CHAPTER- 2

IRON AND STEEL INDUSTRY – AN OUTLOOK
1.0 INTRODUCTION

Iron and steel, although closely related, are not similar. Iron begins as iron ore, which is melted in a blast furnace and blown through with air. Then it is manipulated so as to limit its content of carbon and other impurities. Steel is a particular kind of iron that is approximately one percent carbon, with the carbon content spread throughout the metal evenly. Steel is harder than iron and does not rust as easily. The steel industry is often considered to be an indicator of economic progress, because of the critical role played by steel in infrastructural and overall economic development, with the main demand creators being the automobile, construction, infrastructure and oil and gas Industries. However, steel is harder to make than iron. That is why iron making was by far the bigger industry in America until the late nineteenth century.

2.0 HISTORY OF IRON AND STEEL INDUSTRY IN INDIA
The history of iron and steel began at least 6,000 years ago\(^1\) and in India steel-making can be traced back to 400 BC when the Greek emperors used to recruit Indian archers for their army who used arrows tipped with steel. Many more evidences are there of Indians’ perfect knowledge of steel-making long before the advent of Christ. Archaeological finds in Mesopotamia and Egypt, testify to the fact that use of iron and steel was known to mankind for more than six thousand years and some of the best products were made in India. Those were the days when India flourished in all directions but India’s prosperity gave way to poverty after the advent of the foreign rule. India’s indigenous industry languished because of a deliberate policy of the colonial rulers to make the country only a supplier of raw materials.

The first notable attempt to revive steel industry in India was made in 1874 when the Bengal Iron Works (BIW) came into being at Kulti, in West Bengal. However, in 1830 Joshua Marshall Heath had set up a small plant at Porto Novo on Madras Coast. Marshall produced in his plant pig iron at the rate of 40 tons a week. His method of iron-making needed approximately four tons of charcoal to produce one ton of low quality pig iron which proved to be too expensive for Marshall to carry on in the face of stiff competition from the British steel industry. The BIW made considerable improvement in the process of iron and steel making. It used coke as the fuel instead of charcoal. But the plant fell sick as the source of funds dried up. It was taken over by the Bengal Government and was rechristened as Barakar Iron Works.
In 1889, the Bengal Iron and Steel Company acquired the plant and by the turn of the century the Kulti plant became a success story. It produced 40,000 tons of pig iron in 1900 and continued to produce the metal until it was taken over by Indian Iron and Steel Company (IISCO) in 1936. Iron and Steel Industry in the country has experienced a sustainable growth since the independence of the country. The modern steel industry made a humble beginning in India at Kulti in West Bengal in the year 1870. But production on a large scale became noticeable with the establishment of a steel plant in Jamshedpur in Bihar in 1907. It started production in 1912. The new township was named after J.R.D Tata. This venture was followed by Burnpur and Bhadrawati Steel plants in 1919 and 1923 respectively. It was, however, only after Independence that the steel industry was able to find a strong foothold in the country. Excluding the Jamshedpur plant of the Tata, all are in the public sector and looked after by Steel Authority of India Ltd. (SAIL). Bhilai and Bokaro Steel plants were set up with Soviet assistance. Durgapur and Rourkela came up with British and West German technical expertise, respectively.

3.0 SCENARIO OF IRON AND STEEL IN INDIA

Raw materials of iron and steel are heavy and massive. They encompass iron-ore, coking coal and limestone. The finished products in turn are also heavy and need efficient transport system for their distribution. The Chota Nagpur plateau bordering West Bengal, Bihar, Orissa, and Madhya Pradesh has been the natural nerve-centre. Iron and steel is the backbone of the heavy machines and tools industry. Umpteen number of light, medium, small and cottage industries depend on it, as a
result of modernization and industrialization of a country. Iron and steel also necessitates enormous investment, reliable infrastructure, means of transport and communication system and most importantly plentiful fuel or power supply. Various new policies and other initiatives undertaken by the Government of India have given a new thrust to the growth and flourishing of the iron and steel industry. As a result, expansion and modernization measures are being adopted by the units that already exist while numerous new plants are being set up in various regions of the nation. These plants are more improved, economic and cost effective as they use advanced technologies. Fuelled by growing demands from automobiles, infrastructure and the real estate sectors, the iron and steel industry of India has gained global recognition. India is among the top producers of all forms of steel in the world. Steel plays a vital role in the development of any modern economy. The per capita consumption of steel is generally accepted as a yardstick to measure the level of socio-economic development and living standards of the people. As such, no developing country can afford to ignore iron and steel.

