

Principle of Economic Geography

Unit1

Dr. Pradeep Kumar Pant

**Department of Geography and
NRM**

Uttarakhand Open University

Teenpani, Haldwani, Nainital

Mob 9456545775,8218321201

E-mail pkpant@uou.ac.in

- **Engineering Industries**
- **Cotton Textile Industries**
- **Spatial variations in transportation costs**
- **Water Transport: Inland Waterways and Ocean Transport**

Engineering industry

- Secondary activities or manufacturing change raw materials into products of more value to people.
- Industry refers to an economic activity that is concerned with production of goods, extraction of minerals or the provision of services.
- Industries may be agro , mineral , marine and forest based depending on the type of raw materials they use.
- Agro based industries use plant and animal based products as their raw materials. Food processing, vegetable oil, cotton textile, dairy products and leather industries are examples of agro-based industries.
- Mineral based industries are primary industries that use mineral ores as their raw materials. The products of these industries feed other industries.

- Marine based industries use products from the sea and oceans as raw materials. Industries processing sea food or manufacturing fish oil are some examples.
- Forest based industries utilise forest produce as raw materials. The industries associated with forests are pulp and paper, pharmaceuticals, furniture and buildings.
- Industries can be classified into private sector, state owned or public sector, joint sector and cooperative sector.
- Private sector industries are owned and operated by individuals or a group of individuals.
- The public sector industries are owned and operated by the government, such as Hindustan Aeronautics Limited and Steel Authority of India Limited.

- Joint sector industries are owned and operated by the state and individuals or a group of individuals. Maruti Udyog Limited is an example of joint sector industry.
- Co-operative sector industries are owned and operated by the producers or suppliers of raw materials, workers or both. Anand Milk Union Limited and Sudha Dairy are a success stories of a co- operative venture.
- SUDHA DAIRY
- The factors affecting the location of industries are the availability of raw material, land, water, labour, power, capital, transport and market.
- An industrial system consists of inputs, processes and outputs. The inputs are the raw materials, labour and costs of land, transport, power and other infrastructure

INDUSTRIAL REGIONS

- Industrial regions emerge when a number of industries locate close to each other and share the benefits of their closeness.→
- India has several industrial regions like Mumbai-Pune cluster, Bangalore-Tamil Nadu region, Hugli region, Ahmedabad- Baroda region, Chotta nagpur industrial belt, Vishakhapatnam-Guntur belt, Gurgaon-Delhi-Meerut region and the Kollam-Thiruvananthapuram industrial cluster.
- The world's major industries are the iron and steel industry, the textile industry and the information technology industry.→
- The countries in which iron and steel industry is located are Germany, USA, China, Japan and Russia.→
- Textile industry is concentrated in India, Hong Kong, South Korea, Japan and Taiwan.

- The major hubs of Information technology industry are the Silicon valley of Central California and the Bangalore region of India.
- Like other industries iron and steel industry too comprises various inputs, processes and outputs. This is a feeder industry whose products are used as raw material for other industries.

1. STEEL INDUSTRY-The inputs for the industry include raw materials such as iron ore, coal and limestone, along with labour, capital, site and other infrastructure. The process of converting iron ore into steel involves many stages.

- The raw material is put in the blast furnace where it undergoes smelting
- It is then refined. The output obtained is steel which may be used by other industries as raw material.

- Steel is tough and it can easily be shaped, cut, or made into wire. Special alloys of steel can be made by adding small amounts of other metals such as aluminium, nickel, and copper. Alloys give steel unusual hardness, toughness, or ability to resist rust.
- Before 1800 A.D. iron and steel industry was located where raw materials, power supply and running water were easily available.
- A the important steel producing centres such as Bhilai, Durgapur, Burnpur, Jamshedpur, Rourkela, Bokaro are situated in a region that spreads over four states — West Bengal, Jharkhand, Orissa and Chhattisgarh.
- Bhadravati and Vijay Nagar in Karnataka, Vishakhapatnam in Andhra Pradesh, Salem in Tamil Nadu are other important steel centres utilising local resources.

