MALAPPURAM GEOGRAPHICAL SOCIETY
2020-21

HSSLIVE.IN

FOCUS AREA-'21

GEOGRAPHY
STUDY MATERIAL FOR HIGHER SECONDARY EXAMINATION MARCH'21

PREFACE

The Malappuram Geographical Society has played a major role in energizing the learning process of students and in making geography simple and enjoyable in the crises caused by covid 19. The Malappuram Geographical Society is once again setting a model with another academic activity. There is no doubt that **"Focus' 21"** will be very useful for students as it contain notes and questions based on the Focus area topics on Plus Two Geography. We hope "Focus'21" will reach out to students and give them the energy to excel.

Warm Greetings…..

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MALAPPURAM GEOGRAPHICAL SOCIETY

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PART I

FUNDAMENTALS OF HUMAN GEOGRAPHY

CHAPTER 2
THE WORLD POPULATION DISTRIBUTION, DENSITY AND GROWTH

PATTERN OF POPULATION DISTRIBUTION IN THE WORLD

- 90 % of the world population lives in about 10 % of land area
- The 10 most populous countries of the world contribute about 60 % of the world's population
- Of these 10 countries, **5 are located in Asia**
- China is the largest populated country followed by India

THE 10 MOST POPULOUS COUNTRIES

1. China
2. India
3. USA
4. Indonesia
5. Brazil
6. Pakistan
7. Nigeria
8. Bangladesh
9. Russia
10. Mexico

DENSITY OF POPULATION

- Density is the ratio between the numbers of people to the size of land
- It is usually measured in **persons per sq km**
- Density is calculated as

$$\text{DENSITY OF POPULATION} = \frac{\text{POPULATION}}{\text{AREA}}$$

➢ DISTRIBUTION OF WORLD POPULATION DENSITY AREAS

The world is divided based on population density into three classes

1. High population density areas
2. Moderate population density areas
3. Low population density areas

1. High population density areas

- The densely populated parts of the world with **more than 200 persons per sq. *km*** in areas. some examples are
  1. **The North -Eastern part of U.S.A**
  2. **North-Western part of Europe**,
  3. **South, South-East and East Asia**

2. Moderate population density areas

- The area with **11 to 50 persons per sq. km** in areas is classified as medium population density. some examples are

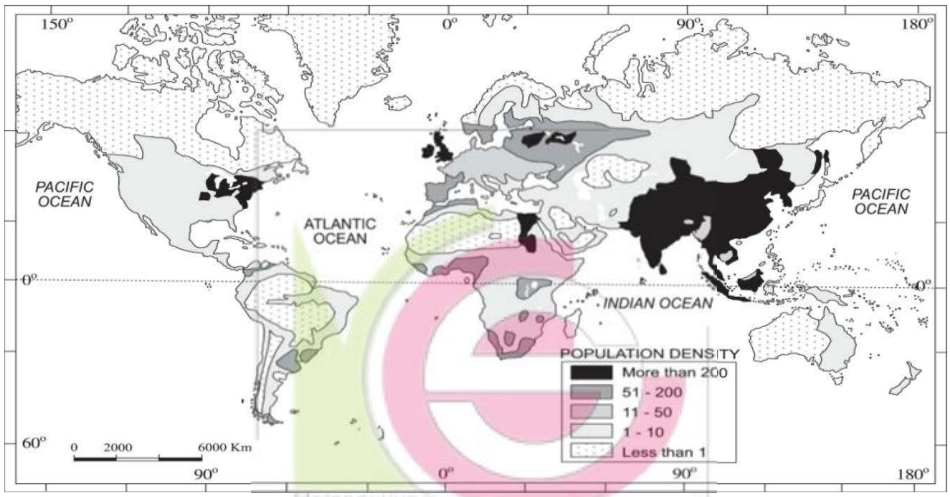
1. **Western China**
2. **Southern India in Asia,**
3. **Norway, Sweden in Europe**

3. <u>Low population density areas</u>

- The sparsely populated regions of the world with **<u>less than 1 person per sq. km.</u>** some examples are

1. Near the North and South Poles,
2. The hot and the cold deserts
3. High rainfall zones near the Equator

<u>Distribution of World Population Density Areas</u>



➢ **<u>FACTORS INFLUENCING THE DISTRIBUTION OF POPULATION</u>**

Factors influencing the distribution of population are classified under following headings

1. Geographical factor

a. Relief/ landforms
b. Climate
c. Availability of water
d. Soil

2. Economic factor

a. Minerals
b. Urbanization
c. Industrialisation

3. Social and cultural factor

a. Religious factor
b. Political factor

I. <u>Geographical Factors</u>

1. <u>Landforms</u>

- People prefer living on **<u>flat plains and gentle slopes</u>**. Such areas are favourable for the production of crops and to build roads and industries.

2. Climate

- An **extreme climate** such as very hot or cold deserts is uncomfortable for human habitation. Areas with a **comfortable climate,** where there is not much seasonal variation attract more people

3. Availability of water

- It is the most important factor for life. So, people prefer to live in areas where fresh water is easily available.

4. Soils

- **Fertile soils** are important for agricultural and allied activities. The areas which have fertile loamy soils have more people living on them as these can support intensive agriculture.

II. Economic Factors

1. Minerals

- Areas with **mineral deposits** attract industries. Mining and industrial activities generate employment. So, skilled and semi–skilled workers move to these areas and make them densely populated.

Example: Katanga Zambia copper belt in Africa

2. Urbanization

- Cities offer better employment opportunities, educational and medical facilities, better means of transport and communication. Good civic amenities and the attraction of city life draw people to the cities.

3. Industrialisation

- Industrial belts provide **job opportunities** and attract large numbers of people.

Example: Kobe-Osaka region in Japan

III. Social and Cultural Factors

1. Religious factor

- Some places attract more people because they have religious or cultural significance. Some example are Mecca – Muslim centre, Varanasi- Hindu, Amritsar- Sikh

2. Political factor

- People tend to move away from places where there is **social and Political unrest**

POPULATION GROWTH

- The population growth refers to the change in number of population of a place during a specific period of time
- This change may be **positive as well as negative**
- It can be expressed either in terms of **Absolute numbers or in terms of percentage**

POPULATION GROWTH RATE

- It is the ratio of population change between two period of time
- Population growth rate is expresses in percentage
- It is calculated in every 10 years interval

TYPES OF POPULATION GROWTH

The population growth may be in the form of following types

1. Natural growth of population
2. Positive growth of population
3. Negative growth of population

1. Natural growth of population

- This is the population increased by **difference between births and deaths** in a particular region between two points of time

Natural Growth = Births – Deaths

Actual Growth of Population = Births – Deaths + In Migration – Out Migration

2. Positive growth of population

- This happens when **the birth rate is more than the death rate** between two points of time or **when people from other countries migrate permanently to a region**

Positive Growth = high birth rate – low death rate

3. Negative growth of population

- If the **population decreases between two points of time** it is known as negative growth of population.
- **It occurs when the birth rate falls below the death rate or people migrate to other countries**

Negative Growth = Low birth rate – High death rate

COMPONENTS OF POPULATION CHANGE

There are three components of population change. They are

1. Births rate
2. Death rates
3. Migration.

1. Births rate

- The crude birth rate **(CBR)** is expressed as **number of live births in a year per thousand of women**. It is calculated as:

$$CBR = \frac{Bi}{P} \times 1000$$

CBR = Crude Birth Rate
Bi = Live births during the year
P = Mid year population of the area.

2. Death rates

- Crude Death Rate (CDR) is expressed in terms of **number of deaths in a particular year per thousand of population** in a particular region
- It is calculated as:

$$CDR = \frac{D}{P} \times 1000$$

CDR = Crude Death Rate
D = Number of deaths
P = Estimated mid-year population of that year

3. **Migration**.

- Migration is the movement of people from one place to another at a Particular period of time

Place of Origin

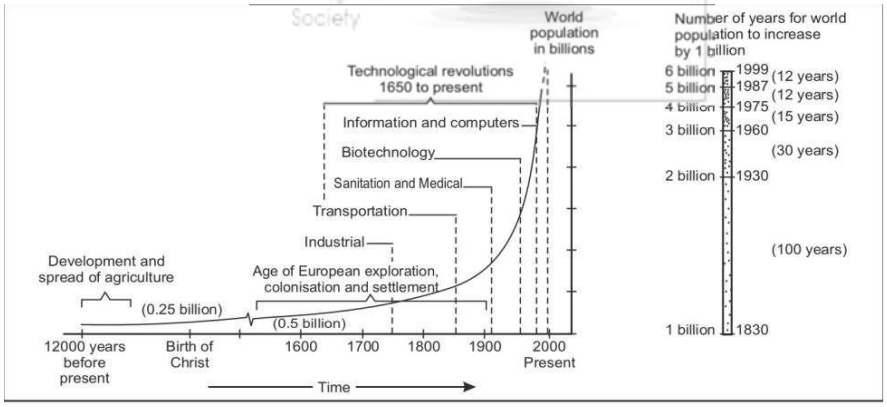
- The place they move from is called the Place of Origin

Place of Destination

- The place they move to is called the Place of Destination.

TRENDS IN POPULATION GROWTH

- In the first century AD it was below 300 million.
- The population on the earth is more than **7.7 billion** in 2019
- World population exploded in the eighteenth century **after the Industrial Revolution**
- **Technological advancement** helped in the reduction of birth rate and provided a stage for accelerated population growth



HOW SCIENCE AND TECHNOLOGY HELPED POPULATION GROWTH?

- **The steam engine replaced human** and animal energy reduced work load
- Provision of **mechanised energy of water and wind** increased agricultural and industrial production.
- **Inoculation against epidemics** and other communicable diseases.
- **Improvement in medical facilities** and sanitation contributed to a rapid **decline in death rates** throughout the world.

DOUBLING TIME OF WORLD POPULATION

- **It took more than a million years** for the human population to attain the one billion mark.
- But it took only **12 years for it to rise from 5 billion to 6 billion**
- The developed countries are taking more time to double their population as compared to developing countries

Period	*Population*	*Time in which Population Doubles*
10,000 B.C.	5 million	
1650 A.D.	500 million	1,500 years
1850 A.D.	1,000 million	200 years
1930 A.D.	2,000 million	80 years
1975 A.D.	4,000 million	45 years
2012 A.D.	8,000 million projected figure	37 years

SPATIAL PATTERN OF POPULATION CHANGE

- **The growth of population is low in developed countries** as compared to developing countries.
- There is negative correlation between economic development and population growth.

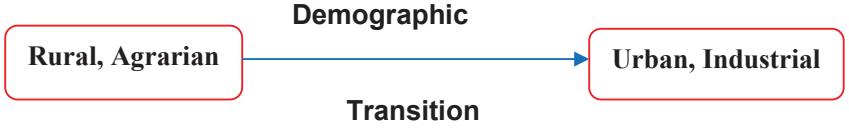
IMPACT OF POPULATION CHANGE

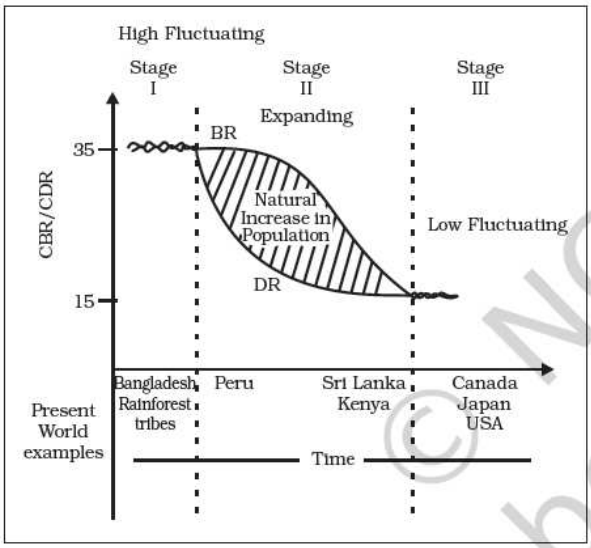
A small increase in population is desirable in a growing economy. However, population growth and population decline beyond a certain level leads to problems

- Some of the problem of population growth is
  1. Depletion of resources due to over population
  2. Environmental problem
  3. Spread of diseases
  4. Unemployment
  5. Poverty

DEMOGRAPHIC TRANSITION

- Demographic transition theory is **used to describe and predict the future population of any area**
- **The theory tells us that population of any region changes from high births and high deaths to low births and low deaths as society progresses from rural agrarian and illiterate to urban industrial and literate society**
- These changes occur in stages which are collectively known as the **demographic cycle**





Stages of Demographic Transition Theory

- Stage I- **High Fluctuating**
- Stage II- **Expanding**
- Stage III- **Low Fluctuating**

Stage I

- **High Fertility and High Mortality**
- People reproduce more to compensate for the deaths due to epidemics and variable food supply
- The population growth is slow and most of the people are engaged in agriculture and large families are asset
- Life Expectancy is low and people are illiterate and low level of technology

Stage II

- **Fertility remains high and declines with time**
- **Reduced mortality rate**
- Improvement in Sanitation and health condition leads to decline in Mortality

Stage III

- **Both fertility and Mortality declines considerably**
- **The population is either stable or grows slowly**
- The population becomes urbanised, literate and high technical know-how
- Deliberately controls the family size

POPULATION CONTROL MEASURES

Some of the measures taken for population growth control are

1. Adoption of family planning programme
2. Improving women's health
3. Free availability of contraceptive for large family
4. Tax disincentive for large family
5. Mass awareness programme

Malthusian Theory of Population

- Put forwarded by **Thomas Malthus** (1793)
- The **number of people would increase faster than the food supply**
- Any **further increase would result in a population crash caused by famine, disease and war**
- The **preventive checks** are better than the **physical checks**
- For the sustainability of our resources, the world will have to control the rapid population increase

Chapter 4

Human Development

GROWTH AND DEVELOPMENT

- Both growth and development refer to changes over a period of time

Growth	Development
❖ **Growth is quantitative and value neutral** ❖ Growth may have positive(showing an increase) or negative(showing a decrease) sign	❖ **Development means a qualitative change** ❖ Which is always value positive ❖ Development cannot take place unless there is an increment or addition to the existing conditions ❖ **Development occurs when positive growth takes place**

The concept of Human Development- Dr Mahbub-ul-Haq and Prof Amartya Sen

- The concept of **human development was introduced by Dr Mahbub-ul-Haq**, Pakistan Economist
- **The development that enlarges people's choices and improves their lives**
- **People are central to all development**
- The United Nations Development Programme (UNDP) has used his concept of human development to publish the Human Development Report annually since 1990

Prof Amartya Sen

- **An increase in freedom (or decrease in un freedom) as the main objective of development**
- His work explores the role of social and political institutions and processes in increasing freedom

THE FOUR PILLARS OF HUMAN DEVELOPMENT

1. **Equity**
2. **Sustainability**
3. **Productivity**
4. **Empowerment**

Equity

- **Equity refers to making equal access to opportunities available to everybody**
- It must be equal irrespective of their gender, race, income and caste

Sustainability

- **Sustainability means continuity in the availability of opportunities**
- For sustainable human development, each generation must have the same opportunities
- All environmental, financial and human resources must be used keeping in mind the future

Productivity

- **Means human labour productivity or productivity in terms of human work**

Empowerment

- **Means the power to make choices**
- Such power comes from increasing freedom and capability
- The empowerment of socially and economically disadvantaged groups is of special importance

APPROACHES TO HUMAN DEVELOPMENT

1. **The income approach**
2. **The welfare approach**
3. **Minimum or Basic needs approach**
4. **Capabilities approach**

Income Approach	❖ This is one of the **oldest approaches to human development** ❖ Human development being **linked to income** ❖ Higher the level of income, the higher is the level of human development
Welfare Approach	❖ **Human beings as beneficiaries or targets of all development activities** ❖ The approach argues for higher government expenditure on education, health, social secondary and amenities ❖ **People are not participants in development but only passive recipients**
Basic Needs Approach	❖ **proposed by the International Labour Organisation (ILO)** ❖ Six basic needs i.e.: health, education, food, water supply, sanitation, and housing were identified ❖ The question of human choices is ignored and the emphasis is on the provision of basic needs
Capability Approach	❖ **This approach is associated with Prof. Amartya Sen** ❖ Building human capabilities in the areas of health, education and access to resources is the key to increasing human development

Human Development Index (HDI)

- The human development index (HDI) ranks the countries based on their performance in the key areas of **health, education and access to resources**
- The human development index measures **attainments** in human development
- These rankings are **based on a score between 0 to 1**
- Score of 0.983 would be considered very high
- While 0.268 would mean a very low level of human development

➢ **Health Indicator**

- The life expectancy at birth

- **Education Indicator**
  - The adult literacy rate
  - The gross enrolment ratio
- **Access to resources**
  - Measured in terms of purchasing power (in U.S. dollars).

