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Unit - 1

India – Location, Relief and Drainage

Learning Objectives

- To understand the strategic importance of India's absolute and relative location in the world
- To know the distinct characteristics of major physiographic divisions of India
- To compare the regions of Great Indian plains
- To understand the drainage system of India
- To differentiate the Himalayan and peninsular rivers

ZVGEWC

Introduction

India is the seventh largest country in the world and second largest country in Asia. It is separated by the Himalayas from the rest of the continent. India accounts for about 2.4 % of the total area of the world with an area of 32,87,263 sq.km. many of the India states are larger than several countries of the world.

India's Land and Water Frontiers

India shares its 15,200 km long land frontier with Pakistan and Afghanistan in the north-west, China, Nepal and Bhutan in the north and Bangladesh and Myanmar in the east.

India's longest border is with Bangladesh (4156 km)while the shortest border is with Afghanistan.(106 km)

About 6,100 km long coastline of India is washed on three sides of the country by the Indian Ocean and its two arms namely the Arabian sea in the west and the Bay of Bengal in the east. The total length of the coast line of India including the islands is 7,516.6 km. India and Sri Lanka are separated by a narrow and shallow sea called Palk Strait.

India and the World

The Indian land mass has a central location between, the East and the West Asia and the southward extension of the Asian continent. The trans Indian ocean routes which connect the countries of Europe in the west and the countries of East Asia provide a strategic central location to India. Thus it helps India to establish close trade contact with West Asia, Africa and Europe from the western coast and with South East, east Asia from the eastern coast.

India: A Subcontinent

India along with the countries of Myanmar, Bangladesh, Pakistan, Nepal, Bhutan and Sri Lanka is called a subcontinent.

This region possesses a distinct continental characteristics in physiography, climate, natural vegetation, minerals, human resources etc. Hence India is known as '**subcontinent**'.

1.1 Location and Extent

India extends from **8°4'N** to **37°6'N** latitudes and **68°7'E** to **97°25'E** longitudes. Hence India is located in the north Eastern hemisphere

(i) The Greater Himalayas/The Himadri
(ii) The Lesser Himalayas /The Himachal
(iii) The Outer Himalayas/The Siwaliks

(i) The Greater Himalayas or the Himadri

The Greater Himalayas rise abruptly like a wall north of the Lesser Himalayas. The Greater Himalayas are about 25 km wide. Its average height is about 6,000 m. The Greater Himalayas receive lesser rainfall as compared to the Lesser Himalayas and the Siwaliks. Physical weathering is less effective over the Greater Himalayas as compared to the other ranges. Almost all the lofty peaks of Himalayas are located in this range. The notable ones are Mt. Everest (8,848

tectonic and volcanic origin. India's only active volcano is found on Barren Island in Andaman and Nicobar group of Islands.

a) Andaman and Nicobar Islands

These islands are located in an elevated portion of the submarine mountains. Since these islands lie close to the equator, the climate remains hot and wet throughout the year and has dense forests. The area of the island group is about 8,249 sq.km. The entire group of islands is divided into two. They are Andaman in the north and the Nicobar in the south. These island groups are of great strategic importance for the country. Port Blair is the administrative capital of the Andaman and Nicobar islands. The **Ten Degree Channel** separates Andaman from Nicobar group. The southernmost tip, the **Indira Point** is a part of Nicobar Island.

b) Lakshadweep Islands

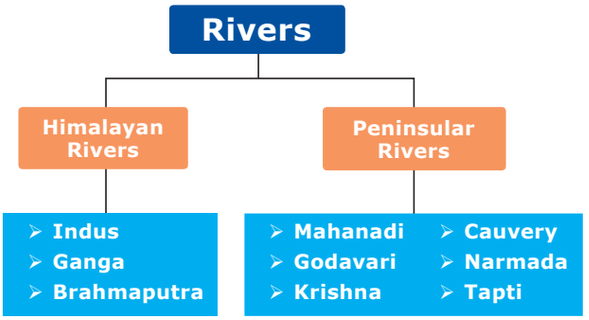
This is a small group of coral islands located off the west coast of India. It covers an area of 32 sq. km. Kavaratti is its administrative capital. Lakshadweep islands are separated from the Maldive Islands by the Eight Degree Channel. The uninhabited "**Pitt Island**" of this group has a bird sanctuary. Earlier, it had three divisions namely Laccadive, Minicoy and Amindivi. It was named as Lakshadweep in 1973.

c) Offshore Islands

Besides the two group of islands, India has a number of islands along the Western Coast, Eastern Coast, in the delta region of Ganga and in the Gulf of Mannar. Many of these islands are uninhabited and are administered by the adjacent states.

1.3 Drainage System of India

A drainage system is an integrated system of tributaries and a trunk stream which collects and drains surface water into the sea, lake or some other body of water. The total area drained by a river and its tributaries is known as a drainage basin. The drainage pattern of an area is the result of the geological structure of the respective areas. The drainage system of India is broadly divided into two major groups on the basis of their location. They are Himalayan rivers and the Peninsular rivers.



Himalayan Rivers

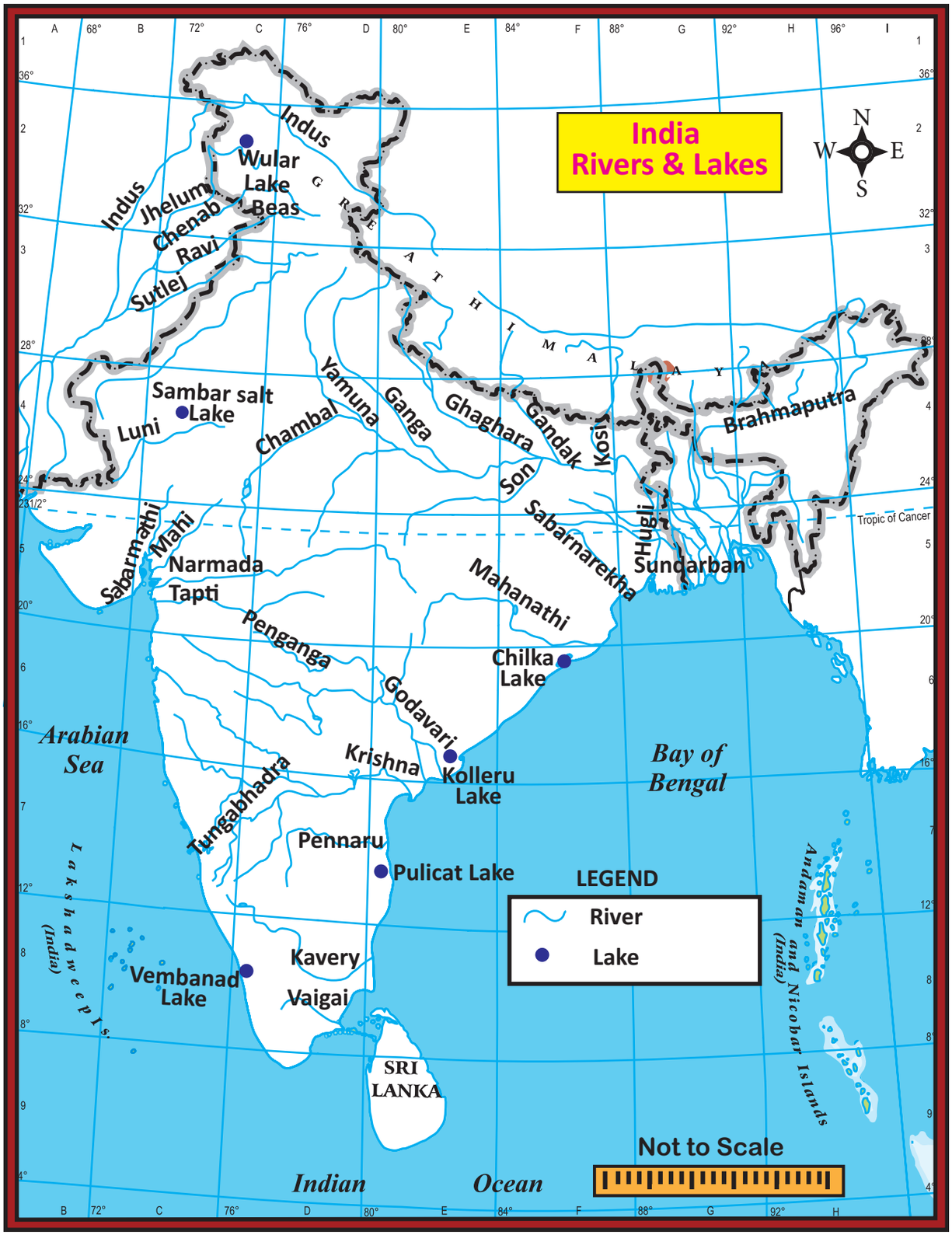
These rivers are found in north India and originate from Himalayas. So, they are also called as Himalayan rivers. These are perennial rivers.

a) The Indus River System

The Indus River is one of the largest rivers of the world. It originates from the northern slope of the Kailash range in Tibet near Manasarovar Lake at an elevation of about 5,150 m. Its length is about 2,880 km (Only 709 km is in India). The river has a total drainage area extending 11,65,500 sq km in which 321,289 sq km areas are drained in India. The river flows through the Ladakh and Zaskar ranges and creates deep gorges. The river runs through Jammu and Kashmir, turns south near Chillar and enters Pakistan. Its major tributaries are Jhelum, Chenab (Largest tributary of Indus), Ravi, Beas and Sutlej. It enters into with the Arabian Sea.

b) The Ganga River System

The Ganga River system is the largest drainage system of India. It extends over an area of 8,61,404 sq km. The Ganga plain is the most densely populated place in India and many towns are developed on the banks of this river. The river Ganga originates as Bhagirathi from the Gangotri Glacier in Uttar Khasi District of Uttarkhand state, at an elevation of 7,010 m.



d) Kaveri

The river Kaveri originates at Talakaveri, Kudagu hills of Karnataka. Its length is 800 km. The river kaveri is called Dhakshin Ganga or Ganga of south. In Karnataka the river bifurcates twice, forming the sacred islands of Srirangapatnam and Sivasamudram. While entering Tamil Nadu, the Kaveri continues through a series of twisted wild gorges until it reaches Hogenakkal Falls and flows through a straight, narrow gorge near Salem. The Kaveri breaks at Srirangam Island with two channels, river Coleroon and Kaveri. At last, it empties into the Bay of Bengal at Poompuhar.

West Flowing Rivers

a) Narmada

This river rises in Amarkantak Plateau in Madhya Pradesh at an elevation of about 1057 m and flows for a distance of about 1,312 km. It covers and area of 98,796 sq km and forms 27 km long estuary before outfalling into the Arabian Sea through the Gulf of Cambay. It is the largest among the west flowing rivers of Peninsular India. Its principal tributaries are Burhner, Halon, Heran, Banjar, Dudhi, Shakkar, Tawa, Barna and Kolar.

b) Tapti

The Tapti is one of the major rivers of Peninsular India with the length of about 724 km. It covers an area of 65,145 sq km. Tapti river rises near Multai tank in the Betul district of Madhya Pradesh at an elevation of about 752 m. It is one of only the three rivers in Peninsular India that run from east to west - the others being the Narmada and the Mahi. The major tributaries are Vaki, Gomai, Arunavati, Aner, Nesu, Buray, Panjhra and Bori. It outfalls into the Arabian Sea through the Gulf of Cambay.

In which river the Gerosappa (jog) fall is found?

Characteristics of South Indian Rivers

1. Originate from Western Ghats
2. Short and narrow
3. Non perennial in nature
4. Suitable for hydro power generation
5. Not useful for navigation

SUMMARY

- India has been physiographically divided into five divisions. They are **Northern Mountains, Northern Great Plains, The Plateau region, Coastal Plains and Islands**.
- Northern Mountains are classified into three divisions as Trans-Himalayas, Himalayas and Eastern Himalayas.
- Northern Great Plains are divided into four as Rajasthan Plains, Punjab-Haryana Plains, Gangetic Plains and Brahmaputra Plains.
- The Plateau region of India has two divisions namely the Central Highlands and the Deccan Plateau.
- Andaman and Nicobar Islands and Lakshadweep are the two major island groups of India.
- The Drainage System of India is classified into the north Indian (Himalayan) and Peninsular rivers.
- Narmada, Tapti, Mahi and Sabarmathi rivers confluence with the Arabian Sea.
- Mahanadi, Godavari, Krishna and Cauvery are the major east flowing rivers and drain into Bay of Bengal.

Unit - 2

Climate and Natural Vegetation of India

Learning Objectives

- To describe the factors controlling the climate of India.
- To understand the characteristics of different seasons in India.
- To know about the rainfall distribution.
- To study the different types of natural vegetation and wild life in India.

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Introduction

We drink more water during summer and do not drink the same amount of water during winter. Why do we wear cotton or lighter clothes during summer season and heavy woollen clothes during cold weather season in north India? Why do not we wear woollen clothes in south India? This is because of the prevalence of varying weather conditions between north and south India.

DO YOU KNOW?

Equable climate is also called as the British climate, Which is neither too hot nor too cold.

2.1 The factors affecting the climate

Climate of India is affected by the factors of latitude, altitude, distance from the seas, monsoon wind, relief features and jet stream.

Latitude

Latitudinally, India lies between 8°4'N and 37°6'N latitudes. The Tropic of cancer divides the country into two equal halves. The area located to the south of Tropic of cancer experiences high temperature and no severe cold season throughout the year whereas, the areas to the north of this parallel enjoys sub-tropical climate.