- **TATA STEEL INDUSTRY**→ Before 1947, there was only one iron and steel plant in the country – Tata Iron and Steel Company Limited (TISCO). It was privately owned. After Independence, the government took the initiative and set up several iron and steel plants. TISCO was started in 1907 at Sakchi, near the confluence of the rivers Subarnarekha and Kharkai in Jharkhand. Geographically, Jamshedpur is the most conveniently situated iron and steel centre in the country.
- **Pittsburgh**→ Pittsburgh It is an important steel city of the United States of America. The steel industry at Pittsburgh enjoys locational advantages. Some of the raw material such as coal is available locally, while the iron ore comes from the iron mines at Minnesota, about 1500 km from Pittsburgh. Between these mines and Pittsburgh is one of the world's best routes for shipping ore cheaply – the famous Great Lakes waterway.

- The textile industry can be divided on the basis of raw materials used in them. Fibres are the raw material of textile industry.
- Fibres can be natural or man-made. Natural fibres are obtained from wool, silk, cotton, linen and jute. Man made fibres include nylon, polyester, acrylic and rayon.
- The cotton textile industry is one of the oldest industries in the world. Till the industrial revolution in the 18th century, cotton cloth was made using hand spinning techniques (wheels) and looms.↵
- Today India, China, Japan and USA are the important producers of cotton textiles.↵
- The Muslins of Dhaka, Chintzes of Masulipatnam, Calicos of Calicut and Gold-wrought cotton pieces of Burhanpur, Surat and Vadodara were known worldwide for their quality and design.

Thanks

COTTON MANUFACTURING REGIONS IN INDIA

- **INFORMATION TECHNOLOGY**— The information technology industry deals in the storage, processing and distribution of information. Today, this industry has become global. This is due to a series of technological, political, and socio-economic events.—
- There are other emerging information technology hubs in metropolitan centres of India such as Mumbai, New Delhi, Hyderabad and Chennai. Other cities such as Gurgaon, Pune, Thiruvanthapuram, Kochi and Chandigarh are also important centres of the IT industry.

Cotton textile industries

- as 90 countries are producing cotton yarn and/or cloth in varying quantity. But the main Cotton textile industry is quite widespread in the world and as many concentration of textile industry is limited to few countries.
- There are two types of production related with cotton textile, one is the production of cotton yarn and another is the production of cotton cloth. Although many countries produce both the items.

Important producers of cotton yarn and their production:

Leading producers of cotton yarn in the world:

Countries	Production (in' 00 million sq metres)	Percentage of world production
China	2256	25.7
India	1250	14.2
Russia	865	9.8
USA	373	4.2
Japan	177	2.0
Germany	90	1.0
Hong Kong	82	0.9
Egypt	61	0.7
France	81	0.9
Romania	54	0.6

- The other producers of cotton cloth in the world are Brazil, Spain, Pakistan, Turkey, Uzbekistan, Bolivia, Vietnam, Korea Republic, Czech Republic, Portugal, Belgium, Poland, South Africa and Syria.
- The cotton textile industry is fairly widespread in the world; however, there are areas of concentration. A brief description of the important areas of cotton textile industry is given here to explain the general pattern of distribution

1. China:

- Cotton textile is one of the oldest types of industry in China. Since very old days, weaving and spinning was normal practice of village weavers and most of the output was contributed by cotton industry. Several characteristics of this industry help to explain this locational diversity and concentration.
- The first modern factory was a textile mill in Shanghai built in 1888. Soon Shanghai had become a major textile centre along with South Manchuria.
- In the first place, there is a ready market for its product. With its vast population, China has a vast domestic market for cheap cotton goods, and its low labour costs, based on its large labour supplies, enable to sell textile abroad.

2. India:

- India is the second largest cotton textile producer in the world. The first cotton mill in India was erected in Calcutta in 1818, while first mill in Bombay (now Mumbai) was started in 1854, which was destined to become the home of the cotton mill industry.
- The early concentration of the cotton textile industry in Mumbai was governed not so much by natural and permanent factors as by other advantages, such as abundance of capital and credit facilities, the presence of cheap and speedy means of transport and the temporary growth of the demand for yarn from China, which Mumbai was in an exceptionally favourable situation to meet.

