Social Science

Resources and Development

Textbook in Geography for Class VIII

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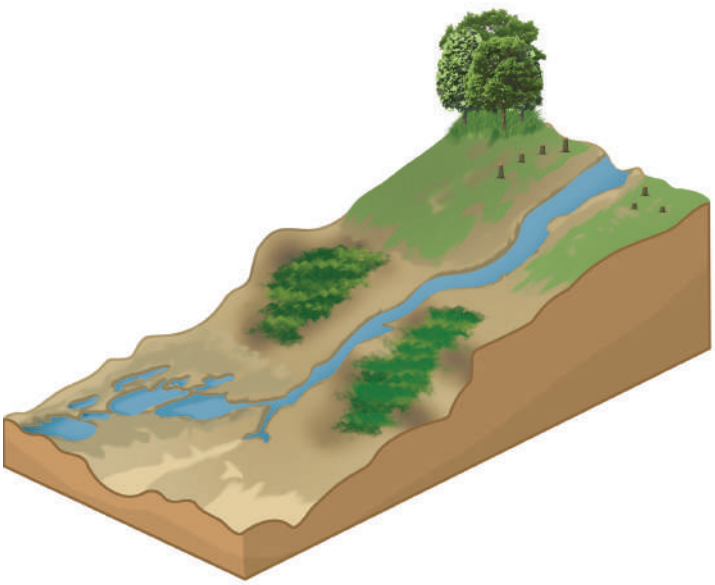

Prepared & Published by
STATE COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING
MIZORAM:AIZAWL

Prescribed for use as a textbook in Geography for Class VIII by the State Council of Educational Research and Training (SCERT), Mizoram, Aizawl

Vide Notification No. M-17021/2/2025-EDN
Dated Aizawl, the 7th November, 2025

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First Edition : **2017**

Tenth Edition : **2026**

Copies : **9834**

Price : **₹ 75/-**

Published by :

THE DIRECTOR
STATE COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING (SCERT)
MIZORAM, AIZAWL

Printed at : **Mizoram Government Press**
Aizawl, Mizoram

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THE CONSTITUTION OF INDIA

PREAMBLE

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

JUSTICE, social, economic and political;

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

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

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

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

---

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

FOREWORD

The State Council of Educational Research & Training, Mizoram has always been committed to fulfilling its role as an academic think–tank to provide critical inputs to ensure quality education. With our role and responsibilities as the Academic Authority for Elementary Education in Mizoram as mandated by the Right to Education Act 2009, the task of developing the curriculum, textbooks and evaluation procedures following the principle and methodology of Continuous and Comprehensive Evaluation has assumed greater importance and significance.

The National Curriculum Framework (NCF), 2005 recommends that children's life at school must be linked to their life outside the school. I am grateful to the National Council of Educational Research & Training (NCERT), New Delhi for sharing the copyrights of the textbooks for necessary adaptations to make the books more meaningful for students in Mizoram.

I extend my sincere gratitude to eminent scholars, educationists, dedicated teachers and my colleagues who have contributed significantly in developing these set of textbooks.

I am confident that the mandates of the RTE Act, fundamentals of education and the recommendations of the NCF 2005 are realised in good measure through such endeavour.

It is therefore, my proud privilege to hand over these books to teachers and students of Mizoram. I am sure that the selection of child friendly materials will ensure that learning becomes a pleasurable journey for the child.

(CAROLINE ZORAMTHANGI)
Director, SCERT
Mizoram:Aizawl

Aizawl
7th November, 2025

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CONSTITUTION OF INDIA

Part IV A (Article 51 A)

Fundamental Duties

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;

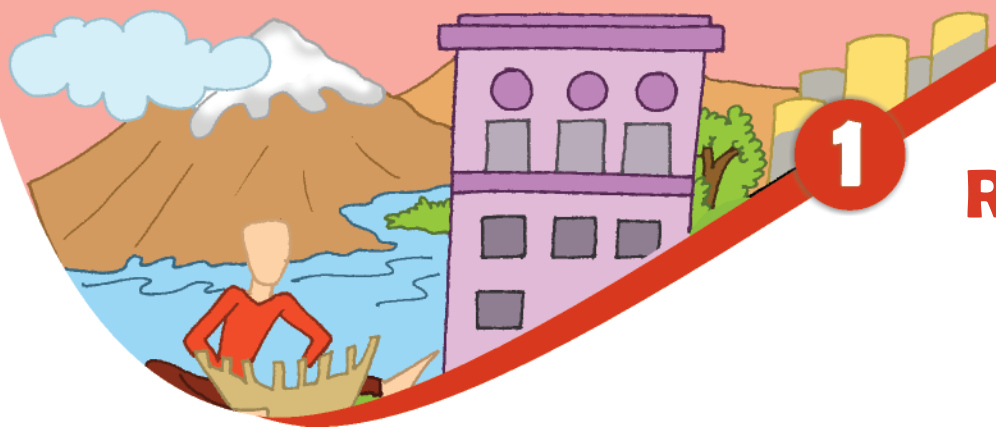
(g) to protect and improve the natural environment including forests, lakes, rivers, wildlife and to have compassion for living creatures;

(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 achievement;

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



1 Resources

Mawii and Fela were helping their mother to clean their house. "Look at all these things.... clothes, utensils, foodgrains, combs, this bottle of honey, books.....Each of these has a use," said Mawii. "That is why they are important," said mother. "These are resources.....". "What is a resource?" was Fela's question to his mother. "Anything that can be used to satisfy a need is a resource", replied his mother. "Look around you and observe, you will be able to identify many types of resources. The water you drink when you are thirsty, the electricity you use in your house, the rickshaw you use to get home from school, the textbook you use to study are all resources. Your father has prepared a tasty snack for you. The fresh vegetables he has used are also a resource".

Assignment
List out five resources you use in your home and five you use in your classroom.

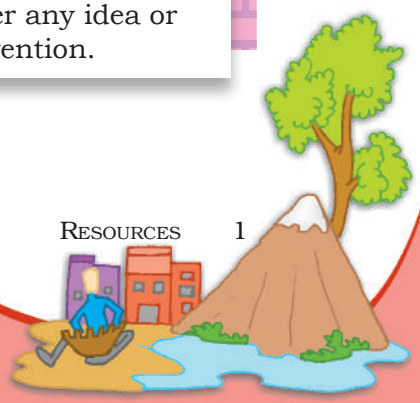
Water, electricity, rickshaw, vegetable and textbook have something in common. They have all been used by you, so they have **utility**. Utility or usability is what makes an object or substance a resource.

*"How does something become a resource?" Fela now wanted to know. His mother told the children that things become resources only when they have a value. "Its use or utility gives it a value. All resources have some **value**." said his mother.*

Value means worth. Some resources have economic value, some do not. For example, metals may have an economic value, a beautiful landscape may not. But both are important and satisfy human needs.

Glossary
Patent: It means the exclusive right over any idea or invention.

Some resources can become economically valuable with time. Your grandmother's home remedies have no commercial value today. But if they are patented and sold by a medical firm tomorrow, they could become economically valuable.



Glossary

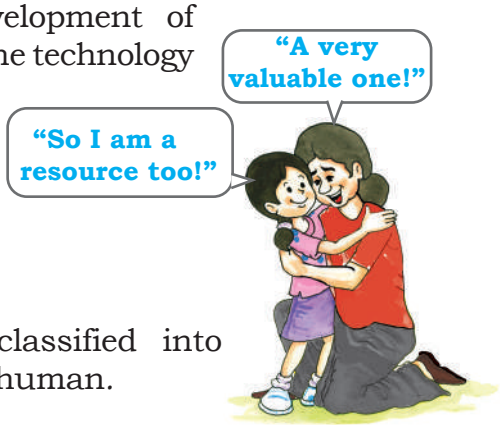
Technology: It is the application of latest knowledge and skill in doing or making things.

Activity

Circle those resources from mother's list that are regarded as having no commercial value.

Mother's List
Cotton cloth
Iron ore
Intelligence
Medicinal plants
Medical knowledge
Coal deposits
Beautiful scenery
Agricultural land
Clean environment
Old folk songs
Good weather
Resourcefulness
A good singing voice
Grandmother's home remedies
Affection from friends and family

Time and technology are two important factors that can change substances into resources. Both are related to the needs of the people. People themselves are the most important resource. It is their ideas, knowledge, inventions and discoveries that lead to the creation of more resources. Each discovery or invention leads to many others. The discovery of fire led to the practice of cooking and other processes while the invention of the wheel ultimately resulted in development of newer modes of transport. The technology to create hydroelectricity has turned energy in fast flowing water into an important resource.



Types of Resources

Resources are generally classified into natural, human made and human.

Natural Resources

Resources that are drawn from Nature and used without much modification are called **natural resources**. The air we breathe, the water in our rivers and lakes, the soils, minerals are all natural resources. Many of these resources are free gifts of nature and can be used directly. In some cases tools and technology may be needed to use a natural resource in the best possible way.

Natural resources can be broadly categorised into **renewable** and **non-renewable** resources.

Renewable resources are those which get renewed or replenished quickly. Some of these are unlimited and are not affected by human activities, such as solar and wind energy. Yet careless use of certain renewable resources like water, soil and forest can affect their stock. Water seems to be an unlimited renewable resource. But shortage and drying up of natural water sources is a major problem in many parts of the world today.

Non-renewable resources are those which have a limited stock. Once the stocks are exhausted it may take thousands of years to be renewed or replenished. Since this period is much more than human life spans, such resources are considered non-renewable.

Coal, petroleum and natural gas are some examples.

The distribution of natural resources depends upon a number of physical factors like terrain, climate and altitude. The distribution of resources is unequal because these factors differ so much over the earth.

Human Made Resources

Sometimes, natural substances become resources only when their original form has been changed. Iron ore was not a resource until people learnt to extract iron from it. People use natural resources to make buildings, bridges, roads, machinery and vehicles, which are known as **human made resources**. Technology is also a human made resource.

"So people like us use natural resources to make human made resources," said Mawii nodding in understanding. "Yes," said Fela.

Human Resources

People can make the best use of nature to create more resources when they have the knowledge, skill and the technology to do so. That is why human beings are a

Read and Ponder: Humans are interdependent on each other. Farmers provide food grains for every one. Scientists suggest various means to combat problems related to agriculture and improve farm production.

Glossary

Stock of Resource
It is the amount of resources available for use.

Let's do

Think of a few renewable resources and mention how their stock may get affected by overuse.

Let's do

Make a list of five human made resources that you can observe around you.

Do you know?

Human Resource refers to the number (quantity) and abilities (mental and physical) of the people. Though, there are differing views regarding treatment of humans as a resource, one cannot deny the fact that it is the skills of humans that help in transferring the physical material into a valuable resource.

special resource. **People are human resources**. Education and health help in making people a valuable resource. Improving the quality of people's skills so that they are able to create more resources is known as **human resource development**.

Conserving Resources

Mawii had a nightmare. She dreamt that all the water on the earth had dried up and all the trees cut down. There was no shade and nothing to eat or drink. People were suffering and roaming around desperately looking for food and shade.

She told her mother about the dream. "Mother can this really happen?" she asked.

"Yes," Mother replied. "If we are not careful then even renewable resources can become very scarce and the non-renewable ones can definitely get exhausted". "What can we do about it," Fela asked. "Lots," replied Mother.

Glossary

Sustainable Development
Carefully utilising resources so that besides meeting the requirements of the present, also takes care of future generations.

Using resources carefully and giving them time to get renewed is called **resource conservation**. Balancing the need to use resources and also conserve them for the future is called **sustainable development**. There are many ways of conserving resources. Each person can contribute by reducing consumption, recycling and reusing things. Ultimately it makes a difference because all our lives are linked.

That evening, the children and their friends made packets and shopping bags out of old newspapers, discarded clothes and baskets from bamboo sticks. "We will give a few to every family we know," said Mawii. "After all it is for a very good cause," said Hmuaka, "To save our resources and to keep our earth alive".

"I am going to be very careful not to waste paper," said Jessy. "Many trees are cut down to make paper," she explained.

"I will see that electricity is not wasted in my house," shouted Hmuaka. "Electricity comes from water and coal."

"I will make sure that water is not wasted at home," said Saii. "Every drop of water is precious"

"Together we can make a difference!" chorused the children.

These are some of the things Mawii, Fela and their friends did. What about you? How are you going to help in conserving resources?

The future of our planet and its people is linked with our ability to maintain and preserve the life support system that nature provides. Therefore it is our duty to ensure that:

- all uses of renewable resources are sustainable.
- the diversity of life on the earth is conserved.
- the damage to natural environmental system is minimised.

Some Principles of Sustainable Development

- Respect and care for all forms of life.
- Improve the quality of human life.
- Conserve the earth's vitality and diversity.
- Minimise the depletion of natural resources.
- Change personal attitude and practices towards the environment.
- Enable communities to care for their own environment.

Exercises

1. Answer the following questions.

(i) Why are resources distributed unequally over the earth?

(ii) What is resource conservation?

(iii) Why are human resources important?

(iv) What is sustainable development?

2. Tick the correct answer.

(i) Which one of the following does NOT make substance a resource?

(a) utility (b) value (c) quantity

(ii) Which one of the following is a human made resource?

(a) medicines to treat cancer

(b) spring water

(c) tropical forests

(iii) Complete the statement.

Non-renewable resources are

(a) those which have limited stock

(b) made by human beings

(c) derived from non-living things

3. Activity

"Rahiman paani raakhiye,
Bin paani sab soon.

Paani gaye na ubere
Moti, manus, choon…"

[Says Rahim, keep water, as without water there is nothing. Without water pearl, swan and dough cannot exist.]

These lines were written by the poet Abdur Rahim Khankhana, one of the nine gems of Akbar's court. What kind of resource is the poet referring to? Write in 100 words what would happen if this resource disappeared?

For Fun

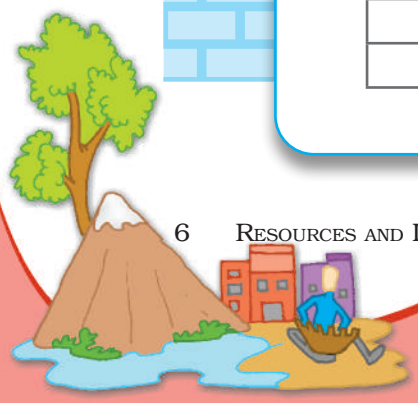
1. Pretend that you live in the prehistoric times on a high windy plateau. What are the uses you and your friends could put the fast winds to? Can you call the wind a resource?

   Now imagine that you are living in the same place in the year 2138. Can you put the winds to any use? How? Can you explain why the wind is an important resource now?

2. Pick up a stone, a leaf, a paper straw and a twig. Think of how you can use these as resources. See the example given below and get creative!

You can use a stone...	**Use/Utility**
To play *stapu*	toy
As a paper-weight	tool
To crush spices	tool
To decorate your garden/room	decoration piece
To open a bottle	tool
In a catapult	weapon

You can use a leaf...	**Use/Utility**



2 Land, Soil, Water, Natural Vegetation and Wildlife Resources

In a small village in Tanzania, Africa, Mamba gets up very early in the morning to fetch water. She has to walk a long way and returns after a few hours. She then helps her mother in the house and joins her brothers in taking care of their goats. All her family owns is a piece of rocky land around their small hut. Mamba's father can barely grow some maize and beans on it after toiling hard. This is not enough to feed their family for the whole year.

Peter lives in the heart of the sheep rearing region in New Zealand where his family runs a wool processing factory. Everyday when he returns from school, Peter watches his uncle taking care of their sheep. Their sheep yard is situated on a wide grassy plain with hills in the far distance. It is managed in a scientific way using the latest technology. Peter's family also grows vegetables through organic farming.

Mamba and Peter stay in two different parts of the world and lead very different lives. This difference is because of the differences in the quality of land, soil, water, natural vegetation, animals and the usage of technology. The availability of such resources is the main reason places differ from each other.

Project

Observe the land, type of soil and water availability in the region you live. Discuss in your class, how it has influenced the lifestyle of people there.

Land

Land is among the most important natural resources. It covers only about thirty per cent of the total area of the earth's surface and all parts of this small percentage are not habitable.

