

MINERAL

A Mineral may be described as a substance that is found in the earth's crust and which generally has a definite chemical composition. They are mixed with contents of certain metals or non metals along other impurities. These resources are of great importance in the industrial development of the country.

India abounds in ferrous minerals like iron ore, manganese, bauxite and mica but is deficient in non-ferrous minerals like gold, silver, copper, tin etc.

IRON ORE

Iron is an important metal. It is being used in making all sorts of tools and implements. All machines are made of iron. The ores of iron found in India are hematite and magnetite. India stands fourth among the countries of the world in respect of large reserves of iron – ore. She has iron ore deposits of about 21,500 million tones. India only accounts for only 3% of the total annual world production of iron ore. It ranks eight in the production of iron in the world.

(a) DISTRIBUTION

Iron ore is distributed unevenly in India. Hematite occurs mainly in Bihar, Orissa, Jharkhand, Madhya Pradesh, Maharashtra, Goa and Karnataka. The reserves are estimated at 960 crore tones. Reserves of magnetite occur in Karnataka, along west coast, with minor occurrences in Kerala, Tamil Nadu and Andhra Pradesh. The iron ore deposits are heavily concentrated in the districts of Singhbhum (Bihar) and Keonjhar, Bonai and Mayurbhanj.

(b) PRODUCTION

In 1950 – 51, India produced 50 lakh tones of iron ore. The production rose to more than 700 lakh tones by 1997 – 98. Iron ore is exported in large quantities to earn foreign exchange which is imperative for developmental activities. The major iron ore exporting ports are Vishakhapatnam, Mormugao, Paradip, Calcutta and Mangalore.

COPPER

The reserves of copper in India are estimated at 28.03 crore tones with a recoverable metal content of about 28. 51 lakh tones. Copper ore production during 1992 -93 was estimated at 5421.7 thousand tones. Major and important copper ore producing areas are in Balaghat, Jhunjhunu and Alwar. Copper is valued for high electrical conductivity. India has to import copper to meet its demands.

MICA

India stands first among the mica – producing countries of the world. It produces nearly 90% of world mica. Bihar produces a little about 50% of India's mica and the rest is obtained from Andhra Pradesh and Rajasthan. Kodarma in Jharkhand is the largest mica mining districts of India. Hazaribagh, Gaya, and Munger districts of Jharkhand, Nellore in Andhra Pradesh and Ajmer, Shehpur, Bhilwara. And Jaipur in Rajasthan are important mica – producing regions in India. The total annual production of mica is 2650 tones.

India is the leading exporter of mica in the world. The share of India in mica exports entering the world markets is 60% Brazil competes with India in the production of mica.

MANGANESE

Manganese is an important ferrous – mineral used in the manufacture of steel and its alloys. India has large reserves of manganese ore; the deposits are estimated at over 180 million tones. In 1972, India produced nearly 1.6 million tones, one – twelfth of the total world output, thus holding the fourth position in the world in manganese.

Manganese deposits occur in Andhra Pradesh, Goa, Gujarat, Karnataka, Madhya Pradesh, Bihar and Orissa.

Manganese is quite essential for producing good quantity steel. It is also used in making resins, Colours and pesticides. It is also used in glass and electric industries.

OPEN PIT MINE

When minerals are founded buried under the crust or at some depth, these can be easily extracted by removing the upper layers. This type of mine is called an open pit mine. Work is done here on large scale. Trucks are used for transportation from here. Lignite mine is Neyvelli is an example of open pit mine. No need is felt for use of lifts in these mines. It resembles a quarry in a bigger way.

OFF – SHORE DRILLING

Off shore drilling is the process of drilling mineral oil from these beds, by drilling at the bottom of these. It is operated by digging deep bores into the bed of shallow seas near the coast for extracting mineral oil.

RUHR OF INDIA

Damodar river valley is called as the Ruhr of India. The Ruhr river valley in Germany abounds in coal and iron ore. This has led to the establishment and development of iron and steel industry in the valley. Similarly, Damodar river valley has immense deposits of coal and iron ore side by side. As a result of the abundance of coal and iron ore in the valley, iron and steel industry has made tremendous progress on the lines of the Ruhr valley. Out of 10 major iron and steel plants of the country 6 have found place in the Damodar valley. So, the basin of the river Damodar in the Scout Bihar is called the Ruhr of India.

POWER RESOURCES

Power plays an important role in the industrialization. It is needed to run big machines. Economic growth is closely related to availability of power. Conventional power resources include coal, petroleum and natural gas. The latest addition is nuclear fuels of the total energy generated in India 61% is consumed by industries.

COAL

Coal has been major industrial fuel since times immemorial. It is also an industrial raw material. The coal reserves of India are estimated at about 110,000 million tones. About 98% of these deposits belong to the Gondwana age of the geological past. The block of the Indian coal deposits is of inferior quality. About fourth – fifths coal belt confined to the Damodar belt the well – known coal fields in the area are Rouging, satpure, Giridih, Bokhara and Karampure. The other coal fields are found in the valleys of the Godavari, Wordha, SON Mahanadi and in the regions of Stpura, Chhattisgarh and Deoglar. Coal is also found near Darjeeling in West Bengal and in Mukum and Lakhimpur areas of Assam.

