have invested their capital in developing countries so that the raw materials, labour, and markets available there can be used in their favour.

It can be seen that the turnover of some multinational companies are more than the national income of certain small developing countries. The multinational companies are also able to make changes favourable to them in the domestic policies and laws of a country.

How are multinational companies different from other companies? Discuss and prepare a note.

Multinational companies mostly start their production by merging with or acquiring domestic companies. By doing so, they pool their products into the market by utilising the production and

distribution mechanisms of the domestic companies. In return, the domestic companies, receive huge capital and high technical know how. There is another method by which these multinational companies control production. Multinational companies hand over the production to small scale entrepreneurs. The goods and services produced by the latter are sold under the brand name of the multinational companies. For example, the production of clothes, sandals, sports equipments, etc. The multinational companies also resort to assembling various parts of a product produced in different countries. Manufacturing of vehicles is done in this method.

Made in Thailand	Made in China	Made in India

Do you think that the products with the tags mentioned above are actually produced entirely in the said country? Discuss and make note with the help of the hints given below.

- *Capital*
- *Raw materials*
- *Technology*
- *Assembly*
- *Organiser*

The concept of neo liberalisation led to the growth of marketisation.

Marketisation

As a result of new economic policies, the market has now become free, extensive, and strong. Government control over the market is declining. Many new sectors such as basic infrastructure development, basic industries, banking, insurance, etc. have come under the scope of the market. Many firms which were under the ownership of the government have been privatised and become a part of the market. It has led to a situation where everything is available in the market and where things are available only in the market. This tendency is called marketisation. Profit is the ultimate goal of marketisation.

Arguments for and against new economic policies

There have been many arguments for and against new economic policies. Let us take a look at them.

Arguments in favour of new economic policies

- Availability of wide varieties of products in the market
- Ability to use the most advanced technology
- Fall in price due to increased competition
- Increase in exports
- Entry of companies into foreign trade
- More employment opportunities due to establishment of new enterprises.
- Increase in national income

Arguments against new economic policies

- Increase in economic disparity
- Excess exploitation of natural resource
- Import leads to fall in price of domestic products
- Government loses control over economic system
- Job security declines
- Future income loss of the government due to privatisation of public sector firms

Prepare a note on "Market now and then" by consulting the elders.

Hints - Wants, product variety, price range, foreign products.

Let us assess

- Why is the capitalist economy known as market economy?
- Planning is the main feature of the socialist economy. Explain.
- Today, purely capitalist and socialist economies cannot be found in the world. Substantiate.
- List the actions taken by the Government of India as a part of liberalisation
- Make a note on the working of multinational companies
- Do you support globalisation policies? Why?

Extended activities

- Compare liberalisation policies with Gandhiji's economic ideas and make a note.
- Is there any Indian company that has become a multinational company? Collect information with the help of the Internet.

Notes

Notes

Notes

Notes

Notes

Notes

Security Features of a Genuine Indian Currency Note

We have to know more about currency notes used for financial transactions. Genuine currency notes have certain security features. Awareness of those features can save us from being duped.

- **Paper**

  Banknotes are printed on special watermarked paper with substrate cotton and cotton rag. This gives the banknotes a unique "touch feel" and "crackling sound".

- **Watermark**

  The portrait of Mahatma Gandhi, the multi-directional lines and an electrolyte mark showing the denomination value appear in this section and these can be viewed better when the banknote is held against light.

- **Security Thread**

  All banknotes carry a security thread, partially exposed and partially embedded, with readable window. The security thread of notes up to Rs 500 denomination contains "Bharath" in Hindi and "RBI" in English alternately. Rs 1000 denomination notes additionally contain "1000" as a numeral in the security thread.

- **Micro lettering**

  The letters "RBI" and the denomination value as a numeral can be viewed with the help of a magnifying glass in the zone between the portrait of Mahatma Gandhi and the right vertical band. (However, only letters "RBI" is seen in Rs. 10 denomination).

- **Intaglio Printing**

  The name Reserve Bank of India, the Guarantee Clause, the Promise Clause, the Signature of RBI Governor, the Portrait of Mahatma Gandhi, the Reserve Bank Seal, the Ashoka Pillar Emblem, the Central Denomination Value in words and figures are printed in intaglio, i.e., in raised prints which can be felt by touch.

- **Fluorescence**

  The number panels of banknotes are printed in fluorescent link.

- **Optically Variable Ink**

  The colour of the denomination in numeral appears green when the note is held flat and changes to blue when the note is held at an angle. The font size also appears reduced. This feature is available only on notes of Rs. 500 and Rs. 1000 denominations.

- **Latent Image**

  The vertical band contains the denomination in numeral. This can be seen by keeping the note flat on the palm of your hand at eye level and viewing it against the light.

Printing and circulation of forged notes are offences under Sections 489A to 489E of the Indian Penal Code and are punishable in the courts of law by fine or imprisonment or both.