# INDUSTRIES

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# INTRODUCTION

## **♦** Manufacturing

Secondary activities or manufacturing :

- (i) Change raw materials into products of more value to people. Pulp changes into paper and paper into a note book. These represent the two stages of the manufacturing process.
- (ii) The paper made from pulp and cloth made from cotton have had value added to them at each stage of the manufacturing process. In this way the finished product has more value and utility than the raw material that it is made from.

# **♦** Industry

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

# **CLASSIFICATION OF INDUSTRIES**

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

#### Raw Materials

Industries may be agro based, mineral based, marine based and forest based epending on the type of raw materials they use.

- **F** Classification of Industries
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- (i) 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.
- (ii) Mineral based industries: are primary industries that use mineral ores as their raw materials. The products of these industries feed other industries. Iron made from iron ore is the product of mineral based industry. This is used as raw material for the manufacture of a number of other products, such as heavy machinery, building materials and railway coaches.
- (iii) Mineral based industries: use products from the sea and oceans as raw materials. Industries processing sea food or manufacturing fish oil are some examples.
- (iv) Forest based industries utilise forest produce as raw materials. The industries associated with forests are pulp and paper, pharmaceuticals, furniture and buildings.

#### Size

It refers to the amount of capital invested, number of people employed and the volume of production. Based on size, industries can be classified into

- (i) Small scale industries: Cottage or household industries are a type of small scale industry where the products are manufactured by hand, by the artisans. Basket weaving, pottery and other handicrafts are examples of cottage industry. Small scale industries use lesser amount of capital and technology. Silk weaving and food processing industries are small scale industries.
- (ii) Large scale industries: Large scale industries that produce large volumes of products. Investment of capital is higher and the technology used is superior in large scale industries. Production of automobiles and heavy machinery are large scall industries.

#### Ownership

Industries can be classified into private sector, state owned or public sector, joint sector and cooperative sector.

- (i) **Private sector industries:** are owned and operated by individuals or a group of individuals.
- (ii) Public sector industries: The public sector industries are owned and operated by the government, such as Hindustan Aeronautics Limited and Steel Authority of India Limited.
- (iii) 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.
- (iv) 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 cooperative venture.

# FACTORS AFFECTING LOCATION OF INDUSTRIES

Some regions are industrially more advanced than others because they have conditions favourable for the growh of industries. Some important factors that influence the locations of industries are-



- Raw materials: Industries that use heavy and bulky raw materials like coal and steel prefer location near sources of raw materials, as the transportation of such materials over long distance is difficult and expensive. Industries using perishable raw materials are also usually located near sources of raw materials, as perishable materials have to reach the factories quickly.
- 2. Power: An uninterrupted supply of power is essential for running machines. Hence, regions rich in power resources are ideal locations for industries.
- **3.** Lobour: For industries that require plenty of labour, densely populated area are ideal locations, as labour is cheap and abundant in such areas.
- 4. Water: Industries need water for cooling machinery, for draining out wastes and for various other purposes. So, most industries are located near sources of water.
- 5. Topography and Climate: A flat topography and a moderate climate are ideal for most industries. Hence, plains have the highest concentration of industries.
- 6. Market: Industries producing perishable or fragile goods are usually located near their respective markets so that the products can reach the markets with minimum delay or damage.
- 7. Transport facilities: An efficient transport network helps raw materials to reach factories and finished goods to reach markets. Thus, regions that are well connected by transport routes are ideal sites for industries. Coastal location with shipping facilities is particularly suitable for industries using imported raw material or producing goods for export.
- 8. Capital: Every industry needs capital for purchasing machines, power and raw materials and alos for paying wages and meeting transportation costs. Areas where money is locally available and people are willing to invest in industries are, therefore, ideal locations for industries.
- **9.** Government Policy: Sometimes, the government makes a particular location attractive to industries by providing land, Tax concessions and various facilities.

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## > INDUSTRIAL SYSTEM

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

# INDUSTRIAL REGIONS

- Industrial regions emerge when a number of industries locate close to each other and share the benefits of their closeness.
- Major industrial regions of the world are eastern North America, western and central Europe, eastern Europe and eastern Asia.
- Major industrial regions tend to be located in the temperate areas, near sea ports and especially near coal fields.
- India has several industrial regions like Mumbai-Pune cluster, Bangalore-Tamil Nadu region, Hugli region, Ahmedabad-Baroda region, Chottanagpur industrial belt, Vishakhapatnam-Guntur belt, Gurgaon-Delhi-Meerut region and the Kollam-Thiruvanathapuram industrial cluster.

