MINERAL RESOURCES IN INDIA

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•Natural resources play a very important role in supporting all activities of the life on earth. Without using any of the natural resources, we can not survive. Water, air, land, soil, minerals, rocks, fuels and materials, all are needed for our use in this world.


Water resources
Forest resources
Energy resources
India has a good amount of all natural resources
Human resources
Land resources
Mineral resources

There are Six Core Industries controlling the national economy of India. They are:

1. Crude Oil
2. Petroleum refinery products
3. Coal
4. Electricity
5. Cement
6. Finished carbon steel.

- All of them are supported by the mining sector.
- This, in turn, depends on Mineral resources.

If we look at the mines Operating in India, we have

- 2999 mines working on all minerals
- 574 mines working on Coal
- 700 mines concentrating on Metallic minerals &
- 1725 mines working for getting Non-metallic minerals.

The mining sector gives adequate employment opportunities to the people

- The average daily employment provided in mining sector is almost 0.52 million.
- Among these, the Public sector provides about 0. 419 million, i.e. About 81% and the Private Sector gives the balance of 19%.

The Economy of India is controlled by

Two Vital resources

- Metallic and non-metallic Mineral Resource
- Mineral fuels

- While studying the economic geography of India, all these aspects are to be studied in detail, because, these two resources control many of the industrial activities.

Mineral- Definition

- A mineral is an element or chemical compound that is normally crystalline, in nature.
- It might have been formed as a result of a geological process.
- It may be occurring alone or in association with other minerals or rocks.
- Minerals containing metals as their major constituents are called as ore minerals.

Precious & Semi-precious Minerals

10. Corundum
11. Diamond
12. Garnet
13. Gold
14. Ruby
15. Sapphire
16. Silver

Metallic Minerals (Ferrous and Non-Ferrous Groups)

Metallic Minerals (Ferrous Group)

1. Iron Ore (Haematite)
2. Iron Ore (Magnetite)
3. Manganese Ore
4. Chromite

Metallic minerals

PRODUCTION OF MAJOR METALLIC MINERALS IN INDIA

Item	Production (Rs. Crore)	% Share
Iron ore	9695.12	75.4
Chromite	1171.68	9.1
Zinc Concentrate	647.29	5.0
Manganese ore	477.48	3.7
Bauxite	303.22	2.4
Copper Concentrate	259.84	2.0
Primary Gold	199.61	1.6
Lead Concentrate	89.37	0.7
Total Metallic Minerals	12858.71	100.0

Metallic Mineral-
Ferrous

IRON ORES

- Iron is the second most abundant metallic element in the Earth's crust.
- The principal minerals of iron are :
  - haematite and magnetite (oxides)
  - limonite and goethite (hydroxides)
  - siderite and pyrite(sulphides)
- Haematite and magnetite are the two important iron ores from which iron is extracted.