Altitude

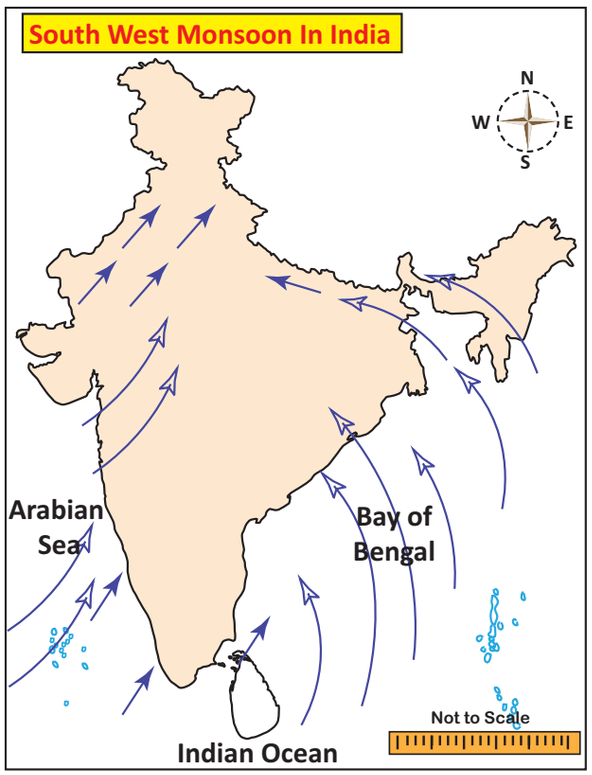
When the altitude increases, The temperature decreases. Temperature decreases at the rate of 6.5ºC for every 1000 metres of ascent. It is called **normal lapse rate.**

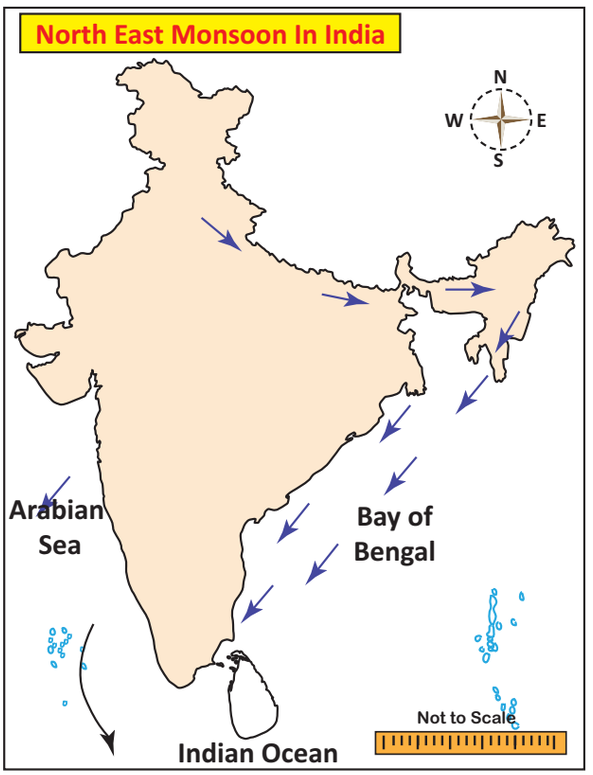
Hence, places in the mountains are cooler than the places on the plains. Ooty and several other hill stations of south India and of the Himalayan ranges like Mussourie, Shimla etc., are much cooler than the places located on the Great Plains.

Find out the temperature of Ooty (2240m) when it is 35ºC in Chennai (6.7m)

Distance from the Sea

A large area of India, especially the peninsular region, is not very far from the sea and this entire area has a clear maritime influence on





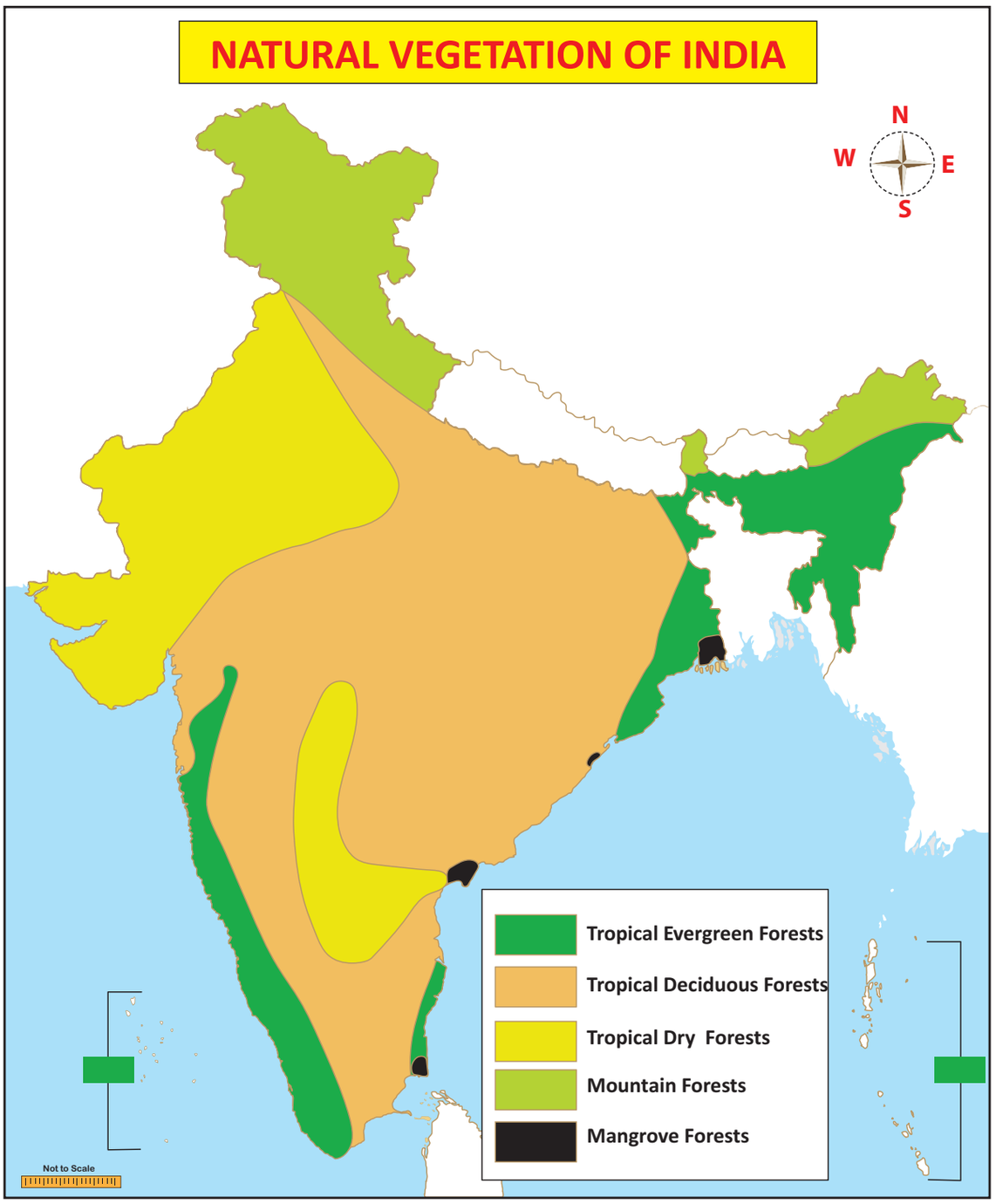
Prior to the onset of the southwest monsoon, the temperature in north India reaches upto 46°C. The sudden approach of monsoon wind over south India with lightning and thunder is termed as the '**break**' or '**burst of monsoon**'. The monsoon wind strikes against the southern tip of Indian land mass and gets divided into two branches. One branch starts from Arabian sea and the other from Bay of Bengal.

The Arabian sea branch of southwest monsoon gives heavy rainfall to the west coast of India as it is located in the windward side of the Western Ghats. The other part which advances towards north is obstructed by Himalayan Mountains and results in heavy rainfall in north. As Aravalli Mountain is located parallel to the wind direction, Rajasthan and western part do not get much rainfall from this branch.

The Bay of Bengal branch moves towards northeast India and Myanmar. This wind is trapped by a chain of mountains namely Garo, Khasi and Jaintia are mainly responsible for the heaviest rainfall caused at **Mawsynram** located in Meghalaya. Later on, this wind travel towards west which results in decrease in rainfall from east to west. Over all about **75% of Indian rainfall is received from this monsoon**.

4. Northeast monsoon season

The southwest monsoon begins to retreat from north India by the end of September due to the southward shifting pressure belts. The southwest monsoon wind returns from Indian landmass and blows towards Bay of Bengal. The coriolis force deflects this wind and makes it to blow from northeast. Hence, it is known as Northeast monsoon or Post-monsoon season. The season is associated with the establishment of the north-easterly wind system over the Indian subcontinent. Andhra Pradesh, Tamil nadu, Kerala and south interior Karnataka receive good amount of rainfall accounting for 35% of their annual total. Many parts of Tamil nadu and some parts of Andhra Pradesh and Karnataka receive rainfall during this season due to the storms forming in the Bay of Bengal. Large scale losses to life and property occur due to heavy rainfall, strong winds and storm surge in the coastal regions. The day time temperatures start falling sharply all over the country.



dry parts of the Deccan plateau in Karnataka, Maharashtra and Andhra Pradesh. Babul, kikar and wild palms are common trees found here.

Mountain or Montane Forest

These forests are classified on the basis of altitude and amount of rainfall.

i. These are found on the slopes of the mountains in north-east states. These forests found in the altitude of 1200-2400m. Sal, Oak, Laurel, Amura, Chestnut, Cinnamon are the main trees found here. Oak, birch, silver, fir, fine, spruce and juniper are the major trees found at the altitude of 2400 to 3600m.

ii. The rainfall of this region is moderate. These forests are found in Jammu & Kashmir, Himachal Pradesh and Uttarakhand. Upto 900 m altitude semi desert vegetation is found and it is known for bushes and small

trees. In altitude from 900 to 1800m, chir is the most common tree. From 1800 to 3000m is covered with semi temperate coniferous forests.

Alpine Forest

It occurs all along the Himalayas with above 2400 m altitude. These are purely having coniferous trees. Oak, silver fir, pine and juniper are the main trees of these forests. The eastern parts of Himalayas has large extent of these forests.

Tidal Forest

These forests occur in and around the deltas, estuaries and creeks prone to tidal influences and as such are also known as delta or swamp forests. The delta of the Ganga-Brahmaputra has the largest tidal forest. The deltas of Mahanadi, Godavari and Krishna rivers are also known for **tidal forests**. These are also known as **mangrove forest**.

2.5 Wildlife

The term '**Wildlife**' includes animals of any habitat in nature. Wild animals are non-domesticated animals and include both vertebrates (fish, amphibians, reptiles, birds and mammals) and invertebrates (bees, butterflies, moths etc.). India has a rich and diversified wildlife. The Indian fauna consists of about 81,251 species of animals out of the world's total of about 1.5 million species.

Our country is home to tigers, lions, leopards, snow leopards, pythons, wolves, foxes, bears, crocodiles, rhinoceroses, camels, wild dogs, monkeys, snakes, antelope species, deer species, varieties of bison and the mighty Asian elephant. Hunting, poaching, deforestation and other anthropogenic interferences in the natural habitats have caused extinction of some species and many are facing the danger of extinction.

The Indian Board for Wildlife (IBWL)

It was constituted in 1952 to suggest means of protection, conservation and management of wildlife to the government.

The Government of India enacted Wildlife (Protection) Act in 1972 with the objective of effectively protecting the wild life of the country and to control poaching, smuggling and illegal trade in wildlife and its diversities.

To preserve the country's rich and diverse wildlife a network of **102 National Parks** and about **515 Wildlife Sanctuaries** across the country have been created.

Biosphere Reserves

Biosphere reserves are protected areas of land coastal environments

The Indian government has established **18 Biosphere Reserves** in India which protect large areas of natural habitat which often include few National Parks with buffer zones that are open to some economic uses.

Project Tiger was launched in April 1973 with the aim to conserve tiger population in specifically constituted "Tiger Reserves" in India.

Biosphere Reserves in India

Eleven of the eighteen biosphere reserves (Gulf of Mannar, Nandadevi, the Nilgiris, Nokrek, Pachmarhi, Simlipal, Sundarbans Agasthiyamalai, Great Nicobar, Kanjanjunga and Amarkantak) of India fall under the list of Man and Biosphere programme of UNESCO.

SUMMARY

- Climate of India is labelled as "Tropical Monsoon Type".
- There are four seasons in India. They are winter season, hot weather, southwest monsoon, and northeast monsoon.
- Natural vegetation refers to a plant community unaffected by man either directly or indirectly.

- Natural vegetation can be classified as tropical evergreen forests, tropical deciduous forests, tropical dry forests, desert and semi desert vegetation, mountain forests, Alpine forests, Tidal forests, etc.,
- Biosphere reserves are protected areas of land coastal environment whereby people are an integral component of a system.

EXERCISE

LA9X5G

I Choose the correct answer

1. Western disturbances cause rainfall in _____.
   a) Tamilnadu b) Kerala
   c) Punjab d) Madhya Pradesh
2. _____ helps in quick ripening of mangoes along the coast of Kerala and Karnataka.
   a) Loo b) Norwester
   c) Mango showers d) Jet stream
3. _____ is a line joining the places of equal rainfall.
   a) Isohyets b) Isobar
   c) Isotherm d) Latitudes
4. Climate of India is labelled as _____.
   a) Tropical humid
   b) Equatorial Climate
   c) Tropical Monsoon Climate
   d) Temperate Climate
5. The monsoon forests are otherwise called as _____.
   a) Tropical evergreen forest
   b) Deciduous forest
   c) Mangrove forest
   d) Mountain forest
6. Sesahachalam hills, a Biosphere reserve is situated in _____.
   a) Tamil Nadu b) Andhra Pradesh
   c) Madhya Pradesh d) Karnataka
7. _____ is a part of the world network biosphere reserves of UNESCO
   A) Nilgiri b) Agasthiyamalai
   c) Great Nicobar d) Kachch

II Match the following

1. Sundarbans — Desert and semi desert vegetation
2. Biodiversity hotspot — October - December
3. North east monsoon — Littoral forest
4. Tropical thorn forests — West Beangal
5. Coastal forests — The Himalayas

III Consider the given statements and choose the correct option from the given below ones

1. **Assertion(A):** The Himalayas acts as a climatic barrier.

   Reason(R): The Himalayas prevents cold winds from central Asia and keep the Indian Sub-continent warm.(Give option for this questions)
   a) Both (A) and (R) are true: R explains A
   b) Both (A) and (R) are true: R does not explain A
   c) (A) is true (R) is false
   d) (A) is false (R) is true

IV Choose the inappropriate answer

1. Tidal forests are found in and around____.
   (a) Desert
   (b) The deltas of Ganga and Brahmaputra
   (c) The delta of Godavari
   (d) The delta of Mahanadhi

Unit - 3

India - Agriculture

Learning Objectives

- To understand the nature of India's soil types and their distribution.
- To know about the importance of irrigation and multi-purpose projects in India.
- To study about the agriculture, its types and importance.
- To understand the livestock and fishing resources of India
- To comprehend the problems of farming in India.

ZVQAXZ

Introduction

Soil is one of the most important natural resources. India's varied natural environments resulted in a great variety of soils compared to any other country of similar size in the world. The rich, deep and fertile soils support high density of population through agricultural prosperity.

3.1 Soils

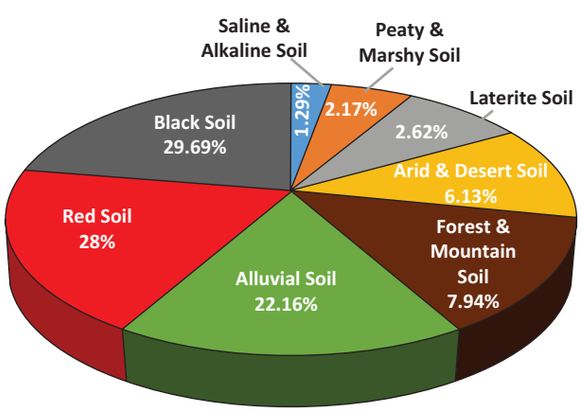
Soil is the uppermost layer of the land surface, usually composed of minerals, organic matter, living organisms, air and water. Grains in the soil are of three categories namely, clay, silt, and sand. Soils are generally formed by the weathering of rocks under different conditions. Some soils are formed by the deposition of agents of denudation. Soils can vary greatly from one region to the other.

