Chapter 7

MINERAL AND ENERGY RESOURCES
India is endowed with a rich variety of mineral resources due to its varied geological structure.

The mineral resources provide the country with the necessary base for industrial development.
Types of Mineral Resources

On the basis of chemical and physical properties, minerals may be grouped under two main categories of **metallics and non-metallics** which may further be classified as follows:
Metallic minerals are the sources of metals. Iron ore, copper, gold produce metal and are included in this category.
Metallic minerals are further divided into ferrous and non-ferrous metallic minerals. Ferrous, as you know, refers to iron. All those minerals which have iron content are ferrous such as iron ore itself and those which do not have iron content are non-ferrous such as copper, bauxite, etc.
Non-metallic minerals are either organic in origin such as fossil fuels also known as mineral fuels which are derived from the buried animal and plant life such as coal and petroleum.
Other type of non-metallic minerals are inorganic in origin such as mica, limestone and graphite, etc.
Minerals have certain characteristics.
1. These are unevenly distributed over space.
2. good quality minerals are less in quantity.
3. all minerals are exhaustible over time
Distribution of Minerals in India

Minerals are generally concentrated in three broad belts in India. There may be some sporadic occurrences here and there in isolated pockets. These belts are:
The North-Eastern Plateau Region

This belt covers Chotanagpur (Jharkhand), Orissa Plateau, West Bengal and parts of Chhattisgarh. It has variety of minerals viz. iron ore coal, manganese, bauxite, mica.
The South-Western Plateau Region

This belt extends over Karnataka, Goa and contiguous Tamil Nadu uplands and Kerala. This belt is rich in ferrous metals and bauxite. It also contains high grade iron ore, manganese and limestone.

Kerala has deposits of monazite and thorium, bauxite clay. Goa has iron ore deposits.
The North-Western Region

This belt extends along Aravali in Rajasthan and part of Gujarat and minerals are associated with Dharwar system of rocks. Copper, zinc have been major minerals. Rajasthan is rich in building stones i.e. sandstone, granite, marble. Gypsum and Fuller’s earth deposits are also extensive.
Ferrous Mineral

Ferrous minerals such as iron ore, manganese, chromite, etc., provide a strong base for the development of metallurgical industries.
Iron Ore

India is endowed with fairly abundant resources of iron ore. It has the largest reserve of iron ore in Asia.

The two main types of ore found in our country are haematite and magnetite.
The iron ore mines occur in close proximity to the coal fields in the north-eastern plateau region of the country which adds to their advantage.
About 95 per cent of total reserves of iron ore is located in the States of Orissa, Jharkhand, Chhattisgarh, Karnataka, Goa, Andhra Pradesh and Tamil Nadu.
<table>
<thead>
<tr>
<th>State</th>
<th>Mine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orissa</td>
<td>Gurumahisani, Sulaipet, Badampahar (Mayurbhaj), Kiruburu (Kendujhar) and Bonai</td>
</tr>
<tr>
<td>Jharkhand</td>
<td>Noamundi, Gua, Dalli, Rajhara</td>
</tr>
<tr>
<td>Karnataka</td>
<td>Sandur-Hospet area of Bellary district, Baba Budan hills and Kudremukh in Chikmagalur district and parts of Shimoga, Chitradurg and Tumkur districts.</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>Chandrapur, Bhandara and Ratnagiri</td>
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Manganese

Manganese is an important raw material for smelting of iron ore and also used for manufacturing ferro alloys.

It is mainly associated with Dharwar system.
Leading producer of Manganese.