# DISTRIBUTION OF MAJOR INDUSTRIES

- The world's major industries are the iron and steel industry, the textile industry and the information technology industry.
- The iron and steel and textile industry are the older industries while information technology is an emerging industry.
- The countries in which iron and steel industry is located are Germany, USA, China, Japan and Russia. Textile industry is concentrated in India, Hong Kong, South Korea, Japan and Taiwan.
- The major hubs of Information technology industry are the Silicon valley of Central California and the Bangalore region of India.

### **IRON AND STEEL INDUSTRY**

- Iron and steel industry too comprises various inputs, processes and outputs. This is a feeder industry whose products are used as raw material for other industries.
- The inputs for the industry include raw materials such as iron ore, coal and limestone, along with labour, capital, site and other infrastructure.

- The process of converting iron ore into steel involves many stages. The raw material is put in the blast furnace where it undergoes smelting. 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.
- Why steel is called the backbone of modern industry: Steel is often called the backbone of modern industry. Almost everything we use is either made of iron or steel or has been made with tools and machinery of these metals. Ships, trains, trucks, and autos are made largely of steel. Even the safety pins and the needles you use are made from steel. Oil wells are drilled with steel machinery. Steel pipelines transport oil. Minerals are mined with steel equipment. Farm machines are mostly steel. Large buildings have steel framework.
- The changing location of iron & steel industry: Before 1800 A.D. iron and steel industry was located where raw materials, power supply and running water were easily available. Later the ideal location for the industry was near coal fields and close to canals and railways. After 1950, iron and steel industry began to be located on large areas of flat land near sea ports. This is because by this time steel works had become very large and iron ore had to be imported from overseas
- Iron and steel industry in In India: In India, iron and steel industry has developed taking advantage of raw materials, cheap labour, transport and market. All the important steel producing centres such as Bhilai, Durgapur, Burnpur, Jamshedpur, Rourkela, Bokaro are situated in a region that spreads over four states West Bengal, Jharkhand, 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. India's steel production increased from one million tonne in 1947 to 30 million tonnes in 2002.

# ♦ Tata Iron and Steel Company, Jamshedpur

- (1) 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.
- (2) 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.
- (3) Sakchi as Location
- (i) Sakchi was chosen to set up the steel plant for several reasons.
- (ii) This place was only 32 km away from Kalimati station on the Bengal-Nagpur railway line.
- (iii) It was close to the iron ore, coal and manganese deposits as well as to Kolkata, which provided a large market.
- (iv) TISCO, gets coal from Jharia coalfields, and iron ore, limestone, dolomite and manganese from Orissa and Chhattisgarh.
- (v) The Kharkai and Subarnarekha rivers ensured sufficient water supply.
- (vi) Government initiatives provided adequate capital for its later development.
- (4) In Jamshedpur, several other industrial plants were set up after TISCO. They produce chemicals, locomotive parts, agricultural equipment, machinery, tinplate, cable and wire.

- (5) The development of the iron and steel industry opened the doors to rapid industrial development in India. Almost all sectors of the Indian industry depend heavily on the iron and steel industry for their basic infrastructure.
- (6) The Indian iron and steel industry consists of large integrated steel plants as well as mini steel mills. It also includes secondary producers, rolling mills and ancillary industries.

## Pittsburgh

- (1) It is an important steel city of the United States of America.
- (2) The steel industry at Pittsburgh enjoys locational advantages.
  - (i) 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.
  - (ii) Between these mines and Pittsburgh is one of the world's best routes for shipping ore cheaply the famous Great Lakes waterway.
  - (iii) Trains carry the ore from the Great Lakes to the Pittsburgh area.
  - (iv) The Ohio, the Monogahela and Allegheny rivers provide adequate water supply.
- (3) Today, very few of the large steel mills are in Pittsburgh itself. They are located in the valleys of the Monogahela and Allegheny rivers above Pittsburgh and along the Ohio River below it. Finished steel is transported to the market by both land and water routes.
- (4) The Pittsburgh area has many factories other than steel mills. These use steel as their raw material to make many different products such as railroad equipment, heavy machinery and rails.

# > COTTON TEXTILE INDUSTRY

- 1. The textile industry can be divided on the basis of raw materials used in them. Fibres are the raw material of textile industry.
- 2. Fibres can be natural or man-made.
  - (i) Natural fibres are obtained from wool, silk, cotton, linen and jute.
  - (ii) Man made fibres include nylon, polyester, acrylic and rayon.
- **3.** 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.
- 4. In 18th century power looms facilitated the development of cotton textile industry, first in the Great Britain and later in other parts of the world.
- 5. Today India, China, Japan and USA are the important producers of cotton textiles.