Types of Soils

The Indian Council of Agriculture Research (ICAR) set up in 1953 divides the soils of India into the following eight major groups. They are

1. Alluvial soil
2. Black soils
3. Red soils
4. Laterite soils
5. Forest and mountain soils
6. Arid and desert soils
7. Saline and alkaline soils
8. Peaty and marshy soils

Types of Soils in India



Name of projects	River	Benefit States
Damodar Valley project	Damodar	Jharkhand, West Bengal
Bhakra-Nangal Project (highest gravity dam in the world)	Sutlej	Punjab, Haryana and Rajasthan
Hirakud Project (longest dam in the world)	Mahanadi	Orissa
Kosi Project	Kosi	Bihar & Nepal
Tungabhadra Project	Tungabhadra	Andhra Pradesh and Karnataka
Tehri Dam:	Bhagirathi	Uttarakhand
Chambal Valley Project	Chambal	Rajasthan and Madhya Pradesh
Nagarjuna Sagar Project	Krishna	Andhra Pradesh
Sardar Sarover Project	Narmada	Madhya Pradesh, Maharashtra, Rajasthan
Indira Gandhi Canal Project	Satlaj	Rajasthan, Punjab and Haryana
Mettur Dam	Cauveri	Tamil Nadu

cleared, crops are grown for two to three years and the land will get abandoned as the fertility of the soil decreases. The farmers then move to new areas and the process will be repeated. They cultivate some grains and vegetable crops using the manual labour. It is also called as "Slash and burn" cultivation.

Different names of shifting agriculture in different regions in India	
Name	**Place**
Jhum	Assam
Poonam	Kerela
Podu	Andhra Pradesh, Odisha
Beewar, Mashan, Penda, Beera	Madhya Pradesh

c) Intensive Farming

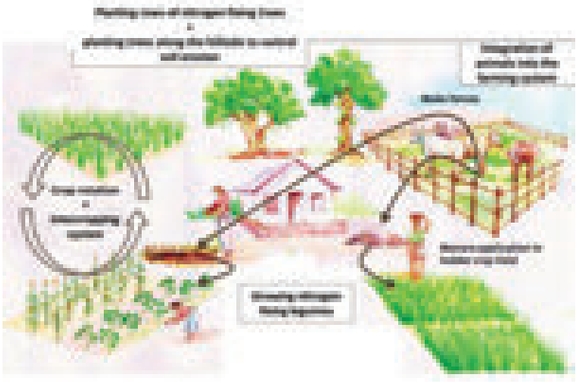
Intensive farming is an agricultural intensification and mechanization system that aims to maximize yields from available land through various means, such as heavy use of pesticides and chemical fertilizers.

d) Dry Farming

This type of farming is practiced in arid areas where irrigation facilities are lacking. Crops cultivated in these areas can withstand dry conditions. The crops grown generally with the help of irrigation are also grown under dry farming. In such circumstances, the yields are generally low. Most of the areas under dry cultivation entertain only one crop per year.

e) Mixed Farming

Mixed farming is defined as a system of farm which includes crop production, raising livestock, poultry, fisheries, bee keeping etc. to sustain and satisfy as many needs of the farmer as possible.



Mixed Farming Agriculture

f) Terrace Farming

This type of cultivation is practiced specially in hilly areas, where lands are of sloping nature. The hill and mountain slopes

are cut to form terraces and the land is used in the same way as in permanent agriculture. Since the availability of flat land is limited, terraces are made to provide small patches of level land. Soil erosion is also checked due to terrace formation on hill slopes.

3.4 Major Crops Cultivated in India

The major crops of India are divided into four major categories as follows:

1. Food crops (wheat, maize, rice, millets, pulses etc.).
2. Cash crops (sugarcane, tobacco, cotton, jute, oilseeds etc.).
3. Plantation crops (tea, coffee and rubber).
4. Horticulture crops (fruits, flowers and vegetables).

1. Food Crops

Due to its large population, Indian agriculture is largely dominated by the food crops.

Rice

Rice is an indigenous crop. India is the second largest producer of rice in the world after China. It is mainly a tropical crop, growing mainly with mean temperatures of 24°C and annual rainfall of 150 cm. Deep fertile clayey or loamy soils are suited well for rice cultivation. It also needs abundant supply of cheap labour.

Paddy Cultivation

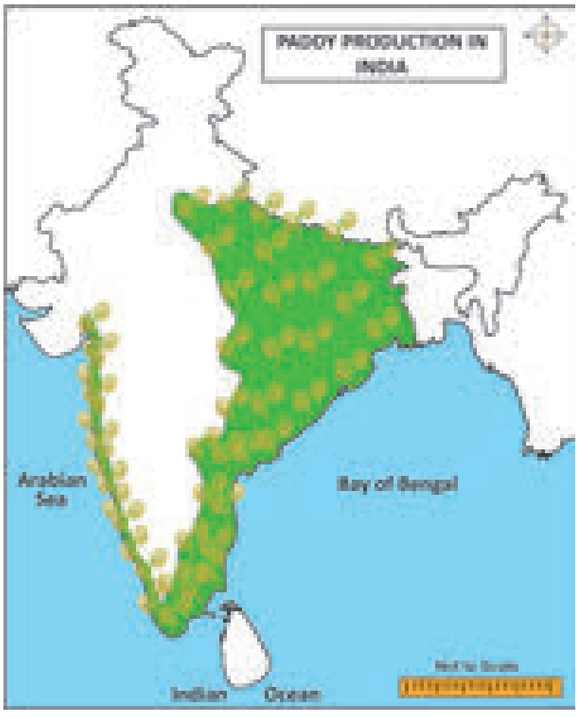
Rice in India is sown in three ways:

i) Broadcasting,

ii) Ploughing or drilling

iii) Transplanting

Due to increased use of High Yielding Variety (HYV) seeds (CR Dhan 205, AR Dhan 306, CRR 451 etc.), many of the indigenous varieties were disappeared. In 2016, the first 10 leading rice producing states are West Bengal (First in India) Uttar Pradesh, Punjab, Tamil Nadu, Andhra Pradesh, Bihar, Chhattisgarh, Odisha, Assam, and Haryana.



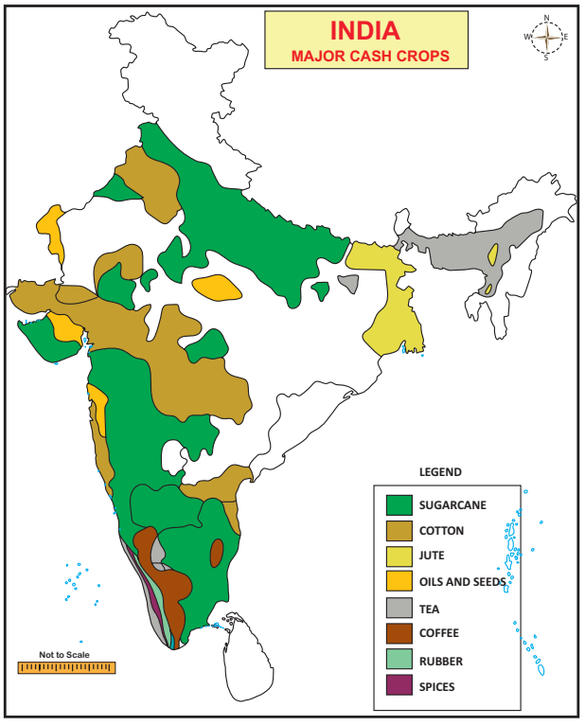
Wheat

Wheat is the second most important food crop of the country, after rice. It accounts for 22 percent of the total area and

Cropping Seasons in India		
Cropping Seasons	Major crops cultivated	
	Northern States	Southern States
Kharif Season June–September	Rice, Cotton, Bajra, Maize, Jowar, Tur	Rice, Ragi, Maize, Jowar, Groundnut
Rabi Season October–March	Wheat, Gram, Rapeseeds, Mustard, Barley	Rice, Maize, Ragi, Groundnut, Jowar
Zaid Season April–June	Vegetables, Fruits, Fodder	Rice, Vegetables, Fodder

Jute

It is a tropical fibre crops, grows well in the alluvial soil. It provides raw material for Jute industry. It is used for manufacturing of gunny bags, carpets, hessian, ropes and strings, rugs, clothes, tarpaulins, upholstery etc. West Bengal is the leading state both in cultivation and production of jute. The other cultivators of jute are Bihar, Assam and Meghalaya.



Oil Seeds

Oil seeds, the premier source of fat in the Indian diet are derived from number of crops like groundnut, rapeseed, mustard, sesame, linseed, sunflower, castor seed, cotton seed, niger seed etc. These provide oil and oilcake which are used for making lubricants, varnish, medicine, perfume, candles, soaps, manure and cattle feed. Gujarat is India's largest oilseeds producing state. In groundnut production, India is the second largest producer in the world after China.

3. Plantation Crops

Plantation crops are cultivated for the purpose of exports. These are cultivated in large estates on hilly slopes. Tea, coffee, rubber and spices are the major plantation crops of India.

Tea

Tea is an evergreen plant that mainly grows in tropical and subtropical climates. Tea is a labour intensive and grows faster under light shade. Tea plants require high rainfall but its root cannot tolerate water logging. Two major varieties of tea are cultivated in India. They are

i) BOHEA - originated from China

ii) ASSAMICA - from India

A number of hybrid varieties have been developed by mixing these two. India is the second largest producer of tea after China in the world. Assam is the larger producer of tea in India. Other states are Tamil Nadu, Kerala and West Bengal.

Coffee

Coffee is grown in shade and it grows effectively in the altitudes between 1,000 and 1,500 m above mean sea level. There are two main varieties of coffee. They are

i) Arabica (High quality-cultivated more in India)

ii) Robusta (Inferior quality).

India is the 7th largest producer of coffee globally. Karnataka is the leading producer of coffee in India. It produces 71% in India, and 2.5 % in the world (source; coffee board of India-2018).

Rubber

Rubber plantation were first established in Kerala in 1902. It needs hot and wet climatic conditions (temperature above 20°C and rainfall above 300cm). Most of the land under rubber belongs to small land holders. The major rubber growing areas are Tamil Nadu, Kerala, Karnataka and Andaman and Nicobar Islands.

Spices

India has been world famous for its spices since ancient times. These spices mostly used for flavouring or tampering cooked food and for preparing medicines, dyes etc. Pepper, chillies, turmeric, ginger, cardamom, clove and areca

Fisheries

1. **Marine or Sea Fisheries:** It includes coastal, off-shore and deep sea fisheries mainly on the continental shelves. Kerala leads in the marine fish production in India.
2. **Inland or Fresh Water Fisheries:** Rivers, lakes, canals, reservoirs, ponds, tanks etc. are the sources of fresh water fresh water fisheries. About 50 percent of the country's total fish production comes from the inland fisheries and Andhra Pradesh is the leading producer in India.

In India, the important varieties of fishes caught by the fisherman are Cat fish, Herrings, Mackerels, Perches, Eels, Mullets etc.

3.7 Major issues faced by farmers in india

Small and fragmented land-holdings

The problem of small and fragmented holdings is more serious in densely populated and intensively cultivated states in India.

High Costs of Inputs

Good quality seeds are out of reach for many small and marginal farmers due to their high price.

Infertile Soil

Indian soils have been used for growing crops over thousands of years without caring much for replenishing. This has led to depletion and exhaustion of soils resulting in low productivity.

Lack of Irrigation

Only one-third of the cropped area falls under irrigated area. To make agriculture reliable, irrigation facility has to be developed.

Lack of mechanization

In spite of the large scale mechanization of agriculture in some parts of the country, most of the agricultural operations in larger parts are carried on by human hand using simple and conventional tools.

Soil erosion

Large tracts of fertile land suffer from soil erosion by wind and water.

Agricultural marketing

Due to the absence of sound marketing facility, the farmers have to depend on local traders and middlemen for the disposal of their farm products which is sold at low price. Besides, there is a fluctuation in the prices of agriculture products.

Inadequate storage facilities

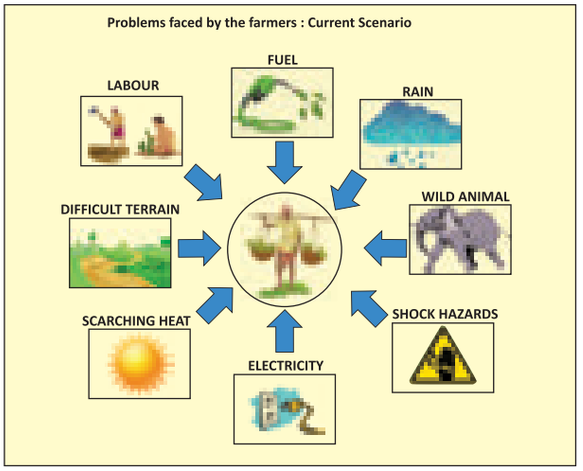
Storage facilities in the rural areas are either totally absent or grossly inadequate. Under such conditions the farmers are compelled to sell their products immediately after the harvest irrespective of the condition of market.

Inadequate transport

One of the main handicaps with Indian agriculture is the lack of cheap and efficient means of transportation.

Scarcity of capital

Agriculture is an important industry which requires a huge capital. The role of capital plays a major role in the purchase of advanced farm machineries and equipments.



List of important Agricultural Revolutions in India	
Revolution	**Related Product**
Yellow Revolution	Oil seed Production (Especially Mustard and Sunflower)
Blue Revolution	Fish Production
Brown Revolution	Leather / Cocoa / Non-Conventional Products
Golden Fibre Revolution	Jute Production
Golden Revolution	Fruits / Honey Production / Horticulture Development
Grey Revolution	Fertilizers
Pink Revolution	Onion Production / Pharmaceuticals / Prawn Production
Evergreen Revolution	Overall Production of Agriculture
Silver Revolution	Egg Production / Poultry Production
Silver Fibre Revolution	Cotton
Red Revolution	Meat Production / Tomato Production
Round Revolution	Potato
Green Revolution	Food Grains
White Revolution	Milk Production

SUMMARY

- Soil is the finest particle found on the earth surface.
- The main sources of irrigation found in India are canal irrigation, well irrigation and tank irrigation etc.
- Kharif, Rabi, and Zaid are the three cropping seasons of India.
- The agricultural crops of India can be divided into food crops, cash crops, plantation crops and horticultural crops.
- Fishing in India is categorized into marine fishing and inland fishing

EXERCISE

WWB7QD

I Choose the correct answer

1. The soil which is rich in iron oxides is _____.

   a) Alluvial b) Black
   c) Red d) Alkaline

2. Which of the following organization has divided the Indian soils into 8 major groups?

   a) Indian Council of Agricultural Research
   b) Indian Meteorological Department
   c) Soil Survey of India
   d) Indian Institute of Soil Science

3. The soils formed by the rivers are:

   a) Red soils b) Black soils
   c) Desert soils d) Alluvial soils

Unit - 4

India - Resources and Industries

Learning Objectives

- To learn about the resource and its types.
- To understand the concept of renewable and non- renewable resources.
- To identify the different types and distribution of industries in India.
- To analyse the problems of Indian industries.

