CHAPTER - I

PERFORMANCE OF IRON AND STEEL INDUSTRY IN INDIA
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1.1 INTRODUCTION

The Indian Steel Industry is today the 8th largest producer of steel in the world. Steel is a highly capital intensive industry and cyclical in nature. Its growth is intertwined with the growth of the economy at large. The steel industry contributes 1.3 per cent to India's GDP and accounts for 10 % in Excise Duty Collections. Indian steel industry is with capital investments of over Rs. 1,00,000 crores. It provides employment to 2 million people. The steel industry plays a vital role in transforming India into an economic superpower. Steel provides basic raw materials to the large number of industries such as engineering, machine tools, ship-building, railways and other industries.

1.2 ORIGIN OF IRON AND STEEL INDUSTRY

The name "iron" comes from the Scandinavian "iarn". It is told that iron was produced for the first time when some pieces of ore, used in cook fires, reduced, when fires were kept long enough. Iron has been known and used since prehistoric times. The writings of the earliest civilizations refer to it, and there is evidence that it was known more than 7000 years ago; in China the usage of steel goes back to 2550 B.C. Considering that iron utensils are less frequent than those of bronze, archaeologists consider the Bronze Age before
the Iron Age. In fact bronze is easier to extract and work than iron. They believe that bronze was abandoned as utensil and weapon by 500 B.C. The lack of copper and the abundance of iron lead the Hindus to develop new techniques for iron working, later used in Europe by several civilizations such as the Etruscans in Northern Italy.

After the fall of the Roman Empire, iron production suffered a considerable development in particular in Spain, being famous the steel blades of Toledo and its craftsmen. These craftsmen went to France and Germany, where they introduced the bloomery which developed and originated the big furnaces. The bye-products of the bloomery were a kind of malleable iron or steel; the big furnaces produced a wide variety of iron that could not be hardened but it was suitable for other kinds of casting and moulding.

The discovery, by Cort, of a transformation process of this kind from iron to forge-iron, with considerable lower production costs than the bloomery process, considerably increased the production in England.

1.3 TYPES OF IRON & STEEL

a. Wrought Iron: Wrought Iron is pure iron mixed with iron silicate. When rolled through the mills a few times, its structure takes on the characteristics of wood, having a definite grain structure. It is forged at a yellow heat.
b. Carbon steels: Most carbon steels contain less than 1.5% carbon. Mild steel, as we once knew it, was labeled 1018-1020 and contained .18% and .20% carbon respectively. Today this is only true for steels smaller than 1/4" thick and over 4" in width.

c. Alloy steels: Since carbon steels can only be hardened to a depth of 1/8", large pieces of hardened steel were not available to industry. The most alloying metal is chrome. Chrome does two things: One is it allows for deeper hardening and another is for increased resistance to deforming at elevated temperatures. Other metals that improve strength and deep hardening are molybdenum, vanadium, nickel and tungsten.

1.4 HISTORY OF IRON AND STEEL INDUSTRY IN INDIA

Steel making in India is an age-old one. Even at the dawn of the 17th century BC Indians were learnt to have possessed the skill to produce quality steel, going by the findings from archaeological excavations at various sites. For centuries India has been producing steel, the best proof of which is the famous Iron Pillar of Delhi, built by Chandragupta II Vikramaditya in the fourth and fifth century AD. Even in the ancient days, Indians manufactured steel by using charcoal. Coal was discovered only in 1774, and mining started between 1820 and 1830 at West Bengal’s Asansol-Ranigunj area.
In the 19th century there was a revival of sorts in steel making. In 1830, attempts were made to set up iron and steel works based on indigenous raw materials and imported technology and using charcoal on the Chennai (Madras) coast. Some iron units sprang up at Pullampatti near Tiruvannamalai, Beypore on the Malabar Coast, Bhadravati (earlier called Benkipuura) in Karnataka, and Golconda in 1853 with a total production of 40 tonnes a week. Following suit were Birbhum Iron Works in Calcutta (1855) and the Kumaon unit (1862) in the United Provinces. All these attempts using the crucible process failed due to their uneconomic scales of operation. Organised steel production started in West Bengal with the foundation of Bengal Iron Works by James Erskine in 1870 at a place called Kulti (then better known as Kendwa) in Bardhaman district. By 1875, operations started with top-open furnaces and poor quality iron ore and raw coal were used instead of coke. By the first decade of the 20th century, Kulti produced steel using openhearth furnaces. However, the efforts did not survive the competition from imported steel. So, though Kulti was the first plant to produce both iron and steel, the credit goes to the Tatas as they did it on a continuous basis in a village called Sakchi in today's Jharkhand. In 1907, Tata Iron & Steel was floated. By the end of 1911, the plant produced its first cast of pig iron. Within three months it started producing steel.
Meanwhile, the Kulti plant kept on changing hands. At one time, it was owned by the Government's Public Works Department as the concept of public sector unit was yet to germinate. By the end of the 19th century, ownership of Bengal Iron Works went to Sir R.N. Mookerjee and Sir Acquin Martin.

