

# **INDIAN STEEL SECTOR**

## **Classification & Key Success Factors**

### **Introduction**

India was the world's third-largest steel producer in 2016-17. The growth in the Indian steel sector has been driven by 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. Manufacturers also use it extensively for various purposes because of its strength and low cost of production.

Steel can be classified as: Carbon steel and Alloy steel.

### **Carbon steel**

- a) Low carbon (mild steel)- It is used widely in making car bodies.
- b) Medium carbon- It is used in rail and rail products, couplings, axles, gears, etc.
- c) High carbon- It is used in cutting tools and railway lines.

### **Alloy steel**

- a) Stainless steel- It is used widely in utensils, architecture and in industrial applications, namely, automotive and food processing products, as well as in medical and health equipment.
- b) Silicon electrical steel- It suitable for use in transformers, power generators, and electric motors.
- c) High speed steel- It is used for manufacturing cutting tools.

### **Types of Steel Products:**

Products obtained on hot rolling/forging of semi-finished steel (blooms/billets/slabs) from both carbon and alloy steel can be broadly classified as long products and flat products.

- A) Flat products- Flat products are produced from slabs/thin slabs in rolling mills using flat rolls. Flat products comprise hot rolled (HR), cold rolled (CR) strips and coated products. Coated flat products: These are CR products coated with metals or organic chemicals.
- B) Long products- Finished steel products are normally produced by hot rolling/forging of bloom/billets/pencil ingots into useable shape/sizes.

## **STEEL TUBES PIPES:**

Steel pipes have been defined as pipes largely made of **carbon steel**. Pipelines form a critical component of India's infrastructure. Pipelines are used for cost-effective transportation of oil, gas, water and other materials. Worldwide, usage of pipelines is dominated by the oil and gas segment.

Applications of steel pipes:

- 1) Water supply, sewage and irrigation
- 2) Oil and gas sector
- 3) Power and infrastructure
- 4) Automobile sector

### **KEY Success Factors:**

- 1) Cost management- To reduce the impact of fluctuating raw material prices, pipe manufacturers generally submit a bid jointly with raw material suppliers or purchase bulk of their order after winning a contract.
- 2) Increased focus on exports- Exports offer higher margins and realizations compared to the domestic market.
- 3) API approval and necessary accreditations- Indian pipe manufacturers are at an advantage here as products of most players already meet necessary quality norms.
- 4) Increasing product portfolio- Increased portfolio in the structural pipe category could help to diversify risks. Companies offer a wide range of products in this category as per customer specifications.

### **KEY Risks:**

- 1) Structural weaknesses- Oil and gas sector is the main growth driver for the steel pipes industry. Investments in the oil and gas sector will be impacted by geo-political tensions prevailing in the Middle East.
- 2) Increasing competition in global markets- Global competition poses a threat to Indian steel pipe exports. Additionally, domestic manufacturers often face the threat of increasing protectionism from major importing countries, which affects their export potential.
- 3) Threat of substitutes- PVC, HDPE or concrete pipes can be used in place of electrical resistant welded (ERW) pipes for water/sewage transportation, since these pipes are available at a lower price vis-a-vis ERW steel pipes.
- 4) Crude oil prices- global demand for crude oil has been under serious pressure in the past year it would weigh down the steel pipe demand in this segment.

## **STEEL SPONGE IRON**

Sponge iron is popularly used as a feed in electric/induction furnaces and as a substitute for steel scrap, because high-quality scrap is costly and scarcely available. It is also used as a coolant by integrated steel plants, again as a substitute to melting scrap. India, world's 2nd largest producer of sponge iron (2016, prov.), has a host of coal based units located in the mineral-rich states of the country.

Sponge iron is of two types - coal-based and gas-based - based on the reducing agent (coal or natural gas) used to remove oxygen from the ore. Over the years, the coal based route has emerged as a key contributor and accounted for 79% of total sponge iron production in the country. Capacity in sponge iron making too has increased over the years and stood at around 43 mt (2015-16).

**KEY Success factors:**

The initial investment and operating costs of direct reduction plants are low compared to integrated steel plants and are more suitable for developing countries where supplies of coking coal are limited. The sector is also highly export oriented which helps in earning foreign exchange for the country.

**KEY Risk factors:**

Competition from Larger players- Large players will continue to enjoy a competitive advantage (in terms of cost and quality) over the small and mid-sized players. Consequently, despite healthy demand prospects for long steel, the standalone sponge iron players are expected to struggle.

Threats of substitutes- Scrap is a direct substitute to sponge iron in steel making and has a higher conversion yield. With the availability of scrap improving and declining scrap prices the gap between the landed cost and domestic sponge iron prices has reduced further.

**STEEL PIG IRON & FOUNDRY GRADE PIG IRON**

Pig iron is an intermediate obtained while smelting iron ore with a high-carbon fuel such as coke or limestone, used as a flux (reducing agent). Pig iron is 92% iron and 3.5-4.5% carbon. Silicon and manganese largely constitute the balance, with phosphorous, sulphur and other impurities accounting for a miniscule share. High carbon content makes pig iron very brittle; hence, it is processed further before use, except in case of certain applications.

Two grades of pig iron are available: one is used to make steel, while the second - with a high degree of silicon - is used in foundries to produce castings and forgings.

Pig iron production share- Basic grade accounts for 60-65% and Foundry grade accounts for 35-40%.

Applications: Higher off-take from the end-user segments such as automobile, pumps, pipes will drive demand for the product.

**KEY Success Factors:**

- 1) Govt schemes AMRUT, Swach Bharat Abhayan, National Clean Ganga Mission, etc.
- 2) Automobiles and pumps segment expect to witness a strong growth in the near term which will increase demand for foundry grade pig iron.

## **STEEL LARGE**

In 2016, the world crude steel production reached 1630 million tonnes (mt) and showed a growth of 0.6% over 2015. China remained world's largest crude steel producer in 2016 (808 mt) followed by Japan (105 mt), India (96 mt) and the USA (79 mt).

India's crude steel output grew 10.7 per cent year-on-year to 25.76 million tonnes (MT) during January-March 2017. India's crude steel output during April 2017 grew by 5.4 per cent year-on-year to 8.107 MT.

### **KEY Success Factors:**

- 1) 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.
- 2) Since steel is an energy intensive industry, Ministry will focus on availability of power to steel making facilities. The power required by the industry is estimated to increase to 27,717 MW by 2030-31. Post de-allocation of coal blocks, various units in steel sector, especially the sponge iron plants, have been procuring power at high cost. Ministry of Steel will deliberate with Ministry of Power to make power available to such units through open access.

