Industries in India

Industries	*Details*
Cotton Textile Industry	▪ The first modern Cotton textile mill was established in Bombay in 1854 by local Parsi entrepreneurs with the name of Bombay spinning and weaving comapny. ▪ Mumbai is called Cottonopolis of India. ▪ Ahmedabad is called Manchester of India. ▪ Coimbatore is called Manchester of South India. ▪ Kanpur is called Manchester of Uttar Pradesh. ▪ **Distribution** Maharashtra (Mumbai, Solapur, Pune, Kolhapur, Satara, Wardha, Aurangabad and Amravati), Gujarat (Ahmedabad, Vadodra, Rajkot, Surat, Bhavnagar, Porbandar, Maurvi and Viramgam), Tamil Nadu (Chennai, Tirunelveli, Madurai, Tuticorin, Salem, Virudhnagar and Pollachi), Karnataka (Bengaluru, Belgaum, Mangalore, Chitradurga, Gulbaraga and Mysore), Uttar Pradesh (Kanpur, Etawah, Modinagar, Moradabad, Bareilly, Agra, Meerut and Varanasi), Madhya Pradesh (Indore, Gwalior, Ujjain, Bhopal), Rajasthan (Kota, Jaipur, Sriganganagar, Bhilwara and Udaipur).
Woollen Textile Industry	▪ The first Woollen textiles mill was set-up in 1876 at Kanpur. Jammu and Kashmir is a large producer of handloom woollen products. ▪ **Distribution** Punjab (Dhariwal, Amritsar, Ludhiana, Ferozpur), Maharashtra (Mumbai), Uttar Pradesh (Kanpur, Mirzapur, Agra, Tanakpur).
Jute Textile Industry	▪ First modern Jute mill was set-up in 1855 at Rishra near Kolkata. India is the largest producer of raw jute and jute good production, whereas it is second largest exporter of jute goods after Bangladesh. ▪ **Distribution** West Bengal, Bihar, Uttar Pradesh, Andhra Pradesh, Assam, Odisha, Tripura and Chhattisgarh.
Silk Textile Industry	▪ India is the second largest prouducer of natural silk, after China and is the only country producing all four varieties or natural silk viz Mulberry, Tasar, Eri and Muga of which Golden yellow Muga silk is unique in India. ▪ **Distribution** Karnataka is the leading producer followed by West Bengal, Bihar etc.
Rubber Industry	▪ The first factory of synthetic rubber was set-up at Bareilly. ▪ **Distribution** Bareilly (Uttar Pradesh), Baroda (Gujarat) Synthetic Rubber Units-Mumbai, Ahmedabad, Amritsar-Reclained Rubber Units.
Tea Industry	▪ Tea cultivation in India was first started in the mid-19th century in Darjeeling, Assam and Nilgiris. ▪ Nearly 98% of the tea production comes from Assam, West Bengal, Tamil Nadu and Kerala, while the rest of it comes from Karnataka, Terai regions of Uttarakhand, Himachal Pradesh, Arunachal Pradesh, Manipur and Tripura.
Sugar Industry	▪ Uttar Pradesh is the leading producer of sugar. **Distribution** Uttar Pradesh (Gorakhpur, Deoria, Basti, Gonda, Meerut, Saharanpur, Muzaffarnagar, Bijnor and Moradabad), Bihar (Darbhanga, Saran, Champaran and Muzaffarpur), Punjab (Phagwara and Dhuri) Haryana (Ambala, Rohtak and Panipat), Maharashtra (Nashik, Pune, Satara, Sangli, Kolhapur and Sholapur) and Karnataka (Munirabad, Shimoga and Mandya).