By 1918, Burn & Co, a British managing agency, floated Indian Iron & Steel Co (IIS Co). The second steel plant in Bengal was built in Burmpur, adjacent to Kulti, by G.H. Fairhurst. In 1936, Bengal Iron Works was merged with IISCo. Three years later, Steel Corporation of Bengal established another steel plant at Bumpur adjacent to IISCo. Later, the two were merged. In the early 1950s, it was managed by Martin Burn. Total capacity increased to one million tonnes and IISCo became a blue-chip with its shares listed on London Stock Exchange.

In the south India The Mysore Iron and Steel Works at Bhadravati, promoted in 1923 by the then Dewan of that principality. Sir M.Visveswarayya and the Steel Corporation of Bengal established in 1937 preferred the open hearth process.

Use of electricity for steel making also came into vogue with the installation of two electric arc furnaces in Calcutta by Hukamchand Electric Steel Company. In 1928, the electric re-rolling industry came into being with a
unit in Kanpur making sheets from discarded steel scrap. By 1946, there were 32 registered re-rolling mills with a total capacity of 1.41 akhs tones per annum. During World War II TISCO and IISCO were making low-cost iron and steel of international quality standards

1.5 GROWTH OF IRON AND STEEL INDUSTRY IN POST INDEPENDENCE ERA

After Independence, till the Second Five Year Plan (1956-61), the progress of the steel industry was slow and halting. The entry of the Government in this field gained momentum when the Government of India passed Industrial Policy Resolution of 1948 and 1956 putting steel under public sector purview. Although the private sector was allowed to expand the old big plants and set up new small ones, the 1956 Industrial Policy Resolution reserved the right to establish new plants by the government.

The Second Five Year Plan period (1956-61) saw a remarkable progress in iron and steel industry. During this period, three integrated steel plants were started with one million tones per annum capacity each were floated in collaboration with foreign governments. They are Durgapur Steel Plant in collaboration with U.K., Rourkela Steel Plant in collaboration with West Germany and Bhilai Steel Plant in collaboration with Soviet Union.
Meanwhile, TISCO and IISCO were permitted to expand their capacities to two million tonnes each. In 1966, the Government of India started the 4th steel plant in public sector at Bokaro. During the next decade, in early 1970s the Government established two more steel plants one in Visakhapatnam in Andhra Pradesh and another at Salem in Tamilnadu. Further in 1973 the public sector units in Durgapur, Rourkela, Bhilai, Bokaro, Salem and Bhadravati were grouped under the Steel Authority of India Ltd (SAIL) to which the Indian Iron and Steel Company (IISCO) a private sector unit became fully owned subsidiary. The main purpose of establishing SAIL was to centralize policy-making and decentralize administrative and operational responsibilities down to the plant level. And also, the country's first shore-based and most modern Visakahapatnam steel plant was rechristened as Rashtriya Ispat Nigam Limited. Later, in 1978 it was restructured as an operating company. At present, SAIL is India's largest steel manufacturer with an annual production of 12 million tonnes per annum (mtpa) and, according to its Corporate Plan, this is being increased to 22.5 mtpa by 2010.