Human Poverty Index

- This index measures the **shortfall in human development**
- It is a **non-income measure**

Measuring Indicators

- The probability of not surviving till the age of 40
- The adult illiteracy rate
- The number of people who do not have access to clean water
- The number of small children who are underweight

Gross National Happiness (GNH)

- **Bhutan**
- Measure of the country's progress
- **GNH encourages us to think of the spiritual, non-material and qualitative aspects of development**

INTERNATIONAL COMPARISONS

- Countries can be classified into four groups on the basis of the human development scores earned by them

Level of Human Development	*Score in Development Index*	*Number of Countries*
Very High	above 0.800	59
High	between 0.701 up to 0.799	53
Medium	between 0.550 up to 0.700	39
Low	below 0.549	38

- Countries with very high human development index are those which have a score of over 0.800 (It include 59 countries)

Countries with very High HDI

1. **Norway**
2. **Switzerland**
3. **Ireland**
4. **Germany**

- High level of human development group has 53 countries
- countries with a high human development score are **located in Europe** and represent the industrialised western world

Causes for High HDI

- **High Percapita Income**
- **Education and healthcare**

- **Good governance**
- **People-oriented policies**
- **Reducing social discrimination**

- There are 39 countries in the medium level of human development
- Most of these are countries which have emerged in the period after the Second World War
- 38 countries record low levels of human development

Causes for Low HDI

- **Political turmoil**
- **Social instability in the form of civil war**
- **Famine**
- **High incidence of diseases**

CHAPTER 5

Primary Activities

- **Human activities which generate income are known as economic activities**
- Economic activities are broadly grouped into
  - **Primary**
  - **Secondary**
  - **Tertiary**
  - **Quaternary and Quinary activities**

Primary Activities

- **Directly dependent on environment**
- **Refers to utilisation of earth's resources** such as land, water, vegetation, building materials and minerals

- Primary Activities **include hunting and gathering, pastoral activities, fishing, forestry, agriculture, and mining and quarrying**

- People engaged in **primary activities** are called **red collar workers** due to the outdoor nature of their work

HUNTING AND GATHERING

- **It involves primitive societies, who extract, both plants and animals to satisfy their needs for food, shelter and clothing**
- **Gathering and hunting are the oldest economic activity known**
- **Gathering is practised in regions with harsh climatic condition**

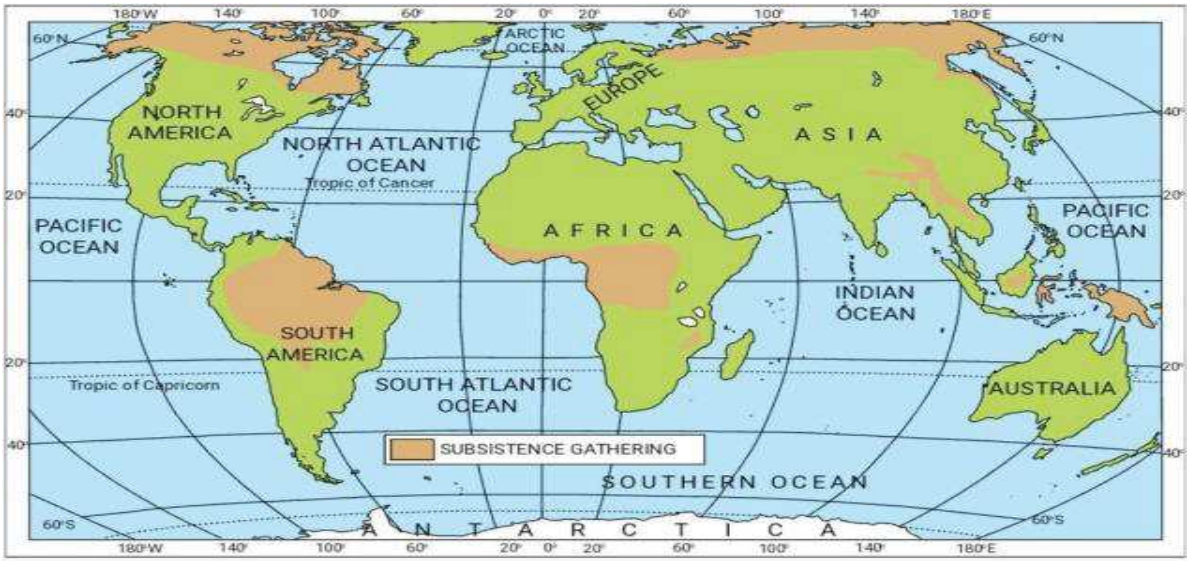
Characteristics

- **Practiced by People located in very cold and extremely hot climate**
- This type of activity requires a Small amount of capital investment
- Operates at very low level of technology
- The yield per person is very low and little or no surplus is produced

Regions of Hunting and Gathering

- **High latitude zones** which include **northern Canada, northern Eurasia and southern Chile**
- **Low latitude zones** such as the **Amazon Basin, tropical Africa, Northern fringe of Australia and the interior parts of Southeast Asia**

Regions of Hunting and Gathering



- **Gathering has little chance of becoming important at the global level. Why?**
  - Products of gathering activity cannot compete in the world market
  - Use of Synthetic products because of better quality and at lower prices

PASTORALISM

- **Domestication of animals**
- Depending on the **geographical factors, and technological development**, animal rearing today is practised either at the **subsistence** or at the **commercial level**

Types of Pastoralism

- **Nomadic Herding or Pastoral nomadism**
- **Commercial Livestock Rearing**

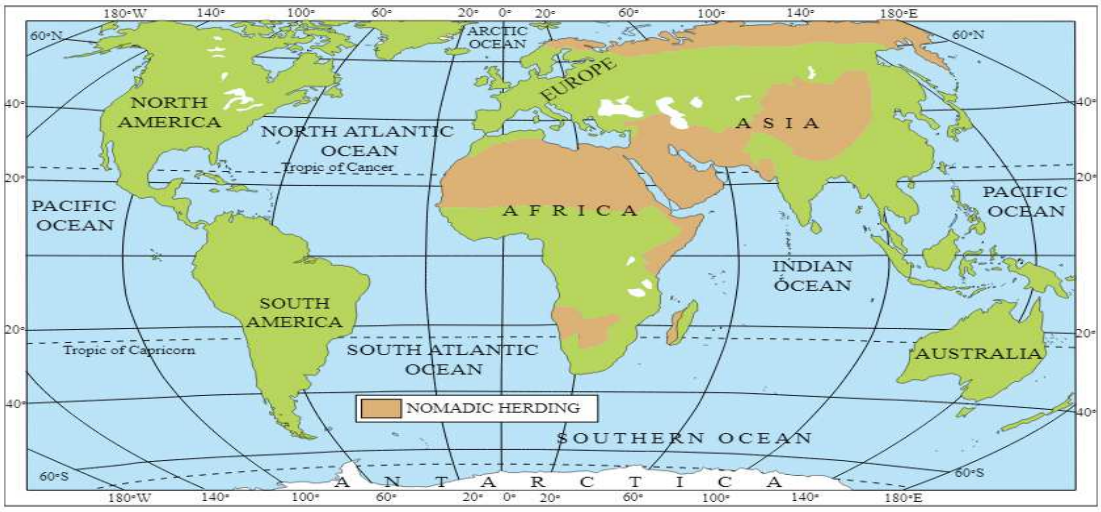
Nomadic Herding or Pastoral nomadism

- **Primitive subsistence activity**
- Herders rely on **animals for food, clothing, shelter, tools and transport**
- They **move from one place to another along with their livestock, depending on the amount and quality of pastures and water**
- Each nomadic community occupies a well-defined territory

Regions of Pastoral Nomadism

- Pastoral nomadism is associated with three important regions
- The core region extends from the **Atlantic shores of North Africa, Arabian peninsula, Mongolia and Central China**
- The second region extends over **the tundra region of Eurasia**
- In the **southern hemisphere** there are small areas **in South-west Africa and on the island of Madagascar**

Regions of Nomadic Herding



TRANSHUMANCE

- The process of **migration from plain areas to pastures on mountains during summers** and again from **mountain pastures to plain areas during winters**
- Examples: **Gujjars, Bakarwals, Gaddis and Bhotiyas**

- **The number of pastoral nomads has been decreasing and the areas operated by them shrinking. Why?**
- **Imposition of political boundaries**
- **New settlement plans by different countries**

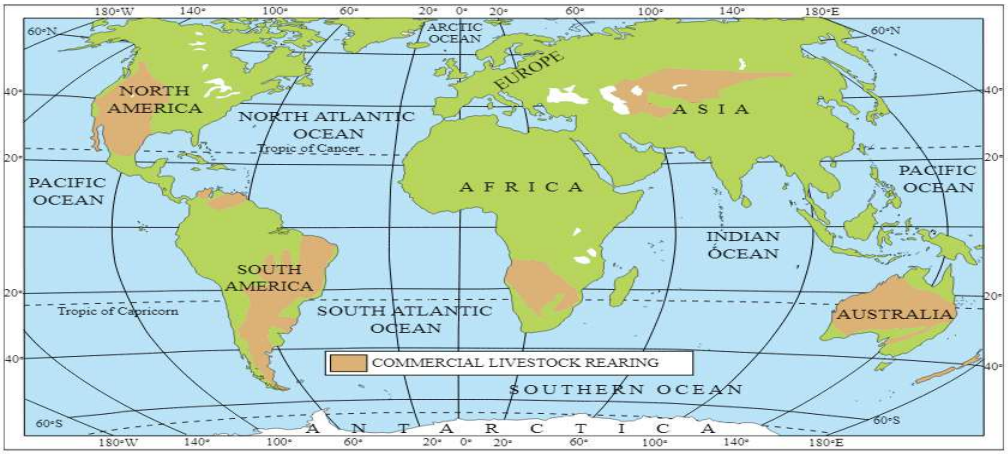
Commercial Livestock Rearing

- **More organised and capital intensive**
- **Associated with western cultures**
- **Practised on permanent ranches**
- These **ranches cover large areas** and are **divided into a number of parcels**, which are **fenced to regulate the grazing**
- When the grass of one parcel is grazed, animals are moved to another parcel
- The number of animals in a pasture is kept according to the carrying capacity of the pasture
- This is a specialised activity in which only **one type of animal is reared**
- Important animals include **sheep, cattle, goats and horses**
- Products such as **meat, wool, hides and skin** are processed and packed scientifically and exported to different world markets
- Emphasis is on breeding, genetic improvement, disease control

Regions of Commercial livestock rearing

- **New Zealand, Australia, Argentina, Uruguay and United States of America**

Areas of Commercial livestock rearing



AGRICULTURE

- **Agriculture** is the science and art of cultivating plants and livestock
- Different type of agriculture practiced under different physical and socio economic conditions

TYPES OF AGRICULTURAL SYSTEMS

- Based on **methods of farming, types of crops grown and livestock raised**
- **Subsistence Agriculture**
- **Plantation Agriculture**
- **Extensive Commercial Grain Cultivation**
- **Mixed Farming**
- **Dairy Farming**
- **Mediterranean Agriculture**
- **Market Gardening and Horticulture**
- **Factory Farming**
- **Co-Operative Farming**
- **Collective Farming**

SUBSISTENCE AGRICULTURE

- Subsistence agriculture is one in which **the farming areas consumes all** and the products locally grown
- It grouped in two categories
  - **Primitive Subsistence Agriculture**
  - **Intensive Subsistence Agriculture**

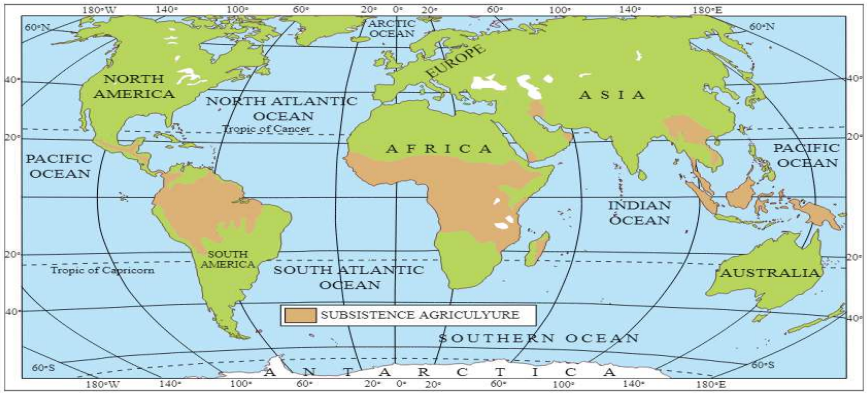
Primitive Subsistence Agriculture or Shifting Cultivation

- Widely practised by many **tribes in the tropics**
- Especially in Africa, south and central America and south east Asia
- Also called **slash and burn agriculture**
- The **vegetation is cleared by fire**, and the ashes add to the fertility of the soil
- The cultivated patches are very small and cultivation is done with very primitive tools such as sticks and hoes
- **After the soil loses its fertility, the farmer shifts to another parts**

Different Names of Shifting Cultivation

- **Jhuming**: North Eastern states of India
- **Milpa**: Central America and Mexico
- **Ladang**: Indonesia and Malaysia

Areas of Subsistence Agriculture



Intensive Subsistence Agriculture

- This type of agriculture is largely found in **densely populated regions of monsoon Asia**

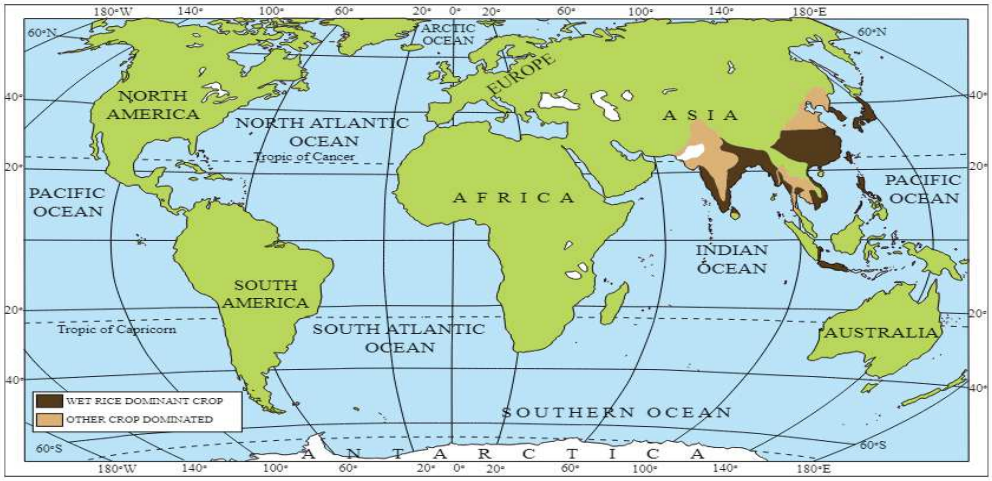
Intensive subsistence agriculture dominated by wet paddy cultivation

- This type of agriculture is characterised by **dominance of the rice crop**
- **Land holdings are very small** due to the high density of population
- Farmers work with the help of family labour leading to **intensive use of land**
- **Use of machinery is limited**
- Agricultural **operations are done by manual labour**
- **Farm yard manure** is used to maintain the fertility of the soil
- The **yield per unit area** is high but **per labour productivity is low**

Intensive subsidence agriculture dominated by crops other than paddy

- Due to the difference in **relief, climate, soil and other geographical factors**, it is **not practical to grow paddy** in many parts of monsoon Asia
- **Wheat, soyabean, barley and sorghum** are grown in **northern China, Manchuria, North Korea and North Japan**

Areas of Intensive Subsistence Agriculture



Plantation Agriculture

- **Introduced by the Europeans in colonies situated in the tropics**
- Plantation crops **are tea, coffee, cocoa, rubber, cotton, oil palm, sugarcane, bananas and pineapples**
- The characteristic features of this type of farming are large estates or plantations
- Large capital investment
- Managerial and technical support
- Scientific methods of cultivation
- **Single crop specialisation**
- cheap labour, and a good system of transportation