The uneven distribution of population in different parts of the world is mainly due to varied characteristics of land and climate. The rugged topography, steep slopes of the mountains, low-lying areas susceptible

Do you know?

Ninety per cent of the world population occupies only thirty per cent of land area. The remaining seventy per cent of the land is either sparsely populated or uninhabited.

Fig. 2.1: *Salzburg in Austria*
Notice in how many ways the land has been used in the above picture.

to water logging, desert areas, thick forested areas are normally sparsely populated or uninhabited.

Plains and river valleys offer suitable land for agriculture. Hence, these are the densely populated areas of the world.

Land Use

Land is used for different purposes such as agriculture, forestry, mining, building houses, roads and setting up of industries. This is commonly termed as **Land use**. Can you list out the different ways in which Mamba's and Peter's family use their land?

The use of land is determined by physical factors such as topography, soil, climate, minerals and availability of water. Human factors such as population and technology are also important determinants of land use pattern.

Land can also be classified on the basis of ownership as – private land and community land. Private land is owned by individuals whereas, community land is owned by the community for common uses like collection of fodder, fruits, nuts or medicinal herbs. These community lands are also called **common property resources.**

People and their demands are ever growing but the availability of land is limited. The quality of land also differs from place to place. People started encroaching the common lands to build up commercial areas, housing complexes in the urban areas and to expand the agricultural land in the rural areas. Today the vast changes in the land use pattern also reflect the cultural changes in our society. Land degradation, landslides, soil erosion, desertification are the major threats to the environment because of the expansion of agriculture and construction activities.

Notes

Activity

Talk to some elderly person in your family or neighbourhood and collect information about changes in the land use over the years, in the place where you live. Display your findings on a bulletin board in your classroom.

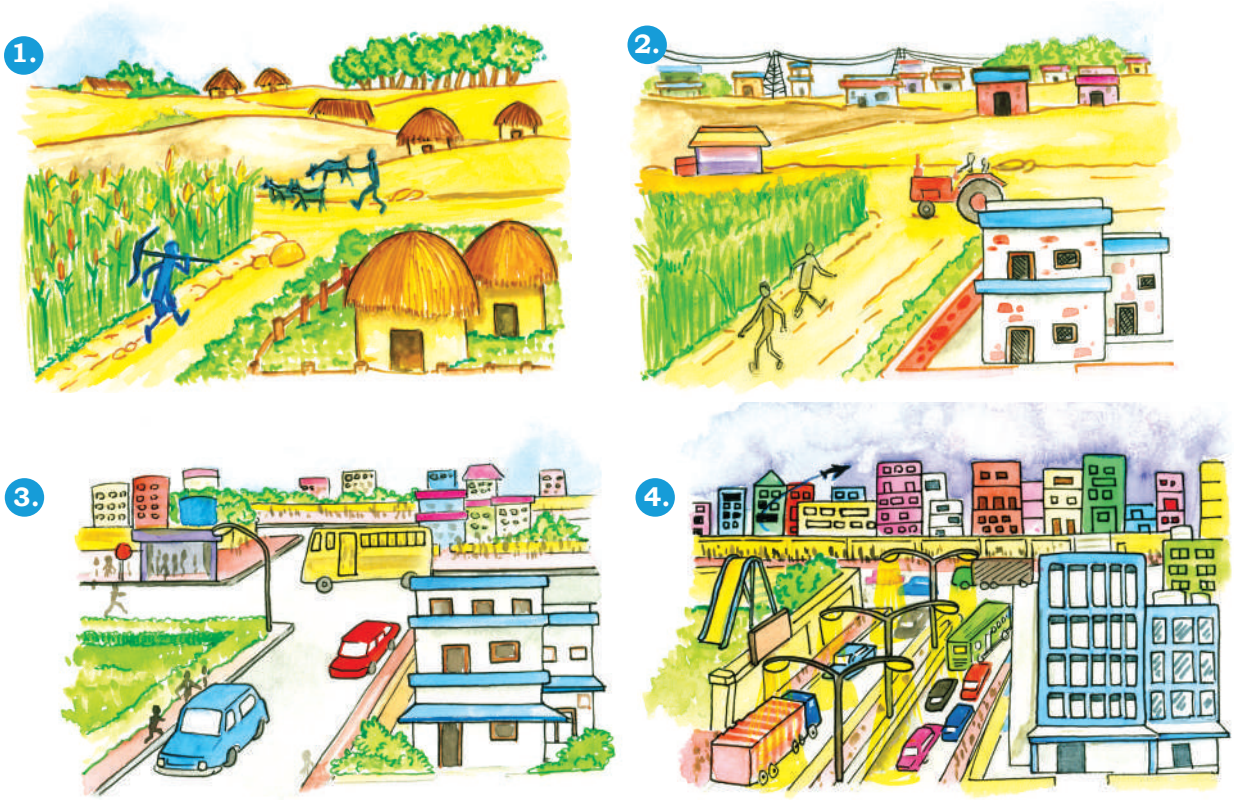


Fig. 2.2: Change in land use over time

Conservation of Land Resource

Growing population and their ever growing demand has led to a large scale destruction of forest cover and arable land and has created a fear of losing this natural resource. Therefore, the present rate of degradation of land must be checked. Afforestation, land reclamation, regulated use of chemical pesticide and fertilisers and checks on overgrazing are some of the common methods used to conserve land resources.

Glossary

Weathering
The breaking up and decay of exposed rocks, by temperature changes, frost action, plants, animals and human activity.

Soil

The thin layer of grainy substance covering the surface of the earth is called soil. It is closely linked to land. Landforms determine the type of soil. Soil is made up of organic matter, minerals and weathered rocks found on the earth. This happens through the process of weathering. The right mix of minerals and organic matter make the soil fertile.

Landslides

Landslides are simply defined as the mass movement of rock, debris or earth down a slope. They often take place in conjunction with earthquakes, floods and volcanoes. A prolonged spell of rainfall can cause heavy landslide that can block the flow of river for quite some time. The formation of river blocks can cause havoc to the settlements downstream on its bursting. In the hilly terrain landslides have been a major and widely spread natural disaster that often strike life and property and occupy a position of major concern.

A Landslide

A Case Study

A massive landslide hit Pangi village near Reckong Peo in Kinnaur district of Himachal Pradesh and damaged a 200-meter stretch of old Hindustan-Tibet road, National Highway - 22. This landslide was triggered by intense blasting at Pangi village. Due to the blasting this weak zone of slope collapsed and caused intense damage to the road and nearby villages. The Pangi village was completely vacated to avoid any possible loss of life.

Mitigation Mechanism

Advancement in scientific techniques has empowered us to understand what factors cause landslides and how to manage them. Some broad mitigation techniques of landslides are as follows:

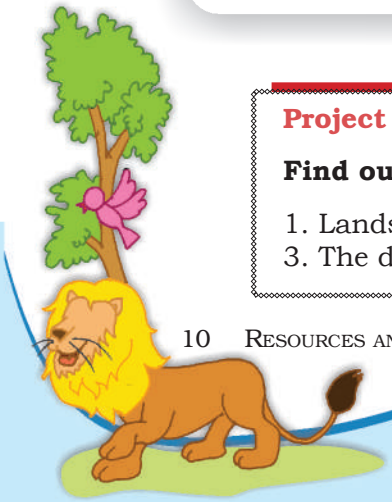
- Hazard mapping to locate areas prone to landslides. Hence, such areas can be avoided for building settlements.
- Construction of retention wall to stop land from slipping.
- Increase in the vegetation cover to arrest landslide.
- The surface drainage control works to control the movement of landslide along with rain water and spring flows.

Retention Wall

Project Work

Find out and write a report under the following heads:

1. Landslide in your village/khua
2. The reasons for the landslides
3. The damage caused by the landslide
3. Prevention of landslide



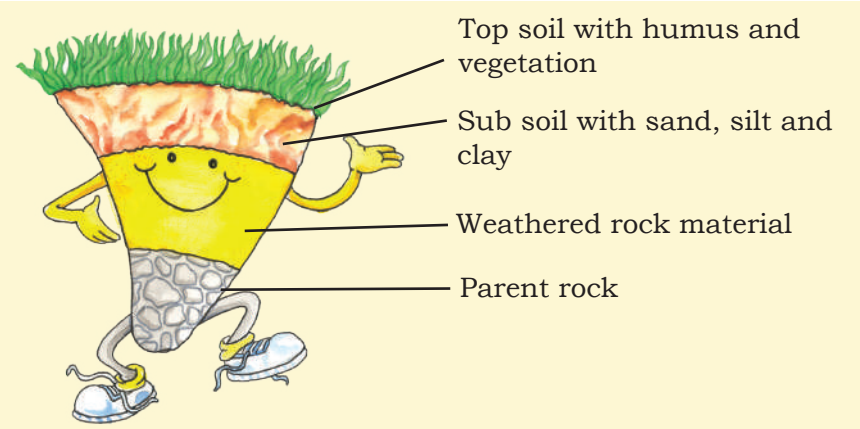


Fig. 2.3: Soil Profile

Do you know?
It takes hundreds of years to make just one centimetre of **soil**.

Factors of Soil Formation

The major factors of **soil formation** are the nature of the parent rock and climatic factors. Other factors are the topography, role of organic material and time taken for the composition of soil formation. All these differ from place to place.

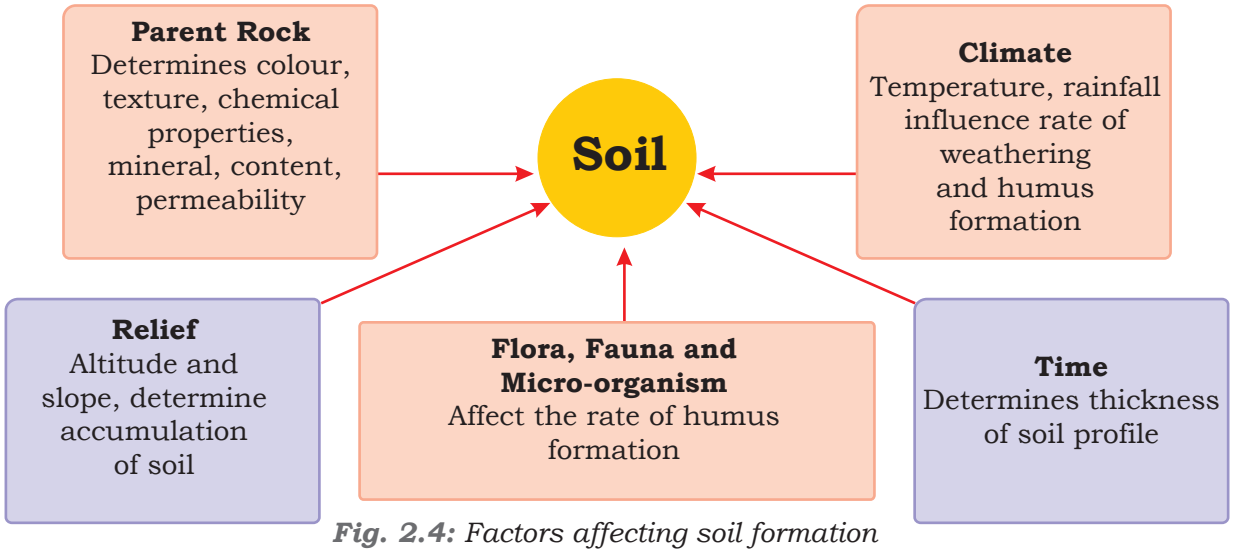


Fig. 2.4: Factors affecting soil formation

Project

In India soils could be alluvial, black, red, laterite, desertic and mountain soil. Collect a handful of different types of soil and observe. How are they different?

Degradation of Soil and Conservation Measures

Soil erosion and depletion are the major threats to soil as a resource. Both human and natural factors can lead to degradation of soils. Factors which lead to soil degradation are deforestation, overgrazing, overuse of chemical feritilisers or pesticides, rain wash, landslides and floods.

Some methods of soil conservation are listed below:

Mulching: The bare ground between plants is covered with a layer of organic matter like straw. It helps to retain soil moisture.

Contour barriers: Stones, grass, soil are used to build barriers along contours. Trenches are made in front of the barriers to collect water.

Rock dam: Rocks are piled up to slow down the flow of water. This prevents gullies and further soil loss.

Fig 2.5: *Terrace Farming*

Fig 2.6: *Contour Ploughing*

Fig 2.7: *Shelter Belts*

Terrace farming: Broad flat steps or terraces are made on the steep slopes so that flat surfaces are available to grow crops. They reduce surface run-off and soil erosion (Fig. 2.5).

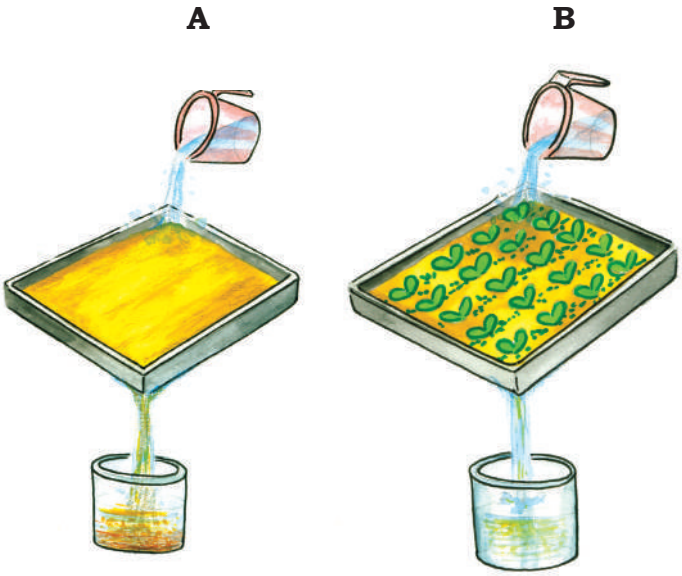
Intercropping: Different crops are grown in alternate rows and are sown at different times to protect the soil from rain wash.

Contour ploughing: Ploughing parallel to the contours of a hill slope to form a natural barrier for water to flow down the slope (Fig. 2.6).

Shelter belts: In the coastal and dry regions, rows of trees are planted to check the wind movement to protect soil cover (Fig. 2.7).

Activity

Take two trays A and B of same size. Make six holes at one end of these trays and then fill them with the same amount of soil. Leave the soil in tray A bare, while sow wheat or rice grains in tray B. When the grain in tray B has grown a few centimetres high, place both the trays in such a way that they are on a slope. Pour one mug of water from the same height into each tray. Collect the muddy water that trickles down the holes of both trays in two separate containers and compare how much soil is washed out of each tray?



Water

Water is a vital renewable natural resource. Three-fourths of the earth's surface is covered with water. It is therefore appropriately called the 'water planet'. It was in the primitive oceans that life began almost 3.5 billion years back. Even today, the oceans cover two-thirds of the earth's surface and support a rich variety of plant and animal life. The ocean water is however saline and not fit for human consumption. Fresh water accounts for only about 2.7 per cent. Nearly 70 per cent of this occurs as ice sheets and glaciers in Antarctica, Greenland and mountain regions. Due to their location they are inaccessible. Only 1 per cent of freshwater is available and fit for human use. It is found as ground water, as surface water in rivers and lakes and as water vapour in the atmosphere.

Fresh water is therefore, the most precious substance on earth. Water can neither be added nor subtracted from the earth. Its total volume remains constant. Its abundance only seems to vary because it is in constant motion, cycling through the oceans, the air, the land and back again, through the processes of evaporation, precipitation and run-off. This as you already know is referred to as the 'water cycle'.

Do you know?

In 1975, the consumption of water for human use was 3850cu km/year. It soared to more than 6000 cu km/year in the year 2000.

Do you know?

A dripping tap wastes1200 litres of water in a year.

Humans use huge amounts of water not only for drinking and washing but also in the process of production. Water for agriculture, industries, generating electricity through reservoirs of dams are the other usages. Increasing population, rising demands for food and cash crops, increasing urbanisation and rising standards of living are the major factors leading to shortages in supply of fresh water either due to drying up of water sources or water pollution.

Activity

An average urban Indian uses about 150 litres of water every day.

Use	Litres per person per day
Drinking	3
Cooking	4
Bathing	20
Flushing	40
Washing clothes	40
Washing utensils	20
Gardening	23
Total 150	

Can you suggest some ways to bring down this amount?