IAUTWU

Introduction

Any matter or energy derived from the environment that is used by living things including humans is called a natural resource. Natural resources include air, water, soil, minerals, fossil fuels, plants, wild life etc. Many natural resources are used as raw materials. They play a vital role in the economic development of any region. Natural resources are classified on several basis. Based on continued availability, the resources are categorised into two types. Renewable Resources are those which have natural regeneration after their utilisation.

Solar energy, wind energy, biogas, tidal energy, wave energy etc. are the renewable resources. Non- Renewable resources are the sources that cannot be replaced again after utilisation. Coal, petroleum, natural gas etc. fall under this category.

4.1 Minerals

Mineral is a natural substance of organic or inorganic origin with definite chemical and physical properties. The process of extracting mineral from the earth is known as mining. The mines near the earth crust are known as open pit mines while the deep mines are known as shaft mines.

DO YOU KNOW?

The organisations associated with minerals in India are

1. The Geological Survey of India Headquarter is at Calcutta
2. Indian Bureau of Mines Headquarter at Nagpur
3. Non-Ferrous Material Technology Development Centre NFTDC, Hyderabad.
4. The Ministry of Mines is responsible for the administration of all mines and minerals (Development and Regulation Act, 1957).

Types of Minerals

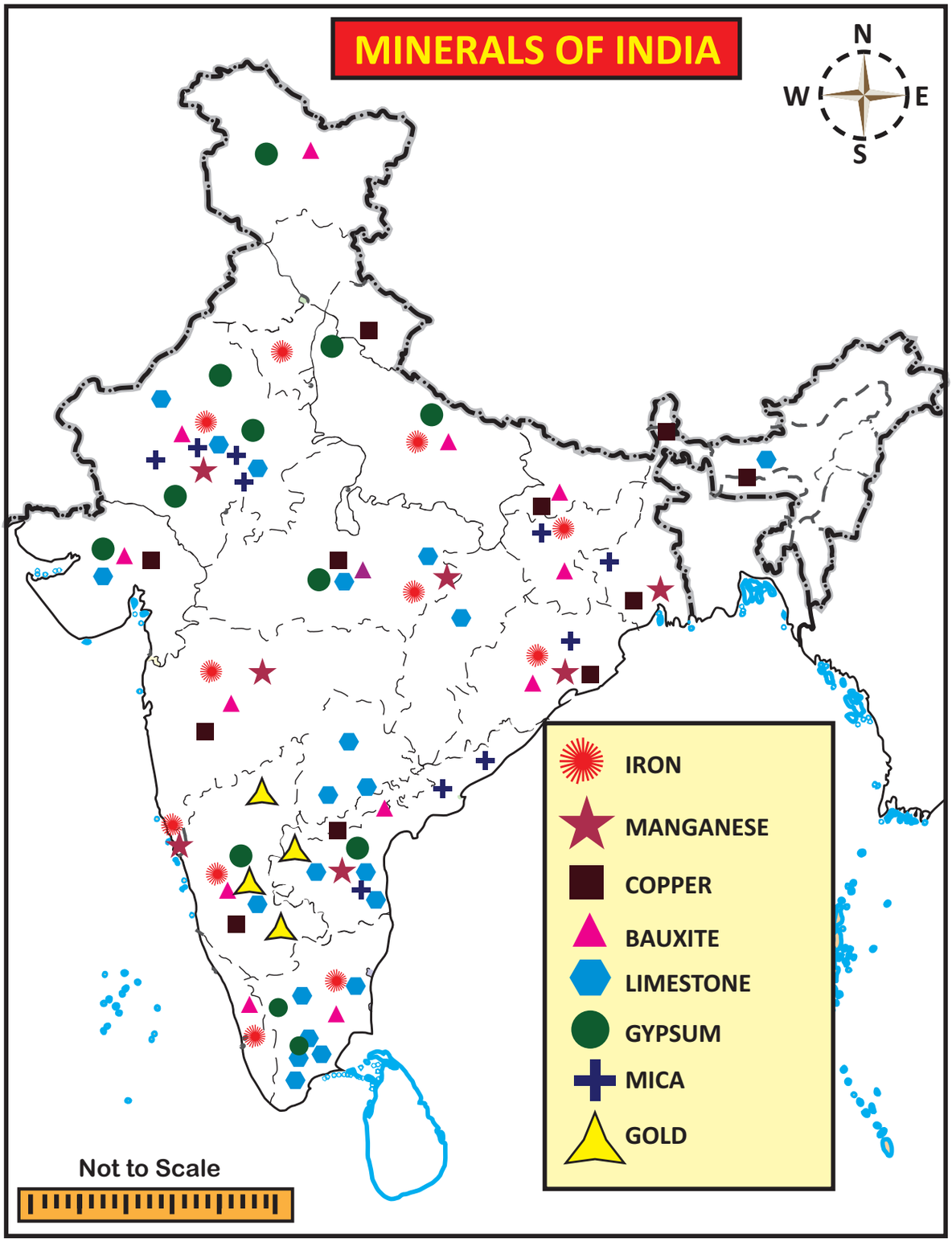
On the basis of chemical and physical properties, minerals are broadly grouped under two categories. They are metallic and non-metallic minerals.

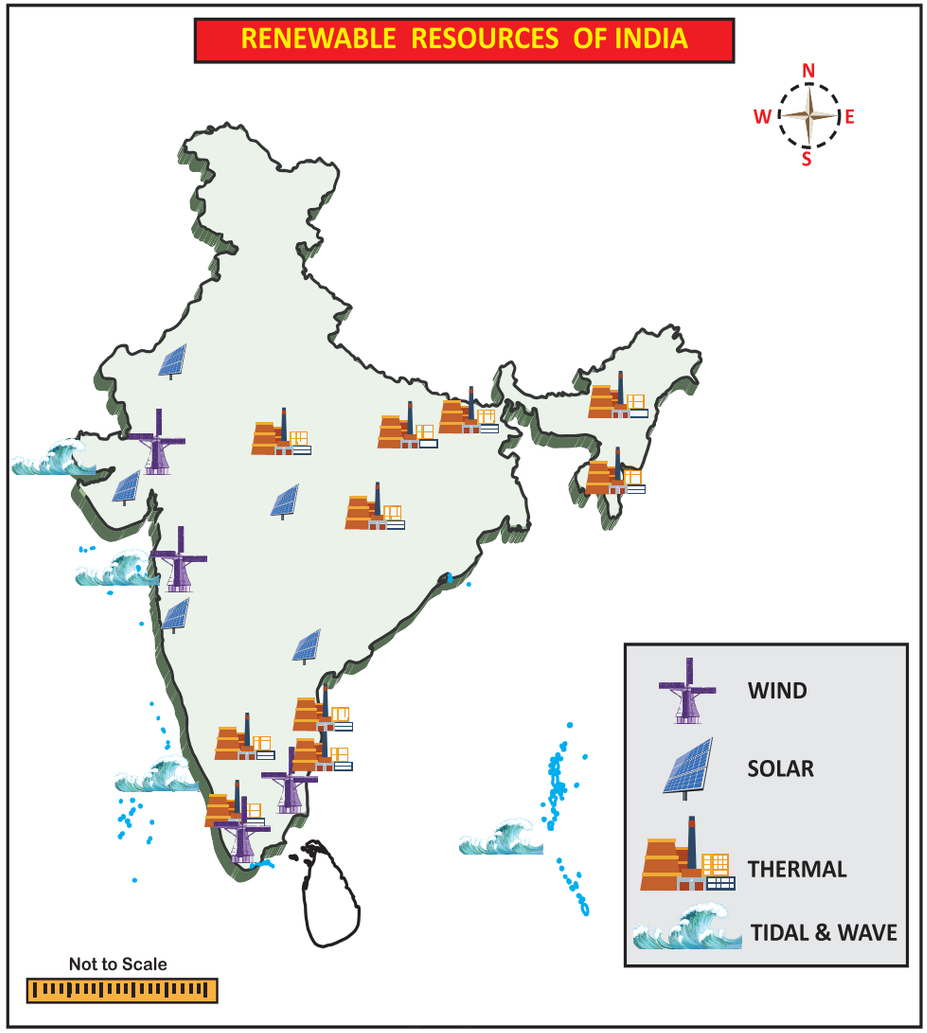
a) Metallic Minerals

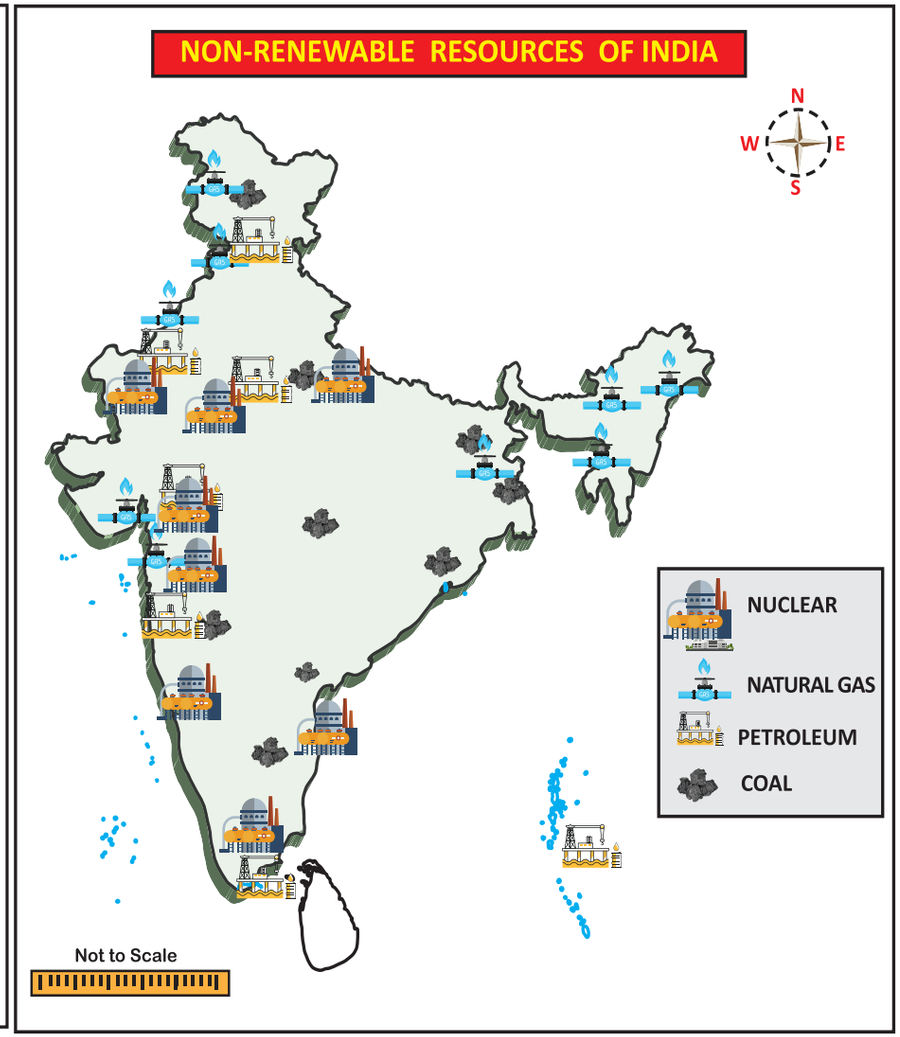
Metallic minerals are the minerals which contain one or more metallic elements in them. Metallic minerals occur in rare, naturally formed concentrations known as mineral deposits. These deposits consist of a variety of valuable metals such as iron, manganese, copper, bauxite, nickel, zinc, lead, gold etc.

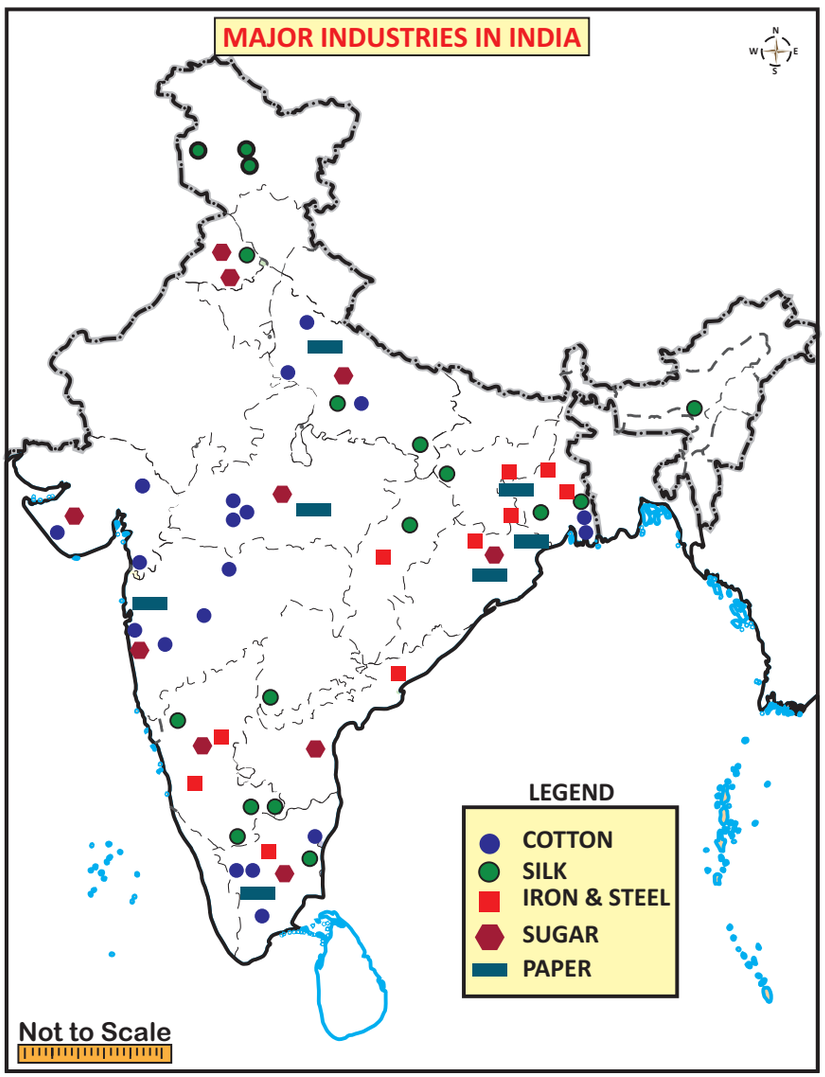
1. Iron ore

Iron ore is the most widely distributed elements of the earth crust, rarely occurs in a









Maharastra, humid climate, presence of Mumbai port, availability of hydro power, good market and well developed transport facility favour the cotton textile industries in Mumbai.