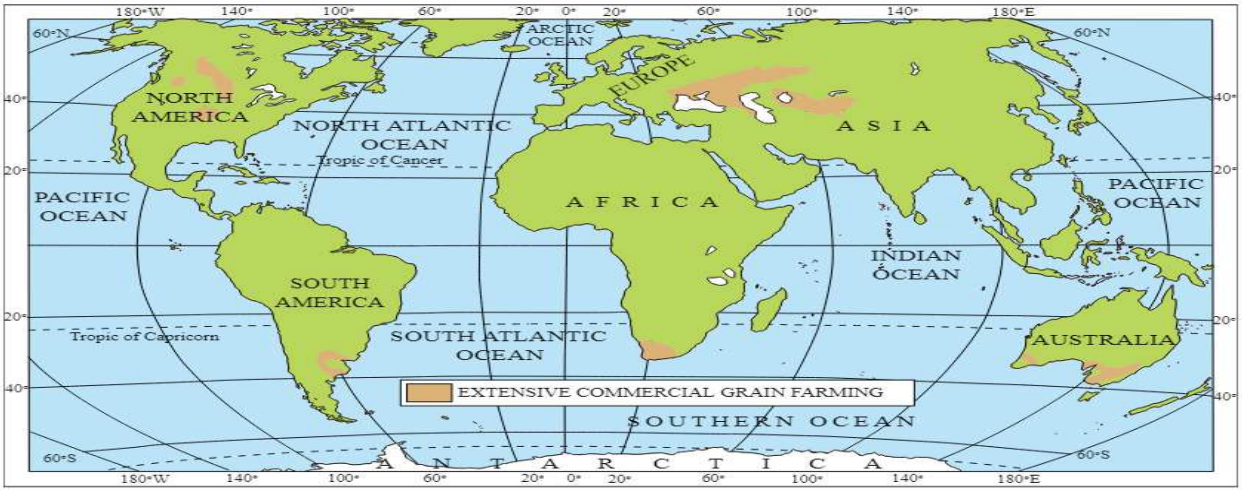
Fazendas
- **large coffee plantations in**

Extensive Commercial Grain Cultivation

- Commercial grain cultivation is practised in the **interior parts of semi-arid lands of the mid latitudes**
- **Wheat is the principal crop**
- Other Crops: **Corn, barley, oats and rye**
- The size of the **farm is very large**
- The **entire operations of cultivation from ploughing to harvesting are mechanised**

Areas of Commercial Grain Farming
- **Eurasian steppes**
- **Canadian and American Prairies**
- **Pampas of Argentina**
- **Velds of South Africa**
- **Australian Downs**
- **Canterbury Plains of New Zealand**

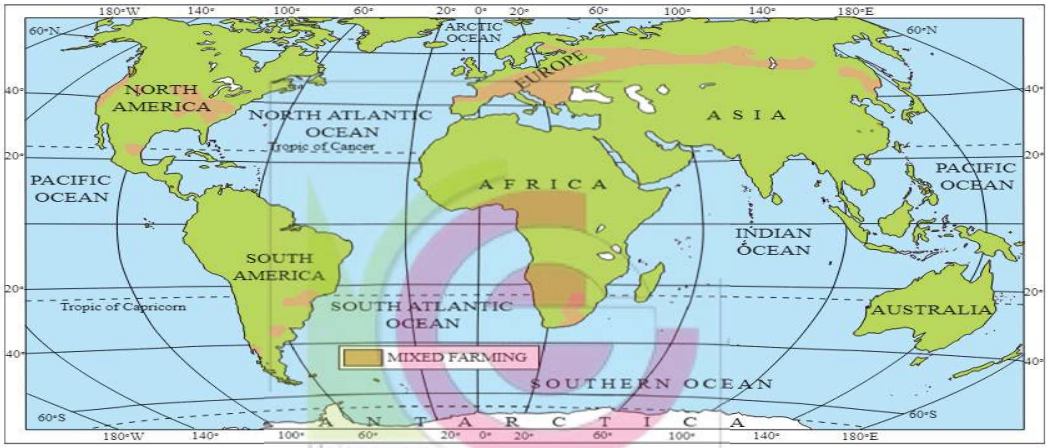
Areas of Extensive Commercial Grain Farming



Mixed Farming

- **Equal emphasis is laid on crop cultivation and animal husbandry**
- This form of agriculture is found in the **highly developed parts of the world**
- **Example: North-western Europe, Eastern North America, parts of Eurasia and the temperate latitudes of Southern continents**
- Mixed farms are moderate in size
- Major crops: **wheat, barley, oats, rye, maize, fodder and root crops**
- **Fodder crops** are an important component of mixed farming
- **Crop rotation and intercropping** play an important role in maintaining soil fertility
- **Animals like cattle, sheep, pigs and poultry provide the main income along with crops**
- Mixed farming is characterised by high capital expenditure on farm machinery and building, extensive use of chemical Fertilisers

Areas of Mixed Farming



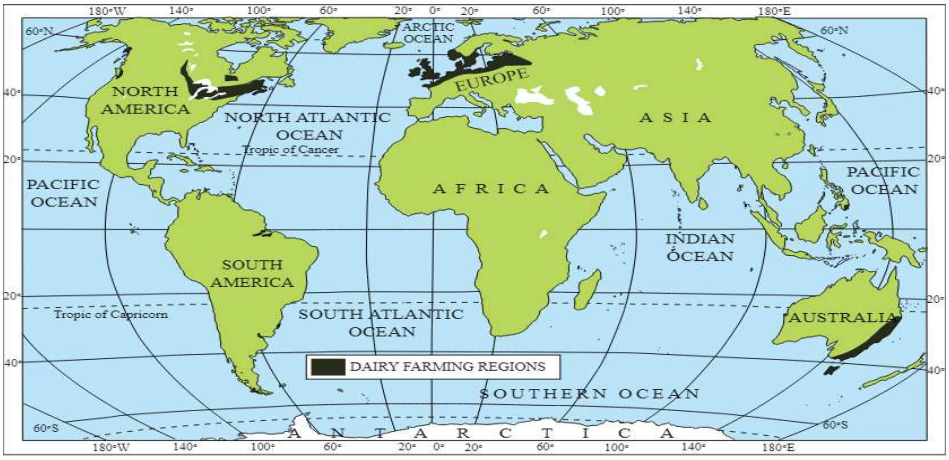
Dairy Farming

- Most **advanced and efficient type of rearing of milch animals**
- It is highly capital intensive
- Animal sheds, storage facilities for fodder, feeding and milching machines add to the cost of dairy farming
- Special emphasis is laid on cattle breeding, health care and veterinary services
- **There is no off season** during the year
- It is **practised mainly near urban and industrial centres**
- Development of transportation, refrigeration pasteurization has increased the marketing

Areas of Dairy Farming

- There are **three main** regions of commercial dairy farming
- The largest is **North Western Europe, Canada, South Eastern Australia, New Zealand and Tasmania**

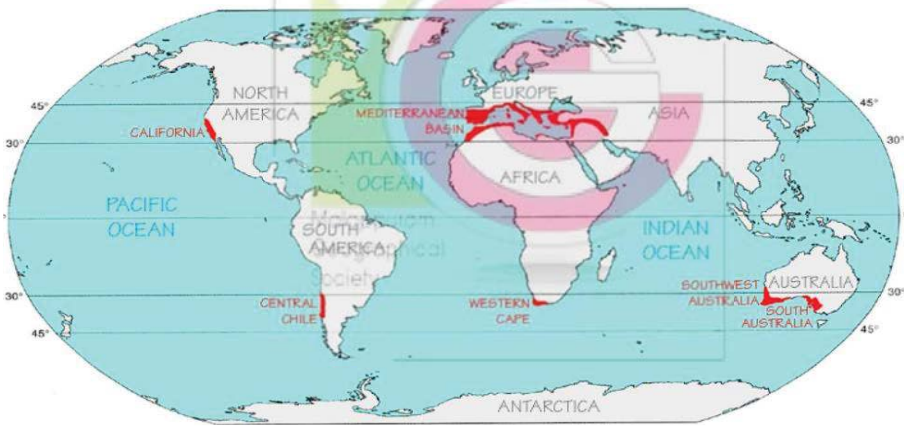
Areas of Dairy Farming



Mediterranean Agriculture

- **Highly specialised in commercial agriculture**
- It is practised in the countries on **either side of the Mediterranean Sea in Europe, North Africa, Southern California, and central Chile, South western parts of South Africa and South western parts of Australia**
- This region is an important **supplier of citrus fruits**

Areas of Mediterranean Agriculture



Viticulture

- **Grape cultivation**
- Best quality wines in the world with distinctive flavours are produced from high quality grapes of this region
- Low quality grapes are used for raisins, and currants
- This region also produces **olives and figs**

Market Gardening and Horticulture

- **Specialise in the cultivation of high value crops such as vegetables, fruits and flowers, for the urban markets**
- Farms are small
- **Located where there are good transportation links with the urban centre** where high income group of consumers is located
- It is both labour and capital intensive

- Emphasis on the **use of irrigation, HYV seeds, fertilisers, insecticides, greenhouses and artificial heating in colder regions**
- Mainly practiced in Mediterranean region north west Europe, and south east America

Truck Farming

- **The regions where farmers specialise in vegetables only** are called Truck Farming
- The distance of truck farms from the market is governed by the distance that a truck can cover overnight

Factory Farming

- **Modern development in the industrial regions of Western Europe and North America**
- Livestock, particularly poultry and cattle rearing, is done in stalls and pens
- fed on manufactured feedstuff and carefully
- Carefully supervised against diseases
- Need heavy capital investments for building, machinery and other operations
- Veterinary services, heating and lightning is provided
- Breed selection and scientific breeding is important feature

➢ **Types of farming according to the farming organisation**

Co-operative Farming

- **A group of farmers form a co-operative society**
- Pooling in their resources voluntarily for more efficient and profitable farming
- Individual farms remain intact and farming is a matter of cooperative initiative

Societies help farmers following activities

- In getting important input for farming
- Sell the products at the most favourable terms
- Help in processing products at cheaper rates
- Practiced in Denmark, Netherlands, Belgium, Sweden & Italy
- **In Denmark, the movement has been so successful**

Collective Farming

- **Based on social ownership of the means of production and collective labour**
- **Introduced in Former Soviet Union**
- Other name **Kolkhoz** in Soviet Union
- Improve upon the inefficiency of the previous methods of agriculture
- **To boost agricultural production for self-sufficiency**
- Farmers pool their resources like land livestock labour
- A small land is allowed to retain of their own to grow their own crops.
- **Yearly targets are fixed by the government**
- **Government fixes the product rates in market**
- Excess produce is distributed among the farmers
- The farmers are to pay taxes for their own land
- Members are paid according to their nature of the work
- **Exceptional work is rewarded by the government**

MINING

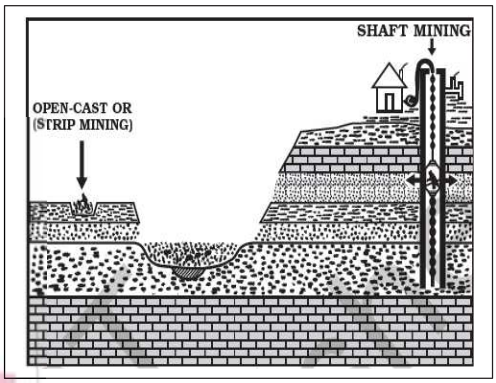
- **Mining is the extraction of valuable minerals from the Earth**
- The actual development of mining began with the **industrial revolution**

Factors Affecting Mining Activity

Physical Factors	Economic Factors
❖ Size of the mineral deposit	❖ Demand for the mineral
❖ Grade of Mineral deposit	❖ Technology available and used
❖ Mode of occurrence of the deposit	❖ Capital to develop infrastructure
	❖ Labour and transport costs

Methods of Mining

- Depending on the mode of occurrence and the nature of the ore, mining are classified into two
  - **Surface /opencast mining**
  - **Underground/shaft mining**



Surface /opencast mining

- **Easiest and the cheapest way of mining minerals**
- **Minerals occur close to the surface**
- Safety precautions and equipment is relatively
- Output is both large and rapid

Underground/shaft mining

- **Ore lies deep below the surface**
- Vertical shafts have to be sunk
- Minerals are extracted and transported to the surface through these passages
- Requires specially designed lifts, drills, haulage vehicles, ventilation system for safety and efficient movement of people and material
- **The developed economies are retreating from mining. Why?**
- **due to high labour costs**
- This method is risky
- Poisonous gases, fires, floods and caving in lead to fatal accidents
- Developing countries are more interest due to large labour availability

CHAPTER 8

Transport and Communication

TRANSPORT

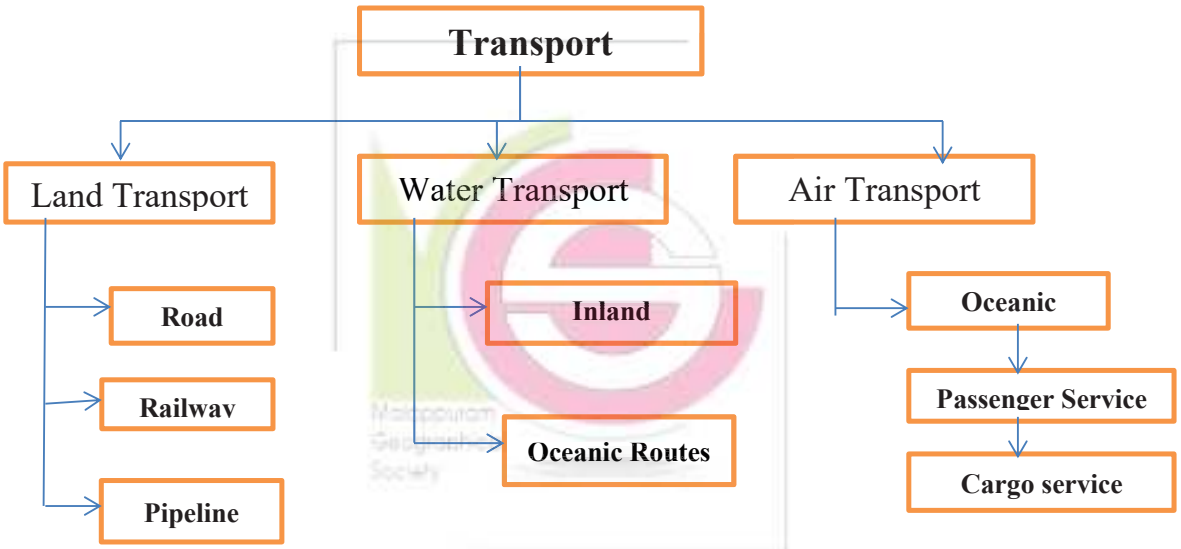
- Transport is a **service or facility for the carriage of persons and goods from one place to the other using humans, animals and different kinds of vehicles**
- Such movements take **place over land, water and air**

Transport Network

Several places (nodes) joined together by a series of routes (links) to form a pattern is known as transport network

MODES OF TRANSPORTATION

- Transportation are broadly classified into 3
- **Land Transportation include Road, Railway and Pipe line**
- **Water Transportation include shipping through canals and inland waterways**
- **Air Transportation**



Land Transport

- **Movement of goods and services takes place over the land**
- In early days, humans were carriers
- Bride being carried on a palanquin (palki/doli) by four persons (Kahars in north India)
- Later animals were used as beasts of burden. mules, horses and camel

Pack Animals

Animals	Area
Horses	Western countries
Dogs and reindeer	North America, North Europe and Siberia to draw sledges over snow-covered ground
Mules	Mountainous regions
Camels	caravan movement in deserts
Bullocks	Pulling carts in India

- With the **invention of the wheel**, the use of carts and wagons became important.
- The revolution in transport came about only after the **invention of the steam engine** in the eighteenth century
- The newer developments in land transportation are pipelines, ropeways and cableways

Roads

- Road transport is **cheaper and faster over short distances and for door-to door services**
- Play a vital role in a nation's trade and commerce and for promoting tourism
- The world's total motorable road length is only about 15 million km, of which North America accounts for 33 per cent
- The highest **road density** and the **highest number of vehicles are registered in North America**

Traffic Flows

- The **total number of vehicles passing a given point in a given time**
- Traffic flow is **expressed as vehicles per hour**
- City roads suffer from chronic traffic congestion
- Road are two types
- **Highways**
- **Boarder roads**

Highways

- Highways are **metalled roads connecting distant places**
- They are **constructed in a manner for unobstructed vehicular movement**
- These are 80 m wide, with separate traffic lanes, bridges, flyovers and dual carriageways to facilitate uninterrupted traffic flow

Distribution of Highways

North America

- Highway density is high, about 0.65 km per sq. km
- Every place is within 20 km distance from a highway
- Cities located on the Pacific coast (west) are well-connected with those of the Atlantic Coast (east)

Major Highways

- **The Trans-Canadian Highway** : links **Vancouver in British Columbia (west coast) to St. John's City in Newfoundland (east coast)**
- **The Alaskan Highway :** links **Edmonton (Canada) to Anchorage (Alaska)**
- **The Pan-American Highway** : connect the countries of **South America, Central America and U.S.A.-Canada**
- **The Trans-Continental Stuart Highway** : connects **Darwin (north coast) and Melbourne via Tennant Creek and Alice Springs in Australia**

Europe

Russia

- A dense highway network is developed in the industrialised region west of the Urals with Moscow as the hub.
- The important Moscow-Vladivostok Highway
- **Due to the vast geographical area, highways in Russia are not as important as railways**

India

- **National Highway No. 7 (NH 7)**
- **New name NH 44**
- **Connecting Varanasi with Kanyakumari**
- **The Golden Quadrilateral (GQ) or Super Expressway : connect the four metropolitan cities — New Delhi, Mumbai, Bangalore, Chennai, Kolkata and Hyderabad**