3.1 TYPES OF IRON AND STEEL

The types of iron and steel which are produced as a result of the steel-making process are detailed as follows:
3.1.1 Pig iron

Basic raw iron is called pig iron because it is produced in the form of chunky molded blocks known as pigs. It is intermediate product of smelting iron ore with a high-carbon fuel such as coke, usually with limestone as a flux. It is the molten iron from the blast furnace, which is a large and cylinder-shaped furnace charged with iron ore, coke, and limestone. Charcoal and anthracite have also been used as fuel. Pig iron has very high carbon content and is much harder than cent per cent pure iron, but still too weak for most everyday purposes.

3.1.2 Cast Iron

Cast iron is iron or a ferrous alloy which is heated until it liquefies, and is then poured into a mould to solidify and allowed to cool and harden to form a finished structural shape, such as a pipe, a gear, or a big girder for an iron bridge. It is usually made from pig iron. There are
several types of cast iron including white and grey cast irons. Grey cast iron has graphite flakes which deflect a passing crack and initiate countless new cracks as the material breaks.

3.1.3 Wrought Iron

If all the carbon is removed from the iron to give high purity iron, it is known as wrought iron. Wrought iron is quite soft and easily worked and has little structural strength. It was once used to make decorative gates and railings, but these days mild steel is normally used instead.

3.1.4 Carbon Steels

The vast quantity of steel produced each day i.e. around 80 to 90 per cent, is carbon steel, though it contains only a tiny amount of carbon sometimes much less than one per cent. In other words, carbon steel is just basic or ordinary steel. Steels with about one to two per cent carbon
are called high-carbon steels and steels with less than one per cent carbon are known as low-carbon steels.

3.1.5 Alloy Steels

Alloy steel is steel that is alloyed with a variety of elements in total amounts between 1.0 per cent and 50 per cent by weight to improve its mechanical properties. Steel is an alloy, but not all steels are called “alloy steels”. Alloy steels are divided into two groups i.e. low-alloy steels and high-alloy steels. Most commonly, the phrase "alloy steel" refers to low-alloy steels. Alloy steels are generally stronger, harder, tougher, and more durable than carbon steel.

3.1.6 Tool Steels

Tool steel is a variety of carbon and alloy steels. These steels are particularly well-suited to be made into tools. Their suitability comes
from their distinctive hardness, resistance to abrasion and deformation and their ability to hold a cutting edge at elevated temperatures. As a result, tool steels are suited for their use in the shaping of other materials.

3.1.7 Stainless Steels

Stainless steel is most often used in household cutlery, scissors, and medical instruments. Stainless steels contain a high proportion of chromium and nickel, are very resistant to corrosion and other chemical reactions, and are easy to clean, polish, and sterilize. It is also known as inox steel.

3.2 USES OF IRON AND STEEL

These days, the uses of iron are much more as compared to the past. Iron is a metallic element which has innumerable uses. Iron is rarely found in its pure form on the surface of the earth as it tends to get oxidized when it comes in contact with atmospheric oxygen. For this reason, most of its ores are in the form of iron oxides. Iron can be used in many ways mainly because of the fact that its properties can be changed according to needs by alloying it with other metallic and nonmetallic substances. Thus, a large variety of steel with desired properties are
obtained. Steel is essential for various construction works. This is because it has the strength that can withstand high pressure as well as high temperature. The frameworks of many buildings, including skyscrapers and bridges, are built with alloyed steel. It is also used in the bodies or frames of heavy carriers like ships and heavy machinery. Some automobile parts and machine parts are also made up of steel. Tungsten steel is required for making cutting and drilling tools that can cut hard metals. An alloy of iron and niobium is exceptionally strong and is used for the construction of nuclear reactors. Thus, iron and steel have a significant impact on our day-to-day life, directly or indirectly.