Industries	Details
Paper Industry	▪ The first Paper mill in the country was set-up at Serampore (Bengal) in 1832, which failed. In 1870, a fresh venture was started at Ballygunj near Calcutta. ▪ Raw material : Bamboo (70%), Salai wood (12%), Sabai (9%), Bagasses (4%) and Waste paper and Rags (5%). ▪ **Distribution** Madhya Pradesh (Nepanagar), Hindustan Paper Corporation, Vellore, Mysore Paper mill, Bhadravati, Maharashtra, (Mumbai, Pune, Ballarpur and Kamptee produce Paper and Vikhroli), Andhra Pradesh (Rajahmundry and Sirpur), Madhya Pradesh (Indore, Bhopal and Shahdol), Karnataka.
Iron and Steel	▪ **Distribution** Bhadrawati (Karnataka), Jamshedpur (Jharkhand), Durgapur, Burnpur (West Bengal), Bokaro (Jharkhand), Rourkela (Odisha), Bhilai (Chhattisgarh), Salem (Tamil Nadu) and Visakhapatnam (Andhra Pradesh).
Ship	▪ **Distribution** Cochin Shipyard , Mumbai (Mazgaon Dock), Hindustan Shipyard at Visakhapatnam and Kolkata (Garden Reach workshop). Mazgaon dock at Mumbai builts Vessels for Indian Navy.
Aircraft Industry	▪ **Distribution** Hindustan Aeronautics India Limited was formed by merging two aricraft factories at Bengaluru and Kanpur. Four other factories are at Nashik, Lucknow, Koraput (Odisha) and Hyderabad.
Fertilizer Industry	▪ The Fertilizer Corporation of India (FCI) was set-up in 1961. ▪ National Fertilizer Limited (NFL) was set-up in 1974. ▪ **Distribution** Sindri (Bihar), Nangal, Gorakhpur (Uttar Pradesh), Durgapur, Namrup, Cochin, Rourkela, Neyveli, Varanasi, Vadodra, Kanpur, Visakhapatnam and Kota.
Heavy Machinery	▪ **Distribution** Durgapur, Mumbai, Ranchi, Visakhapatnam, Tiruchirapalli and Naini.
Machine Tool Industry	▪ It forms the basis for the manufacturing of industrial, defence equipments, automobiles, railway engines and electrical machinery. ▪ **Distribution** Hyderabad, Bengaluru, Pinjore (Haryana), Kalamassery (Kerala), Secunderabad, Ajmer and Srinagar.
Heavy Electrical Equipments	▪ **Distribution** Bengaluru, Bhopal, Jammu, Tiruchirapalli, Ramchandrapuram (Hyderabad) and Jagdishpur (Uttar Pradesh).
Photo Films Industry	▪ The Hindustan Photo Films Manufacturing Company at Udagamandalam (Tamil Nadu) is the only factory in the public sector, producing photo paper and films.
Glass Industry	▪ **Distribution** Uttar Pradesh (Firozabad, Balijoi, Hathras, Naini, Secunderabad, Maharashtra (Mumbai, Telogaon, Pune Sitarampur), Tamil Nadu (Tiruvottiyur) and Karnataka (Belgaum, Bengaluru).

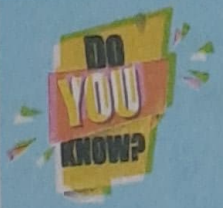
Introduction

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

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

4.1 Minerals

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



The organisations associated with minerals in India are

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

Types of Minerals

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

a) Metallic Minerals

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

1. Iron ore

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

The iron is usually found in following form

Form of Iron ores	Iron Content (%)
Magnetite	72.4%
Hematite	69.9%
Goethite	62.9%
Limonite	55%
Siderite	48.2%

free state. It enters into the composition of many rocks and minerals especially from igneous and metamorphic rocks. The total recoverable reserves of iron ore in India are haematite and magnetite

Jharkhand is the leading producer of iron ore with 25% the country's production. Singhbhum, Hazaribagh, Dhanbad and Ranchi districts are its major producers. Odisha with 21% production ranks second. Sundargarh, Mayurbhanj, Sambalpur and Keonjhar districts are its major producers. The magnetite production of Chhattisgarh is 18% (Rajgarh and Bilaspur are its leading districts) and the Karnataka is 20% (Chikmangalur, Chitradurga, Shimoga and Dharwad districts are its major producers). Andhrapradesh and Tamil Nadu produce about 5% each. Kurnool, Guntur, Cuddapah and Anantapur districts in Andhra Pradesh and Salem, Namakkal, Tiruvannamalai, Tiruchirappalli, Coimbatore, Madurai and Tirunelveli districts in Tamil Nadu are notable for the production of iron ore.

SAIL (Steel Authority of India Limited): The Ministry of Steel is responsible for planning and development of iron and steel industry in India.

2. Manganese

Manganese is a silvery grey element. It is very hard and brittle in nature. It is always available in combination with iron, laterite and other minerals. It is an important mineral used for making iron and steel and serves as basic raw material for alloying. It is most important mineral for making iron steel. Nearly 10 kg manganese is required manufacturing one ton of steel. It is also in the manufacturing of bleaching powder insecticides, paints and batteries.

MOIL - Manganese Ore India Limited state owned manganese ore mining company headquartered in Nagpur. With a market share of 50%. It was the largest producer of manganese ore in India.

Manganese deposits occur mainly in metamorphosed bedded sedimentary deposits. The largest deposits of manganese is found in Odisha followed by Karnataka, Madhya Pradesh, Maharashtra, Goa, Andhra Pradesh, Jharkhand, Rajasthan, Gujarat, Telangana and West Bengal together constitute about 2% of the India's manganese resource. India is the fifth largest producer of manganese in the world.

3. Copper

Copper is the first metal that prehistoric man has started using for many purposes. Being flexible, it can be made into utensils of any shape. Brass and Bronze are obtained when the copper alloys with zinc and tin respectively. Copper has been commonly used for making cooking utensils and other objects of common utility. In modern days, it is extensively used in vast variety of electrical machinery, wires and cables

Largest reserves of copper ore is in the state of Rajasthan followed by Jharkhand and Madhya Pradesh. The states of Andhra Pradesh, Gujarat, Haryana, Karnataka, Maharashtra, Meghalaya, Nagaland, Odisha, Sikkim, Tamil Nadu, Telangana, Uttarakhand

Hindustan Copper Ltd is a Government-owned-corporation in the central public Enterprise under the Ministry of minies, India.