The major cotton textile industries are concentrated in the states of Maharashtra, Gujarat, West Bengal, Uttar Pradesh and Tamil nadu. Coimbatore is the most important centre in Tamil nadu with 200 mills out of its 435 and called as "**Manchester of South India"**. Erode, Tirupur, Karur, Chennai, Thirunelveli, Madurai, Thoothukudi, Salem and Virudhunagar are the other major cotton textiles centres in the state.

b) Jute Textiles

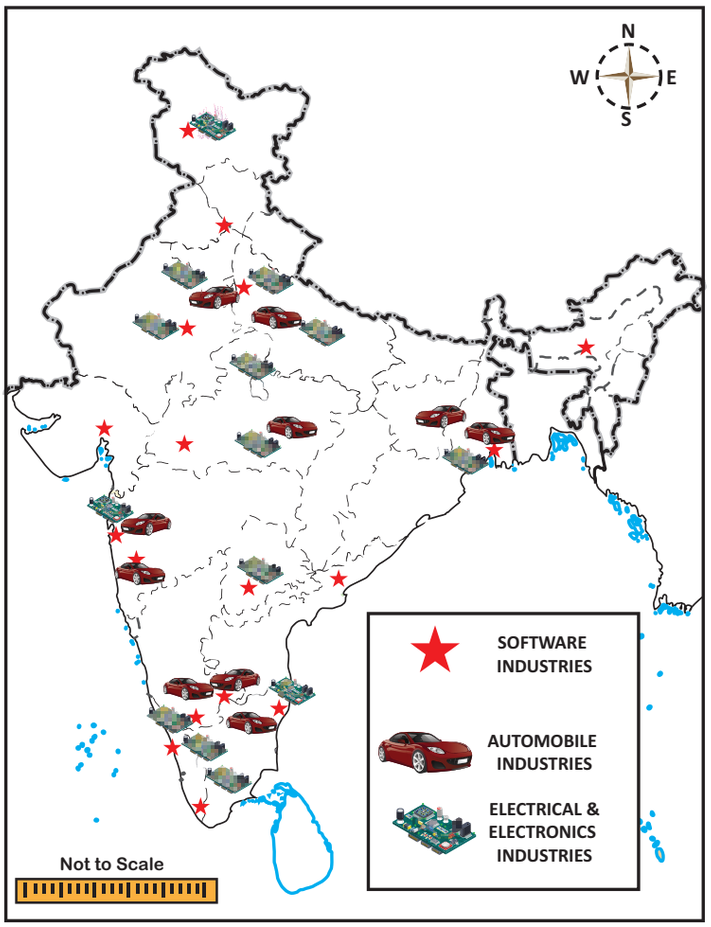
Jute is a low priced fibre used mainly for making package materials like gunny bags. Today jute is blended with cotton and wool to produce textiles. This is the second important textile industry in India after cotton textiles. Jute is the golden fibre which meets all the standards of goods packing with its natural, renewable, bio degradable and eco-friendly products.

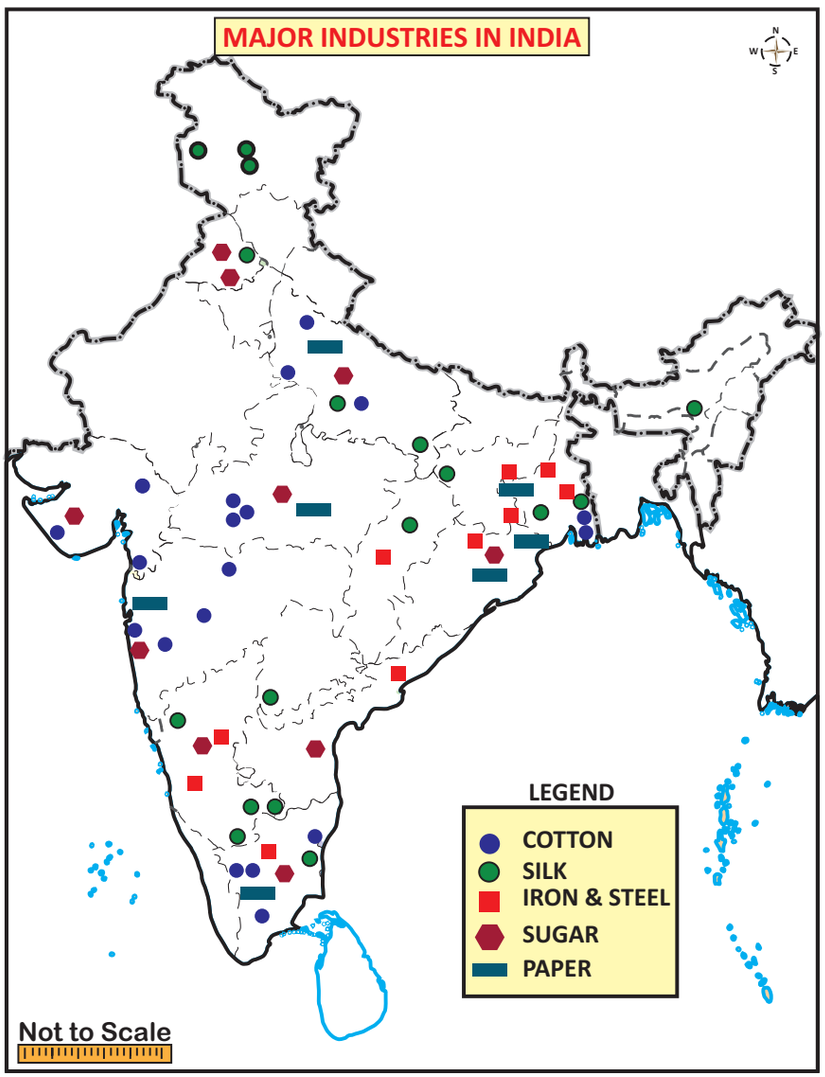
The first jute mill in India was established at Rishra near, Kolkata in 1854 by the English man George Auckland. India tops in the production of raw jute and jute goods and second in the export of jute goods next to Bangladesh. Jute production includes gunny bags, canvas, pack sheets, jute web, carpets, cordage, hessians and twines. Now jute is also being used in plastic furniture and insulation bleached fibres to blend with wool. It is also mixed with cotton to make

National jute board is headquarter at Kolkata.

S.No	Name of Industry	Place	Establishment Year	Product
1	Tata Iron and Steel Company(TISCO)	Jamshedpur, Jharkhand	1911	Pig Iron
2	Indian Iron and Steel Company (IISCO)	Burnpur,Hirapur, Kulti, West Bengal	1972	Pig Iron & Crude steel
3	Visweshwaraya Iron Steel Ltd(VISL)	Bhadravati,Karnataka	1923	Alloy and Sponge steel
4	Hisdustan Steel Ltd (HSL) Collaborated with Russia	Bhilai, Chattisgarh	1957	Railway Equipments and Ship Building
5	Hindustan Steel Ltd(HSL) Collaborated with Germany	Rourkela,Odisha	1965	Hot and Cold rolled sheets, Galvanized sheets and electrical plates
6	Hindustal Steel Ltd(HSL) Collaborated with United kingdom	Durgapur,West Bengal	1959	Alloy steel, Construction materials and railway equipments
7	Hisdustan Steel Ltd(HSL) Collaborated with Russia	Bokaro, Jharkhand	1972	Sludge and Slog
8	Salem Steel Ltd	Salem, Tamil Nadu	1982	Stainless Steel
9	Vijayanagar Steel Plant	Tornagal,Karnataka	1994	Flat steel and Long Steel
10	Visakhapatnam Steel Plant(VSP)	Visakhapatnam, Andhra Pradesh	1981	Hot Metal

MAJOR ELECTRICAL & ELECTRONICS, SOFTWARE AND AUTOMOBILE INDUSTRIES IN INDIA





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National jute board is headquarter at Kolkata.

SUMMARY

- Natural resource - raw materials obtained naturally from the earth.
- Renewable resource – the resources that can be replenished.
- Non renewable resource - the energy that cannot be replenished easily.
- Agro based industry – the industries that depend on agriculture for their raw materials.
- Mineral based industries – the industries that use minerals as raw materials.
- Forest based industries – the industries run with the help of forest products.

EXERCISE

Q47YCF

I Choose the correct answer

1. Manganese is used in_____.
   a) Storage batteries
   b) Steel Making
   c) Copper smelting
   d) Petroleum Refining
2. The Anthracite coal has _____.
   a) 80 to 95% Carbon
   b) Above 70% Carbon
   c) 60 to 70% Carbon
   d) Below 50% Carbon
3. The most important constituents of petroleum are hydrogen and
   a) Oxygen b) Water
   c) Carbon d) Nitrogen
4. The city which is called as the Manchester of South India is
   a) Chennai b) Salem
   c) Madurai d) Coimbatore
5. The first Nuclear Power station was commissioned in
   a) Gujarat b) Rajasthan
   c) Maharashtra d) Tamil nadu
6. The most abundant source of energy is
   a) Bio mass b) Sun
   c) Coal d) Oil
7. The famous Sindri Fertilizer Plant is located in
   a) Jharkhand b) Bihar
   c) Rajasthan d) Assam
8. The nucleus for the development of the chotanagpur plateau region is
   a) Transport
   b) Mineral Deposits
   c) Large demand
   d) Power Availability

II Match the following

1.	Bauxite	-	Cement
2.	Gypsum	-	Aircraft
3.	Black Gold	-	Electrical goods
4.	Iron ore	-	Coal
5.	Mica	-	Magnetite

III Answer the following Questions briefly

1. Define the resource and state its types.
2. What are minerals and state its type?
3. State the uses of magnesium.
4. What is natural gas?
5. Name the different types of coal with their carbon content.
6. Mention the major areas of jute production in India.

Unit - 5

India - Population, Transport, Communication & Trade

Learning Objectives

- To understand the growth and distribution of population in India
- To know about the Human Development in India.
- To learn the transport systems of India.
- To understand the communication system of India.
- To assess the nature of trade in India.

4PNC5Y

Introduction

The study on human population is one of the most important aspects in geography of any region. The human population has many components but the most fundamental are its number, composition, distribution and density. Therefore, it is essential to study these components. The study on these aspects also would reveal the workforce of the country.

5.1 Population

The total number of people residing in a country at a specified period of time is called the **'Population'** of that country. India is the second most populous country in the world next only to china. India covers only 2.4 percent of the land area of the world, but is the home of about 17.5 percent of the world's population. It shows that the proportion of population of India is far higher than the proportion of its area. Thus, a little more than one out of every six persons in the world is from India.

Census

Population census is the total process of collecting, compiling, analysing or otherwise disseminating demographic, economic and social data pertaining, at a specific time, of all persons in a country or a well-defined part of a country. It happens in an interval of ten years. The data collected through the census are used for administration, planning, policy making as well as management and evaluation of various programmes by the government.

DO YOU KNOW?

In India the first census was carried out in the year 1872. But the first complete and synchronous census was conducted in 1881. And the 2011 census represents the fifteenth census of India.

Distribution and Density of Population

The term **'Population Distribution'** refers to the way the people are spaced over the earth's surface. The distribution of population in India is quite uneven because of the vast variation

easy to construct roads. In mountainous area, it is quite difficult to construct roads. Road density is the highest in Kerala and lowest in Jammu &Kashmir.

For the purpose of construction and maintenance, roads are classified into National Highways (NH), State Highways (SH), District Roads, Rural Roads (Village roads), Border Roads and International Highways.

1. Classification of Roads in India

a) National Highways (NH)

National Highways form the most important system of road transportation in India. These highways are running through length and breadth of the country connecting capitals of states, major Ports, rail junctions, industrial and tourist centres. Ministry of Road Transport and Highways of India, is responsible for the development and maintenance of National Highways in India. The longest National highway is NH-44 which runs from Varanasi in Uttar Pradesh to Kanniyakumari in Tamil Nadu covering a distance of 2369 km. The shortest national highway is NH-47A, which runs from Ernakulum to Kochi port (Willington Island) covering a distance of 6 km.

National Highways Authority of India (NHAI) was established in 1995. It is an autonomous body under the Ministry of Surface Transport.

b) State Highways

The state highways are usually roads that link important cities, towns and district headquarters within the state and connect them with national highways or highways of neighbouring states. These roads are administered and financed by state governments.

c) District Roads

District Roads provide connectivity between the district and taluk headquarters with the state highways and national highways. District Roads are constructed and maintained by the Public Works Department of the states.

d) Rural Roads (Village Roads)

These roads are vital for providing links in the rural areas. It links the different villages with their neighbouring towns. They are maintained by Village Panchayats.

e) Border Roads

These are the roads of strategic importance in border areas. They are constructed and maintained by Border Roads Organization. It was established in 1960 for the development of the roads of strategic importance in the northern and northeastern border areas. Border Roads Organization has constructed world's highest road joining Chandigarh and Leh in Ladakh. This road runs at an average altitude of 4,270 meters.

f) Golden Quadrilateral

Golden Quadrilateral 5,846 km long road of 4/6 lanes connects, India's four metropolitan cities: Delhi-Kolkata-Chennai-Mumbai-Delhi. This project was launched in 1999.

Hots

What are the highlights and benefits of the Golden Quadrilateral Highways?

g) North–South and East-West Corridors

North-South corridor aims at connecting Srinagar in Jammu and Kashmir with Kaniyakumari in Tamil Nadu (including Kochi-Salem Spur) with 4,076km long road.

Electronic Media: Radio broadcasting in India was started in 1923 by the Radio club of Bombay. Since then it gained immense popularity and changed the social and cultural life of people. It was named as All India Radio (AIR) in 1936 and again it was renamed as Akashwani in 1957. It broadcasts a variety of programs related to information, education and entertainment. Special news bulletins are also broadcasted on special occasions like session of parliament and state legislatures.

Television broadcasting has emerged as the most effective audio-visual medium for disseminating information and educating the masses. Television network in India is known as Doordarshan (DD) which started Common National Program (CNP) services and it is extended to the backward and remote rural areas.

Internet (contraction of **interconnected network**) is the global system of interconnected computer networks that use the Internet protocol suite to link devices worldwide. **Social media** are interactive computer-mediated technologies that facilitate the creation and sharing of information, ideas, career interests and other forms of expression via virtual communities and networks.

Print Media: Newspapers are the most common but powerful means of communication come under print media. India has many newspapers which carry information on local, national and international events to the people.

Satellite Communication

The use of Satellite in getting a continuous and synoptic view of larger area has made this communication system very vital for the country. Satellite images are used for weather forecasting, monitoring of natural calamities, surveillance of border areas etc. The communication through satellites emerged as a new era in communication in our country after the establishment of **Indian Space Research Organization (ISRO)** in 1969.