4.0 DEVELOPMENT OF IRON AND STEEL INDUSTRY IN INDIA

Indian steel industry is one of the fastest growing industries and contributes a significant amount to the country’s Gross Domestic Product (GDP). As compared to China, India had an excellent beginning. India is the world’s largest producer of direct reduced iron (DRI) or sponge iron. In 2012, India produced 73.79 million tons of crude steel as against 46.46 million tons in 2006. Pig iron production was 6.87 million tons in 2012-13, a growth of five per cent compared to previous year. Several measures undertaken by the government have increased the growth of the iron and steel industry in India. Some of the measures include low import duties, simple tax structure and unrestricted external trade. The social reforms introduced by the government improved the development process of iron and steel industries in India. The government has lately declared that special economic and investment regions would be established in almost six states. These would,
henceforth support further processing of steel, including a few special economic zones where state of the art infrastructure would be provided by the government to develop a better industrial region. Thus, augmentation of production in iron and steel industry in India, by adopting more effective and efficient technologies for manufacture, will help in realizing social, environmental and economic development objectives. At present India produces 80 million tons of steel, but as per the 'National Steel Policy' country is expected to raise this production to 200 million tons by the year 2020. Though India has large reserves of iron ore, estimated at 28.52 billion tons, magnetite reserves could not be exploited due to the presence of these ores in the 'eco-fragile' zones mainly in the Western Ghats. Iron ore is found as hematite and magnate in India in the ratio of 63:37.

The competitive cost and good availability of labour and raw materials gives the Indian steel industry comparative cost advantage. The iron and steel industry in India is divided into three categories i.e. main producers, other major producers and the secondary producers. The main producers and other major producers have integrated steel making facility with plant capacities over 0.5 mt and utilize iron ore and coal gas for production of steel. Amongst the Integrated producers, the major producers include Tata Steel Limited, Rashtriya Ispat Nigam Limited and Steel Authority of India Limited who generate steel by converting iron ore. The secondary producers like Ispat Industries, Lloyds steel and Essar Steel, create steel through the process of melting scrap
iron. These are mainly small steel plants and produce steel in electric furnaces, using scrap and sponge iron.

5.0 PRODUCTION OF IRON AND STEEL

Production of iron and steel is focused on two dimensions. They include category-wise production of iron and steel and contribution to crude steel production by public and private sectors.

5.1 Category-wise Production of Iron and Steel

According to end use, broadly, iron and steel are categorized into pig iron, sponge iron and total finished steel. Table 2.1 depicts the production of pig iron, sponge iron and finished steel (alloy + non-alloy) in million tons for the last five years.

<table>
<thead>
<tr>
<th>TABLE 2.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category-wise Production of Iron and Steel</td>
</tr>
<tr>
<td>(in million tons)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category</th>
<th>2008-09</th>
<th>2009-10</th>
<th>2010-11</th>
<th>2011-12</th>
<th>2012-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pig Iron</td>
<td>6.20</td>
<td>5.88</td>
<td>5.68</td>
<td>5.37</td>
<td>6.87</td>
</tr>
<tr>
<td>Total Finished Steel</td>
<td>60.62</td>
<td>60.62</td>
<td>68.62</td>
<td>75.70</td>
<td>81.68</td>
</tr>
<tr>
<td>(alloy + non alloy)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Ministry of Steel, Annual Report of 2012-13

It is evident that crude steel production grew at a Compounded Annual Growth Rate (CAGR) of seven per cent during the last five years ending 2012-13. Production grew from 58.44 million tons in 2008-09 to 78.42 million tons in 2012-13, a growth of eight per cent (on a CAGR basis). In 2012-13, production for sale of pig iron increased from 6.20 million tons in 2008-09 to 6.87 million tons in 2012-13. The Production for sale of sponge iron was 21.09 million tons in 2008-09 and 14.33
million tons in 2012-13. Total finished steel stood at 81.68 million tons in 2012-13 as against 60.62 million tons in 2008-09.

5.2 Crude Steel Production – Public Sector Vs Private Sector

The contribution of the public and private sector in crude steel production in the country during the last five years is shown in Table 2.2.

<table>
<thead>
<tr>
<th>Year</th>
<th>Public Sector (in mt)</th>
<th>Private Sector (in mt)</th>
<th>Total Production (in mt)</th>
<th>Share of Public Sector (in %)</th>
<th>Share of Private Sector (in %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008-09</td>
<td>16.37</td>
<td>42.07</td>
<td>58.44</td>
<td>28.0</td>
<td>72.0</td>
</tr>
<tr>
<td>2009-10</td>
<td>16.71</td>
<td>49.13</td>
<td>65.84</td>
<td>25.0</td>
<td>75.0</td>
</tr>
<tr>
<td>2010-11</td>
<td>16.99</td>
<td>53.68</td>
<td>70.67</td>
<td>24.0</td>
<td>76.0</td>
</tr>
<tr>
<td>2011-12</td>
<td>16.48</td>
<td>57.31</td>
<td>73.79</td>
<td>22.0</td>
<td>78.0</td>
</tr>
<tr>
<td>2012-13</td>
<td>16.48</td>
<td>61.94</td>
<td>78.42</td>
<td>21.0</td>
<td>79.0</td>
</tr>
</tbody>
</table>