Do you know?

Have you ever heard about a water market? Amreli city in Saurastra region with a population of 1.25 lakhs is completely dependent on purchasing water from the nearby talukas.

Problems of Water Availability

There is scarcity of water in many regions of the world. Most of Africa, West Asia, South Asia, parts of western USA, north-west Mexico, parts of South America and entire Australia are facing shortages in fresh water supply. Countries located in climatic zones most susceptible to droughts face great problems of water scarcity. Thus, water shortage may be a consequence of variation in seasonal or annual precipitation or the scarcity is caused by over-exploitation and contamination of water sources.

Fig 2.8: River Yamuna is getting polluted due to sewage, industrial effluents and garbage

Conservation of Water Resources

Access to clean and adequate water sources is a major problem facing the world today. Steps have to be taken to conserve this dwindling resource. Even though water is a renewable resource, its overuse and pollution make it unfit for use. Discharge of untreated or partially treated sewage, agricultural chemicals and industrial effluents in water bodies are major contaminants. They pollute water with nitrates, metals and pesticides.

Most of these chemicals are non-biodegradable and reach human bodies through water. Water pollution can be controlled by treating these effluents suitably before releasing them in water bodies.

Forest and other vegetation cover slow the surface runoff and replenish underground water. Water harvesting is another method to save surface runoff. The canals used for irrigating field should be properly lined to minimise losses by water seepage. Sprinklers effectively irrigate the area by checking water losses through seepage and evaporation. In dry regions with high rates of evaporation, drip or trickle irrigation is very useful. The valuable water resource can therefore be conserved by adopting these means of irrigation.

Fig 2.9: *A Water Sprinkler*

Do you know?

Rain water harvesting is the process of collecting rain water from roof tops and directing it to an appropriate location where it is stored for future use. On an average, one spell of rain for two hours is enough to save 8,000 litres of water.

Natural Vegetation and Wildlife

Some school children were visiting an exhibition on handicrafts. The articles in the exhibition were collected from different parts of the country. Mona picked up a bag and exclaimed, "This is a beautiful handbag!" "Yes, it is made from Jute," the teacher said. "Do you see those baskets, lamp shades and chairs? Those are made of canes and bamboos. In the eastern and north eastern humid regions of India, bamboo grows in plenty." Jassy was excited to see a silk scarf. "See this beautiful scarf". The teacher explained that silk is obtained from silk worms that are bred on Mulberry trees. The children understood that plants provide us with many different products that we use in our day-to-day life.

Natural vegetation and wildlife exist only in the narrow zone of contact between the lithosphere, hydrosphere and atmosphere that we call **biosphere**. In the biosphere living beings are inter-related and interdependent on each other for survival. This life supporting system is known as the **ecosystem**. Vegetation and wildlife are valuable resources. Plants provide us with timber, give shelter to animals, produce oxygen we breathe, protects soils so

Fig 2.10: *Silk Worms*

essential for growing crops, act as shelter belts, help in storage of underground water, give us fruits, nuts, latex, turpentine oil, gum, medicinal plants and also the paper that is so essential for your studies. There are innumerable uses of plants and you can add some more.

Wildlife includes animals, birds, insects as well as the aquatic life forms. They provide us milk, meat, hides and wool. Insects like bees provide us honey, help in pollination of flowers and have an important role to play as decomposers in the ecosystem. The birds feed on insects and act as decomposers as well. Vulture due to its ability to feed on dead livestock is a scavenger and considered a vital cleanser of the environment. So animals big or small, all are integral to maintaining balance in the ecosystem.

Do you know?

Vultures in the Indian subcontinent were dying of kidney failure shortly after scavenging livestock treated with diclofenac, a painkiller that is similar to aspirin or ibuprofen. Efforts are on to ban the drug for livestock use and breed vultures in captivity.

Fig 2.11: *Brahma Kamal a Medicinal Herb*

Fig 2.12: *A Blue Kingfisher*

Distribution of Natural Vegetation

The growth of vegetation depends primarily on temperature and moisture. The major vegetation types of the world are grouped as forests, grasslands, scrubs and tundra.

In areas of heavy rainfall, huge trees may thrive. The forests are thus associated with areas having abundant water supply. As the amount of moisture decreases the size of trees and their density reduces. Short stunted trees and grasses grow in the regions of moderate rainfall forming the grasslands of the world. Thorny shrubs and

Fig. 2.13: *Grassland and Forest*

scrubs grow in dry areas of low rainfall. In such areas plants have deep roots and leaves with thorny and waxy surface which reduces loss of moisture through transpiration. Tundra vegetation of cold Polar Regions comprise of mosses and lichens.

Fig. 2.14: *A Python in a forest*

Today there are many more people in the world than there were two centuries back. To feed the growing numbers, large areas of forests have been cleared to grow crops. Forest cover all over the world is vanishing rapidly. There is an urgent need to conserve this valuable resource.

Fig. 2.15: *A collage of a forest made by school students*

Conservation of Natural Vegetation and Wildlife

Forests are our wealth. Plants give shelter to the animals and together they maintain the ecosystem. Changes of climate and human interferences can cause the loss of natural habitats for the plants and animals. Many species have become vulnerable or endangered and some are on the verge of extinction.

Deforestation, soil erosion, constructional activities, forest fires, tsunami and landslides are some of the human and natural factors which accelerate the process of extinction of these resources. One of the major concerns is the poaching which results in a sharp decline in the number of particular species. The animals are poached for collection and illegal trade of hides, skins, nails, teeth, horns as well as feathers. Some of these animals are tiger, lion, elephant, deer, black buck, crocodile, rhinoceros, snow leopard, ostrich

Fig. 2.16: *Loss of rainforest in Great Nicobar after Tsunami*

Fig. 2.17: *Black buck also needs protection*

and peacock. These can be conserved by increasing awareness.

National parks, wildlife sanctuaries, biosphere reserves are made to protect our natural vegetation and wildlife. Conservation of creeks, lakes, and wetlands is necessary to save the precious resource from depletion.

There is a balance in the environment if the relative number of species is not disturbed. Human activities in several parts of the world have disturbed the natural

Forest Fire

As California fires rage for fourth day, hopes rest on winds easing

Forest fires kill 41 in Greece

500,000 flee California fires

As California fires day, hopes rest on

California breathes easy as fire tamed

Fires drive stars from homes to posh hotels, disrupt TV work

The California feel to a natural disaster

California wildfires spread, nearly a million told to flee

Almost 700 Homes Burned, Dozens Of Firefighters Injured

High-tech firefighter

The California feel to a natural disaster

Did global warming fan the wildfire?

Kid with matches started massive US fire

Boy Admitted Sparking One Of The California Fires That Destroyed 2,100 Homes, Left 14 Dead

Activity

Read the news item and find out how fires or a fire started in California? Could it be the cause of forest fires or a fire in Mizoram? Could we avoid it in Mizoram?

Know More

Forest fire is a threat to the entire region of fauna and flora. It occurs mainly due to three reasons:

1. Natural fire due to lightning etc.
2. Fire due to heat generated in the litter due to carelessness of people.
3. Fire purposely caused by local inhabitants, mischief makers, miscreants etc.

Some Control Measures

1. Prevention of fires through education.
2. Prompt detection of fires through a well co-ordinated network of observation points, efficient ground patrolling and communication network.

habitats of many species. Due to indiscriminate killings, several birds and animals have either become extinct or are on the verge of extinction.

Awareness programmes like social forestry and *Vanamohatasava* should be encouraged at the regional and community level. School children should be encouraged to bird watch and visit nature camps so that they appreciate the habitat of varied species.

Many countries have passed laws against the trade as well as killing of birds and animals. In India, killing lions, tigers, deers, great Indian bustards and peacocks is illegal.

An international convention CITES has been established that lists several species of animals and birds in which trade is prohibited. Conservation of plants and animals is an ethical duty of every citizen.

Glossary

National Park
A natural area designated to protect the ecological integrity of one or more ecosystems for the present and the future generations.

Fig. 2.18: *A Herd of Cheetals*

Fig. 2.19: *A herd of Elephants in Kaziranga National Park*

Glossary

Biosphere reserves
Series of protected areas linked through a global network, intended to demonstrate the relationship between conservation and development.

Do you know?

CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) is an international agreement between governments. It aims to ensure that international trade in specimens of wild animals and plants does not threaten their survival. Roughly 5,000 species of animals and 28,000 species of plants are protected. Bears, dolphins, cacti, corals, orchids and aloes are some examples.

Exercises

1. Answer the following questions.

(i) Which are the two main climatic factors responsible for soil formation?

(ii) Write any two reasons for land degradation today.

(iii) Why is land considered an important resource?

(iv) Name any two steps that the government has taken to conserve plants and animals.

(v) Suggest three ways to conserve water.

2. Tick the correct answer.

(i) Which one of the following is NOT a factor of soil formation?

(a) time (b) soil texture (c) organic matter

(ii) Which one of the following methods is most appropriate to check soil erosion on steep slopes?

(a) shelter belts (b) mulching (c) terrace cultivation

(iii) Which one of the following is NOT in favour of the conservation of nature?

(a) switch off the bulb when not in use

(b) close the tap immediately after using

(c) dispose polypacks after shopping

3. Match the following:

(i) Land use	(a) prevent soil erosion
(ii) Humus	(b) narrow zone of contact between the lithosphere, hydrosphere and atmosphere
(iii) Rock dams	(c) productive use of land
(iv) Biosphere	(d) organic matter deposited on top soil
	(e) contour ploughing

4. State whether the given statement is true or false. If true, write the reasons.

(i) Ganga–Brahmaputra plain of India is an overpopulated region.

(ii) Water availability per person in India is declining.

(iii) Rows of trees planted in the coastal areas to check the wind movement is called intercropping.

(iv) Human interference and changes of climate can maintain the ecosystem.

5. Activity

Discuss some more reasons which are responsible for changes of land use pattern. Has your place undergone any change in the land use pattern in recent years?

Find out from your parents and elderly people. You can conduct an interview by asking the following questions.

Place	When your grand-parents were in their 30's	When your parents were in their 30's	Why do you think this is happening?	Are common areas and open spaces disappearing?
Rural				
Number of cattle and poultry owned				
Number of trees and ponds in the village				
Main occupation of the head of the family				
Urban				
Number of cars owned				
Number of rooms in the house				
Number of metalled roads				
Number of flyovers in the city				
Number of parks and playgrounds				

Based on the table you have just completed, draw a picture of land use patterns that you foresee in your neighbourhood after 20 years. Why do you think that land use patterns change over the years?

3 Agriculture

Gurpreet, Madho and Tina were walking through the village where they saw a farmer tilling land. The farmer told them that he was growing wheat and had just added manure to the soil to make it more fertile. He told the children that the wheat would fetch a good price in the mandi/market from where it would be taken to factories to make bread and biscuits from flour.

This transformation from a plant to a finished product involves three types of economic activities. These are primary, secondary and tertiary activities.

Primary activities include all those connected with extraction and production of natural resources. Agriculture, fishing and gathering are good examples. Secondary activities are concerned with the processing of these resources. Manufacturing of steel, baking of bread and weaving of cloth are examples of this activity. Tertiary activities provide support to the primary and secondary sectors through services. Transport, trade, banking, insurance and advertising are examples of tertiary activities.

Word Origin

The word agriculture is derived from Latin words *ager* or *agri* meaning soil and *culture* meaning, cultivation.

Agriculture is a primary activity. It includes growing crops, fruits, vegetables, flowers and rearing of livestock. In the world, 50 per cent of persons are engaged in agricultural activity. Two-thirds of India's population is still dependent on agriculture.

Favourable topography of soil and climate are vital for agricultural activity. The land on which the crops are grown is known as arable land (Fig. 3.1). In the map you can see that agricultural activity is concentrated in those regions of the world where suitable factors for the growing of crops exist.

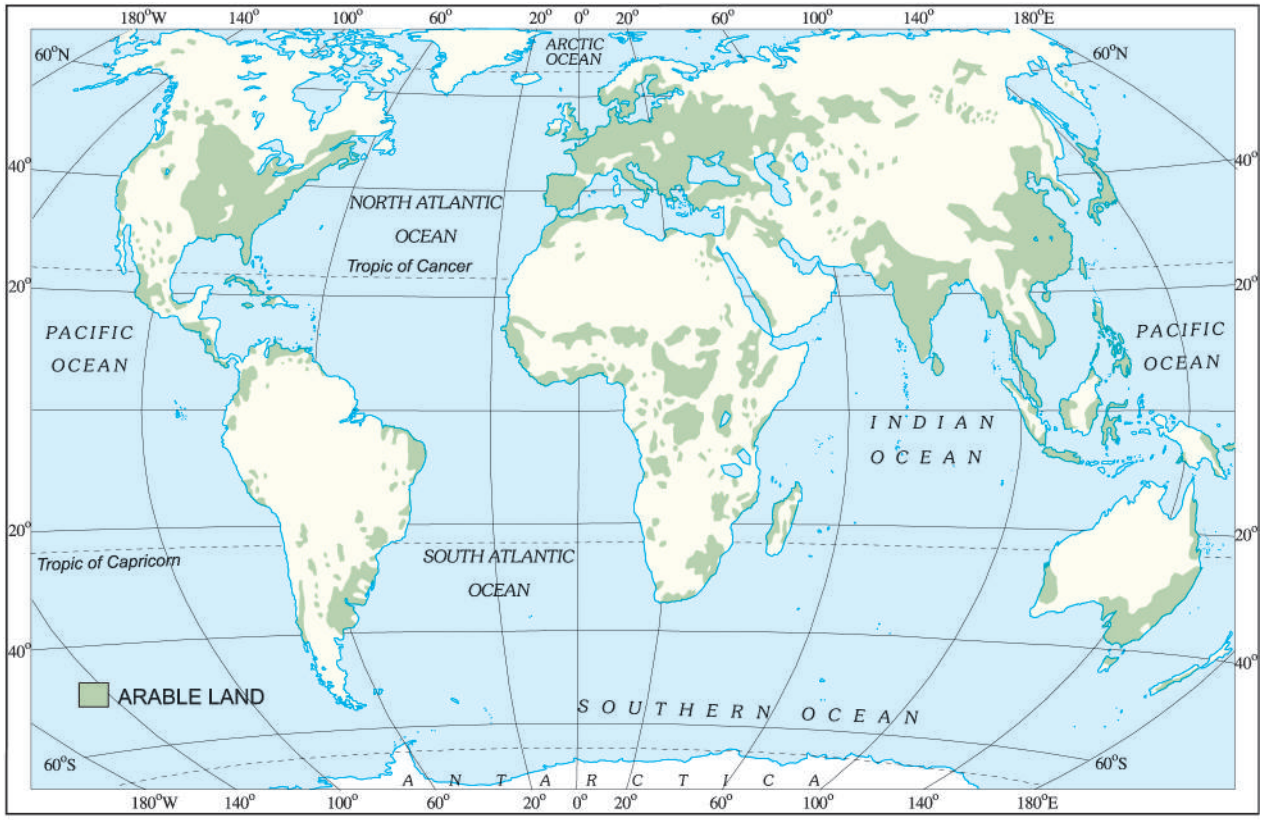


Fig. 3.1: World Distribution of Arable Land

Do you know?

Agri
Seri
Pisci
Viti
Horti
+ *Culture*

Agriculture
The science and art of cultivation on the soil, raising crops and rearing livestock. It is also called farming.

Sericulture
Commercial rearing of silk worms. It may supplement the income of the farmer.

Pisciculture
Breeding of fish in specially constructed tanks and ponds.

Viticulture
Cultivation of grapes.

Horticulture
Growing vegetables, flowers and fruits for commercial use.

