

# Manufacturing Industries - Agro Based

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## 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.

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## 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.