Satellite system in India can be grouped into two

1. The Indian National Satellite System (INSAT)
2. The Indian Remote Sensing Satellite System (IRS).

The INSAT, established in 1983, is a multipurpose system for telecommunication, meteorological observation and for various other programs. The INSAT series are used for relaying signals to television, telephone, radio, mobile phone. It is also useful in weather detection, internet and military applications.

The INSAT series, GSAT series, KALPANA-1, HAMSAT, EDUSAT are the major communication satellite used for communication purpose. GSAT–7A is the recent launch (December 19, 2018) for communication programs. INSAT-1B launched on 30th August 1983 is the first communication satellite in INSAT series.

5.6 Trade

Trade is an important phenomenon that decides the economic growth of a country. Trade is an act (or) process of buying, selling or exchanging of goods and services. The primitive method of trade was known as the Barter system where goods were exchanged for goods. Later on, money was introduced as a medium of exchange in buying and selling of goods. The difference in value between the imports and exports is called balance of trade. The situation in which the value of exports exceeds the value of imports is termed as favourable balance of trade and the reverse position is termed as unfavourable balance of trade.

Types of Trade

Trade in general, is of two types. They are

1. Internal trade
2. International trade

The trade carried on within the domestic territory of a country is termed as **Internal trade.** It is also called as **Domestic trade** or **Local trade.** Land transport (roadways and railways) plays a major role in this trade. Local currency is used in internal trade. It helps to promote a balanced regional growth in the country.

Trade carried on between two or more countries is called **International trade.** It is also called as external trade or foreign trade. Export and Import are two components of International trade. Export means goods and services sold for foreign currency. Import means goods and services bought from overseas producers. Waterways and Airways play a vital role in this type of trade. Foreign currency is involved in international trade. The trade between any two countries is called **Bilateral trade.** The trade between more than two countries is called **Mutilateral Trade.**

Hots

Find out the major trade blocs which are useful for multilateral trade.

Exports

The major exports of India are tea, marine products, ores and minerals, leather products, gems and jewels, sports goods, chemicals and related products, plastics and rubber articles, articles of stones, plaster, cement, asbestos, mica, glass ware, paper and related products, base metals, optical, medical and surgical instruments, electronic items, machinery, office equipments, textiles and allied products.

Imports

The major imports are petroleum products, pearls, precious stones and semi-precious stones, gold and telecom instruments.

Activity

Find out the countries which have trade realtionship with India

SUMMARY

- The total number of people residing in a country at a specified period of time is called the size of population of that country.
- The growth of population is determined by the birth rate, death rate and migration of people.
- The process of society's transformation from rural to urban is known as urbanization.
- Communication is classified into the personal and mass communications.
- Trade is an exchange of goods and services. Internal and International trades are its types. Import and exports are the components of an International Trade.

EXERCISE

WWK3S1

I Choose the correct answer

1. The scientific study of different aspects of population is called
   a) Cartography b) Demography
   c) Anthropology d) Epigraphy

2. _____ transport provides door to door services.
   a) Railways b) Roadways
   c) Airways d) Waterways.

3. The length of Golden Quadrilateral superhighways in India is
   a) 5846 km b) 5942 km
   c) 5630 km d) 5800 km

Unit - 6

Physical Geography of Tamil Nadu

Learning Objectives

NTME8G

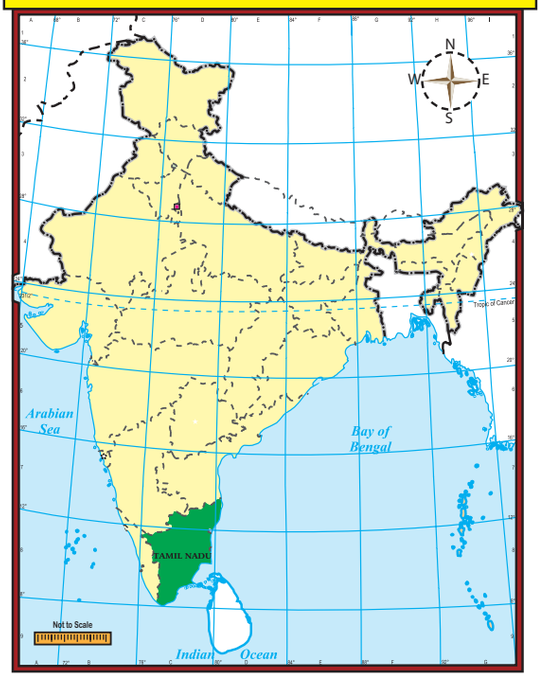
- To know the history of formation of the state
- To study the major physiographic divisions of the state
- To understand the nature of climate, soils and natural vegetation
- To familiarise the students with the geographical conditions of their living places
- To know the major natural disasters and their occurrences in Tamil Nadu

Introduction

The study of one's own region is the first step to become a global citizen. The purpose of studying our local territory is to understand life in our environment. In the last five lessons, you have learnt about various geographical characterstics of our country. In this lesson and those that follow, we shall learn about the geography of Tamil Nadu. You will get to know about the etymology, history of formation, location, size, physical divisions, rivers, climate, soil and natural vegetation of Tamil Nadu in this chapter.

Its exquisite physiography and climate makes our state unique in India. It has long and sunny beaches, waterfalls, hills, forests and varied flora and fauna.

LOCATION OF TAMIL NADU IN INDIA



DO YOU KNOW?

As per, the States Reorganisation Act, 1956, state boundaries were reorganised on some linguistic basis.

- Name the first state of India created on linguistic basis.
- Why was the capital of Tamil Nadu renamed?

6.1 Location and Size

Tamil Nadu is one of the 28 states of India, located in the southern most part of the country. It extends from 8°4'N to 13°35'N latitudes and from 76°18'E to 80°20'E longitudes. Its extremities are

- in eastern - Point Calimere
- in western - hills of Anaimalai
- in northern - Pulicat lake
- in southern - Cape Comorin

It covers an area of 1,30,058 sq.km and is the 11th largest state in India. It covers 4% of the area of our country.

Boundaries and Neighbours

Tamil Nadu is bounded by the Bay of Bengal in the east, Kerala in the west, Andhra Pradesh in the north, Karnataka in the northwest and Indian Ocean in the south. Gulf of Mannar and Palk Strait separate Tamil Nadu from the Island of Sri Lanka, which lies to the southeast of India. The state has 940 km long coastline, the second-longest in India after Gujarat.

Administrative Divisions

Already we have learnt that the state of Tamil Nadu had only 13 districts at the time of its formation. After that, the state was reorganised several times for the administrative convenience. At present there are 37 districts in Tamil Nadu, including the newly created districts such as Kallakurichi, Tenkasi, Chengalpet, Ranipet and Tirupathur. The administrative divisions of the state are given in the following table.

Activity

- Find out the coastal districts of Tamil Nadu with the help of a map.
- Mark the districts of Tamil Nadu which share their boundary with the states of Andhra Pradesh, Karnataka and Kerala separately.

Divisions	Numbers
Districts	37 (32+5)
Revenue Divisions	76
Taluks	226
Firkas	1,127
Revenue Villages	16,564
Municipal Corporations	15
Municipalities	125
Panchayat Unions (Blocks)	385
Town Panchayats	561
Village Panchayats	12,618
Lok Sabha Constituencies	39
Assembly Constituencies	234

Physiographic Divisions

Let's see the major physical features of Tamil Nadu and their characteristics.

Tamil Nadu is located on the Peninsular Plateau, known as Deccan Plateau. It is also a part of the ancient Gondwana land that broke away 135 million years ago during Cretaceous Period. Tamil Nadu is divided into the physical divisions of Western Ghats, Eastern Ghats, Plateaus, Coastal and Inland plains.

6.2 Western Ghats

Western Ghats extend from the Niligris in the north to Marunthuvazh Malai at Swamithope in Kanyakumari district in the south. Height of the Western Ghats ranges from 2,000 to 3,000 metres. It covers an area of about 2,500 sq.km. Though the Western Ghats is a continuous range, it has some passes. The passes are Palghat, Shencottah, Aralvaimozhi, and Achankoil. The Niligris, Anaimalai, Palani hills, Cardamom hills, Varusanadu, Andipatti and Agasthiyar hills are the major hills of Western Ghats .

6.3 The Eastern Ghats

Unlike Western Ghats, Eastern Ghats is a discontinuous and irregular one. It is dissected at many places by the rivers, which drain into the Bay of Bengal. Its height ranges from 1,100 to 1,600 metres. These hills separate the plains from plateaus. Javadhu, Servarayan, the Kalrayan, Kollimalai and Pachaimalai are the major hills of the Eastern Ghats of Tamil Nadu and are located in northern districts of the state.

Javadhu Hills

Javadhu hills are an extension of the Eastern Ghats spread across parts of Vellore and Tiruvannamalai districts and separates these two districts. Many peaks with the height of 1,100–1,150 metres are located in this range. Melpattu is its highest peak. Many parts of this range are covered with bluish grey granites. It is noted for its fruit bearing trees, medicinal herbs and sandalwoods. Due to illegal logging, sandalwood trees are disappeared now.

Kalvarayan Hills

The name 'Kalvarayan' comes from the word 'Karalar', the ancient name of the present tribes. It is another major range of hills in the Eastern Ghats of Tamil Nadu. This range, along with the Pachaimalai, Aralvaimalai, Javadhu and Servarayan hills, separates the river basins of Cauvery and Palar. The height of this hill ranges from 600 to 1,220 metres.

Servarayan Hills

It is a mountain range located near the Salem city with the height ranging from 1,200 to 1,620 metres. The name of the range comes from a local deity, Servarayan. The highest peak in the southern part of the Eastern Ghats is located in this range. The peak is Solaikaradu and its height is 1,620 metres. The hill station Yercaud, which is known as poor man's Ooty, is located on this range. Servarayan temple is its highest point (1623 metres).

Peaks in Eastern Ghats	Height(m)
Shervarayan temple	1,623
Mazhamalai	1,500
Urgamalai	1,486
Kuttirayan	1,395
Muganur	1,279
Valsamalai	1,034

Why are mountain heights measured from mean sea level and not from ground level?

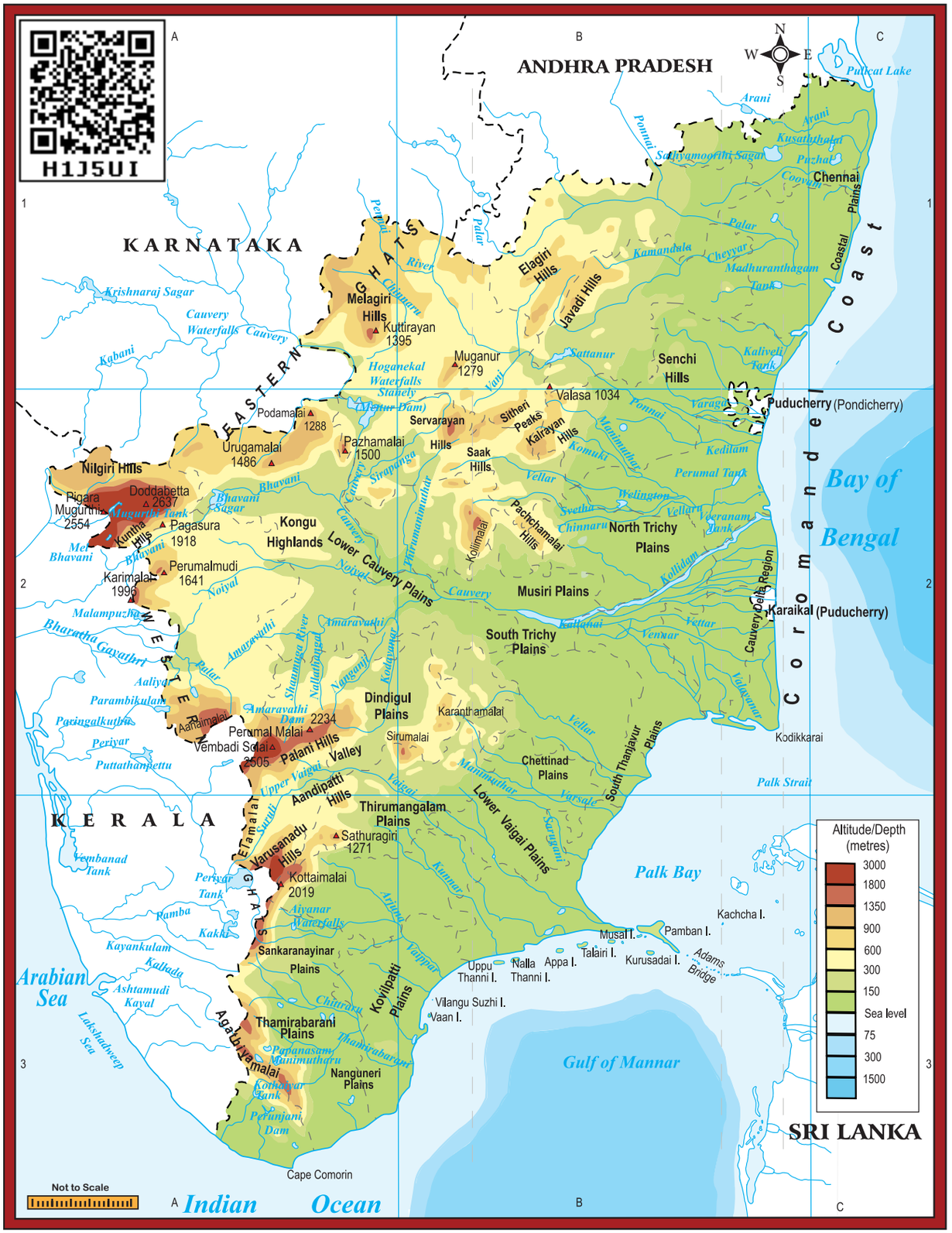
Major hills in Tamil Nadu

Districts	Hills
Coimbatore	Maruthamalai, Velliangiri and Anaimalai
Dharmapuri	Theertha malai, Chitteri and Vathalmalai
Dindigul	Pazhamalai and Kodaikanal
Erode	Chenni hills and Sivan hills
Vellore	Javadhu, Yelagiri and Rathinamalai hills
Namakkal	Kolli hills
Salem	Servarayan, Kanjamalai and Chalk hills
Kallakurichi	Kalvarayan
Villupuram	Gingee hills
Perambalur	Pachaimalai
Kanyakumari	Marunthuvazhmalai
Tirunelveli	Mahendragiri and Agasthiyarmalai
The Nilgiris	Nilgiri hills

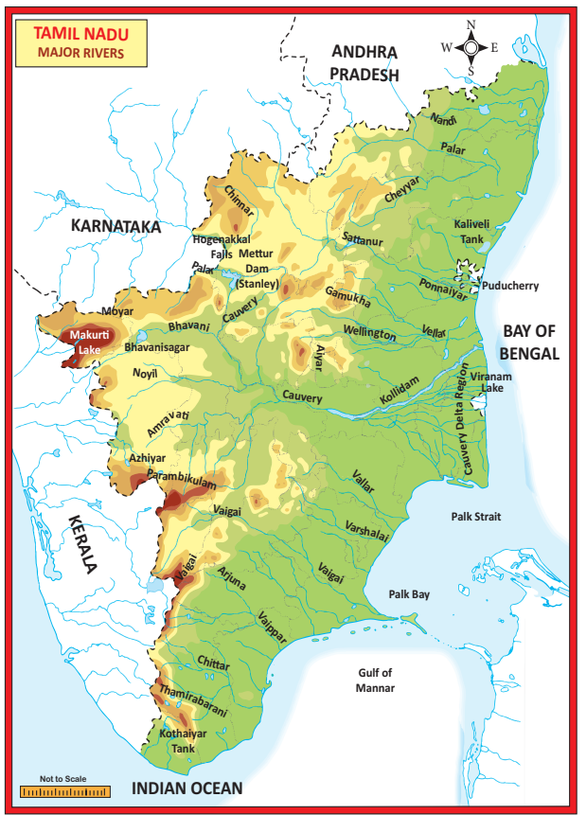
Kolli Hills

It is a small mountain range located in Namakkal district. It covers an area of about 2,800 sq.km. It rises up to 1300 metres. This is a mountain range that runs almost parallel to the east coast of South India. Arpaleeswarar temple located on this range is an important pilgrim centre. It has the largest cover of evergreen or shola forest when compared to other parts of the Eastern Ghats. Several coffee plantations, fruits, flowers and silver-oak estates are found in this region.