Metallic Mineral- Ferrous

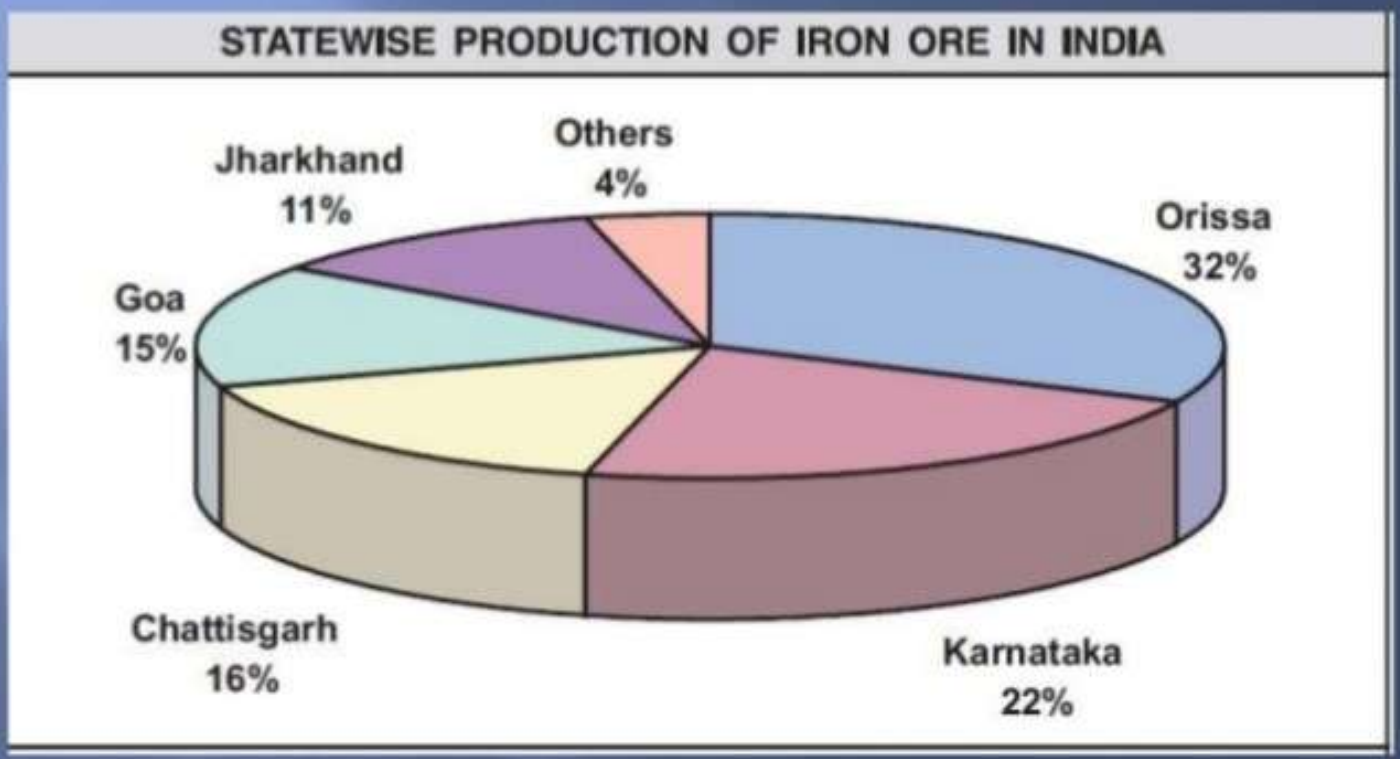
IRON ORE

- Iron ores are the basic raw materials for iron and steel industries.
- Steel is the vital component of a country's economy. Steel is considered as the crux of modernisation.
- Steel is environment-friendly and recyclable.
- The finished steel production in India was found to be at 66.01 million tonnes in 2010-11.

Manganese Ores

- Manganese is a vital component of steel and over 90% of manganese produced world over is used for metallurgical purpose.
- The manganese ores are
  - pyrolusite and
  - Psylomelane.

