



India's Steel Sector

For Prelims: [India's Steel Sector](#), ISA Steel Conclave 2023, Steel Shaping the Sustainable Future, [Carbon Border Adjustment Mechanism](#), Iron.

For Mains: India's Steel Sector, Potential and Challenges, Indian Economy and issues relating to planning, mobilization of resources, growth, development and employment.

[Source: TH](#)

Why in News?

Recently, the 4th edition of 'ISA Steel Conclave 2023' was held, nudging **Steel Firms** to ramp up their capacities so that India's output of the **critical infrastructure input doubles to 300 million tonnes a year by 2030**.

- The event was marked by discussions on the theme, '**Steel Shaping The Sustainable Future**,' underscoring the multifaceted role of the steel industry in India's growth and development.

What is the State of Steel Sector in India?

- **Present Scenario:**
 - India is the world's second-largest producer of crude steel, with an output of **125.32 million tonnes (MT) of crude steel** and 121.29 MT of finished steel production in FY23.
 - The steel industry in India has experienced substantial growth in the **past decade, with a 75% increase in production since 2008**.
 - The **per-capita consumption** of steel in India stood at 86.7 kilograms in FY23.
 - The Indian steel industry has been driven by the **availability of raw materials, such as iron ore, and cost-effective labor**.
 - As per the [National Steel policy](#), launched in 2017, India projects crude steel capacity of 300 million tonnes (MT), production of 255 MT and a robust finished steel per capita **consumption of 158 Kgs by 2030-31**.
- **Significance:**
 - Steel is **one of the widely used materials** all over the world. The iron and steel industry is the bottom line producer industry.
 - The steel industry plays a pivotal role in crucial sectors such as construction, infrastructure, automobile, engineering, and defense.
 - Steel is a key sector for the Indian economy (responsible for **2% of the country's GDP in FY 21-22**).
- **Challenges Faced by the Steel Sector:**
 - **Barriers to Setting up Modern Steel Plants:**
 - One major hindrance is the significant investment required for establishing modern steel-making plants.
 - The high cost, around Rs 7000.00 crores for a 1-tonne capacity plant, poses **challenges for many Indian entities**.

- Reliance on debt financing, coupled with expensive finances in India compared to other countries, **inflates product costs, making the final steel product less competitive globally.**
- **Cyclical Demand and Monsoon Challenges:**
 - The cyclical demand for steel in India, influenced by factors like monsoons that slow down construction, creates financial challenges for steel plants.
 - During low-demand periods, steel plants must operate with minimal income, leading to financial strain and, in severe cases, closures.
- **Low Per Capita Consumption:**
 - India's low per capita consumption of steel, at 86.7 kgs compared to the world average of 233 kgs, **reflects economic disparities.**
 - With low per-capita income and consumption, the incentive to establish **large-scale steel plants for economies of scale diminishes.**
 - China, with significantly higher per capita income, demonstrates a more robust demand for steel.
- **Low Investment in Technology and Research:**
 - India historically **lags in investing in technology, research,** and development for the steel sector.
 - This results in dependence on international research and technology, incurring additional costs. Outdated and polluting technologies further contribute to the sector's unattractiveness.
- **Slow Adoption of Steel in Construction:**
 - India's adherence to **traditional concrete-based construction methods,** rather than embracing steel, hinders the steel industry's growth.
 - Unlike the west, where steel is **extensively used in construction for its efficiency, strength,** and speed, India is yet to fully leverage steel in its construction practices.
- **Environmental Concerns:**
 - The steel industry is among the three biggest **producers of carbon dioxide.** Consequently, steel players across the globe are increasingly facing a **Decarbonisation Challenge** to reduce its carbon footprint from both environmental and economic perspectives.
- **Impact of EU's CBAM:**
 - From 1st January 2026, the EU will start collecting the **Carbon Tax (Carbon Border Adjustment Mechanism)** on each **consignment of steel, aluminum, cement, fertilizer,** hydrogen and electricity. It will have an **adverse impact on India's exports of metals such as Iron,** Steel and aluminum products to the EU, because these will face extra scrutiny under the mechanism.
 - CBAM is part of the **"Fit for 55 in 2030 package"**, which is the EU's plan to reduce greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels in line with the European Climate Law.

Government Initiatives for Steel Industry

- **National Steel Policy (NSP) 2017**
- **Steel Scrap Recycling Policy**
- Adoption of the Fourth Industrial Revolution (**Industry 4.0**)
- Steel Research and Technology Mission of India
- Draft Framework Policy
- **PLI Scheme For Specialty Steel**

Way Forward

- Investing in and adopting **green technologies** to reduce environmental impact and promote sustainable production practices.
 - There is a need to promote manufacturing of **Green Steel,** which can be done by **using**

low-carbon energy sources such as hydrogen, [coal gasification](#), or electricity instead of the traditional carbon-intensive manufacturing route of coal-fired plants.

- Implementing measures to enhance carbon efficiency **in steel production can help mitigate the impact of CBAM**. Adopting cleaner and more sustainable technologies is crucial to reducing the carbon footprint of steel products.
- Also engaging in dialogue with policymakers and international bodies to advocate for fair and realistic CBAM policies is essential. Collaborative efforts with other industries and countries can lead to the development of solutions that consider the unique challenges faced by the Indian steel sector.

UPSC Civil Services Examination Previous Year Questions (PYQs)

Prelims

Q. Which of the following are some important pollutants released by steel industry in India? (2014)

1. Oxides of sulphur
2. Oxides of nitrogen
3. Carbon monoxide
4. Carbon dioxide

Select the correct answer using the code given below:

- (a) 1, 3 and 4 only
(b) 2 and 3 only
(c) 1 and 4 only
(d) 1, 2, 3 and 4

Ans: (d)

Exp:

- Steel industry creates pollution as it uses coal and Iron ore whose combustion releases various Polycyclic Aromatic Hydrocarbons (PAH) compounds and oxides into the air.
- In steel furnace, coke reacts with iron ore, releasing iron and generating major environmental pollutants.
- The pollutants released from steel producing units are:
 - Carbon Monoxide (CO), hence, 3 is correct.
 - Carbon Dioxide (CO₂), hence, 4 is correct.
 - Oxides of Sulphur (SO_x), hence, 1 is correct.
 - Oxides of Nitrogen (NO_x), hence, 2 is correct.
 - PM 2.5,
 - Waste Water,
 - Hazardous waste,
 - Solid waste.
- However, technological interventions in the form of air filters, water filters and other water saving, power saving and closed container can reduce emissions.
- Therefore, option (d) is the correct answer

Mains

Q1. Account for the present location of iron and steel industries away from the source of raw material, by giving examples. **(2020)**

Q2. Account for the change in the spatial pattern of the Iron and Steel industry in the world. **(2014)**