Farm System

Agriculture or farming can be looked at as a system. The important inputs are seeds, fertilisers, machinery and

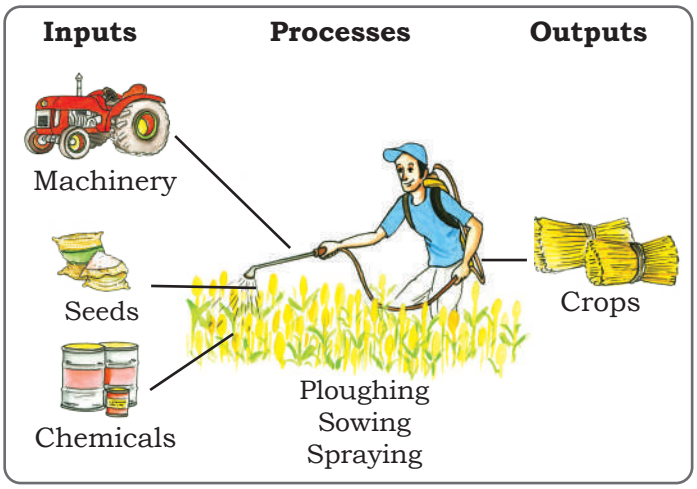


Fig 3.2: The farm system of an arable farm

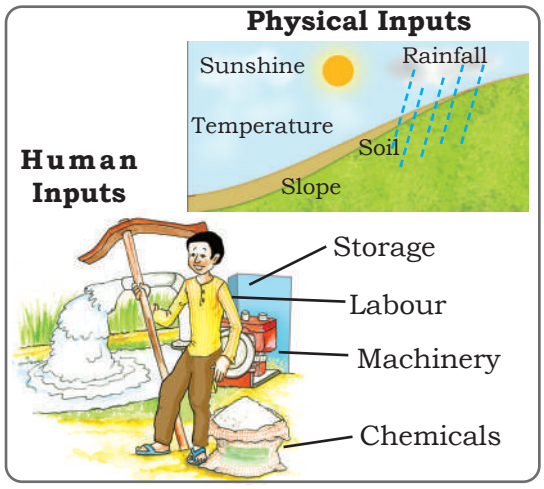


Fig 3.3: Physical and human farm inputs

labour. Some of the operations involved are ploughing, sowing, irrigation, weeding and harvesting. The outputs from the system include crops, wool, dairy and poultry products.

Types Of Farming

Farming is practised in various ways across the world. Depending upon the geographical conditions, demand of produce, labour and level of technology, farming can be classified into two main types. These are **subsistence farming** and **commercial farming**.

Interesting Fact

Organic Farming

In this type of farming, organic manure and natural pesticides are used instead of chemicals. No genetic modification is done to increase the yield of the crop.

Subsistence Farming

This type of farming is practised to meet the needs of the farmer's family. Traditionally, low levels of technology and household labour are used to produce a small output. Subsistence farming can be further classified as intensive subsistence and primitive subsistence farming.

In **intensive subsistence agriculture** the farmer cultivates a small plot of land using simple tools and more labour. Climate with large number of days with sunshine and fertile soils permit growing of more than one crop annually on the same plot. Rice is the main crop. Other crops include wheat, maize, pulses and oilseeds. Intensive subsistence agriculture is prevalent in the thickly populated areas of the monsoon regions of south, southeast and east Asia.

Primitive subsistence agriculture includes shifting cultivation and nomadic herding.

Shifting cultivation is practised in the thickly forested areas of the Amazon basin, tropical Africa, parts of southeast Asia and Northeast India. These are the areas of heavy rainfall and quick regeneration of vegetation. A plot of land is cleared by felling the trees and burning them. The ashes are then mixed with the soil and crops like maize, yam, potatoes and cassava are grown. After the soil loses its fertility, the land is abandoned and the cultivator moves to a new plot. Shifting cultivation is also known as 'slash and burn' agriculture.

Do you know?
Shifting cultivation is known by different names in different parts of the world
Jhumming - North-East India
Milpa -Mexico
Roca - Brazil.
Ladang - Malaysia

Nomadic herding is practised in the semi-arid and arid regions of Sahara, Central Asia and some parts of India, like Rajasthan and Jammu and Kashmir. In this type of farming, herdsmen move from place to place with their animals for fodder and water, along defined routes. This type of movement arises in response to climatic constraints and terrain. Sheep, camel, yak and goats are most commonly reared. They provide milk, meat, wool, hides and other products to the herders and their families.

Fig 3.4: *Nomadic Herders with their camels*

Commercial Farming

In commercial farming crops are grown and animals are reared for sale in a market. The area cultivated and the amount of capital used is large. Most of the work is done by machines. Commercial farming includes commercial grain farming, mixed farming and plantation agriculture (Fig 3.5).

Fig 3.5: *A Sugarcane plantation*

In *commercial grain farming* crops are grown for commercial purpose. Wheat and maize are common commercially grown grains. Major areas where commercial grain farming is practised are the temperate grasslands of North America, Europe and Asia. These areas are sparsely populated with large farms spreading over hundreds of hectares. Severe winters restrict the growing season and only a single crop can be grown.

In **mixed farming** the land is used for growing food and fodder crops and rearing livestock.

It is practised in Europe, eastern USA, Argentina, southeast Australia, New Zealand and South Africa.

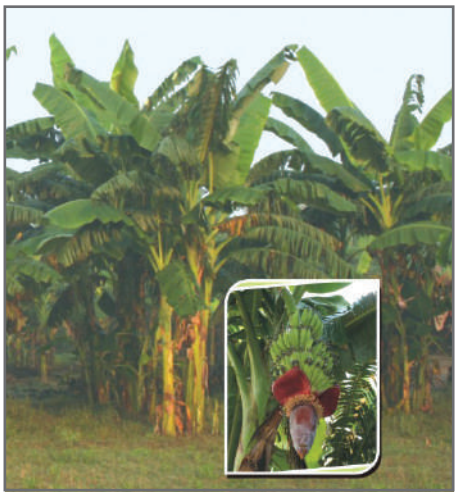


Fig 3.6 : A Banana Plantation

Plantations are a type of commercial farming where single crop of tea, coffee, sugarcane, cashew, rubber, banana or cotton are grown. A large amount of labour and capital are required. The produce may be processed on the farm itself or in nearby factories. The development of a transport network is thus essential for such farming.

Major plantations are found in the tropical regions of the world. Rubber in Malaysia, coffee in Brazil, tea in India and Sri Lanka are some examples.

Major Crops

A large variety of crops are grown to meet the requirement of the growing population. Crops also supply raw materials for agro based industries. Major food crops are wheat, rice, maize and millets. Jute and cotton are fibre crops. Important beverage crops are tea and coffee.

Fig 3.7: Rice Cultivation

Rice: Rice is the major food crop of the world. It is the staple diet of the tropical and sub-tropical regions. Rice needs high temperature, high humidity and rainfall. It grows best in alluvial clayey soil, which can retain water. China leads in the production of rice followed by India, Japan, Sri Lanka and Egypt. In favourable climatic conditions as in West Bengal and Bangladesh two to three crops are grown in a year.

Fig 3.8: Wheat Harvesting

Wheat: Wheat requires moderate temperature and rainfall during growing season and bright sunshine at the time of harvest. It thrives best in well drained loamy soil. Wheat is grown extensively in USA, Canada, Argentina, Russia, Ukraine, Australia and India. In India it is grown in winter.

Fig 3.9: Bajra Cultivation

Millets: They are also known as coarse grains and can be grown on less fertile and sandy soils. It is a hardy crop that needs low rainfall and high to

moderate temperature and adequate rainfall. Jowar, bajra and ragi are grown in India. Other countries are Nigeria, China and Niger.

Fig 3.10: Maize Cultivation

Maize: Maize requires moderate temperature, rainfall and lots of sunshine. It needs well-drained fertile soils. Maize is grown in North America, Brazil, China, Russia, Canada, India, and Mexico.

Fig 3.11: Cotton Cultivation

Cotton: Cotton requires high temperature, light rainfall, two hundred and ten frost-free days and bright sunshine for its growth. It grows best on black and alluvial soils. China, USA, India, Pakistan, Brazil and Egypt are the leading producers of cotton. It is one of the main raw materials for the cotton textile industry.

Jute: Jute was also known as the 'Golden Fibre'. It grows well on alluvial soil and requires high temperature, heavy rainfall and humid climate. This crop is grown in the tropical areas. India and Bangladesh are the leading producers of jute.

Fig 3.12: Coffee Plantation

Coffee: Coffee requires warm and wet climate and well-drained loamy soil. Hill slopes are more suitable for growth of this crop. Brazil is the leading producer followed by Columbia and India.

Tea: Tea is a beverage crop grown on plantations. This requires cool climate and well distributed high rainfall throughout the year for the growth of its tender leaves.

Do you know?

Maize is also known as corn. Various colourful varieties of maize are found across the world.

Interesting Fact

Who discovered the Coffee Plant?

There are different versions about the discovery of coffee. In about AD 850, Kaldi, an Arab goat-herder, who was puzzled by the queer antics of his flock, tasted the berries of the evergreen bush on which the goats were feeding. On experiencing a sense of exhilaration, he proclaimed his discovery to the world.

Fig 3.13: Tea Plantation

It needs well-drained loamy soils and gentle slopes. Labour in large numbers is required to pick the leaves. Kenya, India, China, Sri Lanka produce the best quality tea in the world.

Agricultural Development

Agricultural Development refers to efforts made to increase farm production in order to meet the growing demand of increasing population. This can be achieved in many ways such as increasing the cropped area, the number of crops grown, improving irrigation facilities, use of fertilisers and high yielding variety of seeds. Mechanisation of agriculture is also another aspect of agricultural development. The ultimate aim of agricultural development is to increase food security.

Do you know?
Food security exists when all people, at all times, have access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.

Agriculture has developed at different places in different parts of the world. Developing countries with large populations usually practise intensive agriculture where crops are grown on small holdings mostly for subsistence. Larger holdings are more suitable for commercial agriculture as in USA, Canada and Australia. With the help of two case studies of farms — one from India and the other from the USA, let us understand about agriculture in a developing country and a developed country.

A Farm in India

There is a small village Adilabad in Ghazipur district of Uttar Pradesh. Munna Lal is a small farmer in this village who has a farmland of about 1.5 hectares. His house is in the main village. He purchases high yielding varieties of seeds from the market every alternate year. The land is fertile and he grows atleast two crops in a year which are normally wheat or rice and pulses. The farmer takes advice from his friends and elders as well as government agricultural officers regarding farming practices. He takes a tractor on rent for ploughing his field, though some of his friends still use the traditional method of using bullocks for ploughing. There is a tubewell in the nearby field which he takes on rent to irrigate his field.

Munna Lal also has two buffaloes and few hens. He sells milk in the cooperative store located in the nearby town. He is a member of the co-operative society which also advises him on the type of fodder for his animals, safety measures to protect the health of the livestock and artificial insemination.

All the members of the family help him in various farm activities. Sometimes, he takes credit from a bank or the agricultural co-operative society to buy High Yield Variety (HYV) seeds and implements.

Fig 3.14: *An Agricultural Field in India*

He sells his produce in the *mandi* located in the nearby town. Since a majority of the farmers lack storage facilities, they are forced to sell the produce even when the market is not favourable to them. In recent years, the government has taken some steps to develop storage facilites.

A Farm in the USA

The average size of a farm in the USA is much larger than that of an Indian farm. A typical farm size in the USA is about 250 hectares. The farmer generally resides in the farm. Some of the major crops grown are corn, soyabean, wheat, cotton and sugarbeet. Joe Horan, a farmer in the Midwest USA, in Iowa State owns about 300 hectares of land. He grows corn on his field after making sure that soil and water resources meet the needs of this crop. Adequate measures are taken to control pests that can damage the crop. From time to time he sends the soil samples to a soil testing laboratory to check whether the nutrients are sufficient or not. The results help Joe Horan to plan a scientific fertiliser programme. His computer is linked to the satellite which gives him a precise picture of his field. This helps him to use chemical fertilisers

Fig 3.15: *A Farm in the USA*

Fig 3.17: *Spray of Pesticides*

Fig 3.18: Mechanised Harvesting in the USA

and pesticides wherever they are required. He uses tractors, seed drills, leveller, combined harvester and thresher to perform various agricultural operations. Grains are stored in the automated grain storage or despatched to market agencies. The farmer in USA works like a businessman and not like a peasant farmer.

Exercises

1. Answer the following questions.

(i) What is agriculture?

(ii) Name the factors influencing agriculture?

(iii) What is shifting cultivation? What are its disadvantages?

(iv) What is plantation agriculture?

(v) Name the fibre crops and name the climatic conditions required for their growth.

2. Tick the correct answer.

(i) Horticulture means
(a) growing of fruits and vegetables (b) primitive farming
(c) growing of wheat

(ii) Golden fibre refers to
(a) tea (b) cotton (c) jute

(iii) Leading producers of coffee
(a) Brazil (b) India (c) Russia

3. Give reasons.

(i) In India agriculture is a primary activity.

(ii) Different crops are grown in different regions.

4. Distinguish between the followings.

(i) Primary activites and tertiary activities.

(ii) Subsistence farming and intenstive farming.

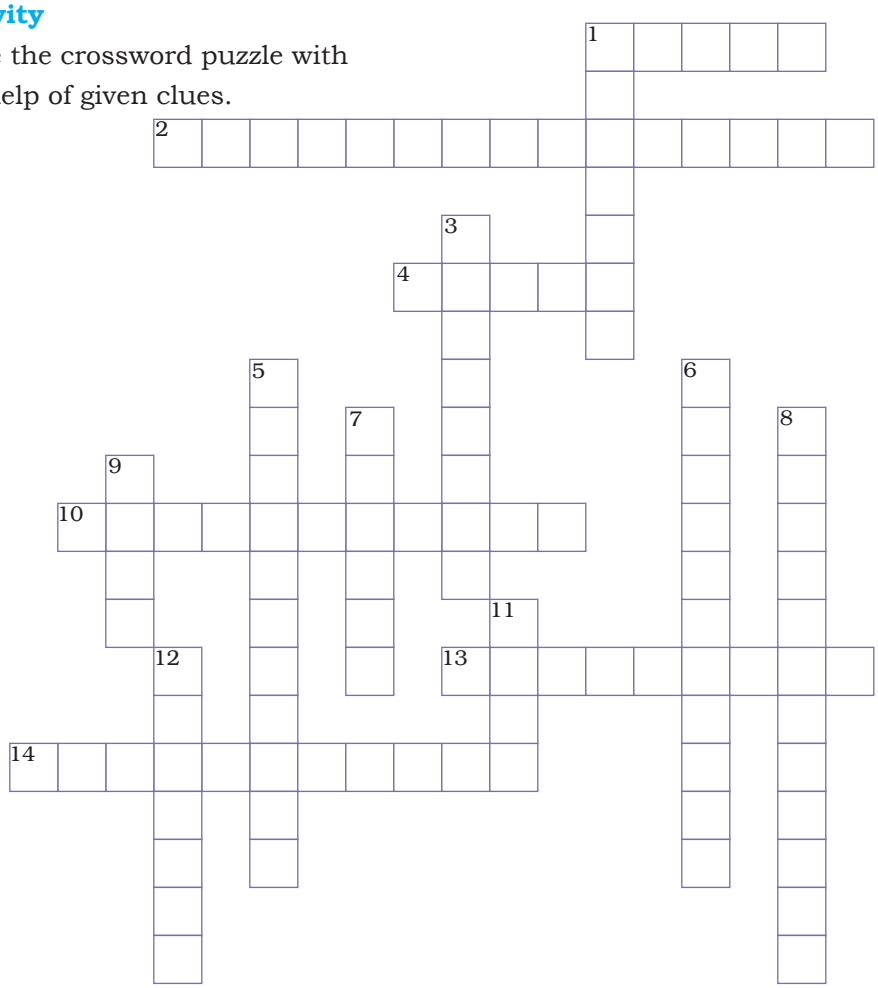
5. Project

(i) Collect seeds of wheat, rice, jowar, bajra, ragi, maize, oilseeds and pulses available in the market. Bring them to the class and find out in which type of soil they grow.

(ii) Find out the difference between the life style of farmers in the USA and India on the basis of pictures collected from magazines, books, newspapers and the internet.

6. Activity

Solve the crossword puzzle with the help of given clues.