# **&** Cotton Textile industry in India.

- (1) India has a glorious tradition of producing good quality cotton textiles.
- (2) Before the British rule, Indian hand spun and hand woven cloth already had a wide market.

- (3) 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.
- (4) But the production of hand woven cotton textile was expensive and time consuming. Hence, traditional cotton textile industry could not face the competition from the new textile mills of the West, which produced cheap and good quality fabrics.
- (5) The first successful modern textile mill was established in Mumbai in 1854. The warm, moist climate, port for importing machinery, availability of raw material and skilled labour resulted in rapid expansion of the industry in the region.
- (6) Initially this industry flourished in the states of Maharashtra and Gujarat because of favourable humid climate. But today, humidity can be created artificially, and raw cotton is a pure and not weight losing raw material, so this industry has spread to other parts of India.
- (7) Coimbatore, Kanpur, Chennai, Ahmedabad, Mumbai, Kolkata, Ludhiana, Pondicherry and Panipat are some of the other important centres.

#### Textiles of Ahmedabad

- (1) It is located in Gujarat on the banks of the Sabarmati river.
- (2) The first mill was established in 1859.
- (3) It soon became the second largest textile city of India, after Mumbai.
- (4) Ahmedabad is often referred to as the 'Manchester of India'.
  - (i) Favourable locational factors were responsible for the development of the textile industry in Ahmedabad.
  - (ii) Ahmedabad is situated in the heart of a cotton growing area. This ensures easy availability of raw material.
  - (iii) The humid climate is ideal for spinning and weaving.
  - (iv) The flat terrain and easy availability of land is suitable for the establishment of the mills.
  - (v) The densely populated states of Gujarat and Maharashtra provide both skilled and semi-skilled labour.
  - (vi) Well developed road and railway network permits easy transportation of textiles to different parts of the country, thus providing easy access to the market.
  - (vii) Mumbai port nearby facilitates import of machinery and export of cotton textiles.
- (5) But in the recent years, Ahmedabad textile mills have been having some problems. Several textile mills have closed down. This is primarily due to emergence of new textile centres in the country as well as nonupgradation of machines and technology in the mills of Ahmedabad.

#### ♦ Osaka: The Textile centre of Japan

- (1) It is an important textile centre of Japan, also known as the 'Manchester of Japan'.
- (2) The textile industry developed in Osaka due to several geographical factors.

- (i) The extensive plain around Osaka ensured that land was easily available for the growth of cotton mills.
- (ii) Warm humid climate is well suited to spinning and weaving.
- (iii) The river Yodo provides sufficient water for the mills.
- (iv) Labour is easily available.
- (v) Location of port facilitates import of raw cotton and for exporting textiles.
- (3) The textile industry at Osaka depends completely upon imported raw materials.
- (4) Cotton is imported from Egypt, India, China and USA.
- (5) The finished product is mostly exported and has a good market due to good quality and low price.
- (6) Though it is one of the important textile cities in the country, of late, the cotton textile industry of Osaka has been replaced by other industries, such as iron and steel, machinery, shipbuilding, automobiles, electrical equipment and cement.

# > INFORMATION TECHNOLOGY (IT)

- 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.
- The main factors guiding the location of these industries are resource availability, cost and infrastructure.
- The major hubs of the IT industry are the Silicon Valley, California and Bangalore, India.
- 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.
- However, Bangalore has always had a unique advantage, as a city with highest availability of middle and top management talent.
- **Solution** Bangalore: Silicon Plateau Locational Advantages.
  - (i) Located on the deccan plateau from where is gets the have 'Silicon plateau.'
  - (ii) The city is known for its mild chivate throughout the year
  - (iii) The state government of Karnataka was the first to announce an IT Policy in 1992
  - (iv) Bangalore has the largest number of educational institutions and IT colleges in India.
  - (v) The city has the largest and widest availability of skilled managers with work experience.
  - (vi) The city was considered dust free with low rents and cost of living.

## ♦ Silicon Valley

- (i) Silicon Valley, is a part of Santa Clara Valley, located next to the Rocky Mountains of North America.
- (ii) The area has temperate climate with the temperatures rarely dropping below 0 degrees centigrade.
- (iii) Close to some of the most advanced scientific and technological centres in the world
- (iv) Pleasant climate with an attractive and a clean environment. Plenty of space for development and future expansion
- (v) Located close to major roads and airports
- (vi) Good access to markets and skilled work force