Source: Ministry of Steel, Annual Report of 2012-13

It is obvious that the private sector had an upper hand in the production of crude steel when compared to public sector. In other words, the share of contribution by public sector was less than that of the private sector. In private sector, crude steel production grew from 72.0 per cent in 2008-09 to 79.0 per cent in 2012-13, whereas production declined from 28.0 per cent to 21.0 per cent in the same year in public sector. It shows that the private sector would contribute largely in India to the production of crude steel.

6.0 GLOBAL RANKING OF INDIAN STEEL PRODUCTION

India has been ranked as the world’s fourth largest crude steel manufacturer by the International Iron and Steel Institute (IISI) and is
The global ranking of India for crude steel production in 2013 is shown in Table 2.3.

**TABLE 2.3**

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>Qty (mt)</th>
<th>% change over 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>China</td>
<td>779</td>
<td>7.5</td>
</tr>
<tr>
<td>2</td>
<td>Japan</td>
<td>111</td>
<td>3.1</td>
</tr>
<tr>
<td>3</td>
<td>United States</td>
<td>87</td>
<td>-2.0</td>
</tr>
<tr>
<td>4</td>
<td>India</td>
<td>81</td>
<td>5.1</td>
</tr>
<tr>
<td>5</td>
<td>Russia</td>
<td>69</td>
<td>-1.5</td>
</tr>
<tr>
<td>6</td>
<td>South Korea</td>
<td>66</td>
<td>-4.4</td>
</tr>
<tr>
<td>7</td>
<td>Germany</td>
<td>43</td>
<td>0.0</td>
</tr>
<tr>
<td>8</td>
<td>Turkey</td>
<td>35</td>
<td>-3.4</td>
</tr>
<tr>
<td>9</td>
<td>Brazil</td>
<td>34</td>
<td>-1.0</td>
</tr>
<tr>
<td>10</td>
<td>Ukraine</td>
<td>33</td>
<td>-0.5</td>
</tr>
<tr>
<td></td>
<td>World</td>
<td>1607</td>
<td>3.5</td>
</tr>
</tbody>
</table>

Source: Ministry of Steel, Annual Report of 2012-13

In 2013, total crude steel production of world was 1607 million tons. China’s crude steel production reached 779 mt and it remained the largest crude steel producer in the world producing 72 per cent of Asian and 48 per cent of world crude steel production in the same year. India was the fourth largest producer during this period and recorded a growth of 5.1 per cent over 2012.

**7.0 IMPORTS AND EXPORTS OF IRON AND STEEL**

Iron and steel products are freely importable and exportable as per the extant policy. Duty Entitlement Pass Book Scheme (DEPB) was introduced to facilitate exports. Under this scheme exporters on the basis of notified entitlement rates, are granted due credits which would entitle them to import duty free goods. In the past, India has been importing around 1.5 million tons annually. The DEPB benefit on export of various
categories of steel items scheme is currently applicable for steel exports. As per the record of Ministry of Steel\(^6\), the data on import and export of total finished steel in million tons (mt) for the last five years is presented in Table 2.4 and Figure 2.1.

**TABLE 2.4**

Imports and Exports of Finished Steel

<table>
<thead>
<tr>
<th>Year</th>
<th>2008-09</th>
<th>2009-10</th>
<th>2010-11</th>
<th>2011-12</th>
<th>2012-13</th>
<th>CAGR (in %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imports</td>
<td>5.84</td>
<td>7.38</td>
<td>6.66</td>
<td>6.86</td>
<td>7.93</td>
<td>6.30</td>
</tr>
<tr>
<td>Exports</td>
<td>4.44</td>
<td>3.25</td>
<td>3.64</td>
<td>4.59</td>
<td>5.37</td>
<td>3.87</td>
</tr>
</tbody>
</table>

Source: Ministry of Steel, Annual Report of 2012-13

**FIGURE 2.1**

Imports and Exports (in mt)

Source: Ministry of Steel, Annual Report of 2012-13

It is clear that an increasing trend in the imports and exports of total finished steel in India for the last five years was noticed. Its imports and exports rose from 5.84 mt and 4.44 mt in the year 2008-09 to 7.93 mt and 5.37 mt in 2012-13 respectively. As per the compound annual growth rate (CAGR), imports of total finished steel increased by an amount of 6.30 per cent whereas, exports grew by 3.87 per cent.
8.0 PROBLEMS OF IRON AND STEEL INDUSTRY

The major problems faced by Indian iron and steel industry are briefly presented:

8.1 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. It is only big investors who can venture into iron and steel production. Thus, the government has to come forward to erect steel plants.