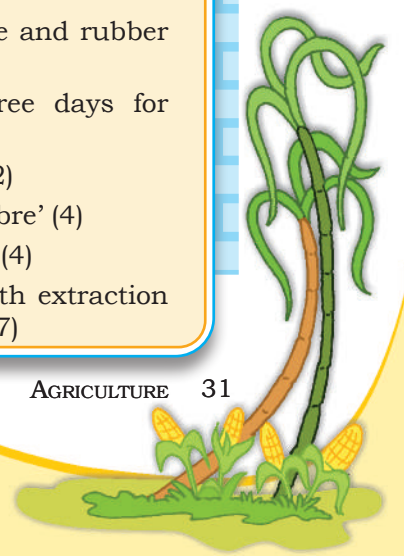


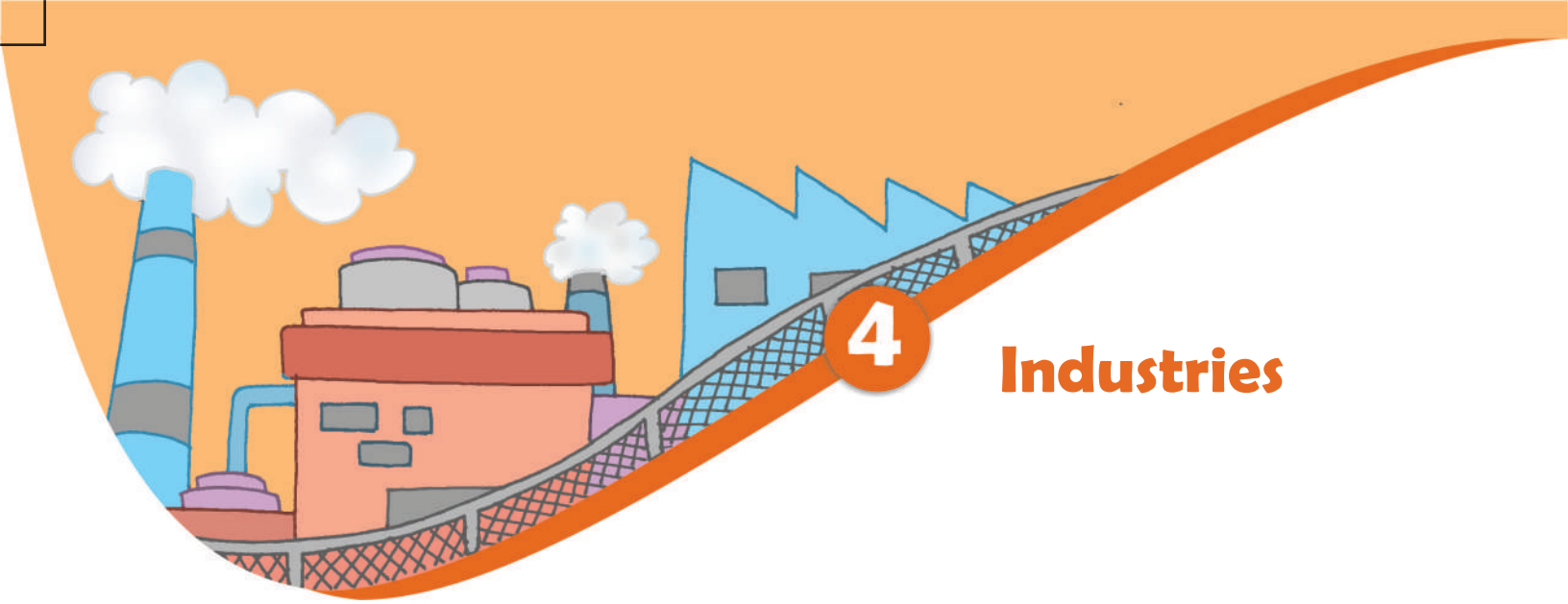
Across

1. Crop that needs well drained fertile soils, moderate temperatures and lots of sunshine (5)
2. Increasing production through use of HYV seeds, chemical fertilisers and pesticides (5,10)
4. USA, Canada, Russia, Australia are major producers of this crop (5)
10. Type of farming to meet family needs (11)
13. Rearing of animals for sale (9)
14. Growing grapes for wines (11)

Down

1. Coarse grains are also called (7)
3. Cultivation involving slash and burn (8)
5. Growing of crops, fruits and vegetables (11)
6. Tea, coffee, sugarcane and rubber are grown in (11)
7. Requires 210 frost-free days for growth (6)
8. Growing of flowers (12)
9. Also called 'Golden Fibre' (4)
11. Also known as paddy (4)
12. Activity concerned with extraction of natural resources (7)





4 Industries

Journey begins...

...paper made...
...recycle...

Have you ever given a thought to the fact that the note book you use for writing has come to you after a long process of manufacturing. It started its life as part of a tree. It was cut down and transported to the pulp mill. There the wood of the tree was processed and converted into wood pulp. The wood pulp was mixed with chemicals and finally changed into paper by machines. This paper found its way to the press where ink made from chemicals was used to print the lines on the pages. The pages were then bound in the form of a note book, packed and sent to the market for sale. Finally, it reached your hands.

Secondary activities or **manufacturing** change raw materials into products of more value to people. As you have seen pulp was changed into paper and paper into a note book. These represent the two stages of the manufacturing process.

The paper made from pulp and cloth made from cotton have had value added to them at each stage of the manufacturing process. In this way the finished product has more value and utility than the raw material that it is made from.

Industry refers to an economic activity that is concerned with production of goods, extraction of minerals or the provision of services. Thus we have iron and steel industry (production of goods), coal mining industry (extraction of coal) and tourism industry (service provider).

Activity
Trace the journey of your shirt from a cotton field to your wardrobe.

Classification of Industries

Industries can be classified on the basis of raw materials, size and ownership.

Raw Materials: Industries may be agro based, mineral based, marine based and forest based depending on the type of raw materials they use. **Agro based industries** use plant and animal based products as their raw materials. Food processing, vegetable oil, cotton textile, dairy products and leather industries are examples of agro-based industries. **Mineral based industries** are primary industries that use mineral ores as their raw materials. The products of these industries feed other industries. Iron made from iron ore is the product of a mineral based industry. This is used as raw material for the manufacture of a number of other products, such as heavy machinery, building materials and railway coaches. **Marine based industries** use products from the sea and oceans as raw materials. Industries processing sea food or manufacturing fish oil are some examples. **Forest based industries** utilise forest produce as raw materials. The industries associated with forests are pulp and paper, pharmaceuticals, furniture and buildings.

Activity
Give some examples of agro based industries.

Size: It refers to the amount of capital invested, number of people employed and the volume of production. Based on size, industries can be classified into **small scale** and **large scale industries**. Cottage or household industries are a type of small scale industry where the products are manufactured by hand, by the artisans. Basket weaving, pottery and other handicrafts are examples of cottage industry. Small scale industries use lesser amount of capital and technology as compared to large scale industries that produce large volumes of products. Investment of capital is higher and the technology used is superior in large scale industries. Silk weaving and food processing industries are small scale industries(Fig 5.1). Production of automobiles and heavy machinery are large scale industries.

Fig 4.1: *Stages in food processing of Gorgon nut (makhana)*

Ownership: Industries can be classified into private sector, state owned or public sector, joint sector and cooperative sector. **Private sector industries** are owned and operated by individuals or a group of individuals. The public sector industries are owned and operated by the government, such as Hindustan Aeronautics Limited and Steel Authority of

Fig 4.2: Sudha dairy in Co-operative sector

India Limited. **Joint sector industries** are owned and operated by the state and individuals or a group of individuals. Maruti Udyog Limited is an example of a joint sector industry. **Co-operative sector** industries are owned and operated by the producers or suppliers of raw materials, workers or both. Anand Milk Union Limited and Sudha Dairy are success stories of a co-operative venture.

Factors Affecting Location of Industries

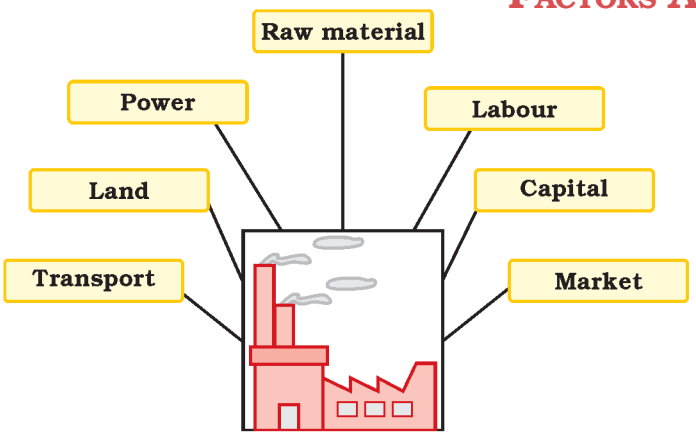


Fig 4.3: Locational factors for industries

The factors affecting the location of industries are the availability of raw material, land, water, labour, power, capital, transport and market. Industries are situated where some or all of these factors are easily available. Sometimes, the government provides incentives like subsidised power, lower transport cost and other infrastructure so that industries may be located in backward areas. Industrialisation often leads to development and growth of towns and cities.

Industrial System

An industrial system consists of inputs, processes and outputs. The inputs are the raw materials, labour and costs of land, transport, power and other infrastructure. The processes include a wide range of activities that convert the raw material into finished products. The outputs are the end product and the income earned from it. In case of the textile industry the inputs may be cotton, human labour, factory and transport cost. The processes include ginning, spinning, weaving, dyeing and printing. The output is the shirt you wear.

Project

Find out the inputs, outputs and processes involved in the manufacture of a leather shoe.

Industrial Regions

Industrial regions emerge when a number of industries are located close to each other and share the benefits of their closeness. Major industrial regions of the world are eastern North America, western and central Europe, eastern Europe and eastern Asia (Fig 4.4). Major

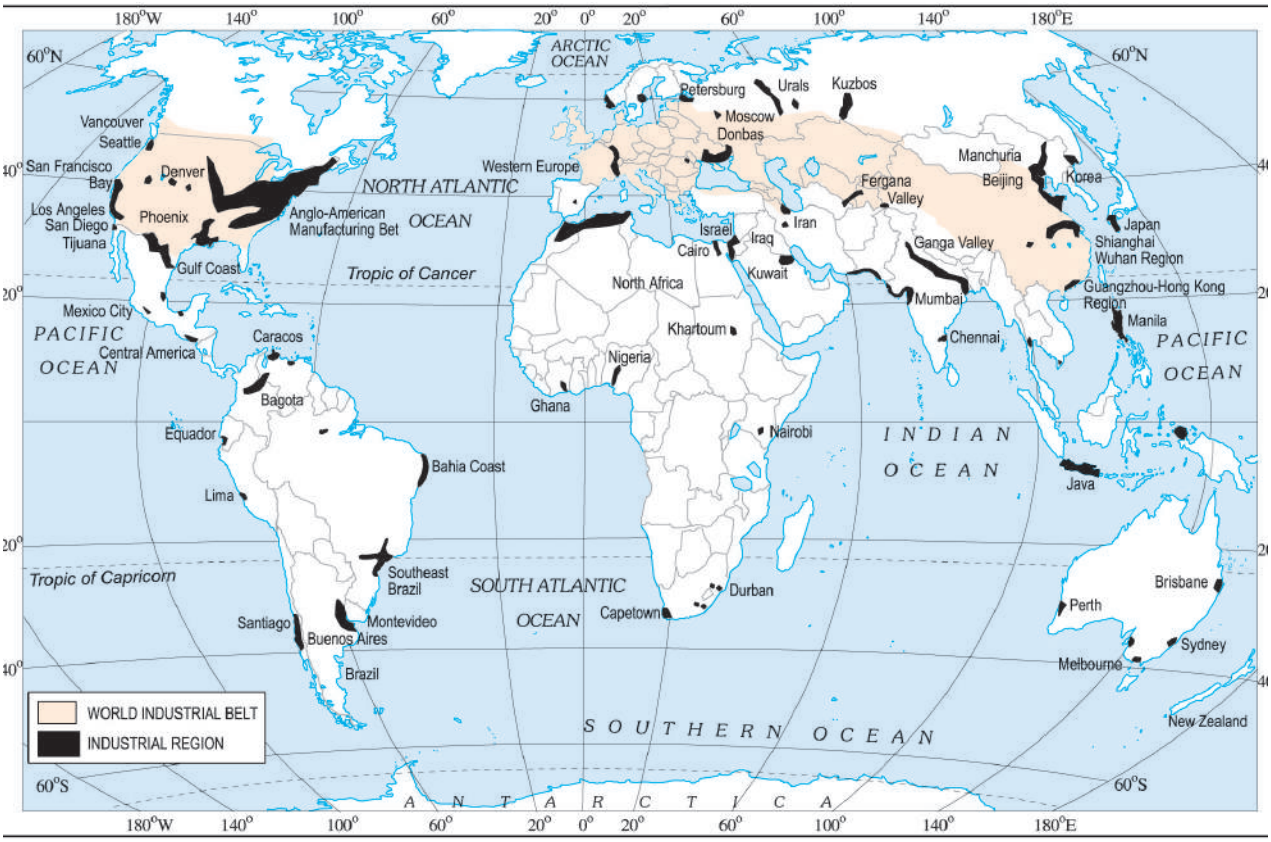


Fig 4.4: *World's Industrial Regions*

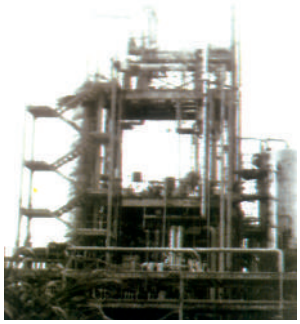
industrial regions tend to be located in the temperate areas, near sea ports and especially near coal fields.

India has several industrial regions like Mumbai-Pune cluster, Bangalore-Tamil Nadu region, Hugli region, Ahmedabad-Baroda region, Chottanagpur industrial belt, Vishakhapatnam-Guntur belt, Gurgaon-Delhi-Meerut region and the Kollam-Thiruvanathapuram industrial cluster.

Industrial Disaster

In industries, accidents/disasters mainly occur due to technical failure or irresponsible handling of hazardous material.

One of the worst industrial disasters of all time occurred in Bhopal on 3rd December 1984 around 00:30 a.m. It was a technological accident in which highly poisonous Methyl Isocyanate (MIC) gas along with Hydrogen Cyanide and other reaction products leaked out of the pesticide factory of Union Carbide. The official death toll was 3,598 in 1989. Thousands, who survived still suffer from one or many ailments like blindness, impaired immune system, gastrointestinal disorders etc.



Union Carbide Factory

In another incident, on 23rd December 2005, due to gas well blowout in Gao Qiao, Chongging, China, 243 people died, 9,000 were injured and 64,000 were evacuated. Many people died because they were unable to run after the explosion. Those who could not escape in time suffered burns to their eyes, skin and lungs from the gas.

Rescue operation in Gao Qiao

Risk Reduction Measures

1. Densely populated residential areas should be separated far away from the industrial areas.
2. People staying in the vicinity of industries should be aware of the storage of toxins or hazardous substances and their possible effects in case if an accident occurs.
3. Fire warning and fighting system should be improved.
4. Storage capacity of toxic substances should be limited.
5. Pollution dispersion qualities in the industries should be improved.

Do you know?
Emerging industries are also known as 'Sunrise Industries'.These include Information Technology, Wellness, Hospitality and Knowledge.

Distribution Of Major Industries

The world's major industries are the iron and steel industry, the textile industry and the information technology industry. The iron and steel and textile industry are the older industries while information technology is an emerging industry.

The countries in which iron and steel industry is located are Germany, USA, China, Japan and Russia. Textile industry is concentrated in India, Hong Kong, South Korea, Japan and Taiwan. The major hubs of Information technology industry are the Silicon valley of Central California and the Bangalore region of India.

Iron and Steel Industry

Glossary
Smelting
It is the process in which metals are extracted from their ores by heating beyond the melting point.

Like other industries iron and steel industry too comprises various inputs, processes and outputs. This is a feeder industry whose products are used as raw material for other industries.

The inputs for the industry include raw materials such as iron ore, coal and limestone, along with labour, capital, site and other infrastructure. The process of converting iron ore into steel involves many stages. The raw material is put in the blast furnace where it undergoes smelting (Fig 4.6). It is then refined. The output obtained is steel which may be used by other industries as raw material.