...West Bengal account for 7.9% of the total ...pper reserves of India.

Bauxite

Bauxite is an important ore from which aluminium is extracted. It is found in the rock consisting mainly of hydrated aluminium oxides. Bauxite is widely distributed as surface deposits in the areas of laterite soil. Being light in weight and tough, aluminium is used in the manufacture of aircraft s and automobile engines. Bauxite is also used in the manufacture of cement and chemicals.

Bauxite is an oxide of aluminium; the name has been derived after the French word Le Baux.

The main bauxite deposits occur in Odisha, Gujarat (Junagadh, Amreli and Bhavnagar districts), Jharkhand (Ranchi and Gumila districts), Maharashtra (Sindhu durg and Ratnagiri), Chhattisgarh (Ballarpur and Durg districts), and Tamil nadu.

National Aluminium Company Limited, abbreviated as NALCO, (incorporated 1981) has units in Odisha at places like Angul and Damanjodi. It was incorporated as a public sector enterprise of the Ministry of Mines, Government of India in 1981.

नालको NALCO

b) Non-Metallic Minerals

These minerals do not contain metal in ...em. Mica, limestone, gypsum, nitrate, potash, ...olomite, coal, petroleum etc are the non-...etallic minerals.

Mica

In ancient time, Mica was used in ayurvedic ...edicine. Mica became very popular with the ...velopment of electrical industry. Abhrak ...a good quality mica. It is translucent, easily ...table into thin sheets, flat, colourless, elastic and incompressible. Mica is used in making of insulating properties, as it withstands high voltage and has low power loss factor. Since it is a non conductor of electricity, it is exclusively used in electrical goods. It is also used in making of lubricants, medicines, paints and varnishes.

The major deposits of mica are found in Andhra Pradesh, Rajasthan, Odisha and Jharkhand.

Lime Stone

Limestone is associated with rocks composed of either calcium carbonate or the double carbonate of calcium and magnesium or mixture of both. Limestone also contains small quantities of silica, alumina, iron oxides, phosphorous and sulphur.

Limestone is used in the industries of chemicals for soda ash, caustic soda, bleaching powder, paper, cement, iron and steel, glass and fertilizers. The major producing areas: Karnataka, Andhra Pradesh, Telangana, Rajasthan, Madhya Pradesh, Tamil Nadu, Meghalaya, Gujarat and Chhattisgarh

Gypsum

Gypsum is a hydrated sulphate of calcium which occurs as white, opaque or transparent minerals in beds of sedimentary rocks such as limestone, sandstone and shale. Gypsum is used in the manufacture of cement, fertilizers, wall board, plaster of paris and in soil conditioning. Rajasthan, Tamil nadu, Gujarat, Himachal Pradesh, Karnataka, Uttarakhand, Andhra Pradesh and Madhya Pradesh are the major producers.

4.2 Energy Resources

The resources from which the electricity generated are called energy resources. Electricity is an important component of our life. No day to day activity takes without the use of this energy. It is also the key factor for all economic activities and industrial development. Energy resources can be

classified into renewable and non-renewable. Coal, petroleum, natural gas and nuclear minerals are the sources of non renewable energy. Water, sun light, wind, bio gas, tides etc., are the sources of renewable energy.

Non-Renewable Energy Resources

a) Coal

Coal is an inflammable organic substance composed mainly of hydrocarbons.

Coal is available in the form of sedimentary rocks. It is used in the generation of thermal power. It has close association with the industrial development of any country. Since it is a valuable one, it is called as "**Black Gold**". Based on carbon content, it is classified in to the following types.

Anthracite: 80 to 90%

Bituminous: 60 to 80%

Lignite: 40 to 60%

Peat: less than 40%

Coal is an important source of energy in India with its varied and innumerable uses. It can be converted into gas, oil, electricity and thermal power. Besides, it forms a basic raw material for the production of chemicals, dyes, fertilizers, paints, synthetic and explosives.

Indian coal is mostly associated with Gondwana series of rocks and is primarily found in Peninsular India. The states of Jharkhand, odisha, West Bengal and Madhya Pradesh alone account for nearly 90% of coal reserves of the country. About 2% of India's coal is of tertiary type and is found mostly in Assam and Jammu & Kashmir.

Coal India Limited (CIL) is an Indian state-controlled coal mining company headquartered in Kolkata, West Bengal.

Jharkhand is the largest coal producing state in the country followed by odisha, Chhattisgarh, West Bengal, Madhya Pradesh, Andhra Pradesh and Maharashtra.

Indian lignite (brown coal) deposits occur in the southern and western parts of Peninsular India particularly in Tamil nadu, Puducherry and Kerala.