8.2 Lack of Technology

Indian steel industry was characterized by a high degree of technological efficiency throughout the 1960s and up to the oil crisis in mid-1970s. The technology was mainly imported 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. Material value productivity in India is still very low. In Japan and Korea, less than 1.1 tons (and in several developed countries 1.05 tons) of crude steel is required to produce a ton of saleable steel. In India, the average is still high at 1.2 tons. Improvement in the yield at each stage of production, particularly for value added products shall be more important.
8.3 **Low Productivity**

The per capita labor productivity in India is 90-100 tons which is one of the lowest in the world. The labor productivity in Japan, Korea and some other major steel producing countries is about 600-700 tons per man per year. At Gallatin Steel, a mini mill in the United States, there are less than 300 employees to produce 1.2 million tons 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 labor force.

8.4 **Inefficiency of Public Sector Units**

Most of the public sector units are plagued by inefficiency caused by heavy investment on social overheads, poor labor relations, inefficient management, under utilization of capacity and the like. It hinders proper functioning of the steel plants and results in heavy losses.

8.5 **Low Potential Utilization**

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

8.6 **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.
8.7 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 instance, the 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.

8.8 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. Thus, there is urgent need to improve the situation and take the country out of the desperate position. Beside these, other enduring problems of Indian iron and steel industry are: (i) the control of prices by the government leaves very limited profits for future up-gradation; (ii) high-grade coking coal reserves are limited and India has to import coking-coal at market rates; and (iii) outdated technology of smelting and steel making is expensive and yields inferior quality products.

9.0 PROFILE OF SELECT IRON AND STEEL UNITS

The Iron and steel industry in India features both public sector companies with strong incumbent footing as well as rapidly developing private enterprises. The government owned Steel Authority of India with its five integrated plants and three special alloy plants is the biggest and most diverse in terms of production. Rashtriya Ispat Nigam Limited (RINL) is the corporate entity of Visakhapatnam Steel plant, the most
modern and successful plant owned by the government. Although the public run enterprises are losing their dominant position, they still account for a quarter of production. The private sector is currently playing an important role in the production and growth of steel industry in the country. The private sector units consist of both major steel producers on the one hand and relatively smaller and medium scale units such as Sponge Iron Plants, Mini Blast Furnace Units, Electric Arc Furnaces, Induction Furnaces, Re-rolling Mills, Cold-rolling Mills and Coating Units on the other. They not only play an important role in the production of primary and secondary steel, but also contribute substantially to value addition in terms of quality, innovation and cost effectiveness.

PUBLIC SECTOR

9.1 Steel Authority of India Limited (SAIL)

The Steel Authority of India Limited (SAIL) is one of the largest state-owned steel making companies based in New Delhi, India and one of the top steel makers in world with an annual turnover of Rs.49350 crore for the financial year 2012-13. It is a public sector undertaking, largely owned by the Government of India, trades publicly in the market and acts like an operating company with an annual production of 13.5 million metric tons. SAIL is the 24th largest steel producer in the world. SAIL operates and owns five integrated steel plants at Rourkela, Bhilai, Durgapur, Bokaro and Burnpur and three special steel plants at Salem, Durgapur and Bhadravathi. It also owns a Ferro Alloy plant at Chandrapur. As part of its global ambition, the
company has taken up a massive expansion and modernization programme involving upgrading and building of new facilities with emphasis on state of the art green technology. SAIL is one of India’s fastest growing public sector units. Besides, it has Research and Development Centre for Iron and Steel (RDCIS), Centre for Engineering and Technology (CET), Management Training Institute (MTI) and SAIL Safety Organization (SSO).