Iron ore contribution in India

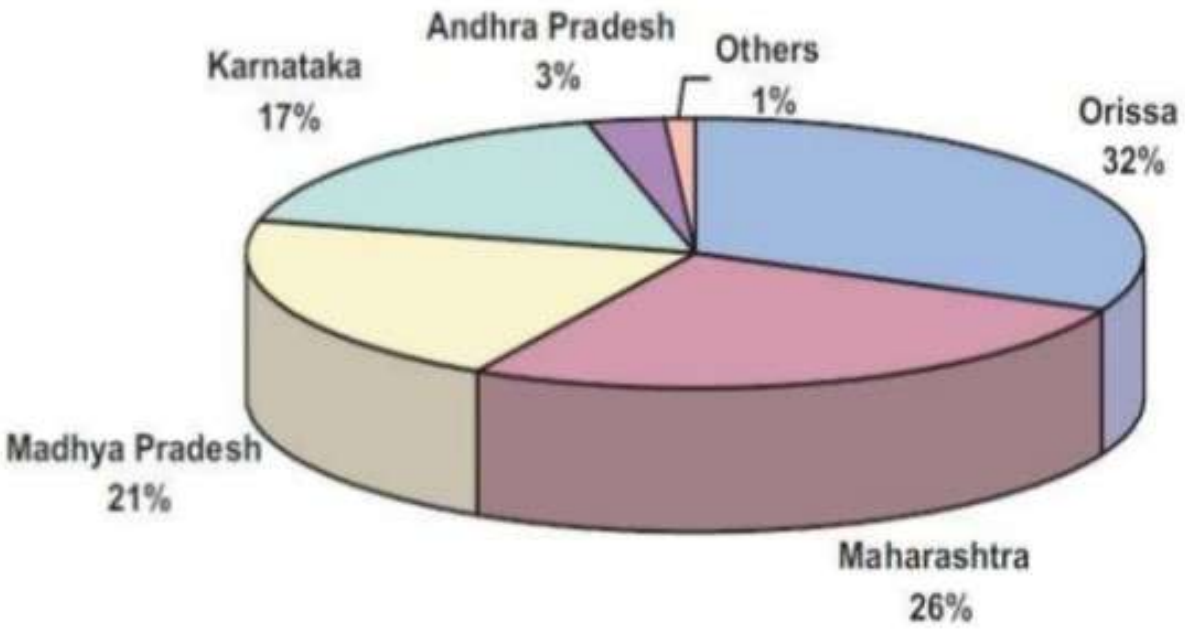


Manganese ores

- The manganese provinces are in the Peninsular India which include the ore deposits of Madhya Pradesh, Maharashtra, Orissa, Karnataka, Andhra Pradesh, Goa, Gujarat and Bihar.
- Two states namely Karnataka and Orissa dominate the ore reserve scenario accounting 40% and 25% of the national endowment respectively.
- M. P. - Maharashtra manganese belt and Goa provide a substantial amount of manganese ores.

Manganese ores in India

STATEWISE PRODUCTION OF MANGANESE ORE IN INDIA



Metallic Mineral- Ferrous

Chromite

- Chromite is an oxide of chromium and iron.
- It is the only commercial source of chromium.
- It occurs as a primary mineral of ultrabasic igneous rocks.
- It is normally associated with peridotite, pyroxenite, dunite and serpentinite.

Chromium

- Chromium is a hard, bluish metallic element (Cr).
- This was identified from a mineral as chromium oxide (CrO_3) by Louis-Nicholas Vauquelin.
- Shortly after Vauquelin's discovery, Tassaert- a German chemist, discovered chromium in an ore. That was called by the geologists as chromite ($FeCr_2O_{4)}$.

It is a Ferrous chromic oxide).

Chromite forms in an igneous environment.

Total resources of chromite

India has 203 million tonnes of Chromite.

More than 93% resources of chromite are located in Odisha, mostly in the Sukinda valley in Cuttack and Jajpur districts.

Minor deposits are scattered over Manipur, Nagaland, Karnataka, Jharkhand, Maharashtra, Tamil Nadu and Andhra Pradesh.

Metallic Minerals (Non-Ferrous Group)

5. Antimony
6. Bauxite
7. Copper
8. Lead & Zinc
9. Platinum Group of Metals

Chromite in India

Copper

- **Copper is a well-known, pinkish and softer non-ferrous base metal.**
- **It occurs as a native metal.** It is both ductile and malleable. It can be made in to various shapes without fracturing. It can be beaten into thin sheets.
- It is a soft metal. It has a high electrical and thermal conductivity(next to silver).
- **It was used prior to iron by mankind, since ancient past. Hence, copper has high cultural significance.**
- **On record, this metal was known to the people of the oldest civilizations. Copper has a history of at least 10,000 years.**

Copper ores

- Copper-bearing ores, in India, fall into three main classes i.e. oxides, carbonates and the sulfides.
- There are more than 150 ore minerals of copper.
- The important oxide ores include
  - cuprite (Cu_2O) and
  - tenorite (CuO).
- The carbonate ores are
  - malachite ($Cu_2CO_3(OH)_2$) and
  - azurite ($Cu_3(CO_3)_2(OH)_2$).
- The common sulfides of copper include
  - chalcopyrite ($CuFeS_2$),
  - covellite (CuS),
  - chalcocite (Cu_2S) and
  - bornite (Cu_5FeS_4).

Global status- Copper