The Ministry of coal has over all responsibility of determining policies and strategies in respect of exploration and development of coal resource in India. Coal India Limited (CIL), NLC India Limited (NLCIL) and Singareni Collieries Company limited (SCCL) are its public sector under takings.

b) Petroleum (or) Crude oil

The word petroleum has been derived from two Latin words petro (meaning - Rock) and oleum (meaning oil). Thus petroleum is oil obtained from rocks of the earth. Therefore it is also called mineral oil. Petroleum is an inflammable liquid that is composed of hydrocarbons which constitute 90-95% of petroleum and the remaining is chiefly organic compounds containing oxygen, nitrogen, sulphur and traces of organ metallic compounds.

The Ministry of Petroleum and Natural Gas (MOP&NG) is a ministry of the Government of India. It is responsible for the exploration, production, refining, distribution, marketing, import, export, and conservation of petroleum, natural gas, petroleum products, and liquefied natural gas in India.

India - Oil refinery

Western coast offshore oil fields	Eastern coast offshore Fields
1. Mumbai high oil fields (largest 65%)	Bhaxmaputra valley (Dibrugarh and Sibsagar districts of upper Assam.)
2. Gujarat coast (2nd largest)	Digboi oil feilds (oldest fields in country)
3. Basseim oil feild, south of Mumbai high	Nahoratiya oil fields (south west of digboi)
4. Alibet oil feild, south of Bhavanagar	Moran-Hugrijan oil field (Southwest of Nahoratiya)
5. Ankleshwar	Rudrasagar-Lawa oil feilds (sibsagar districs of assam)
6. Cambay-Luni Region	Surma valley (Badarpur, Masimpur, Patharia)
7. Ahemedabad-Kalol Region	Offshore of Andaman and Nicobar, Gulf of mannar, Baleshwar coast, Punjab, Haryana and Uttar Pradesh.

Petroleum is used as a source of power and fuel for automobiles, aeroplanes, ships and locomotives. Lubricants, kerosene, vaseline, tar, soap, terylene and wax are its by products. Oil in India is obtained from both from on-shore and off-shore areas.

c) Natural Gas

Natural gas usually accompanies the petroleum accumulations. It is naturally occurring hydro carbon gas mixture consisting primarily of methane, but commonly includes varying amounts of other higher alkanes and sometimes a small percentage of carbon dioxide, nitrogen and hydrogen sulphides. It is formed when layers of decomposed plants and animals are exposed to intense heat and pressure over thousands of years. It is used as a source of energy for heating, cooking and electricity generation. It is also used as fuel for vehicles and as a chemical feedstock in the manufacture of plastics and other commercially important organic chemicals.

GAIL (formerly known as Gas Authority of India Limited) is the largest state-owned natural gas processing and distribution company in India. It is headquartered in New Delhi.

India has a very large proportion of tertia rock and alluvial deposits particularly in t extra peninsular India. These sedimenta rocks, which were once under the shallow se hold the possibility of harbouring oil and g deposits. The highest concentration of natu gas is found in the Mumbai high and basseim fields. Gujarat, Assam, Neypaltur, Mangmada in Thanjavur district in Tamil nadu, Tripu Rajasthan, Arunachal Pradesh, Punjab, W Bengal are the other areas where natural g reserves have been discovered.

Compressed natural gas (CNG) (methan stored at high pressure) is a fuel which ca be used in place of gasoline, diesel fue and propane/LPG. In comparison to othe fuels, natural gas poses less of a threat i the event of a spill, because it is lighte than air and disperses quickly whe released. Biomethane – cleaned-up bioga from anaerobic digestion or landfills can be used. Natural gas run vehicles ar increasingly used in Delhi, Ahmedabad Mumbai, Pune, Kolkata Lucknow, Kanpu Varanasi, etc.

Conventional Energy Sources

a) Thermal power

Thermal power is generated using fos fuels like coal, diesel, petroleum and Natu

National [illegible] was established in 1975. At present NTPC has 13 coal based super thermal power projects and 7 gas / liquid fuel based combined cycle projects in the states of Assam, Bihar, Jharkhand, Chhattisgarh, Mizoram and West Bengal. Neyveli, Mettur, Thoothukudi and Ennore (Chennai) are the important thermal power stations in Tamil nadu.

b) Nuclear power

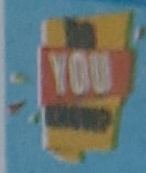
The energy released during nuclear fission or fusion is used to generate electricity. Nuclear energy is generated mainly from the minerals of Uranium and Thorium. The first nuclear power station was setup at Tarapur near Mumbai in 1969. Later atomic reactors were installed at Rawatbhata (335 MW), near Kota in Rajasthan (100 MW), Kalpakkam (440 MW) and Kudankulam (2,000 MW) in Tamil nadu and Narora (235 MW) in Uttar Pradesh, Kaiga in (235 MW) in Karnataka and Kakarapara (235 MW) in Gujarat.