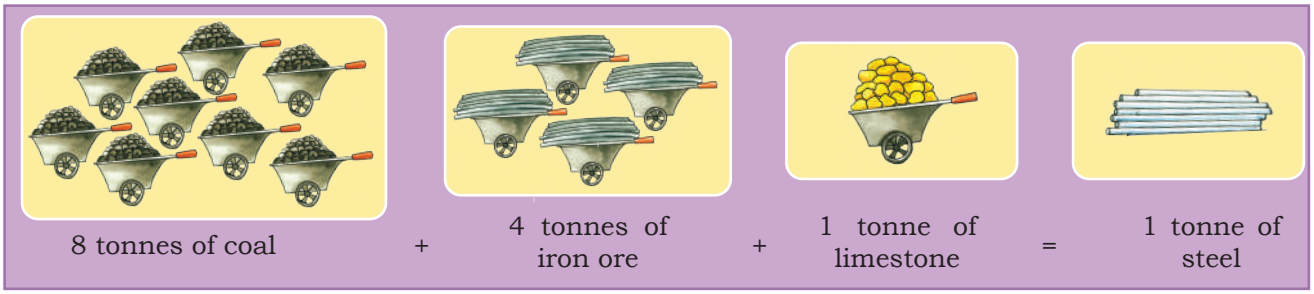


Fig 4.5: Manufacturing of steel

Steel is tough and it can easily be shaped, cut, or made into wire. Special alloys of steel can be made by adding small amounts of other metals such as aluminium, nickel, and copper. Alloys give steel unusual hardness, toughness, or ability to resist rust.

Steel is often called the backbone of modern industry. Almost everything we use is either made of iron or steel or has been made with tools and machinery of these metals. Ships, trains, trucks, and autos are made largely of steel. Even the safety pins and the needles you use are made from steel. Oil wells are drilled with steel machinery. Steel pipelines transport oil. Minerals are mined with steel equipment. Farm machines are mostly steel. Large buildings have steel framework.

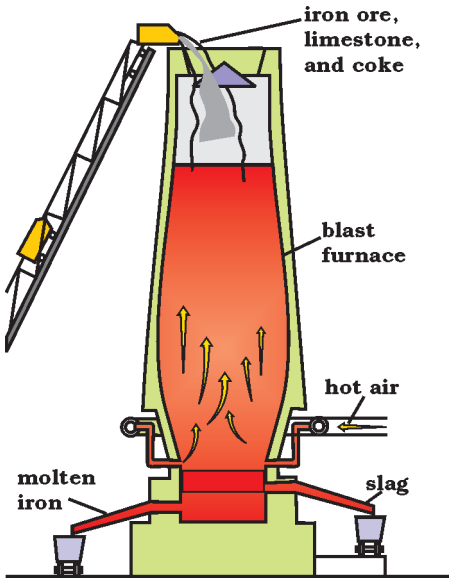


Fig. 4.6: From iron ore to steel in a blast furnace

Before 1800 A.D. iron and steel industry was located where raw materials, power supply and running water were easily available. Later the ideal location for the industry was near coal fields and close to canals and railways. After 1950, iron and steel industry began to be located on large areas of flat land near sea ports. This is because by this time steel works had become very large and iron ore had to be imported from overseas (Fig 4.7).

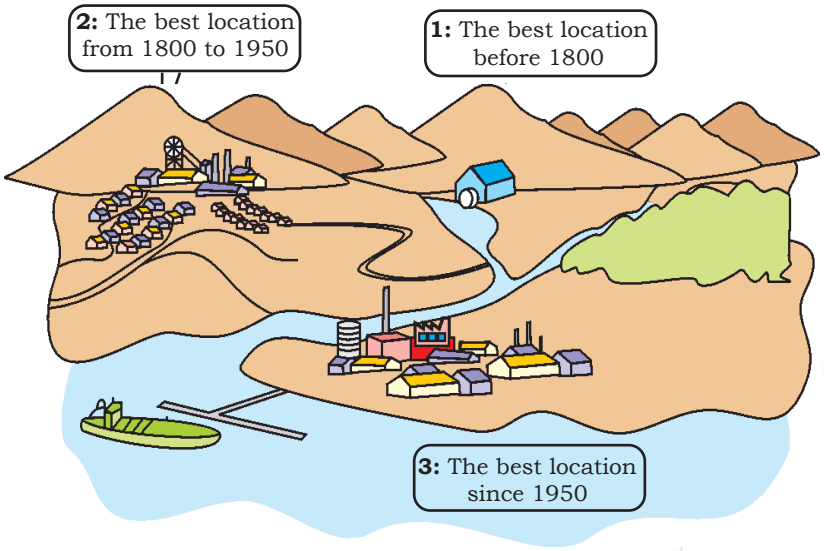


Fig 4.7: The changing location of the iron and steel industry

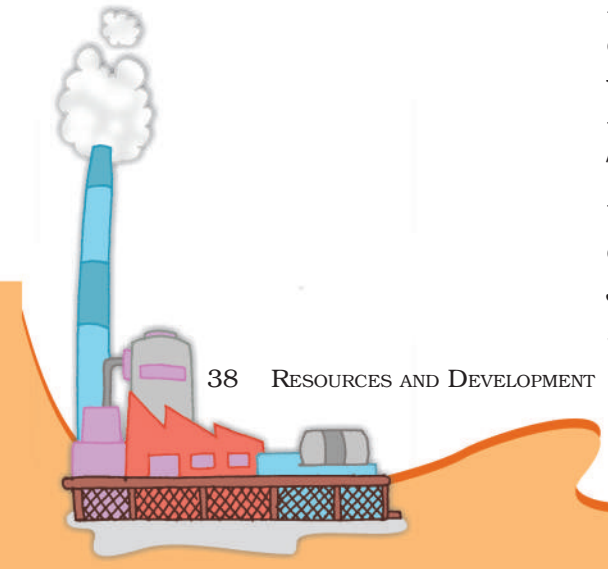
In India, iron and steel industry has developed taking

Fig 4.8: *World: Major Iron Ore Producing Areas*

advantage of raw materials, cheap labour, transport and market. All the important steel producing centres such as Bhilai, Durgapur, Burnpur, Jamshedpur, Rourkela, Bokaro are situated in a region that spreads over four states — West Bengal, Jharkhand, Odisha and Chhattisgarh. Bhadravati and Vijay Nagar in Karnataka, Vishakhapatnam in Andhra Pradesh, Salem in Tamil Nadu are other important steel centres utilising local resources.

JAMSHEDPUR

Before 1947, there was only one iron and steel plant in the country – Tata Iron and Steel Company Limited (TISCO). It was privately owned. After Independence, the government took the initiative and set up several iron and steel plants. TISCO was started in 1907 at Sakchi, near the confluence of the rivers Subarnarekha and Kharkai in Jharkhand. Later on Sakchi was renamed as Jamshedpur. Geographically, Jamshedpur is the most conveniently situated iron and steel centre in the country.



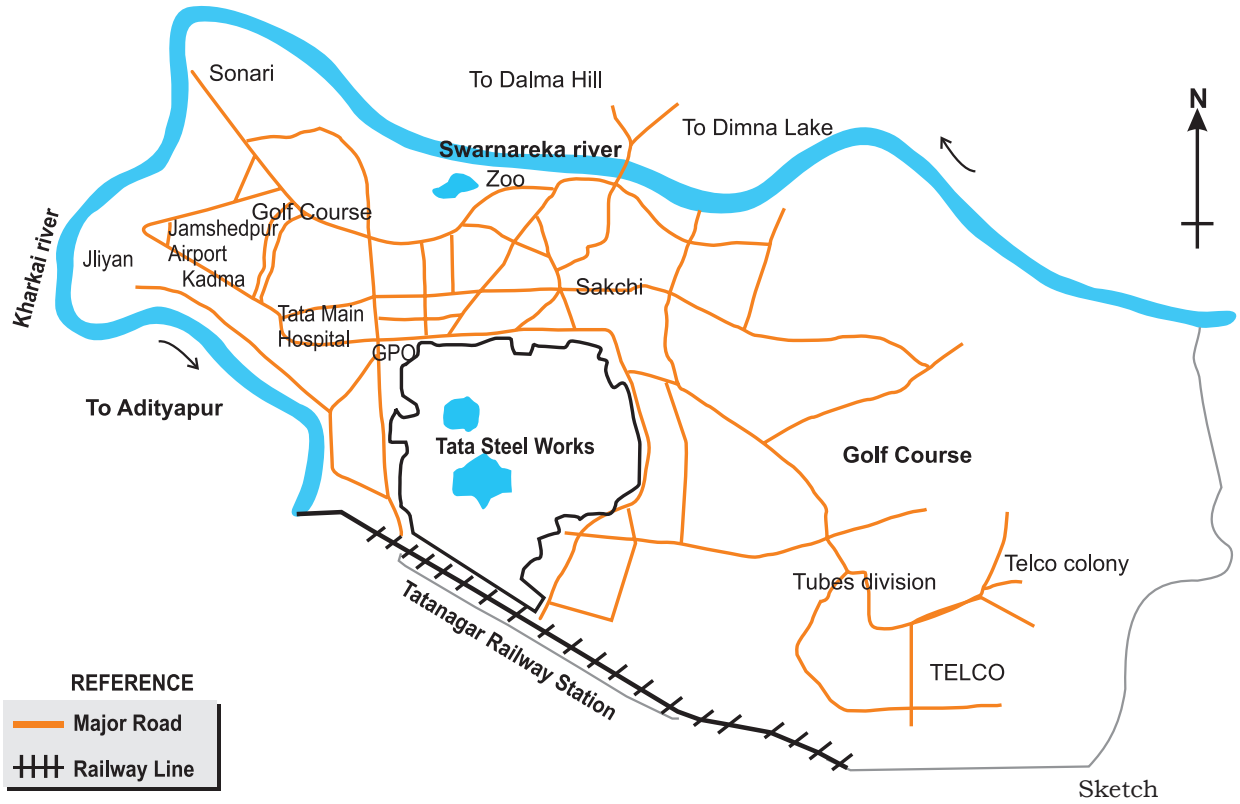


Fig 4.9: Location of iron and steel industry in Jamshedpur

Sakchi was chosen to set up the steel plant for several reasons. This place was only 32 km away from Kalimati station on the Bengal-Nagpur railway line. It was close to the iron ore, coal and manganese deposits as well as to Kolkata, which provided a large market. TISCO, gets coal from Jharia coalfields, and iron ore, limestone, dolomite and manganese from Odisha and Chhattisgarh. The Kharkai and Subarnarekha rivers ensured sufficient water supply. Government initiatives provided adequate capital for its later development.

In Jamshedpur, several other industrial plants were set up after TISCO. They produce chemicals, locomotive parts, agricultural equipment, machinery, tinplate, cable and wire.

The development of the iron and steel industry opened the doors to rapid industrial development in India. Almost all sectors of the Indian industry depend heavily on the iron and steel industry for their basic infrastructure. The Indian iron and steel industry consists of large integrated steel plants as well as mini

Project

With the help of an atlas, identify some iron and steel industries in India and mark their location on an outline map of India.

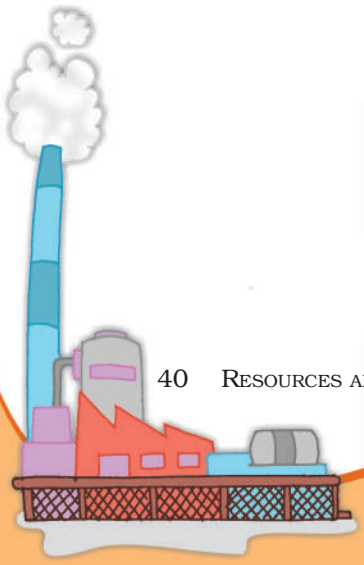
steel mills. It also includes secondary producers, rolling mills and ancillary industries.

Pittsburgh : It is an important steel city of the United States of America. The steel industry at Pittsburgh enjoys locational advantages. Some of the raw materials such as coal is available locally, while the iron ore comes from the iron mines at Minnesota, about 1500 km from Pittsburgh. Between these mines and Pittsburgh is one of the world's best routes for shipping ore cheaply – the famous Great Lakes waterway. Trains carry the ore from the Great Lakes to the Pittsburgh area. The Ohio, the Monogahela and Allegheny rivers provide adequate water supply.

Do you know?
The names of Great Lakes are Superior, Huron, Ontario, Michigan and Erie. Lake Superior is the largest of these five lakes. It lies higher upstream than others.

Today, very few of the large steel mills are in Pittsburgh itself. They are located in the valleys of the Monogahela and Allegheny rivers above Pittsburgh and along the Ohio River below it. Finished steel is transported to the market by both land and water routes.

The Pittsburgh area has many factories other than steel mills. These use steel as their raw material to make many different products such as railroad equipment, heavy machinery and rails.



Exercises

1. Answer the following questions.

(i) What is meant by the term 'industry'?

(ii) Which are the main factors which influence the location of an industry?

(iii) Which industry is often referred to as the backbone of modern industry and why?

2. Distinguish between the followings.

(i) Agro-based and mineral based industry

(ii) Public sector and joint sector industry

3. Give two examples of the following in the space provided :

(i) Raw Materials: _____ and _____

(ii) End products: _____ and _____

(iii) Tertiary Activities: _____ and _____

(iv) Agro-based Industries: _____ and _____

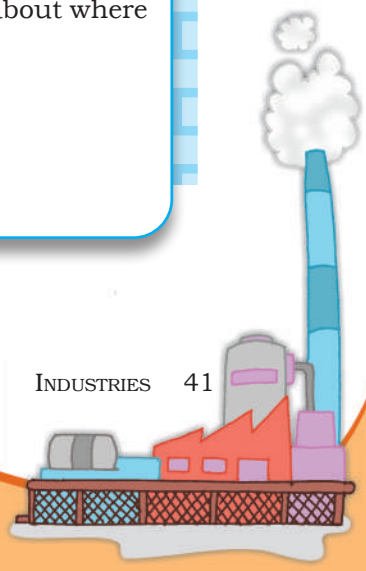
(v) Cottage Industries: _____ and _____

(vi) Co-operatives: _____ and _____

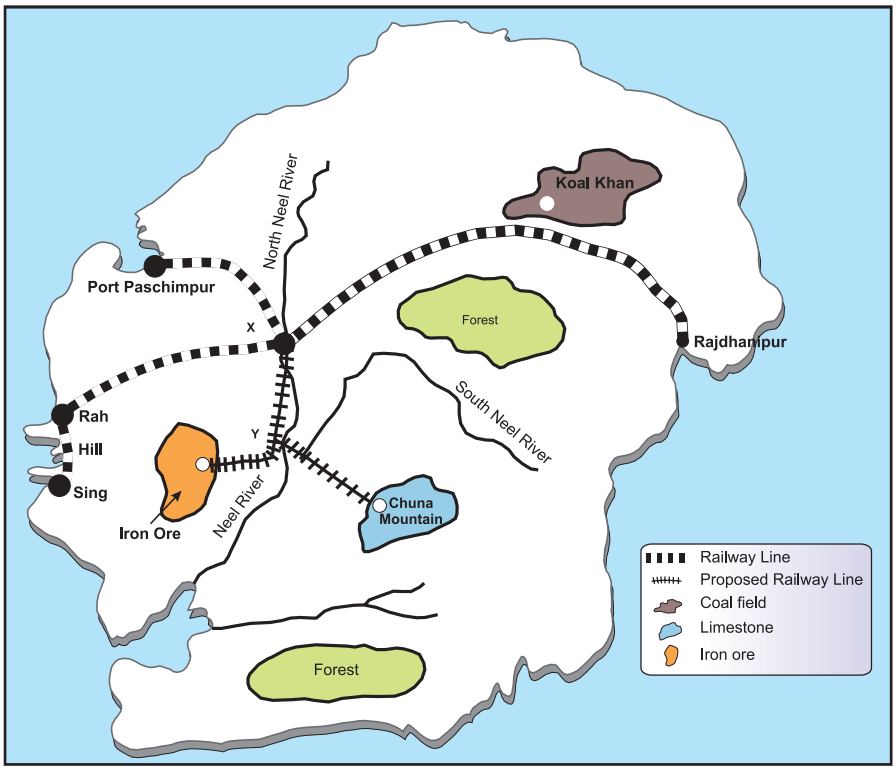
4. Activity

How to identify a location for establishing an industry —

Divide your class into groups. Each group is a Board of Directors faced with the problem of choosing a suitable site for an iron and steel plant of development. A team of technical experts has submitted a report with notes and a map. The team considered access to iron ore, coal, water and limestone, as well as the main market, sources of labour and port facilities. The team has suggested two sites, X and Y. The Board of Directors has to take the final decision about where to locate the steel plant.