Border Roads

- **Roads laid along international boundaries** are called border roads
- They **play an important role in integrating people in remote areas with major cities and providing defence**

Railways

- Railways are a **mode of land transport for bulky goods and passengers over long distances within a country**
- The **first public railway** line was opened in **1825 between Stockton and Darlington in Northern England**

The railway gauges

- **Broad Gauge** : more than 1.5 m
- **Standard Gauge** : 1.44 m
- **Metre Gauge** : 1 m

Distribution of Railway

Europe

- **Europe has the most dense rail networks in the world**
- There are about 4,40,000 km of railways, most of which is double or multiple-tracked
- **Belgium has the highest density** of 1 km of railway for every 6.5 sq. kms area
- The important rail heads are London, Paris, Brussels, Milan, Berlin and Warsaw
- **Channel Tunnel, operated by Euro Tunnel Group connects London with Paris**

Russia

- Railways account for about 90 per cent of the country's total transport
- Moscow is the most important rail head
- Underground railways and commuter trains are important in Moscow

North America

- The railways are used more for long-distance bulky freight like ores, grains, timber and machinery than for passengers
- The most dense rail network is found in the highly industrialised and urbanised region of East Central U.S.A. and adjoining Canada

Australia

- Australia has about 40,000 km of railways, of which 25 per cent are found in New South Wales alone.
- **The west-east Australian National Railway line runs across the country from Perth to Sydney**

South America

- The rail network is the most dense in two regions, namely, the Pampas of Argentina and the coffee growing region of Brazil
- There is only one trans-continental rail route linking **Buenos Aires (Argentina) with Valparaiso (Chile) across the Andes Mountains**

Asia

- In Asia network is the most dense in the thickly populated areas of Japan, China and India

Africa

- Africa has 40,000 km of railways
- South Africa alone accounting for 18,000 km due to the concentration of gold, diamond and copper mining activities

Important Rail routes in Africa

- **The Benguela Railway connects Angola to Katanga-Zambia Copper Belt**
- **The Tanzania Railway from the Zambian Copper Belt to Dar-es-Salaam on the coast**
- **The Blue Train from Cape Town to Pretoria in the Republic of South Africa**
- **Railway through Botswana and Zimbabwe**

Trans–Continental Railways

- Trans–continental railways **run across the continent and link its two ends**
- They were **constructed for economic and political reasons to facilitate long runs in different directions**

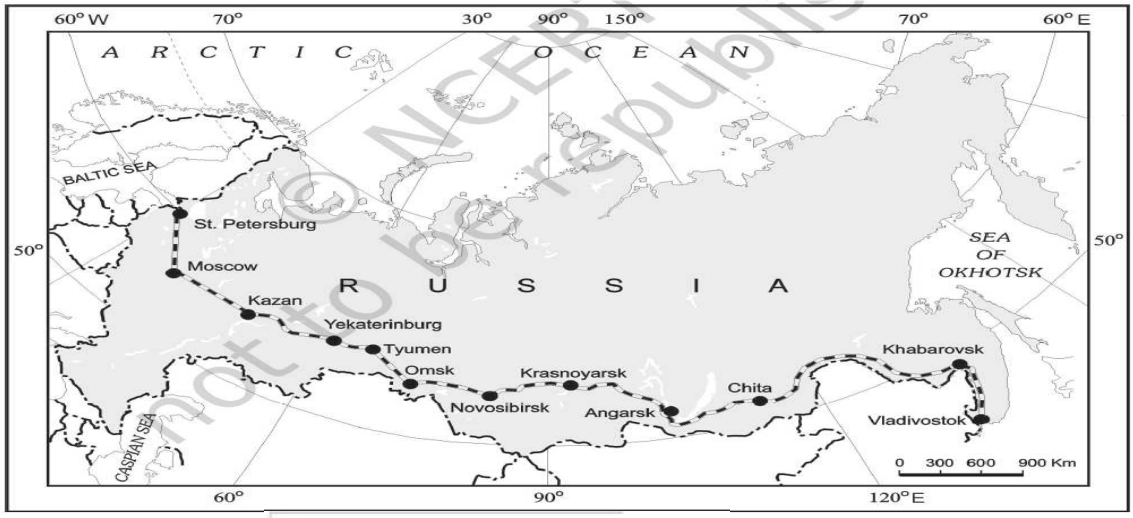
Important trans-continental Railways

- **Trans–Siberian Railway**
- **Trans–Canadian Railways**
- **The Union and Pacific Railway**
- **The Australian Trans–Continental Railway**
- **The Orient Express**

Trans–Siberian Railway

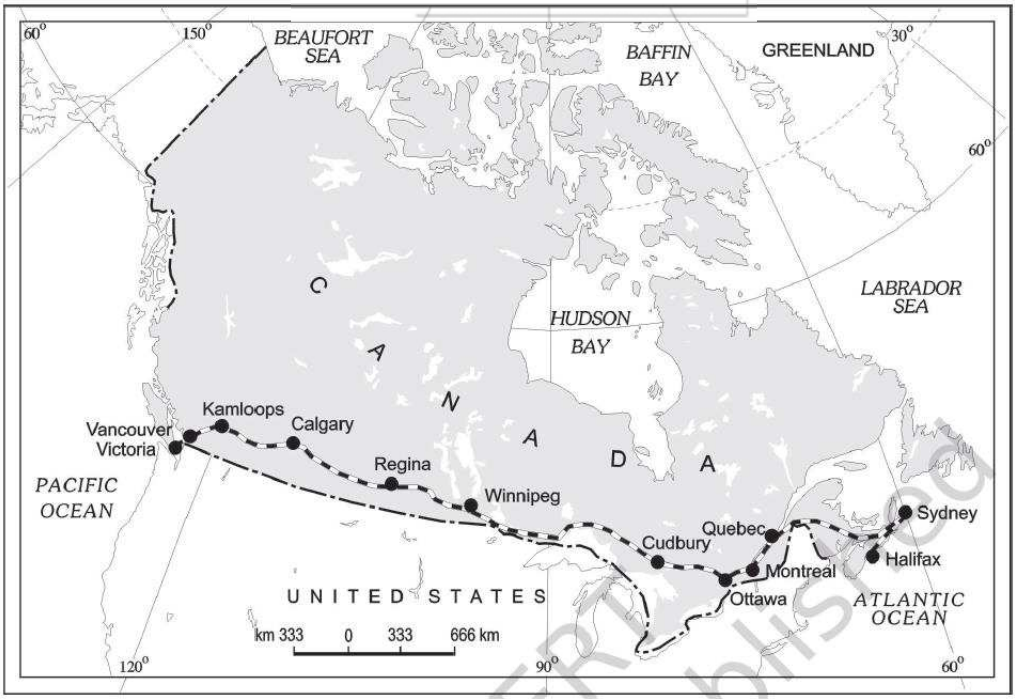
- Major rail route of **Russia**
- **Runs from St. Petersburg in the West to Vladivostok on the Pacific Coast in the East**

- Passing through Moscow, Ufa, Novosibirsk, Irkutsk, Chita and Khabarovsk.
- It is the most **important route in Asia and the longest** (9,332 km) double-tracked and electrified trans– continental railway in the world
- **It has helped in opening Asian region to West European markets**



Trans–Canadian Railways

- **long rail-line in Canada**
- 7,050 km in length
- **Runs from Halifax in the east to Vancouver on the Pacific Coast passing through Montreal, Ottawa, Winnipeg and Calgary.**
- It was constructed in 1886.
- It gained economic significance because it connected the Quebec-Montreal Industrial Region with the wheat belt of the Prairie Region
- **This line is the economic artery of Canada**
- Wheat and meat are the important exports on this route

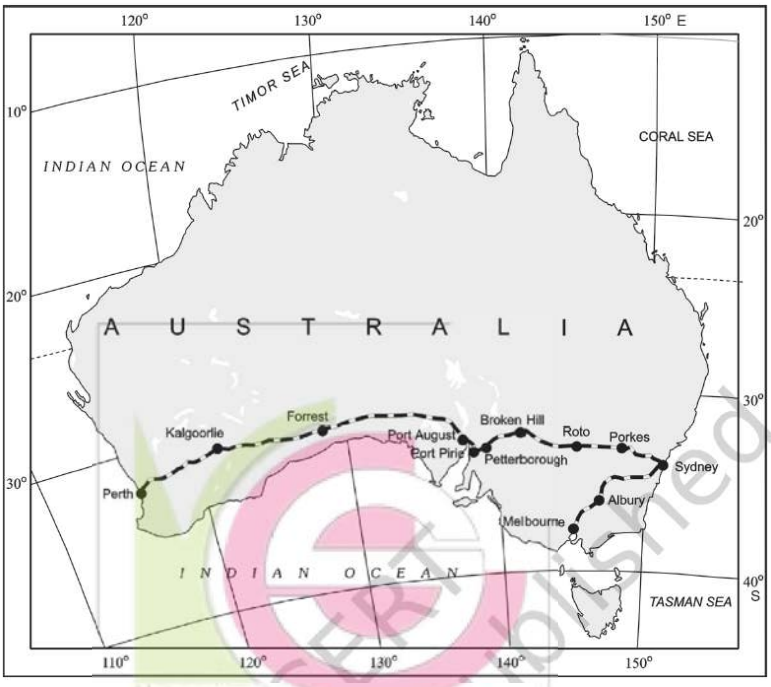


The Union and Pacific Railway

- **This rail-line connects New York on the Atlantic Coast to San Francisco on the Pacific Coast**
- Railway **passing through Cleveland, Chicago, Omaha, Evans, Ogden and Sacramento**
- The most valuable exports on this route are ores, grain, paper, chemicals and machinery

The Australian Trans–Continental Railway

- **This rail-line runs from Perth on the west coast, to Sydney on the east coast**
- Passing through Kalgoorlie, Broken Hill and Port Augusta



The Orient Express

- **This line runs from Paris to Istanbul**
- Passing through **Strasbourg, Munich, Vienna, Budapest and Belgrade**
- The journey time from London to Istanbul by this Express is now reduced to 96 hours as against 10 days by the sea-route

Trans–Asiatic Railway

- Linking Istanbul with Bangkok via Iran, Pakistan, India, Bangladesh and Myanmar

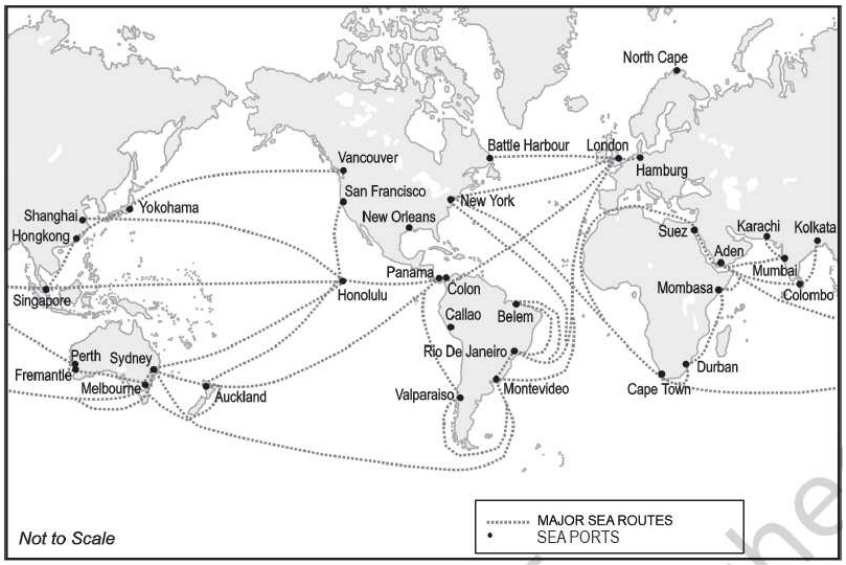
WATER TRANSPORT

- Water ways is an important mode of transport for both passenger and cargo
- **It is the cheapest means of transport and is most suitable for carrying heavy and bulky material**
- It is a **fuel-efficient and eco-friendly mode of transport**
- **It does not require route construction** provide port facilities at the two ends
- It is much cheaper **because the friction of water is far less than that of land**

The water transport is of two types– (a) inland waterways, and (b) oceanic waterways

Sea Routes

- Ocean transport is a cheaper means of **haulage (carrying of load) of bulky material over long distances from one continent to another**



Important Sea Routes

- **The Northern Atlantic Sea Route**
- **The Mediterranean–Indian Ocean Sea Route**
- **The Cape of Good Hope Sea Route**
- **The North Pacific Sea Route**
- **The South Pacific Sea Route**

The Northern Atlantic Sea Route

- **This links North-eastern U.S.A. and Northwestern Europe, the two industrially developed regions of the world**
- The foreign trade over this route is greater than that of the rest of the world
- One fourth of the world's foreign trade moves on this route
- **Busiest sea route in the world and called the Big Trunk Route**
- Both the coasts have highly advanced ports and harbour facilities
- **Important Ports: New York, London**

The Mediterranean–Indian Ocean Sea Route

- **This sea route passes through the heart of the Old World and serves more countries and people than any other route**
- **Important Ports : Port Said, Aden, Mumbai, Colombo and Singapore**
- The construction of Suez canal has greatly reduced the distance
- This trade route connects the highly industrialised Western European region with West Africa, South Africa, South-east Asia and the commercial agriculture and livestock economies of Australia and New Zealand

The Cape of Good Hope Sea Route

- This sea route is another important one across the Atlantic Ocean which **connects West European and West African countries with Brazil, Argentina and Uruguay in South America**

The North Pacific Sea Route

- This sea route links the ports on the **west-coast of North America with those of Asia**

- **Major Ports**
  - **American side**: Vancouver, Seattle, Portland, San Francisco and Los Angeles
  - **Asian Side**: Yokohama, Kobe, Shanghai, Hong Kong, Manila and Singapore

The South Pacific Sea Route

- This sea route connects **Western Europe and North America with Australia, New Zealand and the scattered Pacific islands via the Panama Canal**
- This route is used for reaching Hong Kong, Philippines and Indonesia
- **Important Port: Honolulu**

Coastal Shipping

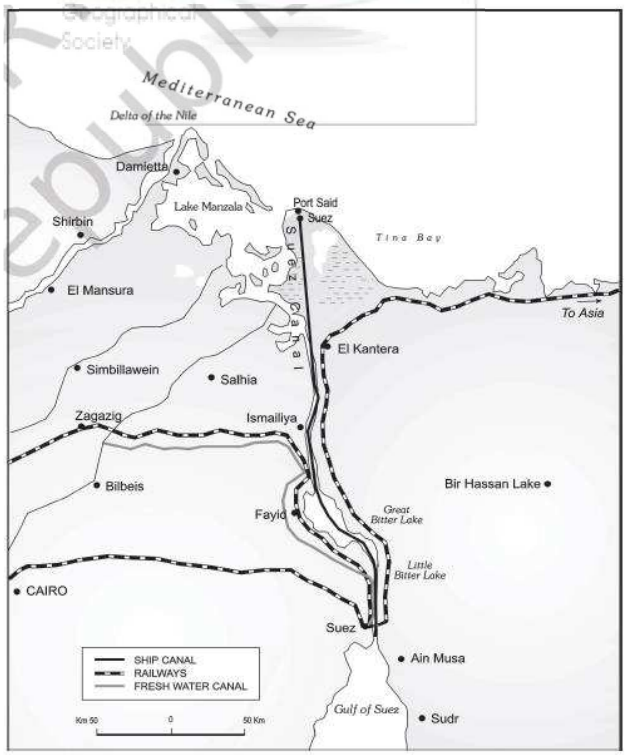
- coastal shipping is a **convenient mode of transportation with long coastlines**, e.g. U.S.A, China and India
- **Shenzhen States in Europe** are most suitably placed for coastal shipping
- **If properly developed, coastal shipping can reduce the congestion on the land routes**