- At present, there are more than 1,220 cotton mills in India; of these, 283 are composite mills and the remaining are the spinning mills. Production wise, Maharashtra tops with 16.4 per cent yarn and 52.3 per cent cloth production in the country, followed by states of Tamil Nadu (30.4% yarn and 8.8% fabric), Gujarat, Uttar Pradesh, Madhya Pradesh, West Bengal, Rajasthan, Punjab, Karnataka, etc.

3. Russia:

- Russia ranks third in cotton cloth production in the world and it produces about ten per cent of the total cotton cloth of the world. Although in Russia textile industry has not received priority in its development plans.
- Before Revolution (1917) the cotton textile industry was localised in Moscow and Ivanovo region but now it has developed in other regions also.

4. USA:

- USA is the leading cotton textile producer in the world. It ranks third in cotton yarn production and fourth in cotton cloth production in the world. The two factors responsible for its growth and development are: (a) capital, and (b) the local market.

In USA cotton textile industry is localised in the following regions:

(i) New England:

(ii) Mid-Atlantic:

(iii) Southern States:

5. Japan:

- After China and India, Japan is the third leading Asian country in cotton textile production. The first cotton mill in Japan was established in 1862 at Kagoshima, but it was about 15 years later that cotton mills began to be started in quick succession, especially in and around the city of Osaka.
- **The main geographical factors helping in the establishment of a successful cotton industry in Japan are:**
 - (i) A suitable climate,
 - (ii) Cheap water-power,
 - (iii) Transport facilities,
 - (iv) Supply of cheap and skilled labour, and
 - (v) The proximity to the large markets of China and India.

The Japanese industry is said to enjoy the following advantages over her competitors:

- (i) Cheaper and efficient labour
 - (ii) Greater proximity to the large consuming markets
 - (iii) Better organisation
 - (iv) Better service from plant
- Japan has to import almost all of the raw materials needed for textile industry. The pioneer attempts to set up industries were made around cotton-growing tracts of Nobi and Kanto regions. Now the major textile centres are located at Chukyo, Hanshin, Toyama, Kyushu and Keihin and also at Osaka and Nagoya.
 - Spatially, majority of the cotton mills are located within the northern half of Japan.

The bulk of the textile goods are produced in following regions:

- (i) The Kwantō Plain,
 - (ii) Nagōwa,
 - (iii) The Kinki Plain, and
 - (iv) Along the Northern Coast.
- As the industry became more and more export-oriented, textile establishment gradually shifted towards coasts. At the beginning of the decade of 1990s, old obsolete mills closed down their productions. The new mills with updated machineries came into existence. Most of the Japanese textile mills are now using the latest technologies.

6. Germany:

- Germany is one of the leading producers of cotton textile. The history of cotton textile industry in Germany is quite old. Initially, the industry was set up depending upon imported cotton and most of the industries were developed along Rhine river valley. But Ruhr industrial region soon became a leading textile centre.
- The cotton manufacturing centres of Germany are grouped into the following three groups:

7. Hong Kong:

Hong Kong ranks 7th in production of cotton cloth in the world. The industry in Hong Kong was set up by the refugees from communist China in 1949. Hong Kong is a free trade area and one of the principal entrepot ports of the world. Manufactured goods, particularly textile provide three-fourths of total export earnings.

8. The United Kingdom:

UK was the leading cotton manufacturing country in the world, but it no longer dominates the world in cotton textile production. The history of cotton textile industry cannot be completed without describing the contribution of United Kingdom. The Industrial Revolution in the 18th century gave the impetus to the development of cotton textile industry in Great Britain. The subsequent invention of spinning machines encouraged the growth.

9. Other Countries:

- In Europe other cotton textile-producing countries are France, Italy, Switzerland, Romania, Czech Republic, Belgium, Poland and Spain. France's cotton textile industry has had a long history.
- The textile industry of France was developed on imported cotton, particularly from USA. The industry is concentrated in the north-eastern industrial region. The major centres of textile-producing centres are Belford, Kolman and Nausi.

Thanks

Spatial variations in transportation costs

- The study of the economic aspects of transport, specially the transport cost, is of prime importance, both to economists as well as to geographers.
- Until recently, geographers have tended to ignore the fundamental importance of cost and price as influences, but now they intend to study the economic aspects realising that an efficient transportation system in many ways is the lifeblood of the economic system.
- Therefore, the study of the nature of transport costs and pricing, at least insofar as they affect the spatial patterns of transport phenomena, is a basis to transport geography.