The Nuclear Power Corporation of India Limited (NPCIL) is an Indian public sector undertaking based in Mumbai, Maharashtra. It is wholly owned by the Government of India and is responsible for the generation of nuclear power for electricity.

Renewable Energy Resources

a) Hydro power

Power generated from water is termed as hydroelectricity. Hydro power is the energy harnessed from running water. Hydro power is considered as one of the most economic and non-polluting sources of energy. It contributes nearly 7% of global electricity production. The cost of production of hydroelectricity is relatively low, making it a competitive source of renewable energy. It is also a flexible mode of power generation as the quantity of production can either be increased or decreased very quickly adapting to changing demands.



The first hydro-electric power station in India was established at "Darjeeling" in 1897.

National Hydroelectric Power Corporation is located in Faridabad, India

b) Solar Energy

Solar Power is the conversion of sunlight into electricity, either directly using photovoltaics (PV) or indirectly using concentrated solar power (CSP). Concentrated solar power systems use lenses or mirrors and tracking system to focus a large area of sunlight into a small beam. Photovoltaics convert light into an electric current using the photovoltaic effect.

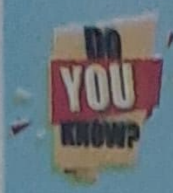
Solar Energy Corporation of India Limited is a Government of India Enterprise.Its head quarter is located at New Delhi.

The mass objectives of the solar thermal energy programme, being implemented by the Ministry of Non-Conventional Energy Source (MNES) are market development, commercialisation and utilisation of heat energy requirement of different applications in domestic, institutional and industrial sectors. Solar power is used in water heaters, refrigerators, drying, street lighting, cooking, pumping, power generator, photovoltaic cells, salon parts etc. Andhra Pradesh, Gujarat, Rajasthan, Maharashtra and Madhya Pradesh are the major solar power producers.

c) Wind Energy

Wind energy is extracted from air flow using wind turbines. It is a cheap and pollution free source of energy. Power from wind mills are used for pumping water and to sail propel ships. Wind power is plentiful, renewable, widely distributed, clean and produces no greenhouse

gas emissions during operation. These plants occupy only a less space.



Tamil nadu has the largest installation of wind turbines in the country in the Aralvoimozhi area near Kanniyakumari is the largest concentrations of wind farm capacity at a single location in the world.

The development of wind power in India began in 1986 with first wind farms were set up in coastal areas of Gujarat (Okha), Maharashtra (Ratnagiri) and Tamil nadu (Thoothukudi) with 55 KW Vestas wind turbines. The capacity has significantly increased in the last few years. India has the fourth largest installed wind power capacity in the world.

The National Institute of Wind Energy (NIWE), Chennai was established in Tamil Nadu in 1998 as an autonomous institution under the administrative control of the Ministry of New and Renewable Energy. NIWE main activities include resource assessment testing and certification.

d) Biomass Energy

Bio energy may be obtained through bio-degradable materials like animal dung, kitchen wastes, water hyacinth, agricultural residues and city wastes etc. It is clean and cheap source of energy. Energy derived from biomass is mostly used for domestic purposes.

e) Tidal and wave Energy

There are two main sources of ocean energy. They are Ocean tides and Ocean waves. The Gulf of Cambay is the best suited area for tidal energy. This is followed by Gulf of Kachch (1,000MW) and sunderbans (100MW).

An wave energy power plant of 150 KW(maximum) has been installed at vizhinjam near Thiruvananthapuram. An another of this kind has been set up near Nicobar Islands.

4.3 Industries

It refers to the activities which the raw materials into finished products sector is called as the value addition On the basis of the source of raw Industries are classified into the Agro industries, Forest based industries and based industries.

Agro based industries

These industries draw their raw from agricultural sector. The following discusses the agro based industries in India.

a) Cotton Textile Industry

Textile is a broad term which cotton, jute, wool, silk and synthetic textiles. This sector in India is the second in the world.

The first cotton mill was established at Gloster near Kolkata in

Traditional sectors like hand loom handicrafts and small power-loom units are the biggest source of employment for millions of people in rural and semi urban areas.

Currently, India is the third largest producer of cotton and has the largest loom arc and ring spindles in the world. At present, cotton textile industry is the largest organized modern industry of India.

Ginning is the process of separating cotton seed from cotton.

The higher concentration of textile mills in and around Mumbai, makes it as "**Manchester of India**". Presence of black cotton soil in

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

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

b) Jute Textiles

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

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

National jute board is headquarter at Kolkata.

is the only research institute in the country dedicated to the Research & Developmental activities related to silk technology. CSTRI was established in the year 1983 by the Central Silk Board, Ministry of Textiles, Govt. of India having head quarter at Bengaluru

carpet and blankets. The major jute producing areas are in West Bengal and concentrated along the Hooghly river within the radius of six kilometre of Kolkata. Titagarh, Jagatdat, Budge-Budge, Haora and Bhadreshwar are the chief centres of jute industry. Andhra Pradesh, Bihar, Uttar Pradesh, Assam, Chhattisgarh and Odisha are the other jute goods producing areas.

c) Silk Industry

India has been well known for the production of silk since the ancient times. India is the second largest producer of raw silk next only to China.