1.6 LIBERALISATION OF THE INDIAN STEEL SECTOR

The progress of the steel industry has a critical influence on the pace of India's development and as such great importance is attached to capacity expansion in line with expected demand at cost and prices which make Indian steel internationally competitive. The new economic policies being pursued by
the government have opened up new opportunities for the expansion of the steel industry. With a view to accelerating the growth of the steel sector, the government has initiated a number of policy measures since 1991.

In consequence of the new Industrial Policy announced in July 1991, iron and steel industry among others, was removed from the list of industries reserved for the public sector and also exempted from the provisions of compulsory licensing under the Industries Development and Regulation Act, 1951. The Iron and Steel Industry was included in the list of 'high priority' industries for automatic approval for foreign equity investment up to 74%. Besides, several duty concessions and incentives were offered for steel industry.

This liberalization era dawned in the nineties witnessed new private sector players like Essar Steel, Lloyds Steel, Ispat Group, Jindal Vijayanagar Steels Limited and several others. They adopted newer cost efficient and qualitative routes for steel making like coal-based DRI(Direct Reduced Iron), gas-based DRI, Conarc(energy efficient twin shell furnace) and Corex-BOFCC-HSM and set up several Greenfield units. TISCO and SAIL units adopted selective introduction of efficient technologies for achieving cost-effectiveness. At present, in the primary sector, there are nine integrated steel mills in the country with a total annual capacity of 17.73 million tonnes.
1.7 INDUSTRY STRUCTURE

The iron and steel industry in India is organized in three categories' viz., 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. In 2004-05, the main producers i.e. SAIL, TISCO and RINL had a combined capacity of around 19.3 mt and capacity utilization was 104 percent. The other major producers comprising of ESSAR, ISPAT and JVSL had a capacity of 6.4 mt with capacity utilization of 97 percent. The secondary sector is dispersed and consists of:

(a) Backward linkage from about 120 sponge iron producers that use iron ore and non-cooking coal, with a capacity of around 13 mt, providing feedstock for steel producers. The capacity utilization in 2004-05 was 75 percent.

(b) About 650 mini blast furnaces, electric arc furnaces, induction furnaces and energy optimizing furnaces that use iron ore, sponge iron and melting scrap to produce steel. Their capacity is around 14.7 mt, and capacity utilization in 2004-05 was 58 percent.

(c) Forward linkage with about 1,200 re-rollers that roll out semis into finished steel products for consumer use. These are small and medium enterprises, whose reported capacity is around 15 mt, and capacity utilization in 2004-05 was 55 percent.
1.8 SWOT ANALYSIS OF THE INDUSTRY

The strengths, weaknesses, opportunities and threats for the Indian steel industry have been tabulated below. The national steel policy\(^3\) lays down the broad roadmap to deal with all of them.

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Availability of iron ore and coal</td>
<td>1. Unscientific mining</td>
</tr>
<tr>
<td>2. Low labour wage rates</td>
<td>2. Low productivity</td>
</tr>
<tr>
<td>3. Abundance of quality manpower</td>
<td>3. Cooking coal import dependence</td>
</tr>
<tr>
<td></td>
<td>5. High cost of debt</td>
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<td></td>
<td>6. Inadequate infrastructure</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Unexplored rural market</td>
<td>1. China becoming net exporter</td>
</tr>
<tr>
<td>2. Growing domestic demand</td>
<td>2. Protectionism in the West</td>
</tr>
<tr>
<td>3. Exports</td>
<td>3. Dumping by competitors</td>
</tr>
<tr>
<td>4. Consolidation</td>
<td></td>
</tr>
</tbody>
</table>

1.9 STEEL DEMAND

a. **Urban Areas:** The present steel consumption per capita per annum is about 30 kg in India, compared to 150 kg in the world, and 350 kg in the developed world\(^4\). The estimated urban consumption per capita per annum is around 77 kg in the country, expected to reach approximately 165 kg in 2019-20, implying a CGR of 5 percent. Apart from the anticipated growth in the construction, automobile, oil and gas transportation, and infrastructure sectors of the economy, conscious promotion of steel usage among architects, engineers and students by the Institute of Steel Development and Growth (INSDAG) and the large
producers will drive this additional consumption. Steps would be taken to encourage usage of steel in bridges, crash barriers, fly overs and building construction. Benefits of steel usage would be added to the technical education curricula in the country.

