

Mineral Based Industries

Mineral-Based Industries in India

Mineral-based industries use minerals as raw materials. A major example is the **Iron and Steel Industry**, where raw materials like iron ore, manganese, limestone, silica, and coal are crucial.

Iron and Steel Industry

India is the fifth-largest producer of crude steel. The Tata Iron and Steel Company (TISCO) in Jamshedpur, established in 1907, marked a significant step in India's industrialization.

- **Raw Materials:** Iron ore, manganese, limestone, silica, scrap iron, and coking coal from places like Jharia, Raniganj, Bokaro, and Giridih are vital.
 - **Steel Making Process:**
 1. **Ore Reduction** in blast furnaces removes impurities like sulfur, silica, and lime.
 2. **Steel Melting Furnace:** Impurities are removed, and carbon is added to form steel.
 3. **Rolling Mills:** Steel is cast into ingots and rolled into various shapes.
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Major Iron and Steel Plants

Tata Iron and Steel Plant (TISCO), Jamshedpur

- **Raw Materials:** Iron ore from Odisha and Jharkhand, manganese from Keonjhar, limestone from Sundargarh, coal from Jharia and Bokaro.
- **Power:** Coal from Jharia and Bokaro.
- **Water:** Rivers Kharkai and Subarnarekha.
- **Labor:** Workers from Bihar, West Bengal, Jharkhand, Chhattisgarh, and Uttar Pradesh.
- **Products:** High-grade carbon steel, alloy steel, railway items.

Other Large Plants:

1. **Bokaro Steel Plant (Jharkhand)**
 - **Raw Materials:** Iron ore from Keonjhar, coal from Bokaro and Jharia.
 - **Power:** Damodar Valley Corporation.
 - **Products:** Pig iron, crude steel, and fertilizers from slag.
2. **Durgapur Steel Plant (West Bengal)**
 - **Raw Materials:** Iron ore from Jharkhand and Odisha, coal from Jharia and Raniganj.
 - **Power:** Jharia coalfields and Damodar Valley Corporation.
 - **Products:** Alloy steel, railway items, coal tar.
3. **Bhilai Iron and Steel Plant (Chhattisgarh)**
 - **Raw Materials:** Iron ore from Dalli Rajhara, coal from Bokaro and Karagati.
 - **Power:** Bokaro and Karagati coalfields.
 - **Products:** Heavy rails, rolled wires, ammonium sulfate, benzol.
4. **Rourkela Steel Plant (Odisha)**

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- o **Raw Materials:** Iron ore from Sundargarh and Keonjhar, coal from Jharia and Talcher.
- o **Power:** Hirakud Project.
- o **Products:** Hot rolled sheets, electrical steel plates, nitrogen.
- 5. **Indian Iron and Steel Company, Burnpur** (West Bengal)
 - o **Raw Materials:** Iron ore from Singbhum and Mayurbhanj, coal from Jharia.
 - o **Power:** Damodar Valley Corporation.
 - o **Products:** Pig iron, iron, and steel.
- 6. **Visvesvaraya Iron and Steel Plant** (Karnataka)
 - o **Raw Materials:** Iron ore from Kemmangundi, coal from nearby forests.
 - o **Power:** Shravati Power Project.
 - o **Products:** Alloy steel, ferro silicon, cement.
- 7. **Vijayanagar Steel Plant** (Karnataka)
 - o **Raw Materials:** Iron ore from Hospet, coal from Kanhan Valley and Singareni.
 - o **Power:** Tungabhadra Reservoir.
 - o **Products:** Ingot steel.
- 8. **Vishakhapatnam Steel Plant** (Andhra Pradesh)
 - o **Raw Materials:** Iron ore from Bailadila, limestone, dolomite, and manganese from Odisha and Andhra Pradesh.
 - o **Power:** Damodar Valley coalfields.
 - o **Products:** Liquid and saleable steel.
- 9. **Salem Steel Plant** (Tamil Nadu)
 - o **Raw Materials:** Iron ore from Salem, Karnataka, coal from Neyveli.
 - o **Products:** Stainless steel, electrical steel.

