



## Metal Industry: Current Outlook and Future Trends

**For Prelims:** Indian Metal Industry, Initiatives related to Metal Sector

**For Mains:** Significance of Indian Metal Sector and Associated Challenges

### Why in News?

Recently, [ASSOCHAM \(Associated Chambers of Commerce and Industry of India\)](#) has organized a conference named **Indian Metal Industry: Current Outlook and Future Trends**.

### What is the State of Indian Metal Industry?

#### ▪ About:

- With the emergence of economies driven by industrialisation at the beginning of the twentieth century, **countries with sound metal industries benefited from a first-mover advantage**.
- Metals have been **one of the core drivers of industrialisation**.

#### ▪ Statistics:

- As of October 2021, India was **the world's "Second-Largest Producer" of crude steel**, with an output of 9.8 MT. In FY22 (till January), the production of crude steel and finished steel stood at 98.39 MT and 92.82 MT, respectively.
- Per capita consumption of Steel in India grew by **10% to 77 kg during the financial year 2021-22**.
- India has **exported a record 13.5 million tonnes of finished steel in the year 2021-22 with a record production of over 120 million tonnes** of crude steel and 113.6 million tonnes of finished steel as per the provisional estimates.

#### ▪ Growth Drivers:

- The growth in the Indian steel sector **has been driven by the domestic availability of raw materials such as iron ore and cost-effective labour**.
- Consequently, the steel sector has been a major contributor to India's manufacturing output.
- The Indian **steel industry is modern, with state-of-the-art steel mills**.
  - It has always strived for **continuous modernisation of older plants and upgradation** to higher energy efficiency levels.

#### ▪ Significance:

- With huge deposits of **iron, coal, dolomite, lead, zinc, silver, gold, etc, India is a natural destination for the mining and metal industry**.
- Among metals, **steel has historically held a dominant position**. As a raw material and intermediate product, **production and consumption of steel are widely regarded as indicators of economic progress**, industrial development and forms the backbone of any economy and is expected to witness growth in the coming years as government incentives increase.
- The Metals and Mining sector in India is **expected to witness a major reform in the next few years**, owing to reforms such as [Make in India Campaign](#), [Smart Cities](#),

[Rural Electrification](#), and a focus on building [renewable energy projects](#) under the [National Electricity Policy](#) as well as the rise in infrastructure development.

- The Average [Index of Industrial Production](#) of Manufacturing of basic metals in the FY 2021-22 is **177.3 and has grown by 18.4 %**.
- Recognising the importance of bringing sustainability in coal mining, a **“Sustainable Development Cell” has been created** in the Ministry of Coal and in all coal PSUs to promote adoption of better environment management practices in coal mines.

▪ **Challenges:**

- **Capital:** Metal industry especially, the Iron and steel, requires **large capital investment which is difficult for a developing country like India to afford**. Many of the public sector integrated steel plants have been established with the help of foreign aid.
- **Low Productivity:** The per capita labour productivity in the country is at 90-100 tonnes **for the steel industry** which is very low. It is 600-700 tonnes per person in Korea, Japan, and other steel producing nations.
- **Low Potential Utilisation:** Durgapur steel plant makes use of approximately 50% of its potential which is caused by factors like strikes, shortage of raw materials, energy crisis, incompetent administration, etc.
- **Huge Demand:** Huge chunks of **steel and other metals are to be imported in order to meet the demands**. In order to save invaluable foreign exchange, productivity needs to be increased.
- **Inferior Quality of Products:** The weak infrastructure, capital inputs and other facilities eventually lead to metallurgical process more time-taking, expensive and produces **an inferior variety of alloys**.

## What are the Government Initiatives for Metal Sector?

- [National Steel Policy \(NSP\) 2017](#).
- [Steel Scrap Recycling Policy](#).
- [PLI Scheme For Specialty Steel](#).
- [Mission Purvodaya: Accelerated Development of Steel Sector](#).
- [Steel Research and Technology Mission of India](#).
- [Adoption of the Fourth Industrial Revolution \(Industry 4.0\)](#).

## Way Forward

- Industry and other stakeholders collectively will need to **identify all those areas and factors contributing to increase in the consumption of these metals to improve availability for the common man** at an affordable cost.
- It is important to **strengthen domestic capability through technology development and innovation**. This will not only enable the Indian metal and metallurgy sector to become a truly global one but will also **help make India a manufacturing hub for metals and metal products**.
- It is of critical importance to **rationalize the need for the development of mineral reserves in the country, especially minerals like Iron, Coal, Bauxite, Lime, Copper, Manganese, Chromium etc.** which are the backbone of economic development.
- It is imperative that different associations of industries go to rural India and inform the people about the schemes of the government through small meetings or seminars. They can run **skill development programs** there and can play an important role in nation building.
- It is important to reduce costs by **introducing technology and smart working**.
- It is highlighted that India has [competitive advantage](#) over its peers in steel production due to domestic availability of high-grade iron ore, strong domestic demand and availability of young workforce.
  - Due to the huge availability of minerals in the country, **metal sector can play a major role in the country's ambitious plans of [Self-Reliant India](#) and [USD 5 trillion economy by 2024-25](#)**.
- Huge scope for growth is offered by India's comparatively low per capita steel consumption and

the expected rise in consumption due to increased infrastructure construction and the thriving automobile and railways sectors.

## UPSC Civil Services Examination, Previous Year Questions

### Q. Why is there a concern about copper smelting plants?

1. They may release lethal quantities of carbon monoxide into environment.
2. The copper slag can cause the leaching of some heavy metals into environment.
3. They may release sulphur dioxide as a pollutant.

Select the correct answer using the code given below.

- (a) 1 and 2 only  
(b) 2 and 3 only  
(c) 1 and 3 only  
(d) 1, 2 and 3

Ans: (b)

Exp:

- There are several different processes that can be used for copper production. One of the traditional processes is based on smelting in Reverberatory furnaces (or electric furnaces for more complex ores), producing matte (copper-iron sulphide). The matte from the furnace is charged to converters, where the molten material is oxidized in the presence of air to remove the iron and sulphur impurities (as converter slag) and to form blister copper.
- The principal air pollutants emitted from the process is sulphur dioxide and particulate matter and the main portion of the solid waste is discarded slag. **Hence, statement 3 is correct.**
- The slag produced can contain significant concentrations of a number of potentially toxic elements including arsenic, lead, cadmium, barium, zinc, etc. The slag can release these potentially toxic elements into the environment under natural weathering conditions and cause pollution of soils, surface waters and groundwater. **Hence, statement 2 is correct.**
- As slag is considered chemically inert, it is mixed with cement and is used to construct roads and railroad beds. It is also used for sandblasting. Moreover, it is also added to roofing shingles.
- Copper smelting does not release lethal quantities of carbon monoxide into the environment. **Hence, statement 1 is not correct.**

Source: PIB

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