Shipping Canals

- The **Suez and the Panama Canals** are two vital man-made navigation canal

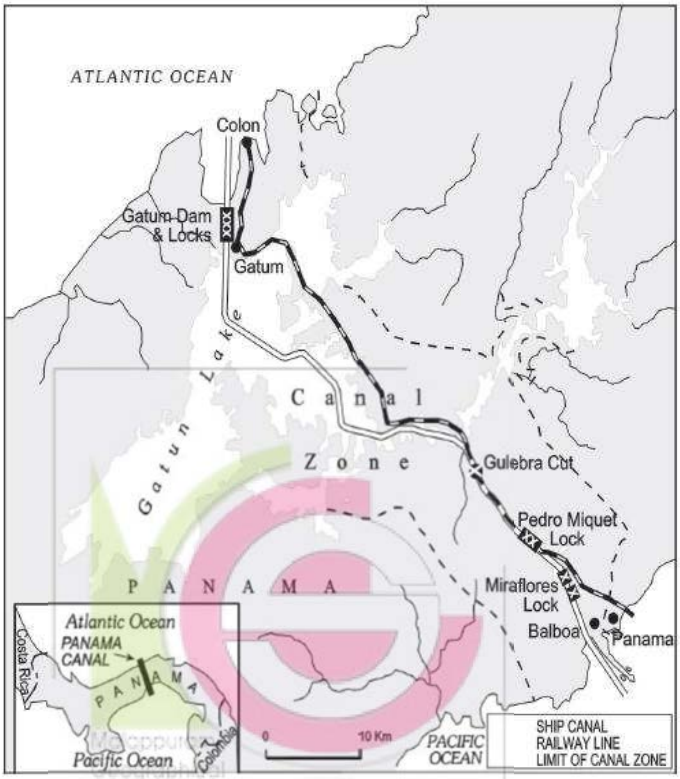
The Suez Canal

- This canal had been constructed in 1869 in Egypt
- **Constructed between Port Said in the north and Port Suez in the south**
- **Linking the Mediterranean Sea and the Red Sea**
- It is a sea-level canal without locks which is about 160 km and 11 to 15 m deep
- About 100 ships travel daily and each ship takes 10-12 hours to cross this canal
- It **gives Europe a new gateway to the Indian Ocean** and reduces direct sea-route distance between Liverpool and Colombo



The Panama Canal

- This canal connects the **Atlantic Ocean in the east to the Pacific Ocean in the west**
- Constructed across the **Panama Isthmus** between **Panama City and Colon by the U.S**
- The Canal is about 72 km
- It has a six lock system
- It **shortens the distance between New York and San Francisco by 13,000 km by sea**
- It is **vital to the economies of Latin America**



Inland Waterways

- **Water transportation through Rivers, canals, lakes**
- Boats and steamers are used as means of transport for cargo and passengers

Factors affecting Inland Waterways

- The **navigability of the river**
- Width and depth of the channel
- Continuity in the **water flow**
- **Transport technology** in use

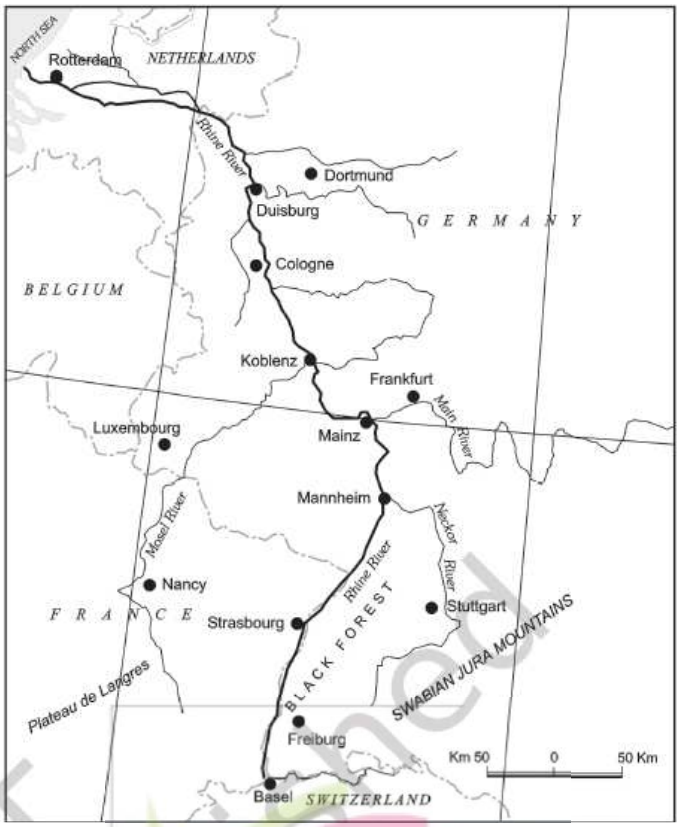
Problems of Inland waterways

- Competition from railways
- Lack of water due to diversion for irrigation
- Poor maintenance

The Rhine Waterways

- **The Rhine flows through Germany and the Netherlands**
- It is navigable for 700 km from **Rotterdam in Netherlands to Basel in Switzerland**
- It connects the industrial areas of Switzerland, Germany, France, Belgium and the Netherlands with the North Atlantic Sea Route

➢ **Important Port: Dusseldorf**



The Danube Waterway

- **This important inland waterway in Eastern Europe**
- The Danube river **rises in the Black Forest and flows eastwards through many countries**
- It is navigable up to Taurna Severin
- The chief export items are wheat, maize, timber, and machinery

The Volga Waterway

- **Important waterway in Russia**
- It provides a navigable waterway of 11,200 km and drains into the Caspian Sea

The Great Lakes – St. Lawrence Seaway

- **The Great Lakes of North America Superior, Huron Erie and Ontario**
- **The St. Lawrence River, along with the Great Lakes, forms a unique commercial waterway in the northern part of North America**
  - The Major Ports : **Duluth and Buffalo**

The Mississippi Waterways

- **The Mississippi-Ohio waterway connects the interior part of U.S.A. with the Gulf of Mexico in the south**

AIR TRANSPORT

- Air transport is the **fastest means of transportation**, but it is very costly
- Being fast, it is **preferred by passengers for long-distance travel**
- **High-value, light and perishable goods** are best moved by airways
- **Only means to reach inaccessible areas**
- Air transport has **brought about a connectivity revolution in the world**
- Today, more than 250 commercial airlines offer regular services to different parts of the world

Inter-Continental Air Routes

- Dense network exists in Eastern U.S.A., Western Europe and Southeast Asia
- U.S.A. alone accounts for 60 per cent of the airways of the world.
- **Major Nodal Airports** : New York, London, Paris, Amsterdam, Frankfurt Rome, Moscow, Karachi, New Delhi, Mumbai, Bangkok, Singapore, Tokyo, San Francisco, Los Angeles and Chicago

> ➢ **There are limited air services between 10-35 latitudes in the Southern hemisphere**
> **Reason**
> - **Sparse population**
> - **Limited landmass and economic development**

PIPELINES

- **Pipelines are used extensively to transport liquids and gases such as water, petroleum and natural gas for an uninterrupted flow**
- Pipelines can also be used to transport liquidified coal

Major Pipe Line in the World

- **Big Inch pipeline** : which carries **petroleum from the oil wells of the Gulf of Mexico to the North-eastern States**
- The proposed Iran-India via Pakistan international oil and natural gas pipeline will be the longest in the world

COMMUNICATIONS

- During the early and mid-twentieth century, the American Telegraph and Telephone Company (AT&T) enjoyed a monopoly over U.S.A.'s telephone industry
- Today there is a phenomenal pace of development
- The first major breakthrough is the use of optic fiber cables (OFC)
- These allow **large quantities of data to be transmitted rapidly, securely, and are virtually error-free**

Satellite Communication

- Communication through satellites emerged as a new area in communication technology since the 1970s after U.S.A. and former U.S.S.R.

India

- Aryabhatt was launched on 19 April 1979
- Bhaskar-I in 1979
- Rohini in 1980. On 18 June 1981, APPLE
- (Arian Passenger Payload Experiment) was launched through Arian rocket
- INSAT I-B have made long distance communication, television and radio

Cyber Space – Internet

- It is the **electronic digital world**
- helpful for **communicating or accessing information over computer networks without physical movement of the sender and the receiver**
- It is also **referred to as the Internet**
- It is encompassed by the Internet such as the World Wide Web (www)

PART II

INDIA PEOPLE AND ECONOMY

Chapter 2

MIGRATION -Types, Causes and Consequences

- **Immigration: Migrants who move into a new place are called Immigrants**
- **Emigration: Migrants who move out of a place are called Emigrants**

- In the Census of India migration is enumerated on two basis
  1. **Place of birth**
  2. **Place of residence**

➢ **Difference between Life-time migrant and Migrant by Place of last residence**

- **Life-time Migrant- the place of birth is different from the place of Enumeration**
- **Migrant by place of last residence- the place of last residence is different from the place of enumeration**

Indian Diaspora

- **Diaspora is the dispersion of people from their homeland**

- **First Wave- During colonial period** (British period) millions of labourers were sent to **Mauritius, Caribbean Islands, Fiji and South Africa** by British from Uttar Pradesh and Bihar through time-bound contract known a **Girmit Act (Indian Emigration Act)**
- **Second wave-** migrants move out into the neighbouring countries in recent times as professionals, artisans, traders and factory workers, in search of economic opportunities to **Thailand, Malaysia, Singapore, Indonesia, Brunei and African countries**, etc
- **Third wave-** migrant comprised of professionals like doctors, engineers, software engineers, management consultants, financial experts, media persons and others migrated to countries such as **USA, Canada, UK, Australia, New Zealand and Germany**

Streams of Migration

- **International Migration-** Person move out of the country and into the country from other countries
- **Internal Migration-** Migration within the country

- Under the internal **four streams** are identified

1. **Rural to Rural (R-R)**
2. **Rural to Urban (R-U)**
3. **Urban to Urban (U-U)**
4. **Urban to Rural (U-R)**

Spatial Variation in Migration

- Maharashtra, Delhi, Gujarat and Haryana attract migrants from other states

- **The state having highest number of Immigrants- Maharashtra**
- **The state having largest number of out-migrants-Uttar Pradesh**

Causes of Migration

1. **Push Factor-** people leave their place of residence or place of origin seem less attractive
2. **Pull factor-** attract the people from different places or the place of destination seem more attractive than the place of origin

Push Factor	Pull Factor
❖ Poverty	❖ better job opportunities and higher wages
❖ Unemployment	❖ better living conditions
❖ poor living conditions	❖ peace and stability
❖ Political turmoil	❖ security of life and property
❖ Unpleasant climate	❖ pleasant climate
❖ natural disasters and epidemics	❖ Better opportunities for education
❖ socio-economic backwardness	❖ better health facilities
❖ high population pressure on the land	❖ sources of entertainment

Consequences of Migration

- Migration is a response to the uneven distribution of opportunities over space
- **People tend to move from place of low opportunity and low safety to the place of higher opportunity and better safety**

Consequences can be classified as

1. **Economic Consequences**
2. **Demographic Consequences**
3. **Social Consequences**
4. **Environmental Consequences**
5. **Others**

Economic Consequences

- A major benefit for the source region is the **remittance sent by migrants**
- Punjab, Kerala and Tamil Nadu receive very significant amount from their international migrants
- Remittances are mainly used for food, repayment of debts, treatment, marriages, children's education, construction of houses, etc.
- **unregulated migration to the metropolitan cities of India has caused overcrowding**
- **Development of slums**

Demographic Consequences

- Migration leads to the **redistribution of the population within a country**
- **Age and skill selective out migration** from the rural area have adverse effect on the rural demographic structure

Social Consequences

- **Migrants act as agents of social change**
- The new ideas related to new technologies, family planning, girl's education, etc. get diffused from urban to rural areas

- ❖ Migration leads to intermixing of people from diverse cultures
- ❖ Anonymity

Environmental Consequences

- ❖ Overcrowding of people due to rural-urban migration
- ❖ Unplanned growth of urban settlement
- ❖ formation of slums and shanty colonies
- ❖ over-exploitation of natural resources
- ❖ depletion of ground water
- ❖ air pollution
- ❖ disposal of sewage and management of solid wastes

Others

- ❖ Migration affects the status of women directly or indirectly
- ❖ In the rural areas, male selective out migration leaving their wives behind puts extra physical as well mental pressure on the women

Chapter 4

HUMAN SETTLEMENTS

Types of Rural Settlement in India

Factors affecting different types of rural settlements in India

- **Physical features –nature of terrain, altitude, climate and availability of water**
- **Cultural and ethnic factors – social structure, caste and religion**
- **Security factors – defence against thefts and robberies**
- Rural settlements in India can **broadly classified into four types**:

Classification of Rural Settlements in India

- **Clustered, agglomerated or nucleated,**
- **Semi-clustered or fragmented**
- **Hamleted**
- **Dispersed or isolated**

Clustered, agglomerated or nucleated

- The clustered rural settlement is a c**ompact or closely built up area of houses**
- In this type of village **the general living area is distinct and separated from the surrounding farms, barns and pastures**
- It may be **rectangular, radial, linear pattern**
- Found in **fertile alluvial plains and in the northeastern states people**

Reason

- **security or defence**

Example: **Bundelkhand region** of central India and in Nagaland

- **scarcity of water** has necessitated compact settlement for maximum utilisation of available water resources

Example: Rajasthan

Semi-Clustered or Fragmented Settlements

- Result from tendency of **clustering in a restricted area of dispersed settlement**
- Such a pattern **result from segregation or fragmentation of a large compact village**
- The land-owning and dominant community occupies the central part of the main village, whereas people of lower strata of society and workers settle on the outer flanks of the village
- Such settlements are **widespread in the Gujarat plain and some parts of Rajasthan**

Hamleted Settlements

- Settlement is **fragmented into several units physically separated from each other bearing a common name**
- Hamlets are locally called **panna, para, palli, nagla and dhani**
- **middle and lower Ganga plain, Chhattisgarh and lower valleys of the Himalayas**

Dispersed or Isolated Settlements

- Appears in the form of **isolated huts or hamlets of few huts in remote jungles, or on small hills with farms or pasture on the slopes**
- **Meghalaya, Uttarakhand, Himachal Pradesh and Kerala**

Urban Settlements

- Urban settlements are generally compact and larger in size

Evolution of Towns in India

On the basis of their evolution in different periods, Indian towns may be classified as

Classification of Towns on the basis of Evolution

- **Ancient Towns**
- **Medieval Towns**
- **Modern Towns**

Ancient Towns	Medieval Towns	Modern Towns
❖ **Historical background of over 2000 years** ❖ Developed as religious and cultural centres ➢ **Varanasi** ➢ **Prayag (Allahabad),** ➢ **Pataliputra(Patna)** ➢ **Madurai**	❖ Developed as **headquarters of principalities and kingdoms** ➢ **Delhi** ➢ **Hyderabad** ➢ **Jaipur** ➢ **Lucknow** ➢ **Agra and Nagpur**	❖ Developed by **British and other Europeans** ➢ **Mumbai (Bombay)** ➢ **Chennai (Madras)** ➢ **Kolkata (Calcutta)** ➢ **Surat, Daman, Goa, Pondicherry**

Urbanisation in India

- **Urbansation is the increase in the proportion of people living in towns and cities**
- The level of urbanisation in India in 2011 was **31.16 per cent**

- **Most Urbanised State in India- Tamil Nadu**
- **Largest Urban Agglomeration (UA) in India- Greater Mumbai**

Classification of Towns on the basis of Population Size

- **Urban Agglomeration (UA)**
- **An urban agglomeration is a continuous urban spread constituting a town and its adjoining outgrowths**

UA consist

- **A town and its adjoining urban outgrowths**
- **Two or more contiguous towns with or without their outgrowths**
- **A city and one or more adjoining towns with their outgrowths together forming a contiguous spread**

Class	Population	Number of Cities
I	1,00,000 and more	468
II	50,000-99,999	474
III	20,000-49,999	1,373
IV	10,000-19,999	1,683
V	5,000-9,999	1,749
VI	Less than 5000	424

Functional Classification of Towns

Administrative towns and cities

- Chandigarh, New Delhi, Bhopal, Shillong, Guwahati, Imphal, Srinagar, Gandhinagar, Jaipur, Chennai, etc.

Industrial towns

- Mumbai, Salem, Coimbatore, Modinagar, Jamshedpur, Hugli, Bhilai, etc.

Transport Cities

- Kandla, Kochchi, Kozhikode, Vishakhapatnam,
- Hubs of inland transport, such as Agra, Dhulia, Mughal Sarai, Itarsi, Katni, etc.