The Structure and Spatial Variations in Transport Costs:

- In dealing with transport costs, the distinction between private cost and social cost is important. The former, as the name suggests, are costs incurred by the individual or transport operator in providing a particular services.
- As Lipsey (1971) says, “this is the opportunity cost to the firm (or individual) or the resources used These are usually based on the market value of factors purchased”.
- The identification of these costs is not easy. Gwilliam and Mackie (1975) have stated that “the non-storable nature of the product and the differences in the needs for and methods of providing and financing track and terminal facilities between modes, make the transport sector as a complex one even in this respect”. On the other hand, social costs are different.

- The two broad categories of transport costs are ‘fixed costs’ (usually called by economists as inescapable costs) and ‘variable costs’ (escapable costs).

Fixed Costs:

- These are costs, which are incurred before any traffic at all passes. They include the costs: (i) of providing the infrastructure (i.e., the roads, the port or the railway line); (ii) of providing, equipping and staffing the terminal facilities (i.e., bus depots, railway stations or airports); (iii) of providing, managerial, administrative and maintenance staff and their offices and workshop.
- These costs are ‘inescapable’ because they cannot be avoided except by abandoning the whole operation. They also do not vary with the level of traffic, but remain independent of it. A railway signal-box of the old fashioned kind, controlling a short stretch of line, must be manned (and thus incurs wage costs) whether there is one train or six trains per hour over the line.

Variable Costs:

- These are costs incurred by the actual movement of traffic and therefore vary with the level of the traffic passing. They include the cost of fuel, crew wages and the maintenance of vehicles due to the operation of those vehicles in traffic service, for example, the replacement of worn bus tyres or routine inspection of an aircraft after so many hours of being airborne.:
- They are called ‘escapable’ because they can be avoided or escaped by not running a particular train, suspending a particular flight or a private motorist leaving his or her car in the garage and walking to the shops.

Fixed and variable costs of the main modes of transport:

Mode	Fixed costs	Variable costs
Private car	Insurance, road fund tax, depreciation, interest	Petrol, oil, vehicle maintenance and tyres
<u>Public service</u>	<u>Administrative and workshop</u>	<u>Fuel oil, lubricants, maintenance</u>
<u>vehicle</u>	<u>overheads, depreciation, interest, insurance and licences</u>	<u>and cleaning, labour costs</u>
<u>Rail</u>	<u>Track, administrative and technical overheads, terminal costs, depreciation and interest</u>	<u>Fuel, vehicle servicing and maintenance, labour costs</u>
<u>Air</u>	<u>Terminal and engineering overheads, insurance, depreciation and interest, central administration</u>	<u>Fuel, landing fees, certain servicing costs and labour costs</u>
<u>Sea</u>	<u>Terminal and engineering overheads, insurance, depreciation and interest</u>	<u>Fuel and oil, in voyage maintenance, crew costs and expenses</u>

- The transport costs per unit varies with the increase in traffic, it falls off rapidly in case of rail than road. If traffic is light, unit costs of rail are impossibly high, but if flows are very heavy unit costs are greatly reduced and rail becomes very competitive.
- All transport operations also give rise to terminal costs. These are both fixed and variable. The proportion of terminal costs in the total costs varies between modes. In road haulage the terminal costs can be negligible.
- On the other hand, to send goods by rail may entail conveying them by lorry from factory to goods depot, loading them into wagons and reversing the process at the other end.

- The transport costs are also proportional to distance; in other words, each additional unit of distance added an equal increment of cost to total transportation costs.
- As result of these varying cost characteristics, each transportation medium offers advantages over different length of haul. Figure 16.4 depicts an idealised transport cost curve for three transportation media.

Thanks

Water Transport: Inland Waterways and Ocean Transport

- Two major categories under which water transport can be divided are as follows: 1. Inland Waterways 2. Ocean Transport!
- Since, prehistoric times, water transport has been used for carrying both men and goods. Water transport probably developed before the use of animals because waterway formed an easy means of travel in places where dense forests on land hindered movement.
- The range and importance of water transport was increased when power of wind was harnessed by use of boats or some other medium. At first, boats were small and confined mainly to inland waters and sheltered coastal areas.