India produced 35 million tones of coal in 1950 – 51. This figure rose of 75 million tones in 1972. Bihar is the larges producer of coal in India. It accounts for half the total production of coal in India. West Bengal comes next and them by Chhattisgarh and Andhra Pradesh.

The Indian coal is being used to produce thermal electricity. The coal is used for producing 600 MW of thermal electricity and has proved a boon to industries.

DIFFERENTIATE BETWEEN**Ferrous Minerals****Non-Ferrous Minerals**

1. Ferrous minerals contain much quantity of iron.	1. Non-Ferrous minerals don not contain on substance. e.g., Salt, coal, Mineral oil.
2. These minerals react to magnets.	2. These minerals do not react to magnets.

METALLIC MINERALS**NON-METALLIC MINERALS**

1. Metallic minerals are those minerals which provide metals after their processing.	1. Non-metallic minerals are those minerals which are not metal based.
2. They are often hard.	2. They are not so hard.
3. These minerals can be smelted.	3. They can not be smelted.
4. They can be drawn into wires and rolled	4. They can neither be redrawn into wires nor

down into sheets. - They are mostly associated with igneous and metamorphic rocks. - When hit, they do not get broken. - They are generally solid and heavy, e.g., Copper, Aluminium, Tin, Silver and Gold.	rolled down into sheets. - They are mostly associated with sedimentary of metamorphic rocks. - When hit, they may be broken into pieces. - They are neither heavy nor solid. Some of them are found in the equip as well as gaseous state, e.g., Sulphur, Coal, Mica, Salt.
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ROCK	MINERAL ORE
- Rocks are natural resources and are the sources of minerals. - A rock provides us a certain mineral. - Their physical and chemical properties are variable. - They form the upper part of the earth. - Rock is mainly divided into three groups igneous, Sedimentary and metamorphic e.g., Granite, Basalt, Limestone, Sandstone, Marble.	- Mineral ores are the metals in their natural state as extracted from the earth's crust. - Mineral ore is obtained from a rock which it abounds in. - They have fixed physical and chemical properties. - They form rocks. - Mineral is of various types it provides both metals and Non-metals. E.g., Silver, Iron ore, Manganese, Mica, Sulphur.

OPEN PIT MINE	SHAFT MINE
- When minerals are found buried under the crust to at some depth, these, can be easily extracted by removing the upper layers. This type of mine is called pit mine. - It is open and not covered. - It is not very deep. - Example: Neyvelli mine is an open pit mine.	- A shaft mine is an underground excavation made deep into the earth for digging minerals and mineral ores like coal, precious stones and iron. - Shaft mines contains vertical and inclined shafts and horizontal tunnels at various levels. - Shaft mine is generally very deep. - Example: the Kolar gold mines in Karnataka.

THERMAL ELECTRICITY	HYDRO ELECTRICITY
- Thermal electricity is that power which is generated by burning fossil fuel or by splitting atomic minerals controlled fission. - Fossil fuels and atomic minerals are exhaustible resources. Hence, thermal power may be not going on to be generated in the future. - Its supply is uncertain. - It is costly. - Thermal power stations cause air and noise pollution. - Thermal power stations can be built far away from the source of fossil fuels and atomic minerals. - Its generation involves heavy machinery and a heavy cost on transporting the fuels.	- Hydro electricity is generated by using water to move turbines. - Water is an inexhaustible resource. Hence, hydro-electricity will be continuously generated in the future. - Its supply is perennial. - It is cheap. - Hydro electric power station doesn't cause any pollution. - It is essential to set up hydel power stations on the rivers. - There is no transportation charge involved in this production.

Contrary to the other Himalayan regions of the country in, the J&K state has rich deposits of mineral wealth.

- ❖ Iron – ore deposits are of the state occur Rajouri, Salal, Chakhar, Khandi in Jammu region. In Kashmir region, these deposits are found at Khrew, Uri, Furez (Sopore), Karnah, Handwara and Lolab.
- ❖ Copper ore deposits occur at Rajouri, Jangal Gali, Doda and Kishtwar in Jammu province. They are also obtained from Ashmuqam, Shobbar and Sambar area of Anantnag, Kangan near Ganderbal, Baramulla, Handwara and Sumbal. Rich Cu ore deposits are also found in kargil and Zaskar.
- ❖ Bauxite :- is one off the most important metalliferous mineral extensively found in Jammu province of the state. The deposits occur in the vicinity of chkakkar, Sanganarg, Panhasa, and Jangal gali of Rajouri and Udhampur districts.
- ❖ Lead is found at Buniyar near Baramulla , Udhampur.
- ❖ Lime stone Non-Metallic Mineral occurs in all the three regions of the state but the deposits found in Kashmir region are of high quality and can be directly used in the manufacture of cement. Huge deposits occur are Anantanag, Mansbal, Achabal, Ashmuqam, Ajas, Mattan, Verinag, Biru, Sonamarg, Khrew, in Kashmir region.

In Jammu region, limestone has been located at kalakot , Balawan, Jangalgali, Muthi, Salal, Assar and Thathri (Doda) and various parts of surpal in ladakh.