b. **Rural Areas:** The rural consumption of steel in India remains at around 2 kg per capita per annum, primarily because steel is perceived to be expensive among the village folks. Based on the promotional efforts mentioned above, and an active focus on opening new block level rural stock points, a target is set for raising the per capita rural consumption of steel to 4 kg per annum by 2019-20, implying a CGR of 4.4 percent.

c. **Exports:** Although the focus of Indian steel industry is on the domestic market, export will be another window on the demand side. The growth of exports of steel from India has been around 10 percent per annum over the past decade. That speaks for the international cost competitiveness of the steel sector. It takes assiduous effort to create, and hold on to export markets. While the business decision to export will depend on the prevailing relative prices, the Government would encourage strategic alliances with buyback arrangements and dedicated export production through 100% export-oriented units. A growth rate of around 13 percent per annum is envisaged up to 2019-2020.
1.10 STEEL SUPPLY

While the country has rich endowments of iron ore and non-cooking coal, and has cheap labour, this advantage is neutralized considerably by low material and energy efficiency, poor quality, poor productivity, and high cost of cooking coal, power, freight and finance. The policy for making the critical inputs available to the industry are outlined in the following paragraphs.

Critical Inputs: In order to support steel production of 110 mt by 2019-20, at 100 percent capacity utilization, the required quantities of critical inputs such as iron ore, cooking and non-cooking coal can be seen in the Table 2 below. The projected requirements are based on the assumption that new capacities will be 60 percent through the Blast Furnace (BF) route, 33 percent through the Sponge Iron - Electric Arc Furnace (EAF) route and 7 percent through other routes.

Table 1.1

CRITICAL INPUTS FOR STEEL (in million tonnes)

<table>
<thead>
<tr>
<th></th>
<th>Iron Ore</th>
<th>Cooking Coal</th>
<th>Non-Cooking Coal</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019-20</td>
<td>190</td>
<td>70</td>
<td>26</td>
</tr>
<tr>
<td>2004-05</td>
<td>54</td>
<td>27</td>
<td>13</td>
</tr>
</tbody>
</table>

Iron ore: At present, the in-situ reserves of relatively rich iron ore in India are 11.43 billion tonnes of haematite and 10.68 billion tonnes of magnetite ores. Though the reserves of haematite ore appear to be large, high-grade lumpy reserves constitute only 8.7 percent of the total. Further, the present
commercial mining capacity for iron ore is only 175 mt. Production of iron ore in 2004-05 was 145 mt, of which 54 mt was domestically consumed and 78 mt was exported. Of the 600 mining leases, only 246 were operated in 2003-04.

In order to ensure availability of 190 mt of iron ore for domestic production of steel by 2019-20, Government would encourage investments in creation of an additional modern mining and beneficiation capacity of 200 mt. The size of these investments will be around Rs. 20,000 crore. The current policy of captive mining leases for the private sector would continue, but it is necessary that investment plans be put in place for idle mining leases. State governments would recommend renewal of existing leases only against credible mining investment plans in a specified period. The Government would lay down priorities and guidelines for the State governments to recommend fresh mining leases, having regard to the entrepreneur's mining investment plans, and technical and financial capabilities. Environmental and forest clearances would be granted within a pre-specified time frame. Though local value addition would be given priority, the Government would encourage iron ore trading in order to make this essential raw material available to the iron and steel industry throughout the country. The Government would encourage investments in adding value to iron ore fines. Scientific mining and economies of scale would also be encouraged through consortia of small users and by prescribing a minimum economic size for mines.
Exports of iron ore: After remaining stagnant at around 35 mt for about a decade (between 1991-92 to 1999-2000), exports of iron ore from India have grown in the last 4 years to 78 mt in 2004-05 on the back of large exports of iron ore fines to China. Fines and concentrates, which have little use in India except as a negative environmental externality, make up about 90 percent of Indian iron ore exports currently. As investments are made into beneficiation, sintering and pelletization in the country, which will use these fines, the growth in exports of iron ore is likely to decline. Exports have thus been estimated to be around 100 mt by 2019-20. In terms of future policy, exports of iron ore, especially high-grade lumps, would be leveraged for imports of cooking coal or for investment in India. Long-term export supply of iron ore would be confined to a maximum of five-year contracts. This duration would be reviewed from time to time. A judicious balance would continue to be maintained between exports and domestic supply of iron ore.