Karnataka is the largest producer of silk. Other major producers of silk are West Bengal, Jammu Kashmir, Bihar, Jharkhand, Chhattisgarh, Uttar Pradesh, Punjab, Assam and Tamil nadu states.

Office of the Development Commissioner for Handlooms was set up as an attached non-participating office on 20th November, 1975 under the Ministry of Commerce. At present it is functioning under the Ministry of Textiles, headquarters at Udyog Bhawan, New Delhi.

d) Sugar Industry

Sugar can be produced from sugar cane, sugar-beets or any other crop which have sugar content. In India, sugar cane is the main source

this is the second large... based industry of India after cotton textile... is the world's second largest producer of... cane after Brazil. Sugar industry is decentra... and located near the sugarcane growing ... they are weight loosing and bulky to transp...

Uttar Pradesh is the largest produc... sugar, producing about 50% of the ... total. Other major producers are Maha... Uttar Pradesh, Karnataka, Andhra Pra... Tamil nadu, Bihar, Punjab, Gujarat, Ha... and Madhya Pradesh states. These states ac... for more than 90% of the sugar mills and ... production.

Forest based industries

Forest provide us with different type... material which are used as raw material ... certain industries like paper, lac, sports go... plywood etc.

a) Paper industry

Paper Industry produces numerous ty... of papers that comes in various use such as ... paper, paper boxes, tissues, paper bags, stationer... envelopes and printed-paper products such ... books, periodicals, and newspapers. In Ind... the Soft wood is the principal raw material ... for making paper especially newsprint and ... class printing papers. Paper is the pre-requis... for education and literacy and its use is an ind... of advancement in these two fields as well as ... overall well being of the society.

Paper Industry in India

The first paper mill of India was started in 1812 at Serampore in West Bengal.

The first successful effort was made in 1870 with the setting up of the Royal Bengal paper mills at Ballyganj near Kolkata. The raw materials for paper industry includes wood pulp, bamboo, salai and sabai grasses, waste paper and bagasse. West Bengal is the largest producer of paper in the country followed by Madhya Pradesh, Odisha and Tamil nadu.

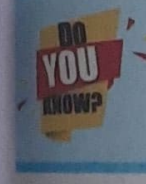
National Newsprint and Paper Mills (NEPA) is at Nepanagar in Burhanpur District of Madhya Pradesh.

Mineral based industries

Mineral based industries use both metallic & non metallic minerals as raw materials. The major mineral based industry of country is the iron steel industry

a) Iron and steel industries

Iron and steel industry is called a basic metallurgical industry as its finished product is used as raw material by host of other industries. Several industries like engineering, heavy machines and machine tools, automobile, locomotives and railway equipment industries use iron and steel as their primary raw material. Due to this, the steel producing capacity of a country is generally taken as an indicator of its level of industrial development.



The first attempt to produce iron and steel unit was set up at Porto Novo in Tamil nadu in 1830.

The modernization of the industry was started in 1907 with the establishment of Tata Iron and Steel Company at Sakchi, now called Jamshedpur. Iron and steel industry of India is mainly concentrated in the states of Jharkhand, West Bengal and Odisha. Proximity to the coal fields of Jharia, Raniganj, Bokaro and Karanpura and the iron ore mines of Mayurbhanj, Keonjar and Brona are responsible for this. This area also has sufficient deposits of limestone, dolomite, manganese and silicon which are required for the industry.

Automobile Industry

India is set to emerge not only as a large domestic market for automobile manufacturers, but also as a crucial link in the global automotive chain. It is one of the most dynamic industrial groups in India.

The first automobile industry of India was started in 1947. The industry is the Premier Automobiles Ltd located at Kurla (Mumbai). It was followed by the Hindustan Motors Ltd at Uttarpara (Kolkata) in 1948. At present, India is the 7th largest producer of automobile manufacturers which include two wheelers, commercial vehicles, passenger car, jeep, scooty, scooters, motor cycles, mopeds and three wheelers. Major centres are at Mumbai, Chennai, Jamshedpur, Jabalpur, Kolkata, Pune, New Delhi, Kanpur, Bengaluru, Sadara, Lucknow and Mysuru.

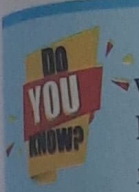
Chennai is nicknamed as the "Detroit of Asia" due to the presence of major automobile manufacturing units and allied industries around the city.