- Read the report submitted by the team.
- Study the map to find out the distances of the resources from each site.
- Give each resource a 'weight' from 1 to 10, according to its importance. The greater the 'pull' of the factor on the industry the higher the weight from 1 to 10.
- Complete the table on the next page.
- The site with the lowest total should be the most satisfactory site.
- Remember each group of directors can decide differently.



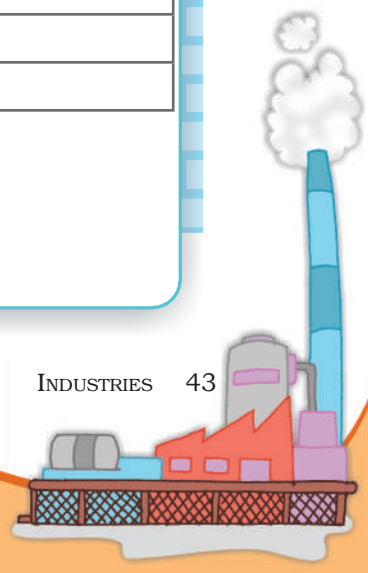
Report

Factors/Resources affecting the location of a proposed Iron and Steel Plant on Developen Dweep.

- ***Iron ore***: This is a very large deposit of low grade iron ore. Long distance transportation of the ore would be uneconomic.
- ***Coal***: The only coalfield contains rich deposits of high grade coal. Transportation of the coal is by railway, which is relatively cheap.
- ***Limestone***: This is widely available over the island, but the purest deposits are in the Chuna Mountains.
- ***Water***: Both the tributaries of River Neel carry sufficient water to supply a large iron and steel plant in all seasons. The sea water because of its high salt content is unsuitable.
- ***Market***: It is expected that the chief market for the Plant's products will be the engineering works of Rajdhanipur. Transport costs for the products- mainly small steel bars and light steel plates would be relatively low.
- ***Labour supply***: This will have to be recruited mainly from the unskilled workers in the 3 fishing villages of Hil, Rah and Sing. It is expected that most workers will commute daily from their present homes.
- ***Port facilities***: These are at present minimal. There is a good, deep natural harbour at port Paschimpur developed to import metal alloys.

Resource	Distance from X	Distance from Y	Weighting* 1-10	Distance X weight for site X	Distance X weight for site Y
Iron ore					
Coal					
Limestone					
Water					
Chief market					
Labour supply					
			Total =		

* the larger the pull, the higher the weighting



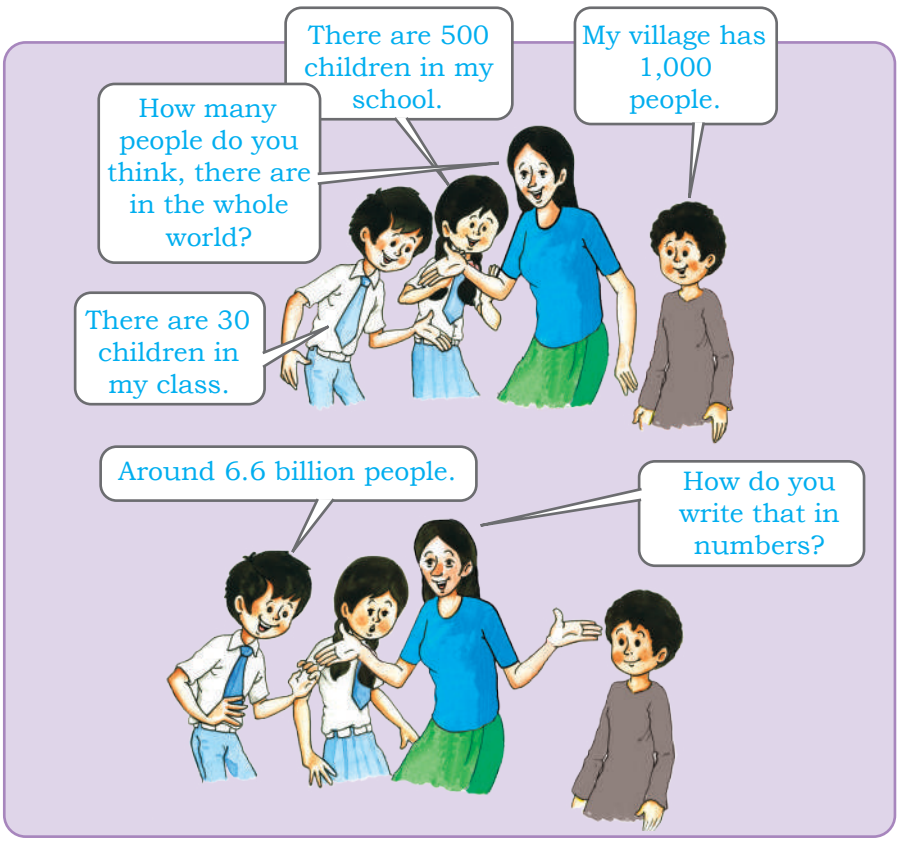
5 Human Resources

Do you know?
The Government of India has a Ministry of Human Resource Development. The Ministry was created in 1985 with an aim to improve people's skills. This just shows how important people are as a resource for the country.

Do you know?
Pradhan Mantri Kaushal Vikas Yojna (PMKVY) was started in 2015 aiming to train one crore Indian youth from 2016 to 2020. The objective of this scheme is to encourage aptitude towards employable skills by giving quality training to probable and existing wage earners.

People are a nation's greatest resource. Nature's bounty becomes significant only when people find it useful. It is people with their demands and abilities that turn them into 'resources'. Hence, **human resource** is the ultimate resource. Healthy, educated and motivated people develop resources as per their requirements.

Human resources like other resources are not equally distributed over the world. They differ in their educational levels, age and sex. Their numbers and characteristics also keep changing.



Distribution of Population

The way in which people are spread across the earth's surface is known as **the pattern of population distribution**. More than 90 per cent of the world's population lives in about 30 per cent of the land surface. The distribution of population in the world is extremely uneven.

Some areas are very crowded and some are sparsely populated. The crowded areas are south and south east Asia, Europe and north eastern North America. Very few people live in high latitude areas, tropical deserts, high mountains and areas of equatorial forests.

Many more people live north of the Equator than south of the Equator. Almost three-quarters of the world's people live in two continents Asia and Africa.

Sixty per cent of the world's people stay in just 10 countries. All of them have more than a 100 million people.

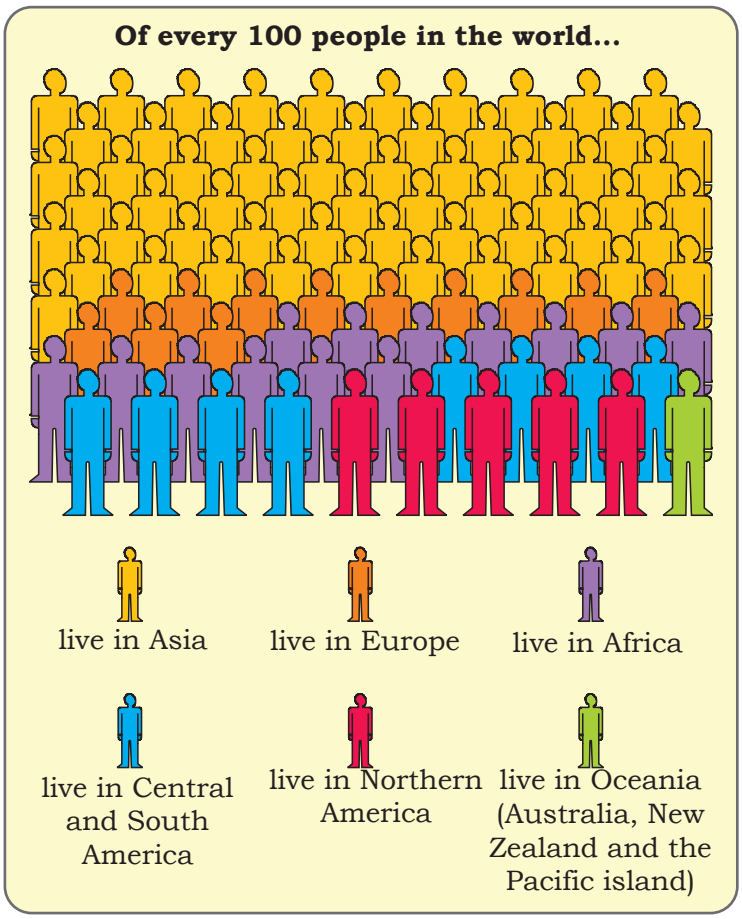


Fig. 5.1: World population by continents

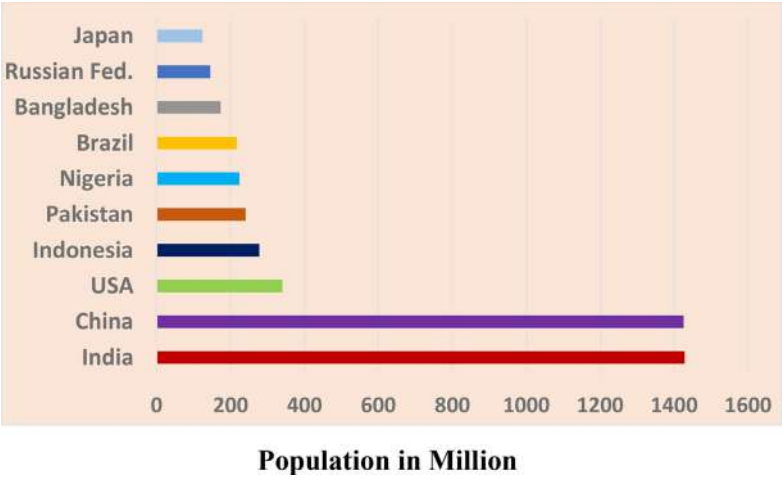


Fig. 5.2: World's most populous countries

Locate and label these countries on the outline map of the world.

Source: https://www.unfpa.org/data/world-population-dashboard

Activity

Study Fig. 5.1 and find out :
of the world's total population which continent has —
(a) only 5 per cent
(b) only 13 per cent
(c) only 1 per cent
(d) only 12 per cent

Do you know?
Average density of population in India is 434.60 persons per square km. (2023)

Density of Population

Population density is the number of people living in a unit area of the earth's surface. It is normally expressed as per square km. The average density of population in the whole world is 59.74 persons per square km. South Central Asia has the highest density of population followed by East and South East Asia

When all the 30 students are present, our classroom seems very crowded. But when the same class is seated in the school assembly hall, it seems so open and empty. Why?

Because the size or area of the hall is much larger than that of the classroom. However, when all the students of the school come into the hall, the hall too starts looking crowded.

Factors Affecting Distribution of Population

Geographical Factors

Topography: People always prefer to live on plains rather than mountains and plateaus because these areas are suitable for farming, manufacturing and service activities. The Ganga plains are the most densely populated areas of the world while mountains like Andes, Alps and Himalayas are sparsely populated.

Climate: People usually avoid extreme climates that are very hot or very cold like Sahara desert, polar regions of Russia, Canada and Antarctica.

Soil: Fertile soils provide suitable land for agriculture. Fertile plains such as Ganga and Brahmaputra in India, Hwang-He, Chang Jiang in China and the Nile in Egypt are densely populated.

Water: People prefer to live in the areas where fresh water is easily available. The river valleys of the world are densely populated while deserts have spare population.

Minerals: Areas with mineral deposits are more populated. Diamond mines of South Africa and discovery of oil in the Middle east led to settling of people in these areas.

Activity
Look at Fig 5.2 and find out:
of these countries how many are in Asia? Colour them on a world map.

Social, Cultural and Economic Factors

Social: Areas of better housing, education and health facilities are more densely populated e.g., Pune.

Cultural: Places with religion or cultural significance

attract people. Varanasi, Jerusalem and Vatican city are some examples.

Economic: Industrial areas provide employment opportunities. Large number of people are attracted to these areas. Osaka in Japan and Mumbai in India are two densely populated areas.

Glossary

Life expectancy
It is the number of years that an average person can expect to live.

Population Change

Population change refers to changes in the number of people during a specific time as the world population has not been stable. It has increased manifold as seen in Fig 5.3. Why? This is actually due to changes in the number of births and deaths. For an extremely long period of human history, until the 1800s, the world's population grew steadily but slowly. Large numbers of babies were born, but they died early too. This was because there were no proper health facilities. Sufficient food was not available for all the people. Farmers were not able to produce enough to meet the food requirements of all the people. As a result the total increase in population was very low.

In 1804, the world's population reached one billion. A hundred and fifty five years later, in 1959, the world's population reached 3 billion. This is often called population explosion. In 1999, 40 years later, the population doubled to 6 billion. The main reason for this growth was that with better food supplies and medicine, deaths were reducing, while the number of births still remained fairly high.

Births are usually measured using the **birth rate** i.e. the number of live births per 1,000 people. Deaths are usually measured using the **death rate** i.e. the number of deaths per 1,000 people. **Migration** is the movement of people in and out of an area.

Births and deaths are the natural causes of population change. The difference between the birth rate and the death rate of a country is called the **natural growth rate**.

The population increase in the world is mainly due to rapid increase in natural growth rate.

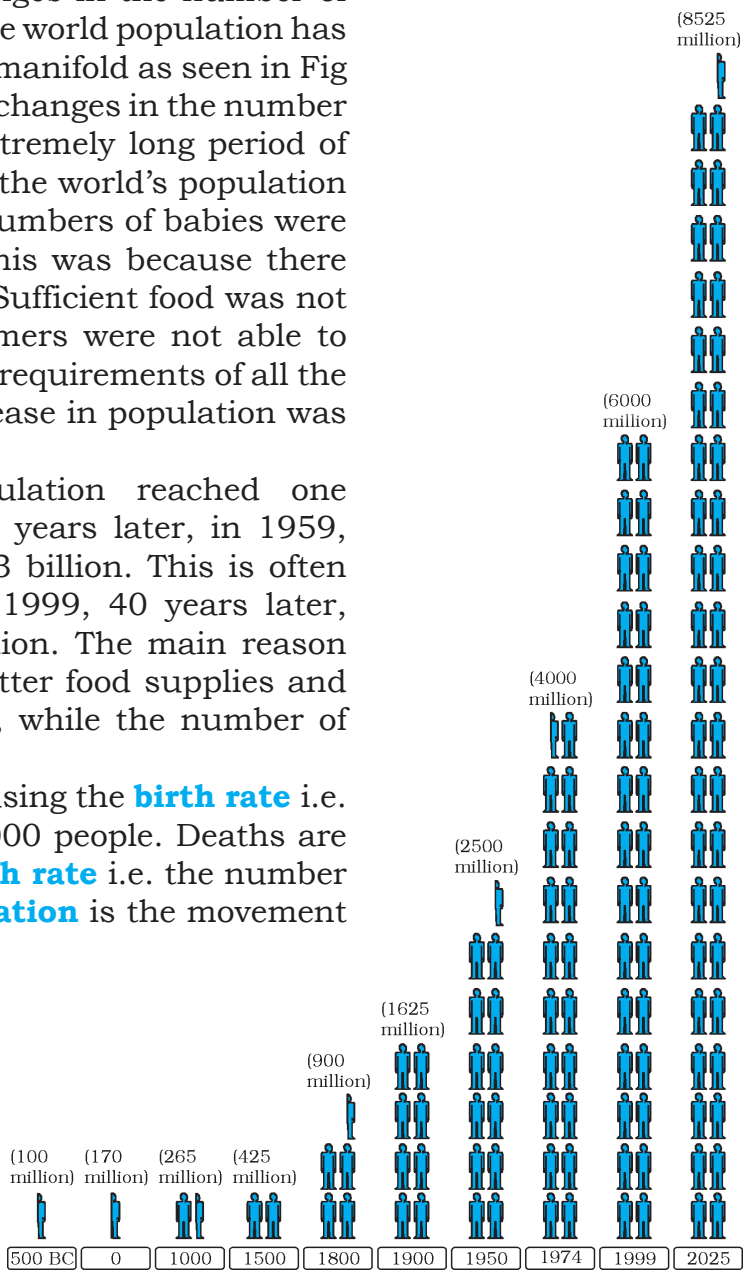
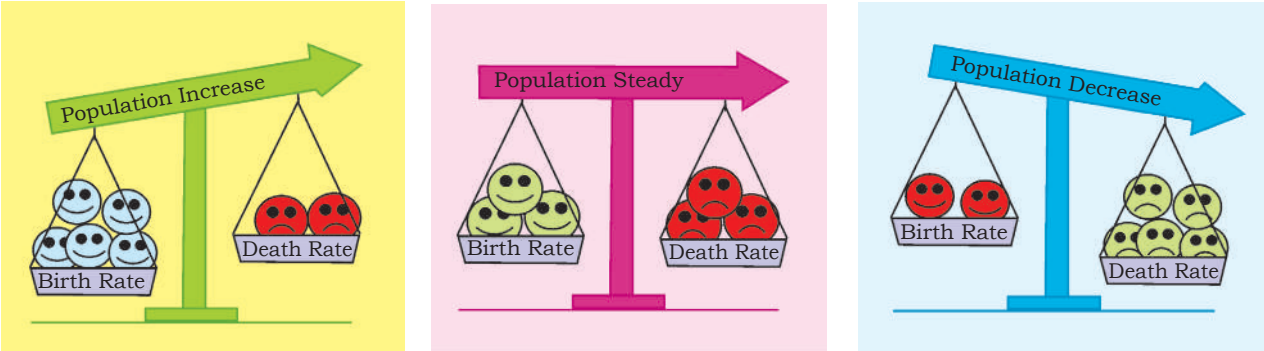


Fig 5.3: World Population Growth



Birth rate more than death rate: population increase | *Birth rate and death rate same: population stays the same* | *Death rate more than birth rate:population decreases*

Fig 5.4: *Balance of Population*

Migration is another way by which population size changes. People may move within a country or between countries. **Emigrants** are people who leave a country; **Immigrants** are those who arrive in a country.

