

Growth and Problems of Major Industries: Iron and Steel Industry

Progress of Iron and Steel Industry in India

We live essentially in an age of iron and steel. "Because of its hardness, strength and durability, because of the ease with which it can be cast and worked into any desired shape and because of its remarkable cheapness under modern methods of production, iron is the most important and widely used metal in the service of man".

Iron and steel were the harbinger of industrial revolution in late 18th and early 19th century. Today this industry has proved to be the harbinger of globalisation. It is one of the very few industries that have assumed a global character with developments in one region affecting the industry almost everywhere else; and India is no exception.

The proud machine civilization of modern age would not have existed without iron. The sturdy structure of modern industrial world is made of steel. Iron and steel is the basic or key industry and lays the foundation of a vibrant industrial economy.

Most of the subsidiary industries such as automobiles, locomotives, rail tracks, ship-building, machine building, bridges, dams and a host of other industrial and commercial activities depend upon iron and steel industry. No wonder, per capita consumption of iron and steel is one of the most significant measures of the level of industrialisation and economic growth of a country.

Although Indians are known for their technique of smelting iron since early time, the first iron and steel unit on modern lines was established in 1830 at Porto Nova in Tamil Nadu. However it could not succeed and was closed down in 1866. The other efforts made during the second half of the 19th century also met with the same fate.

The real beginning of modern iron and steel industry was made in 1907 only when Tata Iron and Steel Company (TISCO) were set up at Jamshedpur (Sakchi at that time). The Indian Iron and Steel Company (IISCO) were set up in 1919 at Bumpur followed by the setting up of Mysore Steel Works at Bhadravati (now Visveswaraya Iron and Steel Works) in 1923.

Iron and steel Industry witnessed rapid growth after Independence. India produced 16.9 lakh tonnes of pig iron in 1950-51. The development of iron and steel industry was envisaged during the first Five-Year Plan, but it was during the Second Five-Year Plan that the three integrated steel projects were started at Bhilai, Rourkela and Durgapur.

India is now the eighth largest producer of steel in the world. Recent developments have amply demonstrated the mettle of Indian steel industry to rise even further and become a major player in the world. However steel is known to be an industry witnessing periodic business cycles of upswings and downswings.

Steel Authority of India (SAIL) Established in 1973, SAIL is a government undertaking and is responsible for the management of steel plants at Bhilai, Durgapur, Rourkela, Bokaro and Bumpur and also the Alloy Steel Plant at Durgapur and Salem Steel Plant. The management of Indian Iron and Steel was taken over by Government on 14th July, 1976. SAIL also took over Maharashtra Elektros melt Limited, a mini steel plant, in January 1986. Visweswaraya Iron and Steel Limited were also taken over by SAIL in August 1989.

Locational Factors:

Iron and steel industry uses large quantities of heavy and weight losing raw materials and its localisation is primarily controlled by the availability of raw materials. Coal and iron ore are the two basic raw materials used by iron and steel industry and on the basis of minimum transportation cost most of the steel plants are located at three distinct places viz. (i) near coal fields, (ii) near iron ore mining centres and (iii) at places between areas of coal and iron ore production.

Most of the iron and steel plants of India such as Jamshedpur, Bumpur, Durgapur, Rourkela, Bhilai and Bokaro are located in Jharkhand, West Bengal, Orissa and Chhattisgarh. These states are very rich in coal and iron ore deposits and are important producers of these materials.

Visveswaraya Iron and Steel Works at Bhadravati is a major exception which is located far away from the main coal producing areas of the country. Earlier, this centre was depending upon charcoal which was available locally. Now it uses hydroelectricity from the Sharavati Power Project.

The other raw materials used in this industry are manganese, limestone, dolomite, chromite, silica, etc. These raw materials are used in small quantities and can be transported without much difficulty. Hence, they do not materially affect the localisation of this industry.

Another important factor influencing the localisation of iron and steel industry is the availability of market. Steel products of an integrated steel plant are quite bulky and it has been estimated that the transport cost per tonne-kilometre of steel product is about three times more than that of coal or iron ore.