Commercial towns

- Kolkata, Saharanpur, Satna

Mining towns

- Raniganj, Jharia, Digboi, Ankaleshwar, Singrauli

Garrisson Cantonment towns

- Ambala, Jalandhar, Mhow, Babina, Udhampur,

Educational towns

- Roorki, Varanasi, Aligarh, Pilani, Allahabad

Religious and cultural towns

- Varanasi, Mathura, Amritsar, Madurai, Puri, Ajmer, Pushkar, Tirupati, Kurukshetra, Haridwar, Ujjain

Tourist towns

- Nainital, Mussoorie, Shimla, Pachmarhi, Jodhpur, Jaisalmer, Udagamandalam (Ooty),

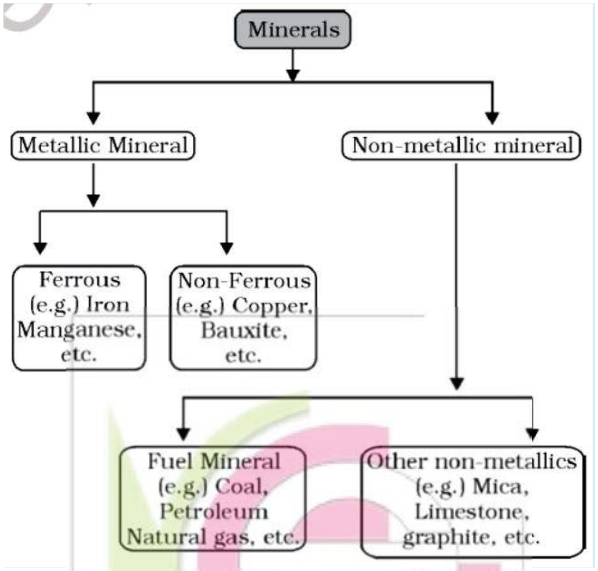
1991-Census Town

- **A minimum population of 5,000**
- **At least 75 per cent of the male main workers engaged in non-agricultural activities**
- **A density of population of at least 400 per sq. km**
- **All places with a municipality, corporation, cantonment board or notified town area committee**

CHAPTER 7

MINERAL AND ENERGY RESOURCES

- A mineral is a **natural substance of organic or inorganic origin with definite chemical and physical properties**
- **On the basis of chemical and physical properties**, minerals may be grouped under two main categories
  - **Metallic Minerals**
  - **Non-metallic Minerals**



Metallic Minerals

- Metallic minerals are the sources of metals

  Examples: Iron ore, Copper, Gold
- Metallic minerals are **further divided into ferrous and non-ferrous metallic minerals**

Ferrous Minerals

- Minerals which have iron content
- **Examples: Iron ore, Manganese**

Non-Ferrous Minerals

- Do not have iron content
- **Example: Copper, Bauxite, etc**

Non-Metallic Minerals

- These minerals do not have contents of metals
- They are **further classified into -Fuel minerals and other Non-metallic minerals**

Fuel Minerals or Organic Minerals

- These are made up of organic matter of buried animal and plants
- **Examples: Coal, Petroleum**

Other non-metallic or Inorganic Minerals

- **Examples: Mica, Limestone, Graphite, etc**

Characteristics of Mineral Resources

- Distribution over the earth surface is **uneven**

- **Inverse relationship in quantity and quality of minerals** i.e. good quality minerals are less in quantity as compared to low quality minerals
- Minerals are **exhaustible over time**
- Once they used **cannot replenished** immediately

Agencies involved in the exploration of minerals

- **GSI: Geological Survey of India**
- **ONGC: Oil and Natural Gas Commission**
- **MECL: Mineral Exploration Corporation Ltd.**
- **NMDC: National Mineral Development Corporation**
- **IBM: Indian Bureau of Mines**
- **BGML: Bharat Gold Mines Ltd.**
- **HCL: Hindustan Copper Ltd.**
- **NALCO: National Aluminium Company Ltd**
- **Departments of Mining and Geology in various states**

Distribution of Minerals in India

- Most of the **metallic minerals in India occur in the peninsular plateau region in the old crystalline rocks**
- Over 97 per cent of **coal reserves occur in the valleys of Damodar, Sone, Mahanadi and Godavari**
- **Petroleum reserves are located in the sedimentary basins of Assam, Gujarat and Mumbai High**

➢ Minerals are generally concentrated in **Four broad belts** in India

Mineral belts of India

- **The North-Eastern Plateau Region**
- **The South-Western Plateau Region**
- **The North-Western Region**
- **The Himalayan belt**

The North-Eastern Plateau Region

- This belt includes **the regions of Chotanagpur (Jharkhand), Odisha Plateau, West Bengal and parts of Chhattisgarh**
- Important minerals are **iron ore, coal, manganese, bauxite and mica**
- Due to availability of these minerals, **most of the iron and steel industries are located here**

The South-Western Plateau Region

- This belt **extends over Karnataka, Goa, uplands of Tamil Nadu and Kerala**
- **Rich in ferrous metals and bauxite**
- **Major Minerals**: **Iron ore, manganese and limestone**
- This belt packs in coal deposits except Neyveli lignite
- **Kerala has deposits of monazite and thorium, bauxite clay**
- Goa have Iron ore deposit

The North-Western Regions

- Minerals are **associated with Dharwar system of rocks**
- This belt **extends along Aravali in Rajasthan and part of Gujarat**
- **Major Minerals: Copper, zinc**
- **Rajasthan is rich in building stones** i.e. sandstone, granite, marble
- **Gujarat and Rajasthan have rich sources of salt**
- Gujarat also known for petroleum deposit.

Himalayan Belt

- **Minerals occur on both the eastern and western parts**
- **Major Minerals: copper, lead, zinc, cobalt and tungsten**
- Assam valley has mineral oil deposits

Spatial Pattern of Metallic Minerals

Ferrous Minerals

- India is well placed in respect of ferrous minerals like **iron-ore, manganese, chromite, etc**
- These minerals provide a **strong base for the development of metallurgical industries**

Iron ore

- India has largest iron ore reserves in Asia
- The two main types of ore found in our country are **Haematite and Magnetite**
- It has great demand in international market due to its superior quality
- The iron ore mines **occur in close proximity to the coal fields in the north-eastern plateau region of the country**
- About 95 per cent of total reserves of iron ore is located in the States of **Odisha, Jharkhand, Chhattisgarh, Karnataka, Goa, Telangana, Andhra Pradesh and Tamil Nadu**

➢ **Odisha**

- Iron ore **occurs in a series of hill ranges in Sundergarh, Mayurbhanj and Jhar**
- The important mines are **Gurumahisani, Sulaipet, Badampahar, Kiruburu and Bonai**

➢ **Jharkhand**

- It has **oldest mines and most of the iron and steel plant in India**
- Important mines are **Noamundi and Gua in Poorbi and Paschimi Singhbhum districts**

➢ **Chhattisgarh**

- **Durg, Dante Wada, Bailadiala, Dalli and Rajhara**

➢ **Karnataka**

- Iron ore deposits **occur in Sandur-Hospet area of Ballari district**
- **Baba Budan hills and Kudremukh** in Chikkamagaluru district
- Parts of Shivamogga, Chitradurg and Tumakuru districts

➢ **Maharashtra**

- **Chandrapur, Bhandara and Ratnagiri districts**

➢ **Andhra Pradesh**

- Karimnagar Warangal, Kurnool, Cuddapah and Anantpur districts

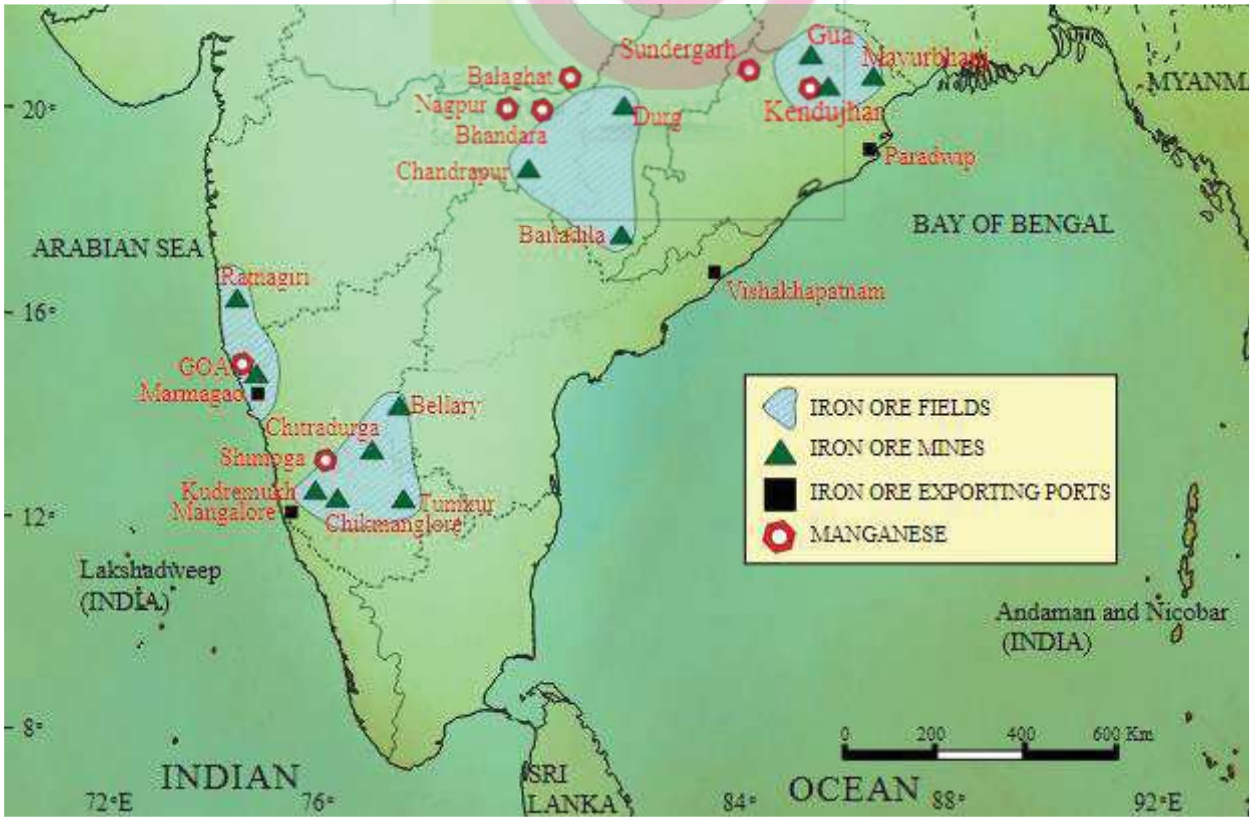
- **Tamil Nadu**
  - Salem and Nilgiri districts

Manganese

- Manganese is an **important raw material for smelting of iron ore** and also **used for manufacturing Ferro alloys**
- It is mainly **associated with Dharwar**
- **Odisha**
- **Leading producer of Manganese : Odisha**
- Major mines are located **Bonai, Kendujhar, Sundergarh, Gangpur, Koraput, Kalahandi and Bolangir**
- **Karnataka**
- **Dharwar, Ballari, Belagavi, North Canara, Chikkmagaluru, Shivamogga, Chitradurg and Tumakuru**
- **Maharashtra**
- **Nagpur, Bhandara and Ratnagiri districts**
- **Madhya Pradesh**
- Extends in a belt in Balaghat-Chhindwara-Nimar-Mandla and Jhabua districts

- **Leading Iron Ore producing State: Odisha**
- **Leading Manganese Producing State: Odisha**

INDIA- METALLIC MINERALS (FERROUS)



Non-Ferrous Minerals

- India has large deposits of bauxite

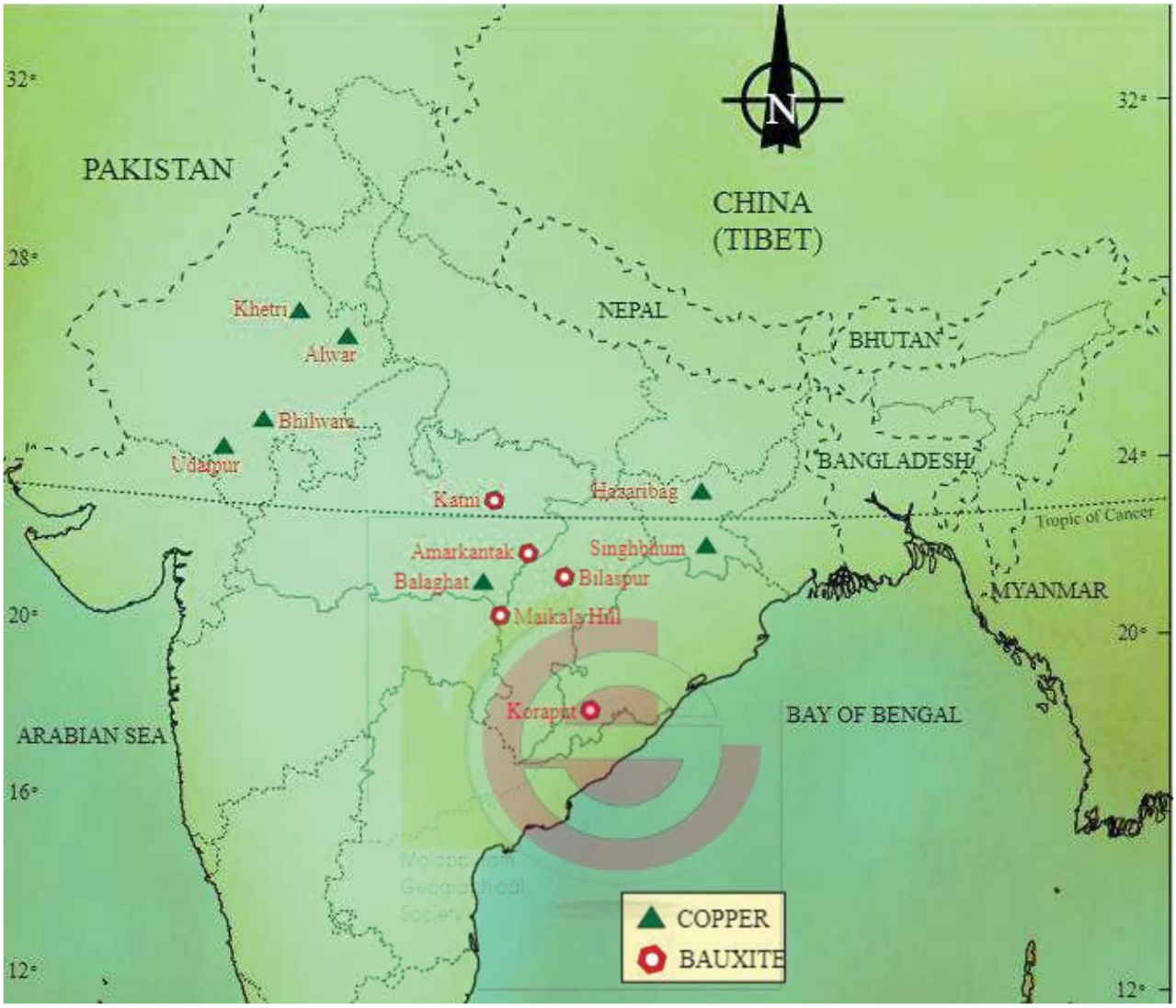
Bauxite

- Bauxite is the **ore which is used in manufacturing of Aluminium**
- Bauxite is **found mainly in tertiary deposits**
- **Associated with laterite rocks on the plateau or hill ranges of peninsular India and also in the coastal area**
  - **Odisha**
  - **Largest producer of Bauxite: Odisha**
  - important producing areas are Kalahandi, Sambalpur, Bolangir and Koraput
  - **Jharkhand**
  - **Patlands of Jharkhand in Lohardaga**
  - **Gujarat**
  - Bhavanagar and Jamnagar
  - **Chattisgarh**
  - Amarkanatak plateau region
  - **Madhya Pradesh**
  - Katni-Jabalpur area and Balaghat
  - **Maharashtra**
  - Kolaba, Thane, Ratnagiri, Satara, Pune and Kolhapur

Copper

- Copper is an **indispensable metal in the electrical industry for making wires, electric motors, transformers and generators**
- It is **alloyable, malleable and ductile**
- It is also mixed with gold to provide strength to jewellery
  - **Jharkhand: Leading Copper Producing States** :Singhbhum district
  - **Madhya Pradesh** Balaghat
  - **Rajasthan** Jhunjhunu and Alwar
  - **Andhra Pradesh** Agnigundala in Guntur district
  - **Karnataka** Chitradurg and Hasan
  - **Tamil Nadu** South Arcot district

INDIA MINERALS- NON-FERROUS



Non-Metallic Minerals

- **Important Non-Metallic Mineral: Mica**
- Others: **limestone, dolomite and phosphate**

Mica

- Mica is **mainly used in the electrical and electronic industries**
- It can be split into very thin sheets which are tough and flexible
- **Jharkhand** : leading producer of Mica
- Hazaribagh plateau produces a high quality of mica
- **Andhra Pradesh**
- Nellore district
- **Rajasthan**
- A 320 km long belt from Jaipur to Bhilwara near Udaipur
- **Karnataka**
- Mysore and Hasan

- **Tamil Nadu**
- Coimbatore, Tiruchirappalli, Madurai and Kanniyakumari
- **Kerala**
- Alleppey

Energy Resources

- Mineral fuels are **essential for generation of power, required by agriculture, industry, transport and other sectors of the economy**
- Two types -**conventional or non-conventional energy resources**

Conventional Sources of Energy or Non-renewable Source of Energy

- **Exhaustible resources**
- **Examples fossil fuels** like **coal, petroleum and natural gas and Nuclear Energy**

Coal

- **Used for generation of thermal power and smelting of iron ore**
- Coal occurs in rocks **mainly of two geological ages**, **Gondwana and tertiary deposits**
- About **80 per cent of the coal deposits in India is of bituminous type and is of non-coking grade**
- **Gondwana Coal Fields**
- Located in **Damodar Valley**
- They lie in Jharkhand-Bengal coal belt
- important coal fields in this region are **Raniganj, Jharia, Bokaro, Giridih, Karanpura**
- **Largest coal field- Jharia followed by Raniganj**
- Other river valleys are **Godavari, Mahanadi and Sone**

- **Tertiary Coal Fields**
- **Tertiary coals occur in Assam, Arunachal Pradesh, Meghalaya and Nagaland**
- **Darangiri, Cherrapunji, Mewlong and Langrin**
- **Assam**
- **Makum, Jaipur and Nazira**
- **Other Coal Fields**
- **The brown coal or lignite coal occurs in Neyveli of Tamil Nadu**

Petroleum

- Petroleum is known as **liquid gold** because **of its scarcity and diversified uses**
- **Essential source of energy for all internal combustion engines in automobiles, railways and aircraft**
- Crude petroleum consists of hydrocarbons of liquid and gaseous states varying in chemical composition, colour and specific gravity
- It is also **used as a raw material in petrochemical industries** to produce fertilizer, synthetic rubber, synthetic fiber, medicines, Vaseline, lubricants, wax soap and cosmetics, etc.
- **Crude petroleum occurs in sedimentary rocks of the tertiary period**

- Oil exploration and production was systematically taken up by **Oil and Natural Gas Commission (ONGC)** set up in 1956
  - **Assam: Digboi, Naharkatiya and Moran**
  - **Gujarat: Ankaleshwar, Kalol, Mehsana, Nawagam, Kosamba and Lunej**
- **Mumbai High** which **lies 160 km off Mumbai** was discovered in 1973 and production commenced in 1976
  - **Krishna-Godavari and Kaveri basin on the east coast**

There are **two types of oil refineries** in India:

Oil Refineries

- **Field Based Refineries: Digboi** is an example of field based refinery
- **Market Based Refineries: Barauni** is an example of market based refinery

- There are total 21 refineries as on June 2011.