TAMIL NADU - PHYSICAL



and Ramanathi are its main tributaries. It is the only perennial river in South India.



Major waterfalls in Tamil Nadu

District	Waterfalls
Dharmapuri	Hogenakkal
Thirunelveli	Kalyanatheertham, Courtallam
Theni	Kumbakkarai and Suruli
Namakkal	Agayagangai
The Nilgiri	Catherine and Pykara
Salem	Kiliyur
Virudhunagar	Ayyanar
Coimbatore	Vaideki, Sengupathi, Siruvani and Kovaikutralam
Tiruppur	Tirumurthy
Madurai	Kutladampatti
Kanyakumari	Tirparappu, Kaalikesam, Ulakkai and Vattaparai

6.7 Climate

You have already learnt that the Tropic of Cancer divides India roughly into two equal parts and the state Tamil Nadu lies to the south of Tropic of Cancer, which is near the Equator. As it receives vertical sunrays, the temperature of the state is relatively high throughout the year. Though the state falls within the hot climatic zone, the east coast of Tamil Nadu enjoys tropical maritime climate. The Bay of Bengal and Indian Ocean influence the climate of the coastal regions.

While the east coast experiences tropical maritime climate, the western region of the state enjoys the mountainous climate. Low altitude and distance from the sea are the reasons for high temperature and dry conditions in the central part of Tamil Nadu. The migration of vertical sun's rays leads to the formation of different seasons in Tamil Nadu as follows.

Seasons of Tamil Nadu	
Season	**Period**
Winter Season	January-February
Summer Season	March- May
Southwest Monsoon	June-September
Northeast Monsoon	October –December

Winter Season

During January and February, the vertical rays of the sun fall between the Tropic of Capricorn and the Equator. Hence, Tamil Nadu and India on the whole receive slanting rays from the sun. So, the weather is slightly cooler during these months. Winter temperature in Tamil Nadu varies from 15°C to 25°C. However, in the hill stations, the winter temperature drops below 5°C occasionally. Some valleys in the Nilgiris record even 0°C. This drop in temperature leads to the formation of thick mist and frost. This season is practically dry.

Summer Season

The apparent migration of the sun towards north during March, April and May results in the reception of vertical sun's rays by South

Tamil Nadu Wildlife Sanctuaries & Bird Sanctuaries

Tsunami

Though Tsunami is not a common one in India, its incident in 2004 alerted India and the state of Tamil Nadu on this aspect.

Tsunami

Risk Reduction Measures

Before: if you live in a coastal area, know about tsunami risk and local warning arrangements; develop household emergency plan; know where the nearest high ground is and how you will reach it.

During: Take your get away kit, don't travel areas at risk; move immediately nearest high ground; if you can't escape tsunami, go to an upper storey of the building or climb onto a roof or tree or grab a floating objects; never go to the shore to watch tsunami and listen to local radio stations as emergency management.

After: Continue to listen to the radio; don't return to the evacuation zone until authorities have given all clear; check yourself for injuries and get first aid and help others.

6.12.7 Earthquakes

India is a vast country which experiences many earthquakes at different periods. Generally high risk zones of the country are located in the north and central parts. The state of Tamil Nadu is located in the moderately low risk zone.

Risk Reduction Measures

During: Take cover under a strong table or any other piece of furniture and remain under cover until the shaking stops.

After: Proceed cautiously once the earthquake has stopped and always avoid roads, bridges that might have been damaged by the earthquake.

For the management of disasters in the state, the following forces and organizations are in service.

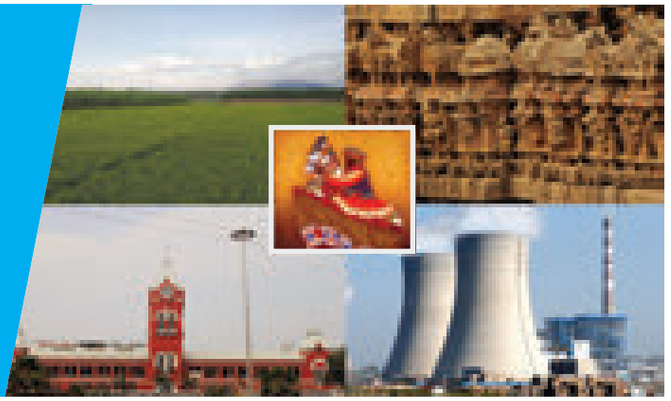
State/Union Territories organizations	District Organizations
1. State Disaster Management Authority (Chairman-Chief Minister)	1. District Magistrate (Chairman-District Collector)
2. Relief/ Disaster Management Department	2. Revenue Department
3. Police	3. Civil Administration,
4. Forest Department	4. Local Police,
5. Fire and Civil Defence Services	5. Civil Defence,
6. Health Services	6. Fire & Emergency Services,
7. Transport Department	7. Home Guards (also Local Community, Non-Governmental Organisations, Voluntary Agencies) etc.
8. Public Works Department	
9. Veterinary Services	
10. Food & Civil Supplied Department.	

SUMMARY

- Physical geography is the branch of geography dealing with the different physical aspects such as landforms, drainage, climate, soil, natural vegetation etc.
- Tamil Nadu is broadly classified into three physical divisions namely mountains (Western and Eastern Ghats), plateaus (Bharamahal, Coimbatore and Madurai) and plains (inland and coastal).

Unit - 7

Human Geography of Tamil Nadu



Learning Objectives

NTWAA4

- To understand the agricultural factors, major crops and their distribution in Tamil Nadu
- To learn about the water resources of Tamil Nadu
- To study the mineral and industrial resources of Tamil Nadu
- To analyze the population and its composition in Tamil Nadu
- To learn about the man made disasters in Tamil Nadu

Introduction

Human geography refers to the study of ways of development of human societies and their operation in relation to their physical environment. This chapter focuses on the distribution, characteristics and utilisation of different resources in Tamil Nadu. We have studied earlier that the earth is endowed with a variety of natural resources such as landforms, rivers, soil, natural vegetation, water and wildlife. These resources are useful only when they are utilised. Human beings use these resources using their intelligence and skill. Thus, the human beings are the most significant resource on the earth surface. They turn all these natural resources into useful products with their skills and abilities.

7.1 Agriculture

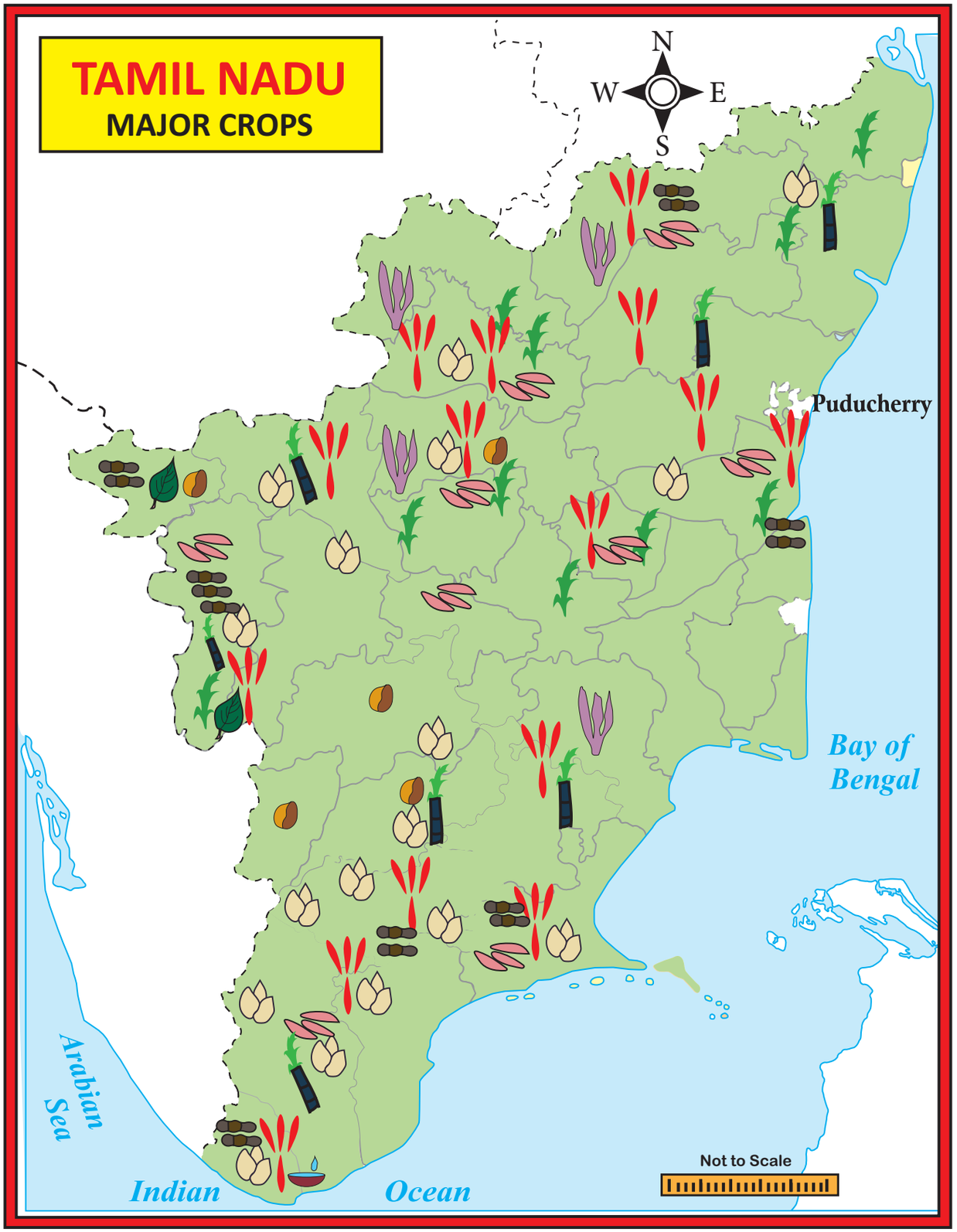
The word **"agriculture"** is derived from the Latin words **"ager and cultura"**, which means field and growing. Agriculture is a practice of farming that includes the cultivation of crops, rearing of animals, birds, forestry, fisheries and other related activities. Agriculture is the major occupation in Tamil Nadu. Agriculture has been the mainstay of the state's economy since independence with more than 65% of the population depends upon this sector for their living. Agriculture provides employment for rural people on a large scale. There is a strong link between agriculture and economic growth. Paddy, millets and pulses are the principal food crops of the state. Sugarcane, cotton, sunflower, coconut, cashew, chillies, gingelly, groundnut, tea, coffee, cardamom and rubber are the major commercial crops.

7.2 Geographical determinants of Agriculture

Landform, climate, soil and irrigation are the factors that determine the growth of agriculture.

Landform

Tamil Nadu is a land of diverse landscape comprising of hills, plateaus and plains. Among them the plains are most suitable for agriculture. The plains with alluvial soil enhances agricultural productivity. Example: Plains of cauvery. Agriculture in the plateau is moderate and is poor on the hills.



LEGEND

PADDY	SUGARCANE	RAGI	COTTON	OIL SEEDS
PULSES	MILLETS	TEA	COFFEE	RUBBER

Mullaiperiyar Dam

Mullaiperiyar dam was built by the British administration in 1895. It has been constructed on the Periyar river, which originates from Thekkady hills of Kerala. The dam was built mainly for watering the farming land of Tamil Nadu, which is perennially drought-prone.

Vaigai Dam

This dam built across the river Vaigai near Andipatti. The dam with a height of 111 feet can store water up to 71 feet. It is located 7 km from Andipatti and 70 km from Madurai. This dam was opened on 21 January, 1959.

Manimuthar Dam

Manimuthar dam is located about 47 km from Tirunelveli.

The Papanasam Dam

It is also known as Karaiyar dam and is located about 49 km away from Tirunelveli. The dam is used to irrigate Tirunelveli and Thoothukudi districts.

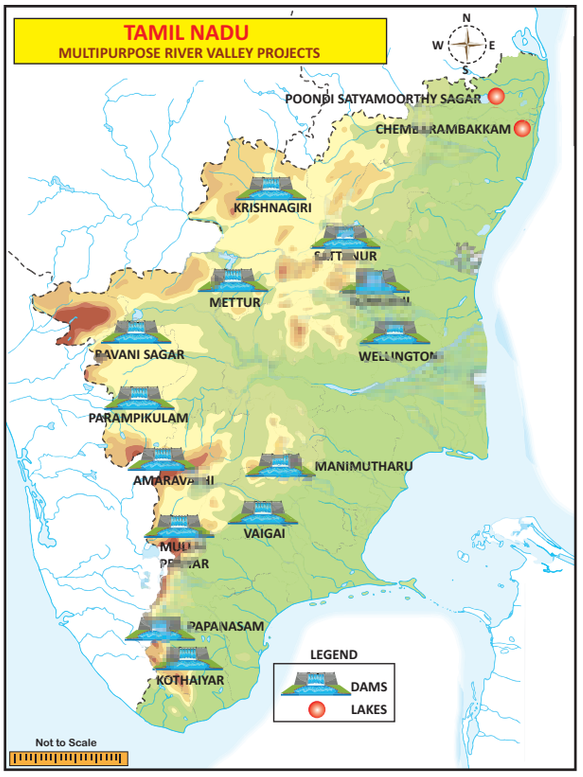
Parampikulam Aliyar Project

It is a joint venture of Tamil Nadu and Kerala states. It envisages the construction of seven interconnected reservoirs by harnessing the water of seven rivers, which include major rivers of Parambikulam and Aliyar.