Water transport can be divided into following two categories:

- (i) Inland waterways, and
- (ii) Ocean transport.

1. Inland Waterways:

- There are three types of inland waterways, namely, rivers, rivers which have been modified or canalised, and specially constructed canals. In earlier times much, perhaps most, of the inland carriage of commodities was by water.
- This was possible when vessels were small, the volume of traffic limited, and the time factor was not particularly pressing. But during the 18th century, ships began to grow in size, trade began greatly to expand, and speed of carriage came to be of greater importance.

The chief advantages are:

- (i) There is no track to lay or maintain, although dredging may be necessary in the case of natural waterways;
- (ii) They may provide the only practicable routes, e.g., in very difficult, mountainous country or in areas of very dense tropical forest; and
- (iii) Waterways, under favourable conditions, provide cheap transport for heavy, bulky, imperishable commodities such as coal, ore, timber, cement.

The principal disadvantages of inland waterways are:

- (i) Rivers may involve devious journeys and may flow in the wrong direction from the point of view of trade;
- (ii) Otherwise navigable rivers may be interrupted by falls or rapids while canals require locks if there are differences in level;
- (iii) River levels may change seasonally and freezing may occur in winter causing stoppages in navigation;
- (iv) Canal construction involves heavy capital outlay and canals require constant maintenance and sometimes dredging, and may also require a water supply;
- (v) Transport by water is slow in comparison with most other forms of overland transport and carriage by water is generally unsuitable for perishable produce; and
- (vi) Waterways are less flexible than either roads or railways which can more easily adapt themselves to changing industrial location.

A brief review of inland waterways is as follows:

Europe:

- In Europe, France, Germany, Belgium, Netherlands as well as Russia, have very extensive inland waterways including rivers and canals. France is having 5,600 km of navigable rivers and another 4,800 km of canals.
- The major French rivers, e.g., Loire, Garonne, Seine, Rhone, Meuse and Moselle have been modified and are linked by canal systems so as to travel entirely by river and canals from Mediterranean Sea to English Channel or from Rhine to Atlantic Ocean. On the other hand, Germany is having 7,040 km of inland waterways.

Waterways of the Germanic-Baltic Lowlands:

- An extensive network of waterways consisting of east-west canals joining the north-south flowing rivers crosses the northern German plain. The Mittelland Canal, also known as the Midland Canal was built in 1938, joins the three major rivers of Ems, Weser and Elbe. Kiel Canal is 96 km long, links the Elbe estuary to the Baltic Sea. The Dortmund-Ems canal runs north-south and links the Rhine with ports of Bremen and Emden.
- **Waterways of Southern Germany:**
- Danube is the main river, which flows through seven countries – Germany, Austria, Czech Republic, Hungary, Yugoslavia, Romania and Bulgaria and navigable for about 2,400 km. Canals like Ludwing Canal, Rhone—Rhine Canal provide a good inland waterway.

North America:

- In North America the rivers of most use for navigation are the Mississippi and Missouri and the most important canals are those of St. Lawrence, which unites the Ontario and St. Lawrence; the Sault Sainte Marie canal, between Superior and Huron; the canal which links the Chesapeake to the Ohio; the New York canal; and the canals between North Allegheny and Erie.
- The length of navigable waterways in United States is over 36,072 km. The Mississippi river system, largest of all, provides more than 8,000 kilometres of waterways with depths of 3 metres or more, including the main river trunkline from Minneapolis to the Gulf of Mexico — a distance of more than 12,880 kilometres. The Missouri, a tributary of Mississippi, is navigable for 1,216 km to Sioux City, Iowa.

Asia:

- Asia is not having elaborate system of inland waterways, but rivers in many countries are used as inland waterways.
- In China, the rivers have made a significant contribution to the development of commerce. The three great rivers, the Hwang-ho, the Yang-tse-kiang and the Sikiang, cross the country from west to east. China's greatest river is the
- Yang-tse-kiang, the most important waterway for navigation in the country. It is doubtful whether there is another equally extensive region of wealth in the world where the people depend as solely upon a single artery of traffic and upon one entrepot as do the inhabitants of the Yangtse basin.