Natural Gas

- The **Gas Authority of India** Limited was set up in 1984 as a public sector undertaking to transport and market natural gas
- Exclusive reserves have been **located along the eastern coast (Tamil Nadu, Odisha and Andhra Pradesh) as well as Tripura, Rajasthan and off-shore wells in Gujarat and Maharashtra**
- According to a survey report, there are indications of huge gas **reserves in Ramathanpuram in Tamil/Nadu state**

Nuclear Energy Sources

- Nuclear energy has emerged as a **viable source** in recent times
- Important minerals used for the generation of nuclear energy are **Uranium and Thorium**

Uranium Deposits in India

- It is found in **Dharwar rock system**
  - **Jharkhand** Singhbhum (along with the copper belt)
  - **Rajasthan** Udaipur, Alwar, Jhunjhunu districts
  - **Chhattisgarh** Durg district
  - **Maharashtra** Bhandara district
  - **Himachal Pradesh** Kullu district

Thorium Deposits in India

- Thorium is mainly **obtained from monazite and ilmenite in the beach sands of Kerala and Tamil Nadu**
- **World's richest monazite deposits occur in Palakkad and Kollam districts of Kerala**
  - **Andhra Pradesh**: Vishakhapatnam in Andhra Pradesh
  - **Odisha**: Mahanadi river delta

History of Nuclear Energy in India

- **Atomic Energy Commission** was established in 1948

- progress could be made only after the establishment of the **Atomic Energy Institute at Trombay** in 1954
- which was renamed as **the Bhabha Atomic Research Centre** in 1967

Important Nuclear Projects

- **Tarapur** (Maharashtra), **Rawatbhata near Kota** (Rajasthan), **Kalpakkam** (Tamil Nadu), **Narora** (Uttar Pradesh), **Kaiga** (Karnataka) and **Kakarapara** (Gujarat)

Non-Conventional or Renewable Energy Sources

- **Sustainable energy resources**
- **Renewable in nature**
- Examples: **Solar, wind, tidal and wave energy, hydro, geothermal and biomass**
- These energy sources are more **equitably distributed and environmental friendly**
- **Cheaper energy** after the initial cost is taken care of.

Solar Energy

- **Sun rays tapped in photovoltaic cells can be converted into energy**
- The two effective processes to tap solar energy are **photovoltaics and solar thermal technology**
- It is **cost competitive, environment friendly and easy to construct**
- Solar energy is 7 per cent more effective than coal
- Used more in appliances like heaters, crop dryers, cookers, etc
- **The western part of India has greater potential** for the development of solar energy in Gujarat and Rajasthan

Wind Energy

- Wind energy is absolutely **pollution free, inexhaustible source of energy**
- The **kinetic energy of wind, through turbines is converted into electrical energy**
- The **permanent wind systems such the trade winds, westerlies and seasonal wind like monsoon have been used as source of energy**
- **Land and sea breezes**
- The country's potential of wind power generation exceeds 50,000 megawatts
- **Rajasthan, Gujarat, Maharashtra and Karnataka**, favourable conditions for wind energy

Tidal and Wave Energy

- Ocean currents are the store-house of infinite energy
- **Large Potential: West coast of India**
- But these waves have not yet been utilised properly because of lack of technology'.

Geothermal energy

- **When the magma from the interior of earth, comes out on the surface, tremendous heat is released**
- **This heat energy can successfully be tapped and converted to electrical energy**
- Apart from this, the hot water that gushes out through the **geyser**
- **Example: Manikaran in Himachal Pradesh**

- **The first successful (1890) attempt to tap the underground heat** was made in the city of **Boise, Idaho (U.S.A.)**
- It can be used as an alternative to conventional energy sources

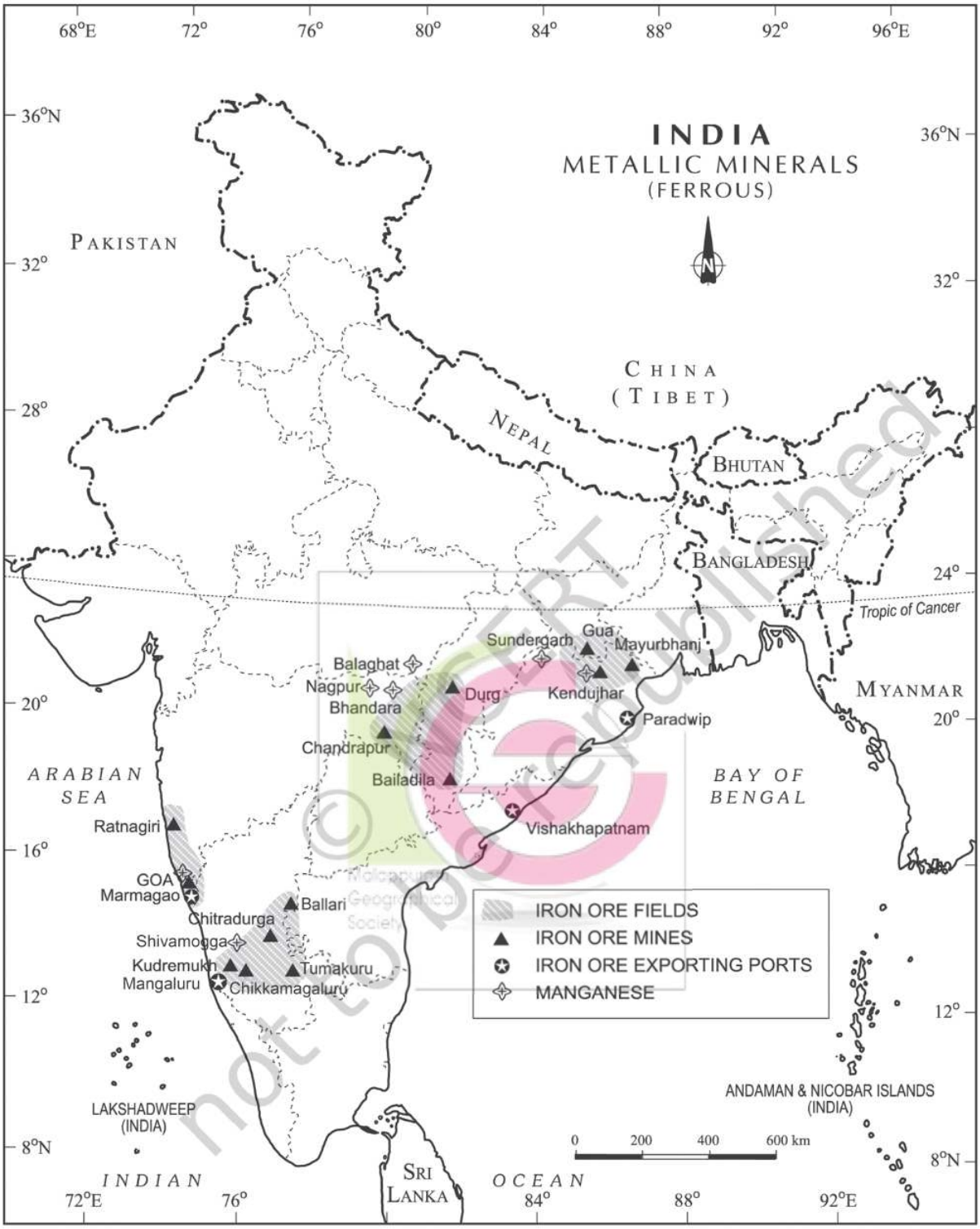
Bio-Energy

- **Bio-energy refers to energy derived from biological products which includes agricultural residues, municipal, industrial and other wastes**
- It can be converted into electrical energy, heat energy or gas for cooking
- This will **improve economic life of rural areas in developing countries**
- Reduce environmental pollution
- **Enhance self-reliance and reduce pressure on fuel wood**
- **Example: Okhla in Delhi**

Conservation of Mineral Resources

- **Adoption of renewable resources like solar power, wind, geothermal energy**
- **Use of scrap metals**
- **Use of substitutes for scarce metals**
- **Export of strategic and scarce minerals must be reduced**, so that the existing reserve may be used for a longer period

> - **First Atomic power station in India: Tarapur (Maharashtra)**
> - **Minerals which is known as brown diamond: Lignite**



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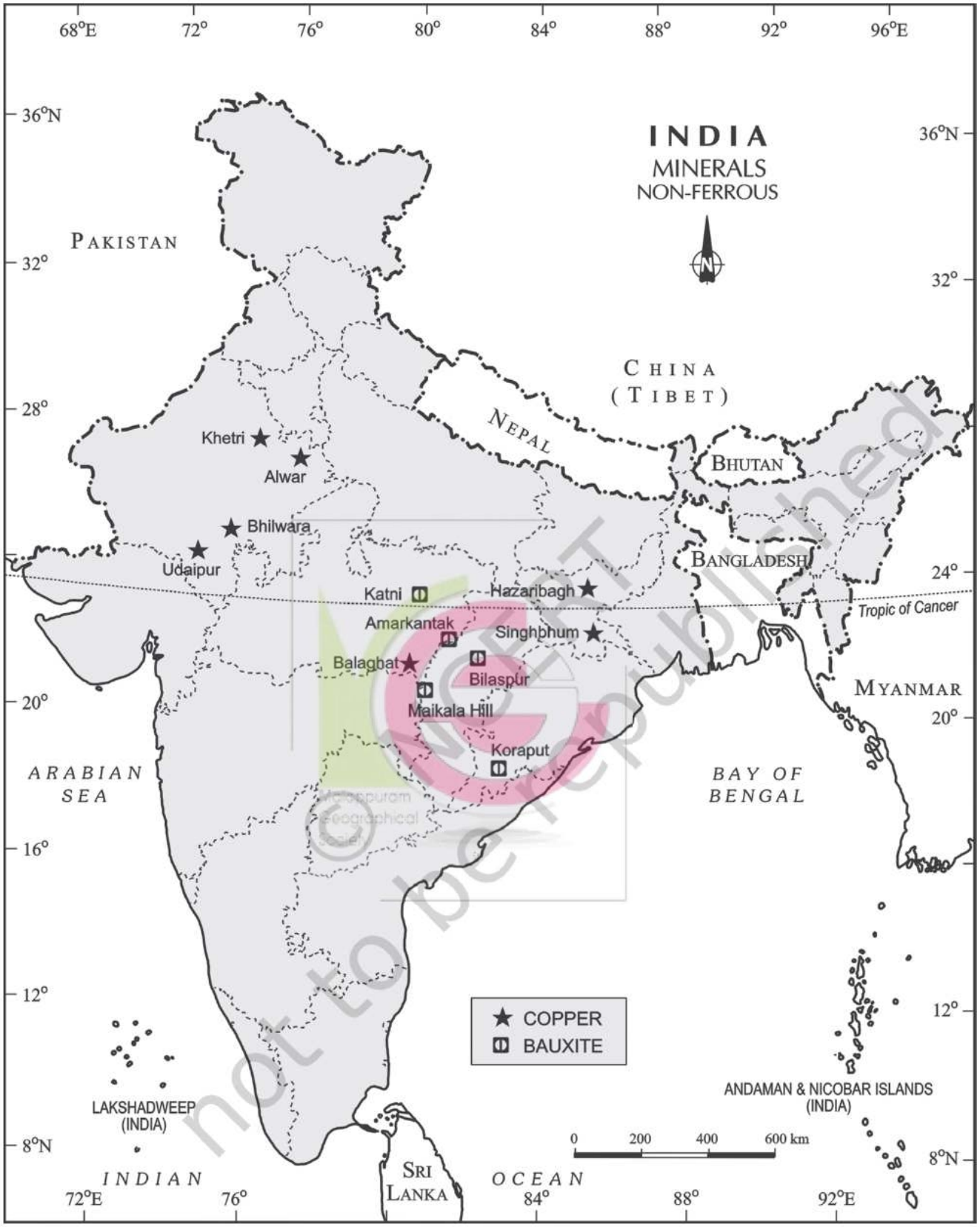

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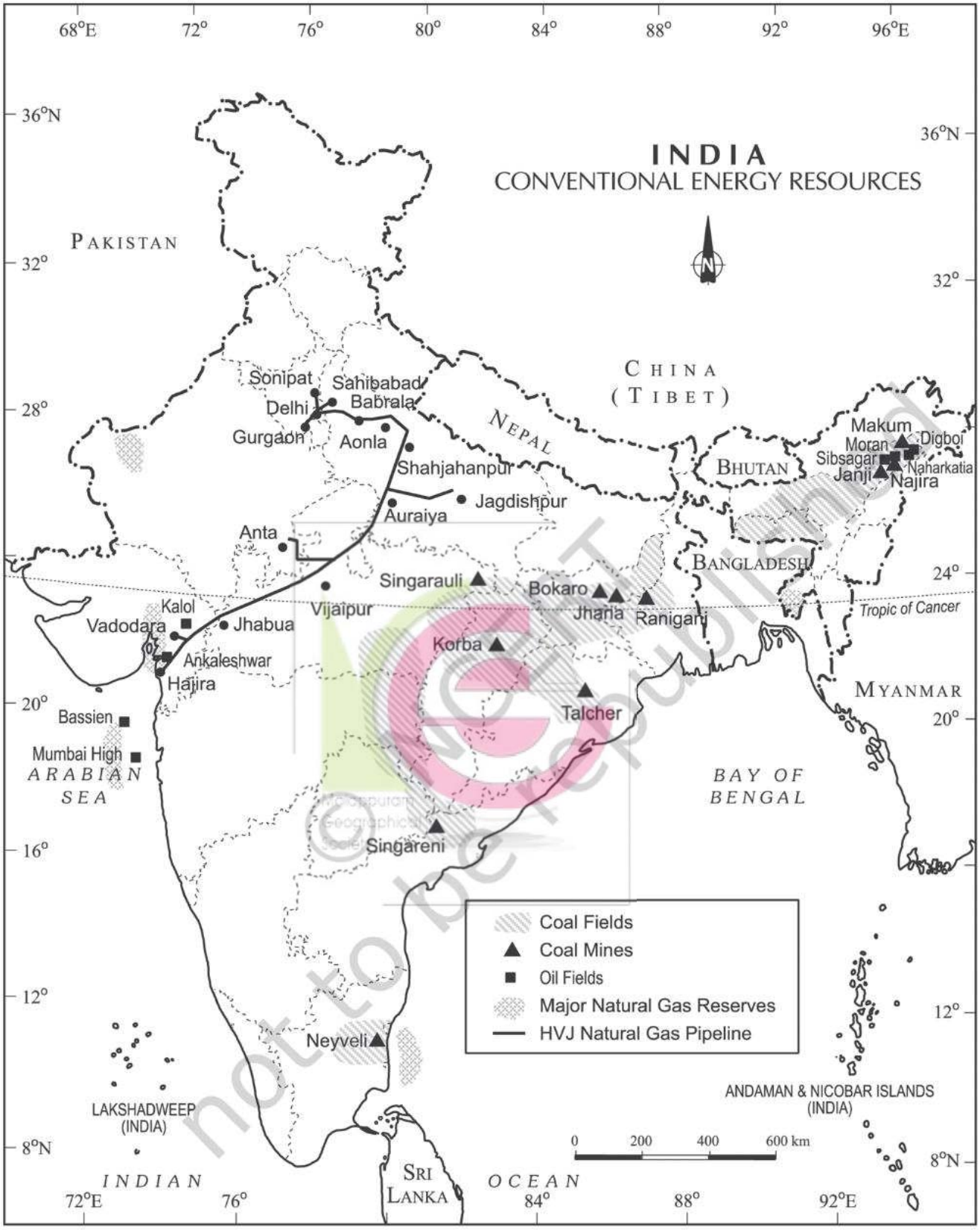