<table>
<thead>
<tr>
<th>State</th>
<th>Mine/Region/Districts</th>
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</thead>
<tbody>
<tr>
<td>Orissa</td>
<td>Bonai, Kendujhar, Sundergarh, Gangpur, Koraput</td>
</tr>
<tr>
<td>Karnataka</td>
<td>Bellary, Belgaum, North Canara, Chikmagalur, Shimoga, Chitradurg and Tumkur.</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>Nagpur, Bhandara and Ratnagiri</td>
</tr>
<tr>
<td>Madhya Pradesh</td>
<td>Balaghat-Chhindwara-Nimar-Mandla and Jhabua districts.</td>
</tr>
</tbody>
</table>
Non-Ferrous Minerals

India is poorly endowed with non-ferrous metallic minerals except bauxite.
Bauxite

Bauxite is the ore which is used in manufacturing of aluminium. Bauxite is found mainly in tertiary deposits and is associated with laterite rocks occurring extensively either on the plateau or hill ranges of peninsular India and also in the coastal tracts of the country.
## Major Bauxite producing States

<table>
<thead>
<tr>
<th>State</th>
<th>Mines/ region/District</th>
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<tbody>
<tr>
<td>Orissa</td>
<td>Kalahandi and Sambalpur</td>
</tr>
<tr>
<td>Jharkhand</td>
<td>Lohardaga</td>
</tr>
<tr>
<td>Gujarat</td>
<td>Bhavanagar, Jamnagar</td>
</tr>
<tr>
<td>Chhattisgarh</td>
<td>Amarkantak plateau</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>Kolaba, Thane, Ratnagiri, Satara, Pune</td>
</tr>
</tbody>
</table>
Copper

Copper is an indispensable metal in the electrical industry for making wires, electric motors, transformers and generators. It is alloyable, malleable and ductile. It is also mixed with gold to provide strength to jewellery.
The Copper deposits mainly occur in
1. Singhbhum district in Jharkhand,
2. Balaghat district in Madhya Pradesh and
Non-metallic Minerals

Among the non-metallic minerals produced in India, mica is the important one. The other minerals extracted for local consumption are limestone, dolomite and phosphate.
Mica

Mica is mainly used in the electrical and electronic industries. It can be split into very thin sheets which are tough and flexible.
Mica in India is produced in
Jharkhand  ( Hazaribagh plateau )
Andhra Pradesh  ( Nellore )
Rajasthan  ( around Udaipur )
Tamil Nadu,  ( Coimbatore, Tiruchirapalli )
West Bengal  ( Purulia and Bankura )
Energy Resources
Mineral fuels are essential for generation of power, required by agriculture, industry, transport and other sectors of the economy. Mineral fuels like coal, petroleum and natural gas (known as fossil fuels), nuclear energy minerals, are the conventional sources of energy. These conventional sources are exhaustible resources.
Coal

Coal is one of the important minerals which is mainly used in the generation of thermal power and smelting of iron ore. Coal occurs in rock sequences mainly of two geological ages, namely **Gondwana and tertiary deposits**.
About 80 per cent of the coal deposits in India is of bituminous type and is of non-coking grade.
The most important Gondwana coal fields of India are located in Damodar Valley. They lie in Jharkhand-Bengal coal belt and the important coal fields in this region are:

- Raniganj,
- Jharia,
- Bokaro,
- Giridih,
- Karanpura.
Jharia is the largest coal field followed by Raniganj. The other river valleys associated with coal are Godavari, Mahanadi and Sone. They lie in Jharkhand-Bengal coal belt and the important coal fields in this region are Raniganj, Jharia, Bokaro, Giridih, Karanpura.
<table>
<thead>
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<th>Mines</th>
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<tr>
<td>Madhya Pradesh</td>
<td>Singrauli</td>
</tr>
<tr>
<td>Chhattisgarh</td>
<td>Korba</td>
</tr>
<tr>
<td>Orissa</td>
<td>Talcher and Rampur</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>Chanda–Wardha, Kamptee and Bander</td>
</tr>
<tr>
<td>Andhra Pradesh</td>
<td>Singareni and Pandur</td>
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</table>
• Tertiary coals

Tertiary coals occur in Assam, Arunachal Pradesh, Meghalaya and Nagaland. It is extracted from Darangiri, Cherrapunji, Mewlong and Langrin (Meghalaya); Makum, Jaipur and Nazira in upper Assam, Namchik – Namphuk (Arunachal Pradesh) and Kalakot (Jammu and Kashmir).
Petroleum