Tata Motors, Maruti Suzuki, Mahindra & Mahindra and Hindustan Motors are the largest passenger car manufacturers of Indian companies in the country. Presence of foreign car companies such as Mercedes Benz, Fiat, General Motors, Toyota and the recent entry of passenger car manufacturers BMW, Audi, Volkswagen and Volvo makes the Indian automobile sector a special one. Tata Motors, Ashok Leyland, Eicher Motors, Mahindra & Mahindra and Ford Motors are the major Indian companies which manfacture commercial vehicles. MAN, ITEC, Mercedes-Benz, Scania and Hyundai are the foreign companies engage in the manfacture of commercial vehicles. Two-wheeler manufacturing is dominated by Indian companies like Hero, Bajaj Auto and TVS.

ctrical and Electronic Industries

Heavy electrical industries manufacture ipment used for power generation, nsmission and utilization. Turbines for steam d hydro power plants, boilers for thermal wer plants, generators, transformers, switch rs etc. are the chief products of this industry. e most important company in the field of avy electrical is Bharat Heavy Electricals Ltd HEL). It has its plants at Hardwar, Bhopal, derabad, Jammu, Bengaluru, Jhansi and ruchirappalli. This Industry covers a wide nge of products including television sets, ansistor sets, telephone exchanges, cellular legram, computers and varied equipments for ost and railway, defence and meteorological epartment.

Bengaluru is the largest producer of lectronic goods in India, hence it is called as he "Electronic Capital of India". The other major producers of electronic goods centers are Hyderabad, Delhi, Mumbai, Chennai, Kolkata, Kanpur, Pune, Lucknow, Jaipur and Coimbatore.



Make in India program was launched in 2014 to put India on the world map as a major hub for global design and manufacturing.

Software Industry

India is home to some of the finest software companies in the world. The software companies in India are reputed across the globe for their efficient IT and business related solutions. The Indian Software Industry has brought about a tremendous success for the emerging economy.

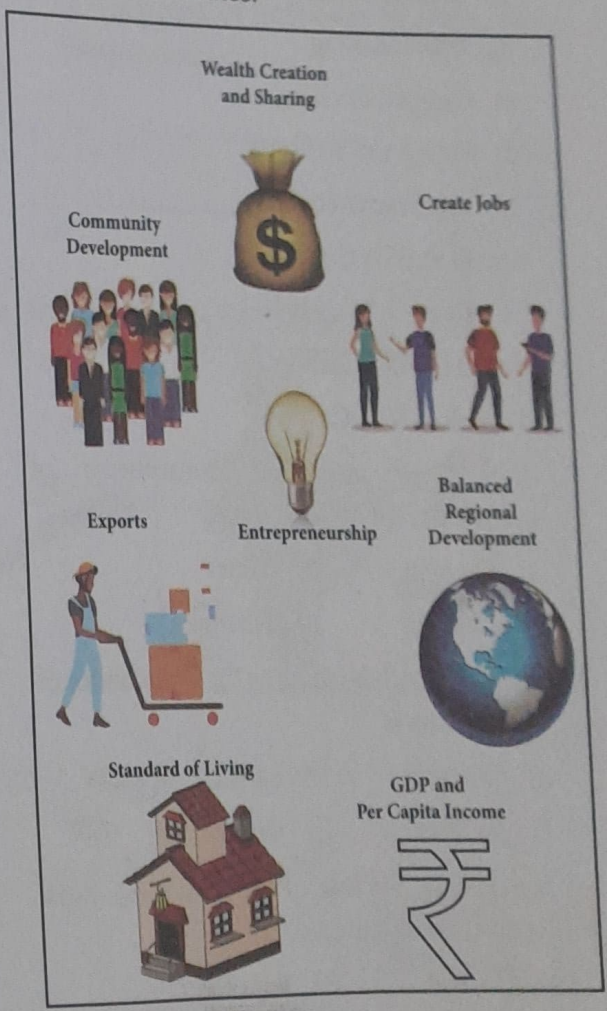
In India, software industry began in 1970 with the entry of Tata Consultancy Services (TCS). Along with this, L & T, Infotech, i-Flex, Accenture, Cognizant, GalexE Solutions India Pvt Ltd and ITC Infotech are the major software industries in the country. At present, there are more than 500 software companies all over India. It exports software service to nearly 95 countries in the world.

The main centres of IT parks are located in Chennai, Coimbatore, Thiruvananthapuram, Bengaluru, Mysuru, Hyderabad, Visakhapatnam, Mumbai, Pune, Indore, Gandhi Nagar, Jaipur, Noida, Mohali and Srinagar.

Major challenges of Indian Industries

Industries in India face many problems. Some major problems are listed below.

- Shortage and fluctuation in Power Supply.
- Non- availability of large blocks of land.
- Poor access to credit.
- High rate of interest for borrowed loan.
- Non- availability of cheap labourers.
- Lack of technical and vocational training for employees.
- Inappropriate living conditions nearby industrial estates.