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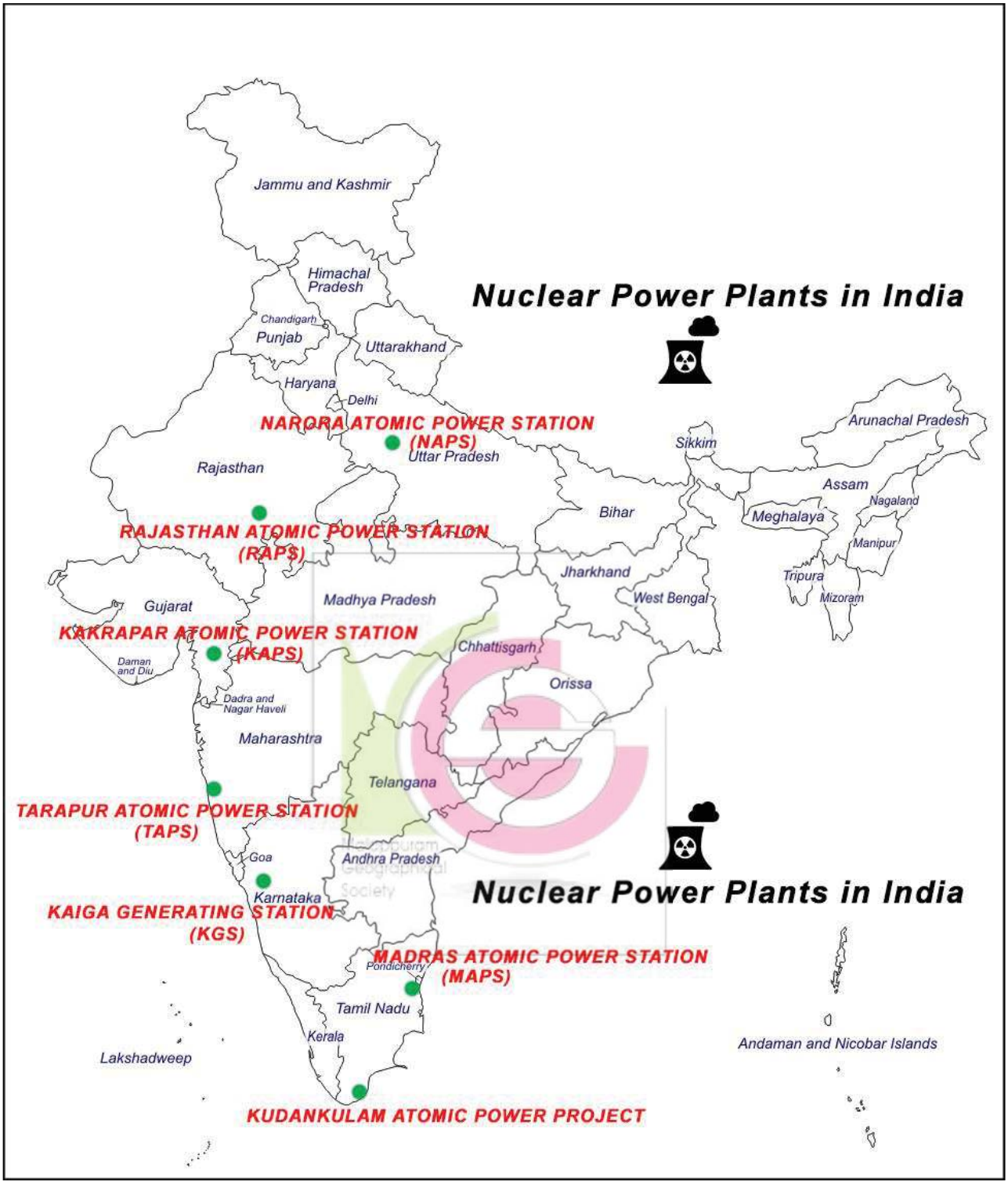
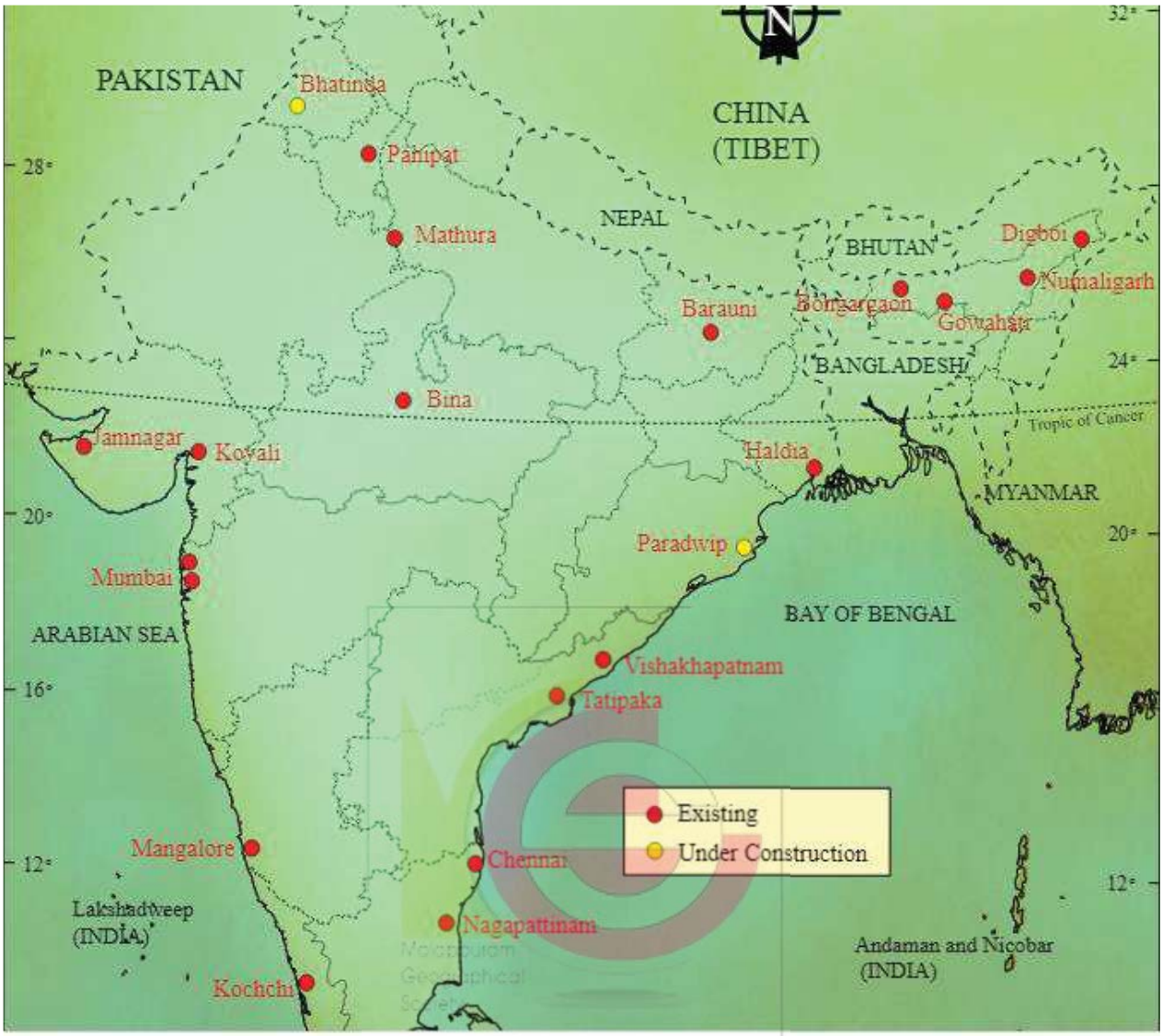
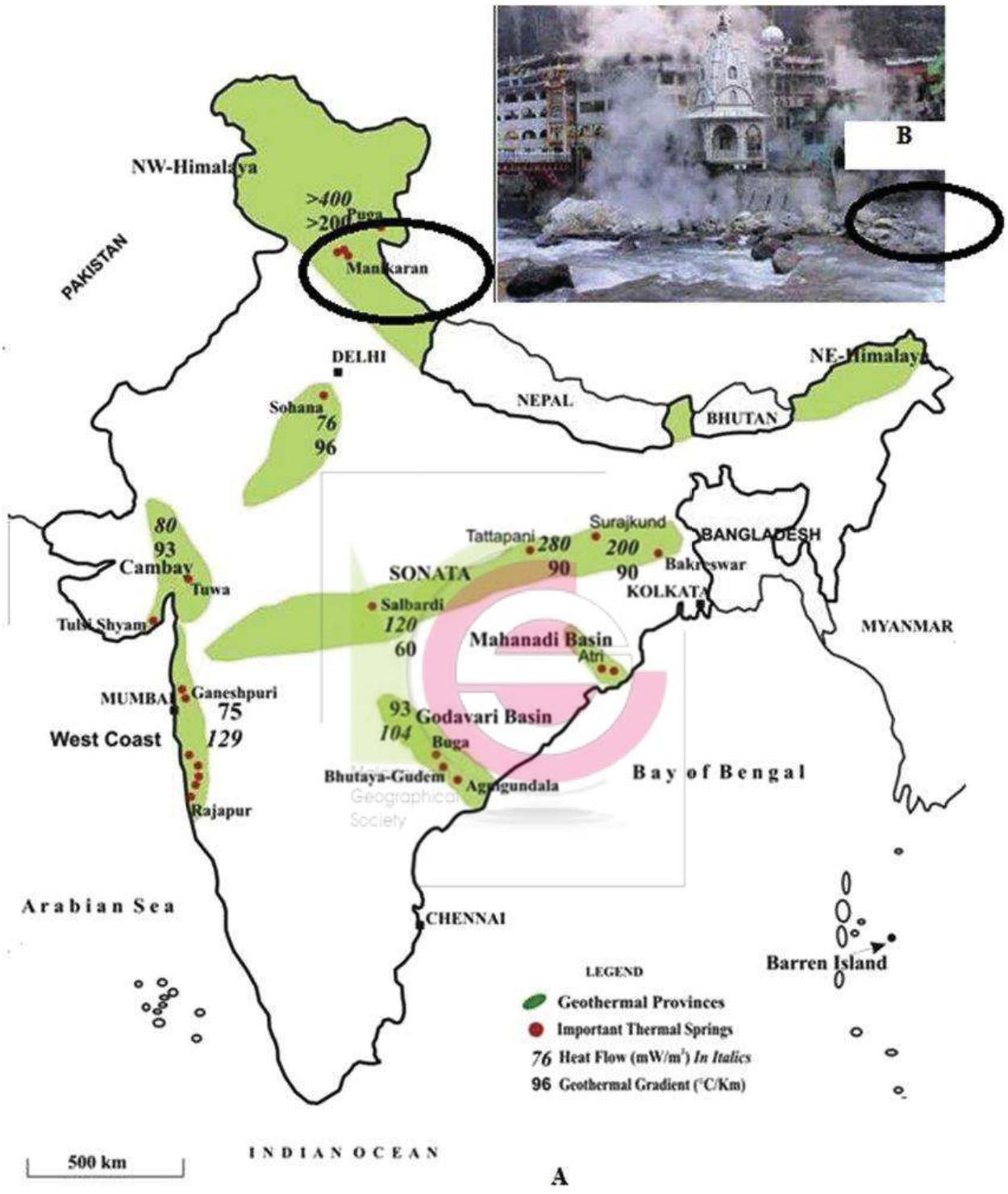

Nuclear Power Plants in India
Jammu and Kashmir
Himachal Pradesh
Chandigarh
Punjab
Uttarakhand
Haryana
Delhi
NARORA ATOMIC POWER STATION (NAPS)
Uttar Pradesh
Rajasthan
RAJASTHAN ATOMIC POWER STATION (RAPS)
Gujarat
KAKRAPAR ATOMIC POWER STATION (KAPS)
Daman and Diu
Dadra and Nagar Haveli
Maharashtra
TARAPUR ATOMIC POWER STATION (TAPS)
Goa
Karnataka
KAIGA GENERATING STATION (KGS)
Madhya Pradesh
Chhattisgarh
Orissa
Telangana
Andhra Pradesh
Pondicherry
MADRAS ATOMIC POWER STATION (MAPS)
Tamil Nadu
Kerala
Lakshadweep
KUDANKULAM ATOMIC POWER PROJECT
Bihar
Jharkhand
West Bengal
Sikkim
Arunachal Pradesh
Assam
Nagaland
Meghalaya
Manipur
Tripura
Mizoram
Andaman and Nicobar Islands
Nuclear Power Plants in India

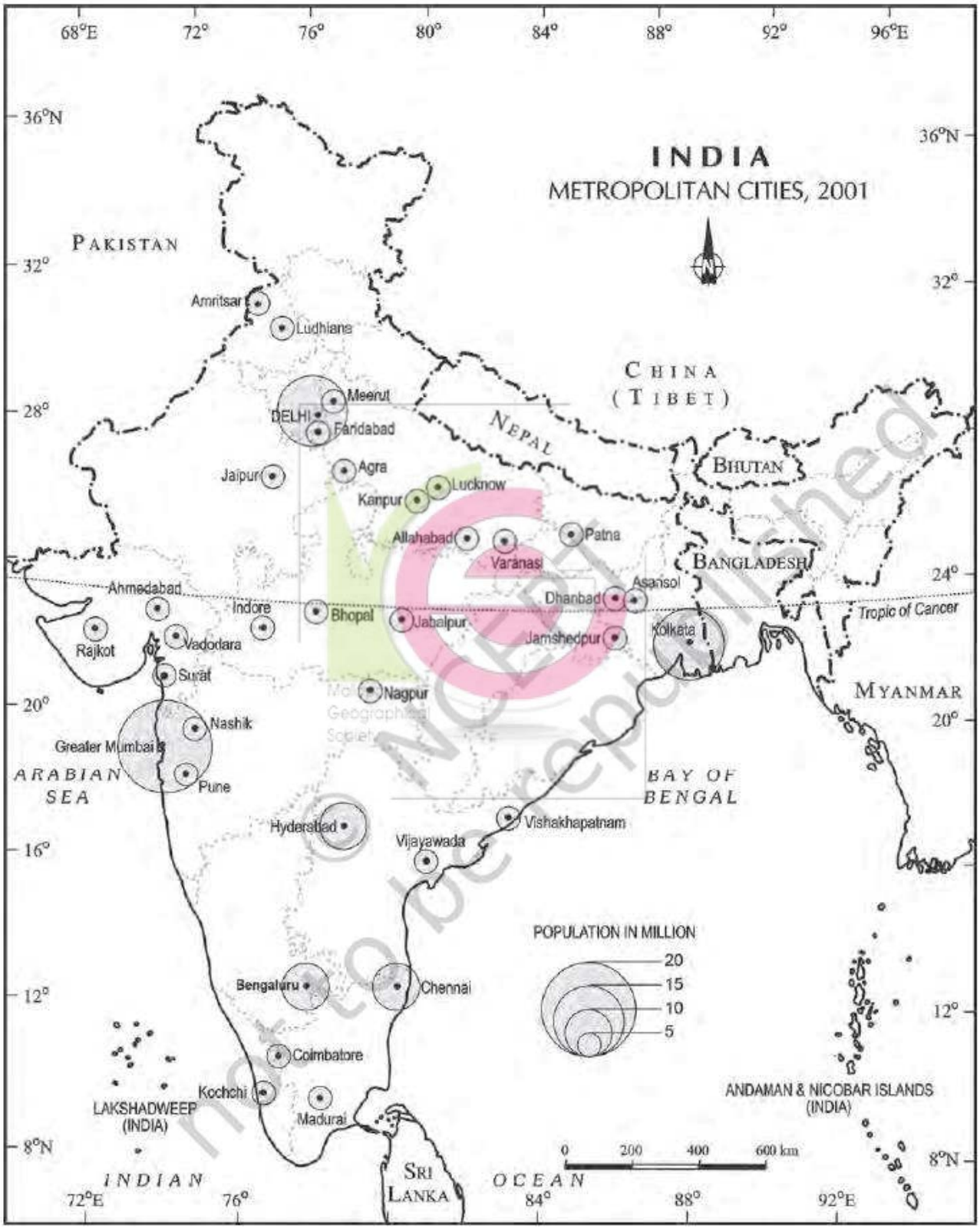
INDIA-OIL REFINERIES



Geothermal Energy- Manikaran



INDIA METROPOLITAN CITES



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