Mini Steel Plants

Mini steel plants use scrap iron, pig iron, or sponge as raw materials. They are encouraged for the following reasons:

- Use of cheap and easily available scrap iron.
- No pollution due to reliance on electric power.
- Lower investment requirements.
- Meet local market demands, reducing pressure on large plants.

Heavy Engineering Industries

These industries provide machinery and equipment for sectors like agriculture, transport, mining, and construction. They require bulky raw materials, advanced technology, capital resources, and a large workforce. Key industries include iron and steel, shipbuilding, and the automobile industries.

Shipbuilding Industry

Factors favoring shipbuilding in India:

- Located near raw materials.
- Requires skilled labor.
- Situated near deep waters for navigation.
- Needs large, level land for construction.

Major Shipyards:

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1. **Hindustan Shipyard Ltd** (Vishakhapatnam): Builds cargo and passenger vessels.
2. **Cochin Shipyard** (Kochi): Specializes in ship construction and repair.
3. **Garden Reach Workshop** (Kolkata): Builds ships, docks, and fishing trawlers.
4. **Mazagaon Dock Ltd** (Mumbai): Builds naval ships and cargo vessels.

Automobile Industry

The automobile industry in India requires:

- Raw materials like iron, steel, and paint.
- Tools and machinery for factory maintenance.
- Finished goods such as tyres and batteries.
- Coal and hydropower.

India is the 6th largest producer of passenger cars and commercial vehicles globally.

Railway Locomotives

Important railway manufacturing units:

1. **Chittaranjan Locomotive Works** (West Bengal): Electric railway engines.
2. **Diesel Locomotive Works** (Varanasi): Diesel locomotives.
3. **Integral Coach Factory** (Chennai): Passenger coaches.
4. **Rail Coach Factory** (Kapurthala): Lightweight high-speed coaches.

Aircraft Industry

Hindustan Aeronautics Ltd (Bengaluru) manufactures and repairs aircraft, aero engines, and avionics, and designs helicopters and light combat aircraft.

Heavy Electrical Industry

This industry produces equipment for power generation, transmission, and distribution, including generators, turbines, and cables. Notable companies:

1. **Heavy Electricals Limited** (Bhopal)
2. **Bharat Heavy Electricals Ltd** (New Delhi)
3. **Hindustan Cables Factory** (Rupnarainpur)

Heavy Machinery and Tools

The industry manufactures machines for all sectors of the economy. Notable companies include **Hindustan Machine Tools** (Bengaluru), which makes machinery, watches, and tractors.

Electronics Industry

The electronics industry grew rapidly after 1950. Major companies:

1. **Indian Telephone Industry** (Bengaluru): Manufactures telecommunication equipment.
2. **Electronic Corporation of India** (Hyderabad): Produces systems for nuclear and medical applications.
3. **Bharat Electronics Ltd** (Bengaluru): Provides defense and broadcasting equipment.

Manufacturing Industries in India

Space Technology

The **Indian Space Research Organisation (ISRO)**, based in Bengaluru, is key to India's satellite launching and space research efforts, including the Mars orbital mission.

Software Industry

India has emerged as a global IT services leader. Major hubs include **Bengaluru** and **Hyderabad**.

Entertainment Products Industry

The electronics industry helped boost the television and audio sectors in the 1990s. Major companies include **BPL**, **Videocon**, and **Philips**, with production centers in **Mumbai**, **Pune**, **Kolkata**, and **Chennai**.

Petrochemical Industry

This industry uses petroleum, LPG, and coal products for manufacturing synthetic fibers, plastics, and pharmaceuticals. It is located near oil refineries. Notable companies:

1. **Herdillia Chemicals Ltd** (Chennai): Manufactures chemicals.
2. **National Organic Chemicals Industries** (Mumbai): Produces ethylene and PVC.
3. **Reliance Industries** (Gujarat): Major player in petrochemicals.