Africa:

- In Africa, some rivers are navigable, that too for a very limited length. The Nile is the most important river in north-east Africa, but its great defect is the succession of cataracts. In its upper course the Nile has rapids and falls; in its middle course there are cataracts. It is navigable in the delta and in its lower course.
- **South America:**
- South America is having some long rivers but their use as inland waterways is limited. Amazon River is the longest river of the continent. But till now the Amazon system is of relatively little use, because the region through which the river flows is densely forested, scantily populated, undeveloped and largely unexplored.

2. Ocean Transport:

- Ocean transport is the most important water transport, because it has certain advantages over land carriage. The sea offers a ready-made carriageway for ships which, unlike the roadway or railway, requires no maintenance.
- Water surfaces are two-dimensional and, although sea-going vessels frequently keep to shipping lanes, ships can travel, within a limited number of constraints, in any direction.
- Because of floatability and reduced friction, ocean vessels are capable of carrying far greater loads and far greater weights than can be handled even by the longest railway train, the most powerful lorry and trailer, or the largest aircraft; accordingly, ocean transport is usually the cheapest of all forms of transport.

- The most spectacular development, however, has been the appearance of bulk-carriers, the most important of which are tankers, the product of the oil age. Recent years have witnessed a tremendous growth in the size of tankers, a number of which now exceed 5, 00,000 tons dead-weight.
- Today, more than half of the world's merchant shipping tonnage comprises tankers, a fact indicative of the great importance of oil in the modern world.
- Although ships have freedom of movement and are capable of going virtually anywhere on the ocean surface, they tend to keep to certain "lanes". They do so because of: (i) physical conditions, and (ii) economic considerations.

The principal ocean trade routes of the world are as follows

Figure 13.6
Major Ocean Trade Routes of the World



The North Atlantic Ocean Route:

- The North Atlantic Ocean Route has the greatest traffic of all ocean routes. Nearly one-fourth of the tonnage of the world's merchant vessels serves this route. In volume and variety of cargo, this route far exceeds any other.
- This route connects the ports of Western Europe with those on the east coast of North America. These two regions are the most populous and highly developed regions in the world.
- North America and Western Europe are the world's greatest producers of goods of quantity and diversity. Ports on the western coast of Europe are Glasgow, Liverpool Manchester, Southampton, London, Rotterdam, Bremen, Bordeaux and Lisbon. Ports on the eastern coast of the USA are Quebec, Montreal Halifax, St. John, Boston, New York, Baltimore, Charleston Galveston and New Orleans.

The Suez Canal or Mediterranean Asiatic Route:

- This route is second to the North Atlantic in respect of volume of traffic. It commands the markets of eastern Africa, Iran, Arabia, India, the Far East, Australia and New Zealand. In fact, the route passes through the heart of the world and touches more lands and serves more people than any other route. Throughout its many ports of call, it reaches about three-quarters of the total population of the globe.
- After crossing the Red Sea, the route follows two directions – one along the eastern coast of Africa to Durban; another to farther east – to India, Australia, etc. Ports of departure are London, Liverpool, Southampton, Hamburg, Rotterdam, Lisbon, Marseilles, Genoa and Naples. The ports of call are Aden, Mumbai, Kolkata, Rangoon, Penang, Singapore, Manila, Hong Kong, Perth, Adelaide, Melbourne, Sydney, Mombasa, Zanzibar, Mozambique and Durban.

The Cape of Good Hope Route

- This route was once the subsidiary alternative to Suez Canal route, but because of its long and circuitous journey, was avoided by most of the shipping companies. During the closure of Suez Canal in 1967 all the ships had no choice but to take this route.
- Even after Suez Canal reopened in 1975, much trade continues to follow this route because tankers and other vehicles nowadays are much larger. As the Suez Canal can only accommodate ships of around 20,000 tons capacity and toll charges are high, the Cape route is growing in importance.
- It has several other advantages. With the greater economic development of the recently independent African nations and the exploitation of their rich natural resources such as gold, copper, diamonds, tin, chromium, manganese, cotton, oil palm, groundnuts, coffee and fruits, the volume of traffic round the Cape of Good Hope and from ports in both East and West Africa is on the increase.