Challenges of Indian Industries

ENERGY

- India is a fast growing country and therefore the demand for energy is also continuously growing. India is exploiting almost all the sources of energy such as hydroelectricity, thermal energy, nuclear energy, solar energy and wind energy etc.
- Power development commenced in India with the commissioning of electricity supply in Darjeeling during 1897, followed by a hydropower station at Sivasamudram in Karnataka during 1902.
- Himachal Pradesh, Meghalaya, Nagaland, Sikkim and Uttarakhand are largely dependent upon hydroelectricity.
- National Hydro Power Corporation (NHPC) was set-up in 1975, under public sector for the generation of hydropower in India.
- National Thermal Power Corporation (NTPC) was set-up in 1975, for generation of thermal energy. NTPC has 18 coal based super thermal power projects and 7 gas/liquid based combined cycle projects.
- Atomic Energy Institute at Trombay was set-up in 1954 and renamed as Bhabha Atomic Research Centre (BARC) in 1967.
- Heavy Water Plants are at Vadodra, Tuticorin, Kota, Thal, Hazira and Manuguru. The first heavy water plant was set-up in Nangal in 1962.
- The Renewable Energy Programme started with the establishment of the Department of Non-Conventional Energy Sources in 1982. Indian Renewable Energy Development Agency was set-up in 1987. In 1992; DNES was converted into Ministry of Non-conventional Energy Sources.

Renewable Energy Plants

Types of Energy	*Plants*	*States*
Wind Energy	Muppandal	Tamil Nadu
	Perungudi	Tamil Nadu
	Kayattar	Tamil Nadu
	Satara	Maharashtra
	Jogimati	Karnataka
	Lamba, Mandvi	Gujarat
Geothermal Energy	Manikaran	Himachal Pradesh
	Puga Valley	Jammu and Kashmir
	Tattapani	Chhattisgarh
Tidal Energy	Gulf of Khambat	Gujarat
	Gulf of Kachchh	Gujarat
	Sundarban	West Bengal
Wave Energy	Vizhinjam	Kerala
Solar Energy	Tirupati	Andhra Pradesh

The Major Atomic Power Stations

Power Station	*Location*
Tarapur	Maharashtra
Rawatbhata	Rajasthan
Kalpakkam	Tamil Nadu
Narora	Uttar Pradesh
Kakrapara	Gujarat
Kaiga	Karnataka
Kudankulam	Tamil Nadu
Banswara	Rajasthan (UC)

UC : *Under Construction*

Ultra Mega Power Plants (UMPP)

Plants	*States*	*Capacity (MW)*	*Awarded to*
Sasan	Madhya Pradesh	4000	Reliance
Mundra	Gujarat	4000	Tata
Krishna-patnam	Andhra Pradesh	4000	Reliance
Girye	Maharashtra	4000	NA
Tadri	Karnataka	4000	NA

- In this type of agriculture, a piece of forest land is cleared mainly by tribal people by felling and burning of trees and crops are grown.
- Dry paddy, buck wheat, maize, small millets, tobacco and sugarcane are the main crops grown under this type of agriculture.

Intensive Farming

- This is a system of farming, in which the cultivator uses large amount of labour and capital on a relatively small area.
- In regions, where the size of population is big, but land is less, this type of farming is done.
- Agriculture is done with the help of manual labour.

Extensive Farming

- This is a system of farming, in which the cultivator uses a limited amount of labour and capital on a relatively large area.
- This type of agriculture is practised in regions, where population size is small and land is enough.
- Agricultural is done with the help of machines.

Green Revolution

It is the phrase generally used to describe the spectacular increase that took place during 1968 and is continuing in the production of foodgrains in India.

The components of Green Revolution are as follows:

- High Yield Variety Seeds
- Irrigation
- Use of Fertilizers
- Use of Insecticide and Pesticide
- Command Area Development
- Consolidation of Holdings
- Land Reforms
- Supply of Agricultural Credit
- Rural Electrification
- Rural Roads and Marketing
- Farm Mechanisation
- Agricultural Universities

Impact of Green Revolution

Positive Impact

- Increase in agricultural production
- Reduction of the import of foodgrains
- Capitalistic farming
- Industrial growth
- Rural employment

Negative Impact

- Inter-crop imbalance
- Environmental impacts
- Increase in regional imbalance
- Unemployment due to mechanisation
- Negligence of other crops

Major Crops and Producing States

Crop Type	*Crop Name*	*Major Producers*
Cereals	*Wheat*	Uttar Pradesh, Punjab and Madhya Pradesh
	Rice	West Bengal and Uttar Pradesh
	Gram	Madhya Pradesh and Tamil Nadu
	Barley	Maharashtra, Uttar Pradesh and Rajasthan
	Bajra	Maharashtra, Gujarat and Rajasthan
Cash Crops	*Sugarcane*	Uttar Pradesh and Maharashtra
	Poppy	Uttar Pradesh and Himachal Pradesh
Oil Seeds	*Coconut*	Kerala and Tamil Nadu
	Linseed	Rajasthan Madhya Pradesh and Haryana
	Groundnut	Gujarat, Andhra Pradesh and Tamil Nadu
	Rape seed and Mustard	Rajasthan, Madhya Pradesh and Haryana
	Sesame	Uttar Pradesh and Rajasthan
	Sunflower	Andhra Pradesh and Maharashtra Karnataka