Parappalar project is located near Ottanchatram. Its storage capacity is 167 million cubic feet of water. It is about 75 km from Madurai and is in Palani taluk.

Water Resource Management

Water resource management is the activity of planning, developing, distributing and managing the optimum use of water resources. The demand for water in Tamil Nadu is increasing at a fast rate both due to increasing population and also due to larger per capita needs triggered by economic growth. Demands from other sectors such as domestic and industries have been growing significantly. The state is heavily dependent on monsoon rains. Since the state is entirely dependent on rains for recharging its water resources, monsoon failures lead to acute water scarcity and severe droughts. So, it is important to save water for us and the future generation.



7.7 Mineral Resources

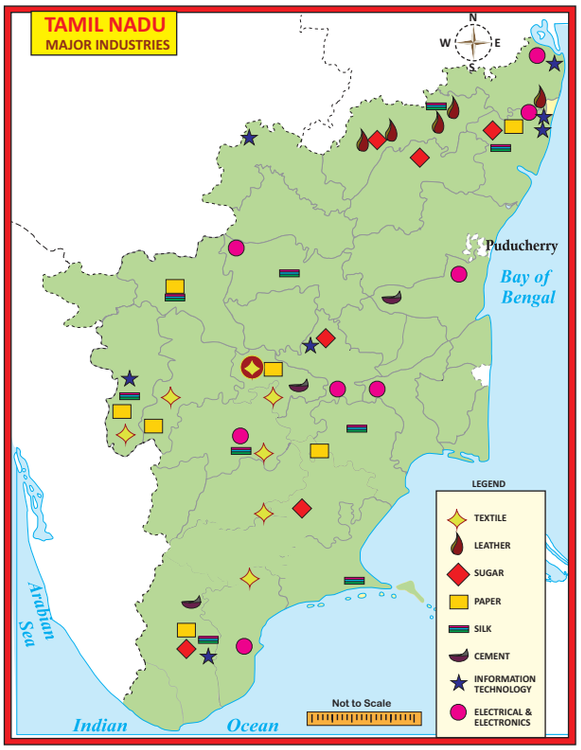
Tamil Nadu is the leading holder of country's resources of vermiculite, magnetite, dunite, rutile, garnet, molybdenum and ilmenite. The state accounts for the country's 55.3% of lignite, 75% of vermiculite, 69% of dunite, 59% of garnet, 52% of molybdenum and 30% of titanium mineral resources.

Important minerals are found in the state are as follows: Neyveli has large lignite resources. Coal is also availablein Ramanathapuram. Oil and gas are found in the Cauvery basin.

Iron deposits are found in Kanjamalai region in Salem district and Kalrayan Malai region of Tiruvannamalai district. Magnesite ores are available near Salem. Bauxite is found in Servarayan Hills, Kotagiri, Udagamandalam, Palani and Kollimalai areas. Gypsum is obtained in Tiruchirappalli, Tirunelveli, Thoothukudi and Virudhunagar districts. Ilmenite and rutile are found in the sands of Kanyakumari

Sugar Industry

Sugar industry in Tamil Nadu is an important agro-based industry. It plays a vital role in the economic development of the state, particularly in rural areas. The sugar industry provides large-scale direct employment to several thousands and indirect employment to several lakhs of farmers and agricultural labourers in the rural areas who are involved in cultivation of sugarcane, harvesting, transporting and other services.



Tourism Industry

Tourism is considered as an industry because of its enormous potential in creating employment for a large number of people. In recent years, the state has emerged as one of the leading tourist destinations for both domestic and foreign tourists. Tourism in Tamil Nadu is promoted by Tamil Nadu Tourism Development Corporation (TTDC). The presence of ancient monuments, pilgrim centres, hill stations, a variety of natural landscapes, long coastline, along with rich culture and heritage make Tamil Nadu the best destination for tourists.

7.10 Population

The term 'population' refers to the number of people living in a defined area. The statistical study of the characteristics of human population is called demography.

ZFXJV1

Regions of High Population

Coimbatore, Chennai, Tiruvallur, Kancheepuram, Villupuram, Dharmapuri, Salem, Madurai and Tirunelveli are the most populous districts in the state. Agriculture and industrial development are the main causes of high concentration of population of these districts.

Regions of Moderate Population

Tiruvannamalai, Cuddalore, Tiruchirapalli and Thanjavur districts have a population 30–35 lakh. Vellore, Dindugal, Virudhunagar and Thoothukudi districts each have a population of 15–20 lakh. Other than agriculture, small-scale industries and fishing along the coastal areas are the major occupations of people in these districts.

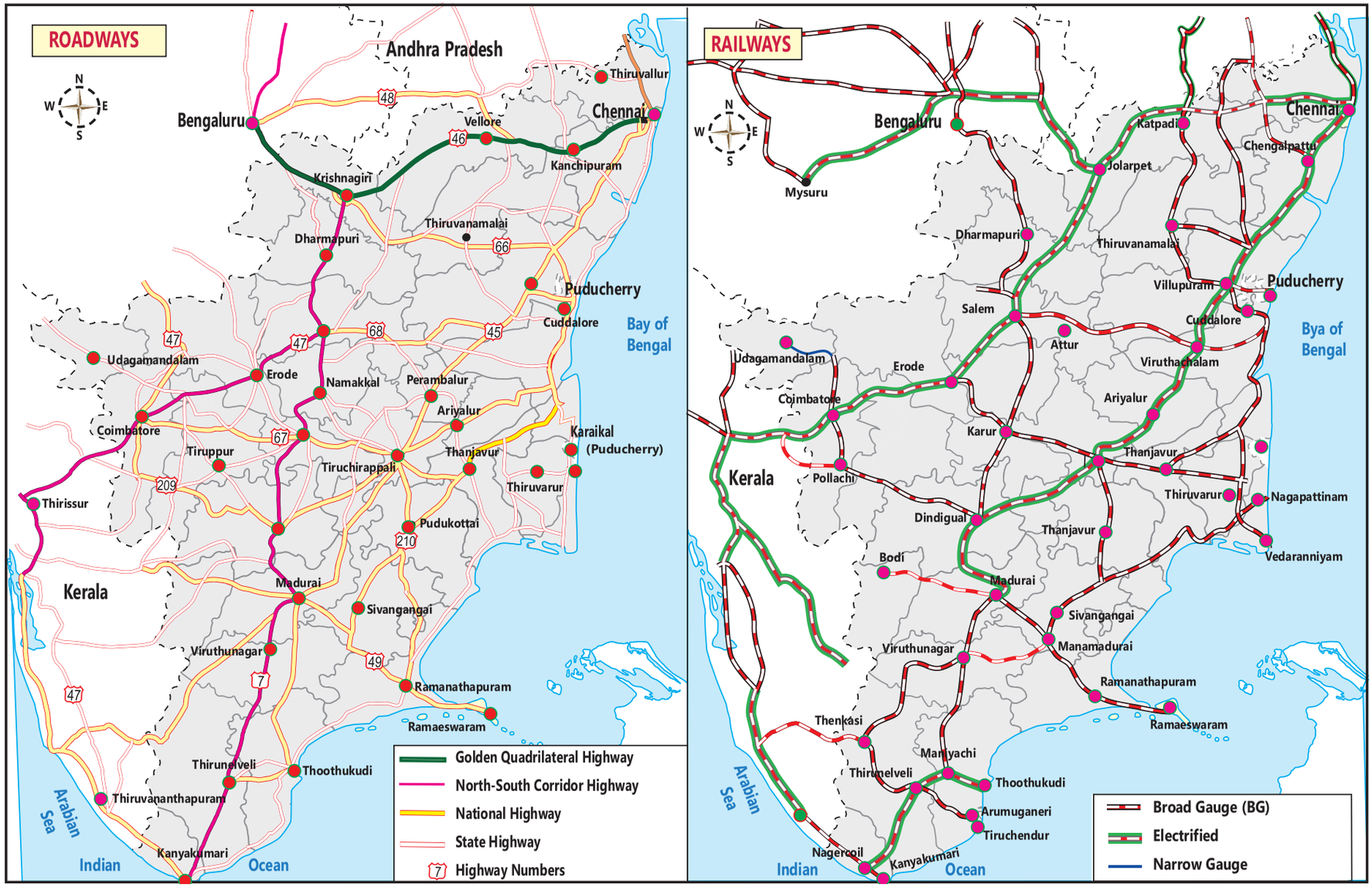
Regions of Sparse Population

The coastal districts Nagapattinam, Tiruvarur, Pudukottai, Ramanathapuram and Sivagangai have a less than 15 lakh. The Nilgiris district has a population of less than 10 lakh population.

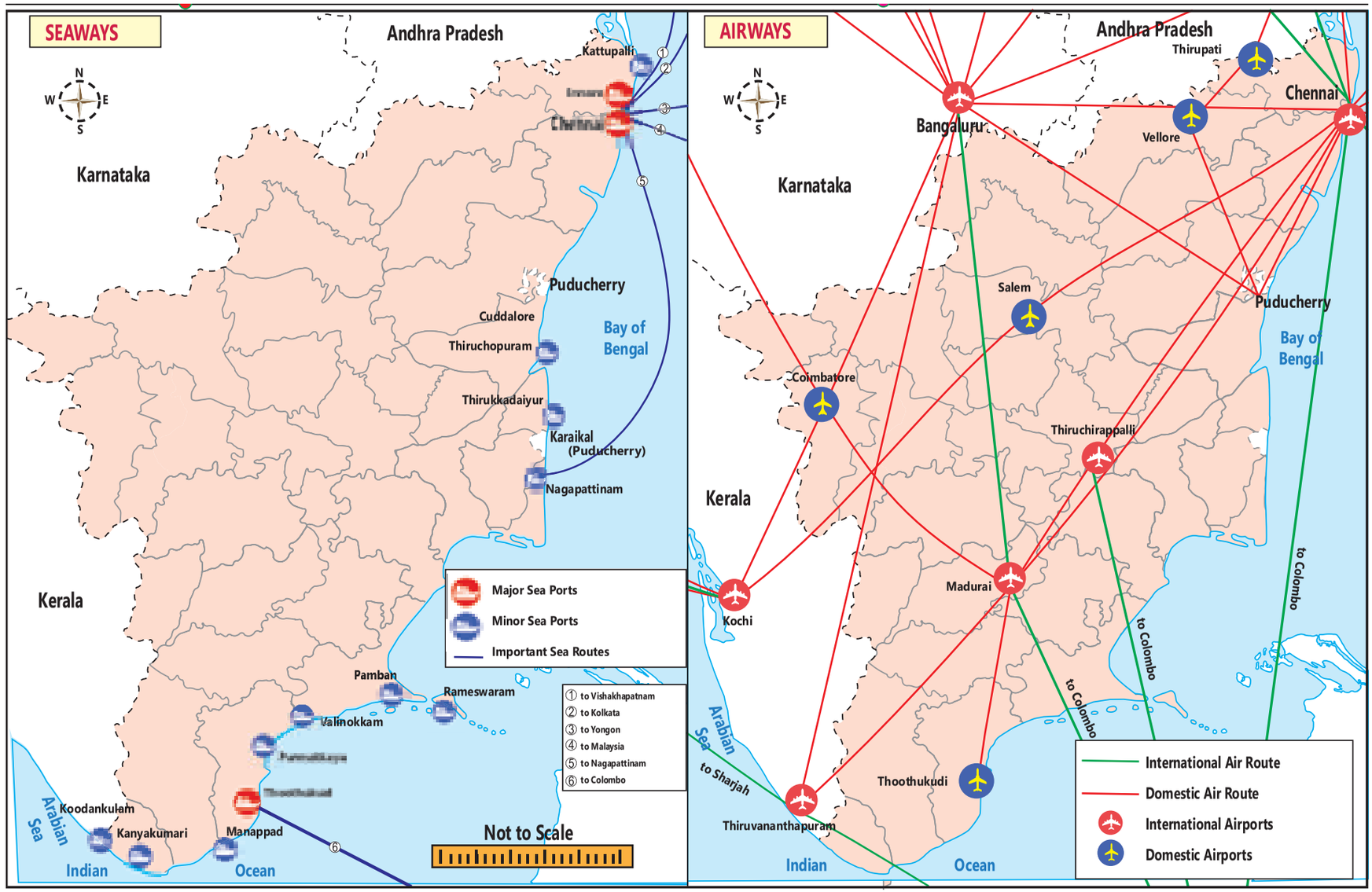
Population Density

The state ranks 12th among the Indian states in population density. The national average density of population as per the 2011 Census is 382. Chennai is the densest district with 26,903 persons per sq.km followed by Kanyakumari, Tiruvallur, Kancheepuram, Madurai, Coimbatore, Cuddalore, Thanjavur, Nagapattinam, Salem, Vellore and Tiruchirappalli. These are the regions with high density of population. The least density of population is recorded in the Nilgiris and the other districts have moderate density of population.

TAMILNADU – TRANSPORT



TAMILNADU – TRANSPORT



7.13 Trade

Export and import are the two components of trade. Export means goods and services sold for foreign currency. Tamil Nadu contributes 12.2% to the country's exports. Import refers to goods and services are brought from overseas producers. Tamil Nadu imports many goods from outside. The difference between the values of export and import is called the balance of trade.

7.14 Imports of Tamil Nadu

Machineries like transport equipment, machine tools, non-electrical machinery, electrical machinery, pharmaceutical products, petroleum, fertilizers and newsprint are its major imports. The state contributes 10.94% to the country's trade through major ports.

Major Exports of Tamil Nadu	
(i) Agricultural Products	tobacco, cereals, cotton, sugarcane, paddy, groundnut, spices and vegetables.
(ii) Leather Products	wallets, purses, pouches, handbags, belts, footwear and gloves
(iii) Gems and Jewellery	pearls, precious stones, gold jewellery, decorations and antiques
(iv) Chemicals and related products	paper, chemicals, rubber and glass.

The above discussion shows that Tamil Nadu is an important state of India in terms of size, population, resources and economic development. People in the state are well secured. The new schemes introduced by the state government periodically have enabled notable progress in various fields.

SUMMARY

- Human Geography is the branch of geography dealing with how human activity affects or is influenced by the nature.
- Tropical crops like paddy, millets, pluses, oilseeds and plantation crops of tea, coffee, cashew, rubber etc are the major crops of Tamil Nadu.
- Tamil Nadu has 55.3% of lignite, 75% of vermiculite, 69% of dunite, 59% of garnet, 52% of molybdenum and 30% of titanium.

EXERCISE

E2DXNJ

I Choose the correct answer

1. The delta which is known as Granary of South India is

   a) Cauvery delta b) Mahanadi delta
   c) Godavari delta d) Krishna delta

2. Second staple food of the people of Tamil Nadu is

   a) Pulses b) Millets
   c) Oilseeds d) Rice

3. A major hydro-electric power project of Tamil Nadu is

   a) Mettur b) Papansam
   c) Sathanur d) Thungabahdra