Countries like the United States of America and Australia have gained in-numbers by **in-migration** or **immigration**. Sudan is an example of a country that has experienced a loss in population numbers due to **out-migration** or **emigration**.

The general trend of international migrations is from the less developed nations to the more developed nations in search of better employment opportunities. Within countries a large number of people may move from the rural to urban areas in search of employment, education and health facilities.

Glossary

Immigration
When a person enters a new country.

Emigration
When a person leaves a country.

Patterns of Population Change

Rates of population growth vary across the world (Fig 5.5). Although, the world's total population is rising rapidly, not all countries are experiencing this growth. Some countries like Kenya have high population growth rates. They had both high birth rates and death rates. Now, with improving health care, death rates have fallen, but birth rates still remain high leading to high growth rates.

In other countries like United Kingdom, population growth is slowing because of both low death and low birth rates.

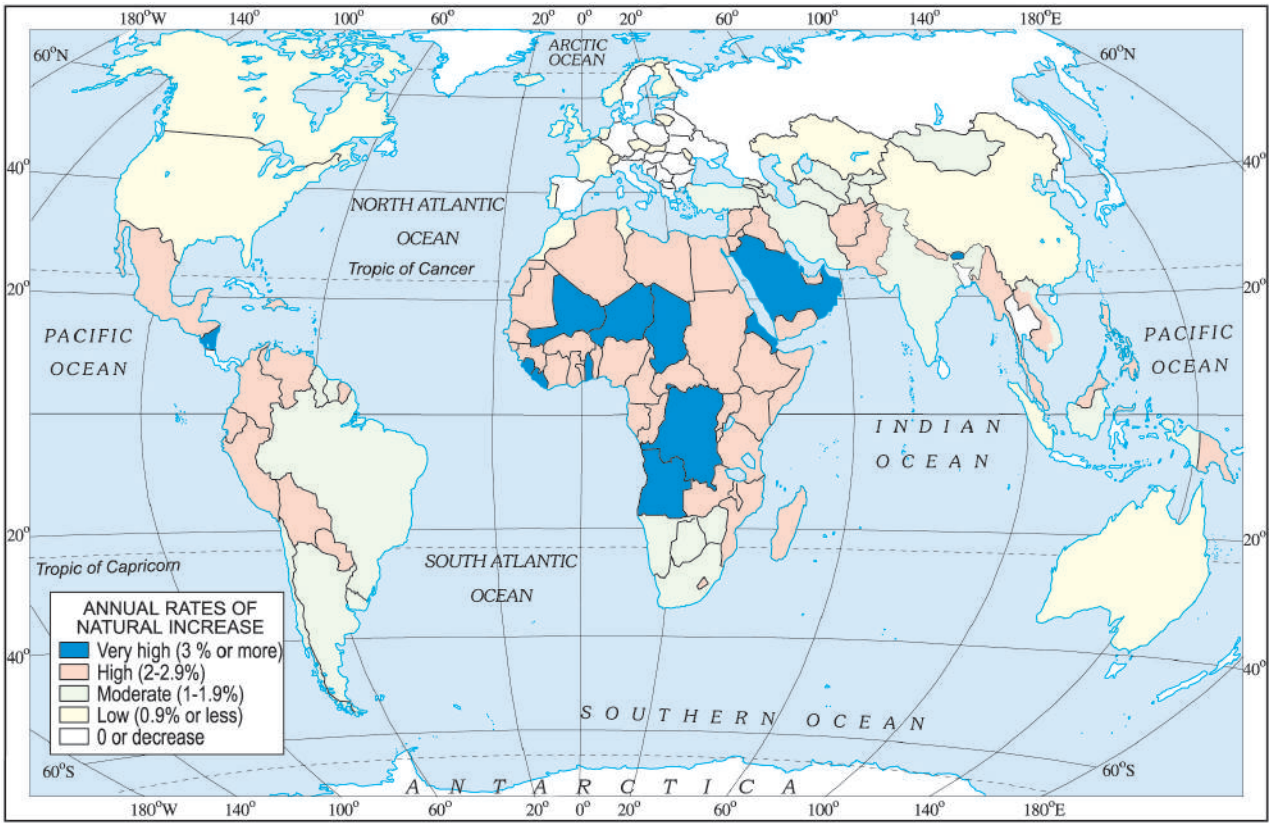
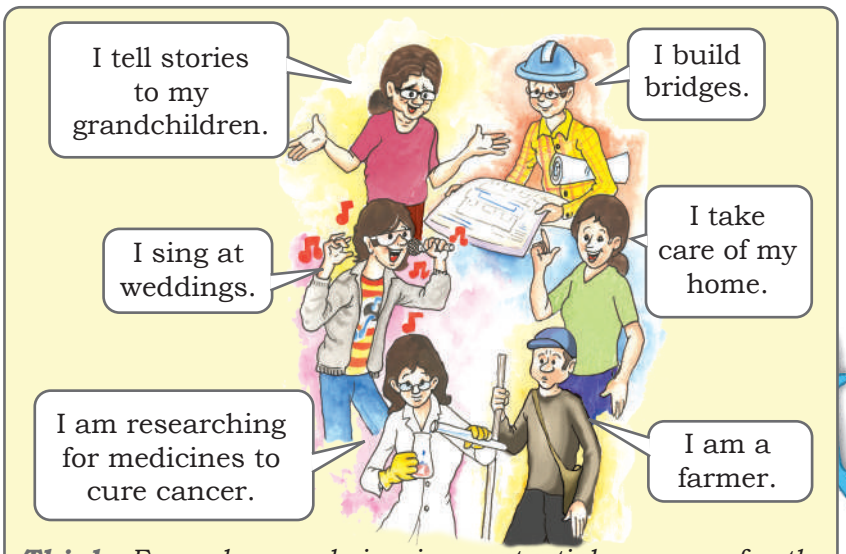


Fig. 5.5: *World: Differing rates of population growth*

Population Composition

How crowded a country is, has little to do with its level of economic development. For example, both Bangladesh and Japan are very densely populated but Japan is far more economically developed than Bangladesh.

To understand the role of people as a resource, we need to know more about their qualities. People vary greatly in their age, sex, literacy level, health condition, occupation and income level. It is essential to understand these characteristics of the people. Population composition refers to the structure of the population. The composition of population helps us to know how many are males



Think: *Every human being is a potential resource for the society. What will be your contribution as a human resource?*

or females, which age group they belong to, how educated they are and what type of occupations they are employed in, what their income levels and health conditions are.

An interesting way of studying the population composition of a country is by looking at the population pyramid, also called an age-sex pyramid.

A population pyramid shows

- The total population divided into various age groups, e.g., 5 to 9 years, 10 to 14 years.
- The percentage of the total population, subdivided into males and females, in each of those groups.

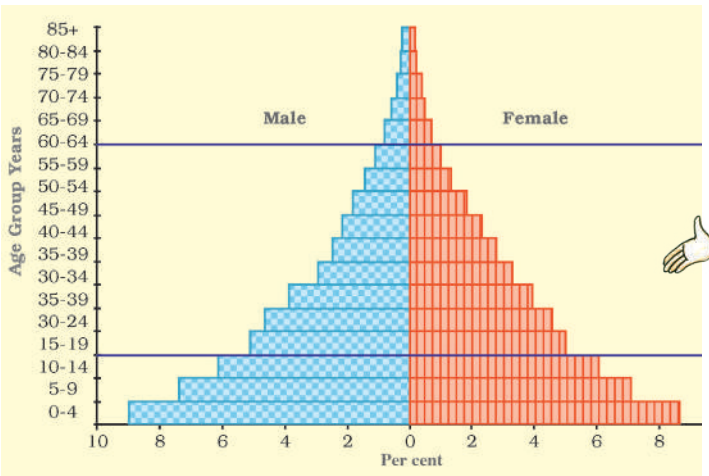
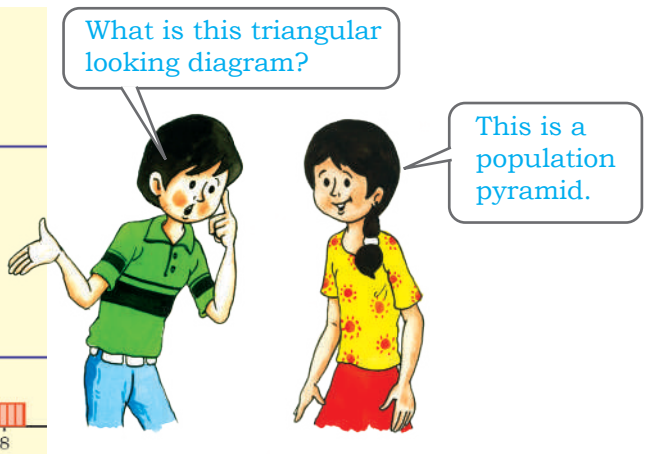


Fig. 5.6: Population Pyramid



The shape of the population pyramid tells the story of the people living in that particular country. The numbers of children (below 15 years) are shown at the bottom and reflect the level of births. The size of the top shows the numbers of aged people (above 65 years) and reflects the number of deaths.

The population pyramid also tells us how many dependents there are in a country. There are two groups of dependents — young dependents (aged below 15 years) and elderly dependents (aged over 65 years). Those of the working age are the economically active.

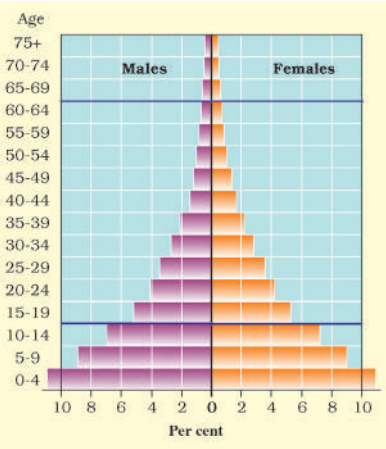


Fig. 5.7: Population Pyramid of Kenya

The population pyramid of a country in which both birth and death rates are high is broad at the base and rapidly narrows towards the top. This is because although, many children are born, a large percentage of them die in their infancy, relatively few become adults and there are very few old people. This situation is typified by the pyramid shown for Kenya (Fig 5.7).

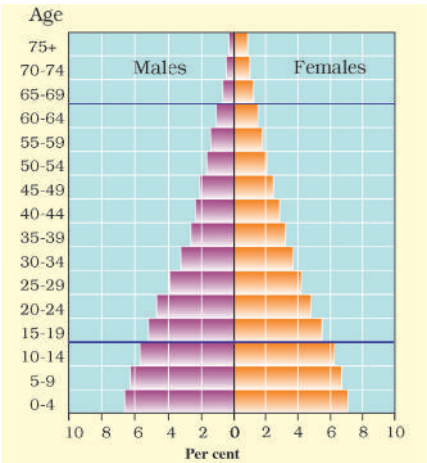


Fig. 5.8: Population Pyramid of India

In countries where death rates (especially amongst the very young) are decreasing, the pyramid is broad in the younger age groups, because more infants survive to adulthood. This can be seen in the pyramid for India (Fig 5.8). Such populations contain a relatively large number of young people and which means a strong and expanding labour force.

In countries like Japan, low birth rates make the pyramid narrow at the base (Fig 5.9). Decreased death rates allow numbers of people to reach old age.

Skilled, spirited and hopeful young people endowed with a positive outlook are the future of any nation. We in India are fortunate to have such a resource. They must be educated and provided skills and opportunities to become able and productive.

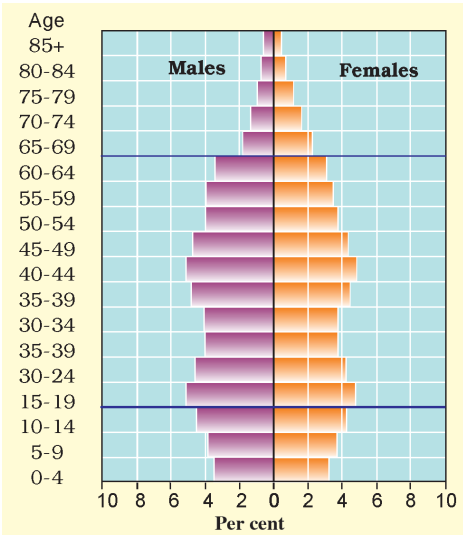


Fig. 5.9: Population Pyramid of Japan

Exercise

1. Answer the following questions.

(i) Why are people considered a resource?

(ii) What are the causes for the uneven distribution of population in the world?

(iii) The world population has grown very rapidly. Why?

(iv) Discuss the role of any two factors influencing population change.

(v) What is meant by population composition?

(vi) What are population pyramids? How do they help in understanding about the population of a country?

2. Tick the correct answer.

(i) What does the term population distribution refer to?

(a) How population in a specified area changes over time.

(b) The number of people who die in relation to the number of people born in a specified area.

(c) The way in which people are spread across a given area.

(ii) Which are three main factors that cause population change?

(a) Births, deaths and marriage

(b) Births, deaths and migration

(c) Births, deaths and life expectancy

(iii) In 1999, the world population reached

(a) 1 billion (b) 3 billion (c) 6 billion

(iv) What is a population pyramid?

(a) A graphical presentation of the age, sex composition of a population.

(b) When the population density of an area is so high that people live in tall buildings.

(c) Pattern of population distribution in large urban areas.

3. Complete the sentences below using some of the following words.

sparsely, favourable, fallow, artificial, fertile, natural, extreme, densely

When people are attracted to an area it becomes ..... populated.

Factors that influence this include ..... climate; good supplies of ..... resources and ..... land.

4. Activity

Discuss the characteristics of a society with 'too many under 15s' and one with 'too few under 15s'.

Hint : need for schools; pension schemes, teachers, toys, wheel chairs, labour supply, hospitals.

Some Internet Sources for More Information

www.ndmindia.nic.in
www.environmentdefense.org
www.freefoto.com
www.worldgame.org/worldmeters
www.cseindia.org
www.mnes.nic.in
www.undp.org/popin

Notes