Cooking coal: The proven reserves of prime cooking coal are only 4.6 billion tonnes. The quality of Indian cooking coal is also not suitable for steel. The production of coal during 2001-02 was 328 mt, out of which cooking coal amounted to only 29 mt. The low ash cooking coals required by steel makers was around 10 mt in 2001-02. Cooking coal production has declined at an annual rate of 4.7 percent during the decade ending 2001-02.
Poor quality domestic prime cooking coal has to be blended with imported coal. Currently the steel industry imports around 19 mt of cooking coal annually, and procures 7.5 mt from indigenous sources including captive mines. By 2019-20, about 70 mt of cooking coal will be required, of which 85 percent will have to be imported.

The imperatives of cooking coal security require that new sources of cooking coal be tapped. Accordingly, the Government would aim for the coal sector to become market-driven, but in the meantime continue allocation of captive cooking coal blocks to steel plants, and establish mechanisms to share their surplus resource with other steel plants. The Government would encourage joint ventures and equity participation abroad by steel and coal companies. Simultaneously, efforts would be made to develop and adapt technologies, which have synergy with the natural resource base (non-cooking coal) of the country. The steel industry would be encouraged to make investments in washing and beneficiation of coal.

Non-Cooking Coal: With proven reserves of 74 billion tonnes, non-cooking coal constitutes around 82 percent of the total coal reserves in India. Production of non-cooking coal at 294 mt during 2001-02 was 91 percent of the total coal production of 328 mt. In 2004-05, the steel sector consumed about 8 mt of non-cooking coal, excluding thermal coal for captive power plants.
Sponge iron grade non-cooking coal: The sponge iron industry using non-cooking coal as input material will play an important role in future as a substitute input for coke. The capacity of sponge iron industry would increase from the current 13 mt to 20 mt by the end of 2010-11, at a growth rate of 6.5 percent per annum, and thereafter, till 2020, grow to 38 mt. The current trends indicate that a large number of sponge iron based steel units may come up in the states of Orissa and Jharkhand. By 2019-20 the steel industry will demand around 26 mt of non-cooking coal of higher grades.

Available data show a declining rate of growth in production of non-cooking coal in India. In the decade of 1980s, the growth rate was 6.5 percent, which fell to 3.9 percent in the 1990s. In the last five years the growth rate has been 4.7 percent. The power plants are, therefore, planning to import large quantities of thermal coal. Further, Indian coal is high in ash content, which will force non-cooking coal based steel production also to go for some imports.

While market forces should allocate resources to their most efficient uses, which would require the coal sector to be deregulated, a strategy for the transitional period would be needed. Accordingly, the sponge iron and steel industry would get first priority in the allocation of higher grades of non-cooking coal of below 12 percent ash content, being essential feedstock. Greater flexibilities would be introduced in the form of sale of surplus coal, re-
allocation of existing unused linkages with Coal India Limited, and allocation to consortia of small users. Joint ventures of public sector companies with the private sector would be explored in order to finance the required investments.

Natural Gas: The pricing mechanism for natural gas, taking into account the cyclical nature of the steel industry, needs to move gradually towards market-determined prices. It would also be desirable to put in place the regulatory framework, as natural gas stocks are limited in the country and sufficient level of competition has to be ensured in this sector. Further the industry needs time for adjustment as price shocks lead to loss of business confidence.

Considering the importance of gas based steel plants due to (a) environmental cleanliness, (b) shortages of cooking coal required for other major routes, and (c) natural gas being a feedstock for sponge iron plants and not just a heating source, the present system of allocation and pricing of natural gas to the steel sector would remain under continual review.

Refractories: Refractories are used to line various high temperature vessels used in the steel manufacturing process. India has a refractory industry of 80 units with 1.6 mt capacity, and utilization of just 55 percent in 2004-05. It needs modernizing and upgrading. The Government would foster closer technical interaction between the steel industry and the refractory industry so as to achieve fewer breakdowns, reduced down time and prompt hot repairs.
The Government would also support basic and applied research in utilizing indigenous refractory raw materials through partnerships between steel and refractory producers.