9.2 Rashtriya Ispat Nigam Limited (RINL)

The Rashtriya Ispat Nigam Limited (RINL), corporate entity of Visakhapatnam Steel Plant is a Navratna Company under the Ministry of Steel, Government of India. Visakhapatnam Steel Plant – popularly known as “Vizag Steel”, is one of the first shore-based integrated steel plants in India. It is one of the leading companies in “long” steel products. It caters to the requirements of the construction, infrastructure, manufacturing and automobile sectors. RINL’s products have wide acceptance in the market as they are made from cent per cent virgin steel, with stringent tolerances in both physical and chemical properties, and are the preferred steel maker for a wide array of customers. With more than 75 per cent of value added products in its basket, RINL has a wide marketing network spread across the country. The plant, on the verge of completion of its expansion to 6.3 MTPA (million tons per annum) of liquid steel, has been operating above its rated capacity at high levels of operational efficiency, consistently making profits for more than a decade. In order to maintain its techno economic
supremacy, RINL is modernizing its existing assets, which would further increase the capacity to 7.3 million tons by 2017.

PRIVATE SECTOR

9.3  Essar Steel Limited (ESL)

Essar Steel Limited (ESL) is an integrated steel producer which manufactures and sells steel products primarily in India. The company was incorporated in 1976 and is based in Mumbai, India. Essar Steel Limited is a subsidiary of Essar Steel Asia Holdings Limited, Mauritius. Essar Steel is a global integrated steel producer with an annual capacity of 14 million tons with a strong presence in intensive steel consuming markets of Asia and North America. The company offers hot rolled, cold rolled, and galvanized steel products; color coated sheets; and pipes and plates, as well as shot blasted and primed plates, factory welded beams, burnt-to-shape plates, trapezoidal blanks, and chequered plates. It provides steel products for use in engineering, shipbuilding, automotive, construction, railways, white goods, line pipes, wind engineering and power generation, boilers and pressure vessels, and yellow goods. The company operates approximately 350 retail outlets for sale of steel under the Essar Hyper mart brand name. ESL also exports its products to the European Union, the Middle East, NAFTA region, the ASEAN, and African countries.

9.4  Jindal Steel and Power Limited (JSPL)

Jindal Steel and Power Limited (JSPL) is one of the leaders in steel manufacturing and power generation in India. JSPL is the largest private sector investor in the state of Chhattisgarh with a total investment
commitment of more than Rs. 10,000 crores. JSPL operates the largest coal-based sponge iron plant in the world and has an installed capacity of 3 MTPA (million tons per annum) of steel at Raigarh in Chhattisgarh. Also, it has set up a 0.6 MTPA wire rod mill and a 1 MTPA capacity bar mill at Patratu, Jharkhand and a 2.5 MTPA steel melting shop and a plate mill to produce up to 5.0 meter-wide plates at Angul, Odisha. JSPL has also ventured into exploration and mining of high value minerals and metals, like diamond, precious stones, gold, platinum group of minerals, base metals, tar sands and the like. JSPL has been rated as the second highest value creator in the world by the Boston Consulting Group, the 11th fastest growing company in India by Business World and has figured in the Forbes Asia list of Fab 50 companies. It has also been named among the Best Blue Chip companies. It has ranked 4th in the list of companies that generated the highest total income in the iron and steel sector.

9.5 Tata Steel Limited (TSL)

Tata Steel Limited (TSL) (formerly Tata Iron and Steel Company Limited (TISCO)) is an Indian multinational steel-making company headquartered in Mumbai, Maharashtra, India, and a subsidiary of the Tata Group. It was the 11th largest steel producing company in the world in 2013, with an annual crude steel capacity of 25.3 million tonnes, and the second largest private-sector steel company in India with an annual capacity of 9.7 million tonnes. TSL has manufacturing operations in 26 countries, including Australia, China, India, the Netherlands, Singapore, Thailand and the United Kingdom. Its largest plant is located
in Jamshedpur, Jharkhand. In 2007 TSL acquired the UK-based steel maker, Corus, which was the largest international acquisition by an Indian company till that date. It was ranked 486th in the 2014 Fortune Global ranking of the world’s biggest corporations. It was the seventh most valuable Indian brand of 2013 as per Brand Finance. TSL completed 100 years of steel making in India as on 16 February of 2012.
REFERENCES


6. Annual Reports of Ministry of Steel, Government of India.


Websites

http://www.sail.co.in

http://www.vizagsteel.com

http://www.essarsteel.com

http://www.jindalsteelpower.com

http://www.tatasteel.com

http://worldsteel.org

63