Thus, following the theory of minimum transportation cost many centres of iron and steel production tend to be attracted by market. Moreover, recent technological developments in transport, the use of scrap as raw material and the agglomeration economics have made market oriented location more advantageous than ever before. With the increasing popularity of open hearth process, scrap has become a very important raw material in this industry.

About half of the metal now melted 'in world's iron and steel furnaces is scrap. Industrialized areas, specially with steel consuming industries, are the major sources of

scrap iron. Thus, the market has double attraction, as the consumer of steel and as a source of raw materials. However, the use of scrap as raw material on a large scale is yet to pick up in India.

From the above discussion, it is clear that in the present day localization of iron and steel industry, each of the three factors viz., coal, iron ore and market has almost equal significance. The geographical coincidence of any two of the three factors would easily determine the site of the steel plant.

In another situation, when some ingredients are to be imported or finished steel is to be exported, sea port locations are preferred. This is exemplified by the establishment of the Vishakhapatnam Steel Plant at a sea port. A few more plants in the offing such as Mangalore and Ratnagiri also favour seaboard location.

Centres of Production:

At present there are 10 primary integrated plants and a large number of decentralised secondary units known as mini steel plants. Besides, there are several rolling and re-rolling mills and foundries which manufacture different items of steel using pig iron and ingot steel. There are about 10,000 foundries, 95 per cent of which are concentrated in the western states of Maharashtra and Gujarat and in the southern state of Tamil Nadu.

Some of the major problems faced by Indian iron and steel industry are as follows:

1. Capital:

Iron and steel industry requires large capital investment which a developing country like India cannot afford.

Many of the public sector integrated steel plants have been established with the help of foreign aid.

2. Lack of Technology:

Throughout the 1960s and upto the oil crisis in mid-1970s, Indian steel industry was characterised by a high degree of technological efficiency. This technology was mainly from abroad. But during the following two decades after the oil crisis, steep hike in energy costs and escalation of costs of other inputs, reduced the margin of profit of the steel plants.

This resulted in lower levels of investment in technological developments. Consequently, the industry lost its technology edge and is now way behind the advanced countries in this regard. Material value productivity in India is still very low.

In Japan and Korea, less than 1.1 tonnes (and in several developed countries 1.05 tonnes) of crude steel is required to produce a tonne of saleable steel. In India, the average is still high at 1.2 tonnes. Improvement in the yield at each stage of production, particularly for value added products will be more important in the coming years.

3. Low Productivity:

The per capita labour productivity in India is at 90-100 tonnes which is one of the lowest in the world. The labour productivity in Japan, Korea and some other major steel producing countries is about 600-700 tonnes per man per year.

At Gallatin Steel a mini mill in the U.S. there are less than 300 employees to produce 1.2 million tonnes of hot rolled coils. A comparable facility in India employs 5,000 workers. Therefore, there is an urgent need to increase the productivity which requires retraining and redevelopment of the labour force.

4. Inefficiency of public sector units:

Most of the public sector units are plagued by inefficiency caused by heavy investment on social overheads, poor labour relations, inefficient management, underutilisation of capacity, etc. This hinders proper functioning of the steel plants and results in heavy losses.

5. Low potential utilisation:

The potential utilisation in iron and steel is very low. Rarely the potential utilisation exceeds 80 per cent. For example, Durgapur steel plant utilises only 50 per cent of its potential. This is caused by several factors, like strikes, lockouts, scarcity of raw materials, energy crisis, inefficient administration, etc.

6. Heavy demand:

Even at low per capita consumption rate, demand for iron and steel is increasing with each passing day and large quantities of iron and steel are to be imported for meeting the demands. Production has to be increased to save precious foreign exchange.

7. Shortage of metallurgical coal:

Although India has huge deposits of high grade iron ore, her coal reserves, especially high grade cooking coal for smelting iron are limited. Many steel plants are forced to import metallurgical coal. For example, steel plant at Vishakhapatnam has to import coal from Australia. Serious thought is now being given to replace imported coal by natural gas from Krishna-Godavari basin.

8. Inferior quality of products:

Lack of modern technological and capital inputs and weak infrastructural facilities leads to a process of steel making which is more time consuming, expensive and yields inferior variety of goods. Such a situation forces us to import better quality steel from abroad. Thus there is urgent need to improve the situation and take the country out of desperate position.