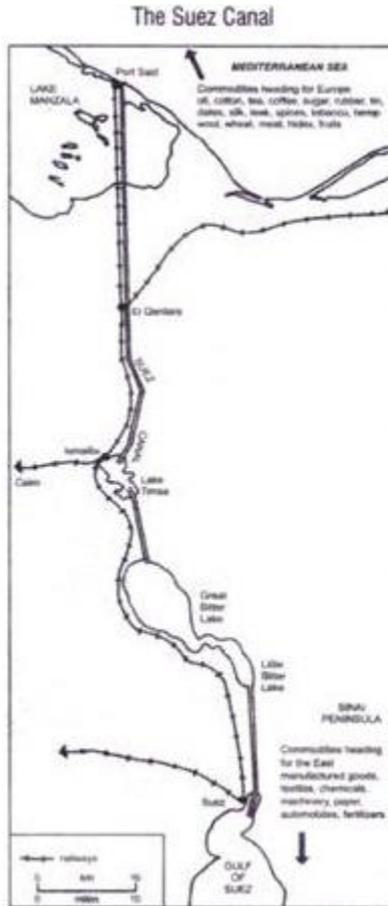
The Panama Canal: West Indian Central American Route:

- The construction of Panama Canal was completed in 1913. The Panama Canal is 'the gateway to the Pacific' and eliminated the long and hazardous voyage round the Cape Horn. It has benefited on both Atlantic and Pacific seaboard, facilitating trade in minerals, oil, foodstuffs, raw materials, and manufactured products. But the greatest benefits have accrued to traffic between the east and west coasts of USA.

The Suez Canal:

- The Suez Canal is one of the great international waterways of the world — cuts across the Isthmus of Suez and provides navigational facilities between the Mediterranean Sea and the Indian Ocean.
- The history of a canal connecting the Mediterranean with the Red Sea dates back to 13th century B.C. when Nile-Red Sea canal is known to have been in use until the end of 8th century AD. From 16th century onward one or the other of European powers became interested in the idea of either reopening the old waterway or cutting a new one from the Mediterranean.
- In 1834, Ferdinand de Lesseps, a member of the French Consular service at Alexandria was interested in the Suez Canal scheme. In 1854, he discussed the project with the Viceroy of Egypt (Khedive) and got his approval. A concession to run for 99 years from the date of the canal's opening was granted to de Lesseps, authoring him to form an International Company for the purpose of constructing a waterway.

The suez canal

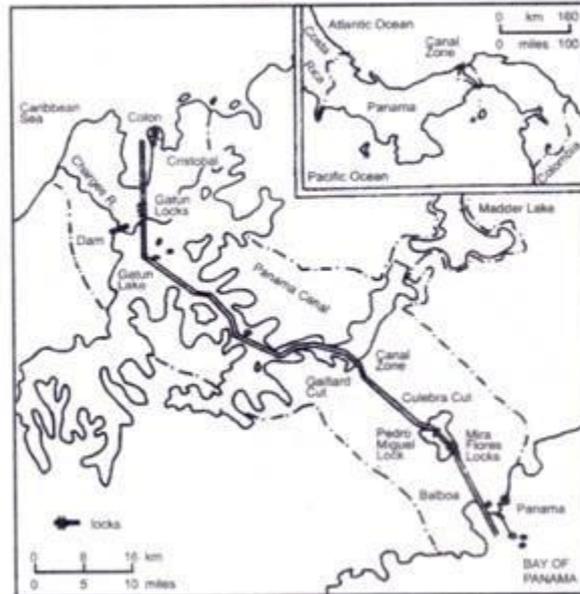


The Panama Canal:

- The Panama Canal connects the Atlantic and the Pacific oceans by means of two bays, an artificial lake, a natural lake, and three systems of locks. It has been constructed across the narrow Isthmus of Panama where the long Continental Divide dips to one of the lowest points. The canal is 72 km long from deep water to deep water in the oceans. It was opened on 15 August, 1914
- All the locks are double, so that ships can pass in both directions without any congestion of traffic. The depth of the channel varies from 12 to 26 metres and the width varies from 91 to 305 metres. The time taken to pass through the canal from Panama to Colon is 14 hours.

The Panama Canal

Figure 13.8
The Panama Canal



Thanks