1.11 INFRASTRUCTURE

Inland transportation: It is estimated that every tonne of steel production involves transportation of 4 tonnes of material. The envisaged addition of 75 mt of steel annually implies 300 mt of additional traffic. In a globally integrated economy, minimization of the overall cost of transportation becomes an important instrument of maintaining the competitive edge in both the domestic and overseas markets.

Table 3 below shows the year-on-year growth in gross capital formation for 'Railways' and 'Transportation by other means'.

Table 1.2

<table>
<thead>
<tr>
<th></th>
<th>Railways</th>
<th>Transport by other means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railways</td>
<td>5068</td>
<td>5019</td>
</tr>
<tr>
<td></td>
<td>(-0.99)</td>
<td>(-5.7)</td>
</tr>
<tr>
<td>Transport by other</td>
<td>16460</td>
<td>18153</td>
</tr>
<tr>
<td>means</td>
<td>(10.3)</td>
<td>(17.2)</td>
</tr>
</tbody>
</table>

Note: Figures in parentheses indicate year-on-year variation.
Railways: The railways transport iron ore and coal from mines and ports to the plants, and steel to ports and consuming areas. However, over the last decade railways has been consistently losing traffic originating in the steel sector to the roads. The share of railways in transporting finished steel has declined from 71.9 percent in 1991-92 to 34.4 percent in 2001-02. The decline has been largely on account of railway's competitive weakness in the face of challenges from other modes of transport like roads, pipeline and coastal shipping. Replacement of the 'equalized railway freight' by 'freight ceilings' is also partly responsible for the modal switch. On the basis of the present share of railways and roads in the movement of raw materials and finished/saleable steel, the expected scenario by 2019-20 appears to be as follows:

Table 1.3
Modal Distribution of Traffic, 2004-05 and 2019-20

<table>
<thead>
<tr>
<th>Expected traffic originating in the steel sector to be handled by the railways (mt)</th>
<th>2004-05</th>
<th>2019-20</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Railways</td>
<td>Road</td>
</tr>
<tr>
<td>Raw Materials*</td>
<td>80</td>
<td>34</td>
</tr>
<tr>
<td>Finished Steel</td>
<td>11</td>
<td>27</td>
</tr>
<tr>
<td>Total</td>
<td>91</td>
<td>61</td>
</tr>
</tbody>
</table>

* Excludes traffic due to export of iron ore.

Based on the average lead distance over which the freight needs to be computed for raw materials for steel making and finished products, it is estimated that the total traffic generated for railways originating due to the iron and steel industry would be around 120 billion tonne kilometer by 2020. The total traffic for railways including export of iron ore will be around 150
billion tonne kilometer. This estimate, however, may change somewhat depending on the exact location of the new (green-field) plants and mines coming up in the next two decades.

The Railway facilities, therefore, would need to be expanded substantially in view of the renewed investor interests in the creation of additional steel capacities - both in green field and brown-field projects. The outlay for railways as a percentage of total plan outlay has come down from 10.3 percent (up to 4th Plan) to 6.8 percent (10th Plan). Resource constraints may necessitate participation by the steel industry in the creation of railway infrastructure, especially in the capital-intensive areas of laying tracks and procuring wagons. Besides ensuring availability, the railways would also need to re-examine their freight structure and improve quality of services. Dedicated freight trains in the private sector would be encouraged.

Roads

Similarly, the existing road network needs to be expanded and strengthened considerably for reducing the transaction costs of the Indian producers. The steel plants and mines need to be integrated with the on-going programmes of national highway development and also with the proposed rural road schemes for expanding the delivery chain of steel across the country, especially the rural areas.
Geographical coverage of the country by road transportation remains woefully low despite the quantum jump in construction of roadways across India in the recent years. Performance of the Indian road sector is poor in terms of effective sustained velocity of movement. This is demonstrated by the fact that roads now carry an overwhelming 85 percent of passenger traffic and 70 percent of freight, and that highways account for around 40 percent of this movement while making up only 2 percent of the overall road network. The steel industry would be encouraged to create links to the nearest available highways. But the task of expanding the highway network would continue through public-private partnerships.

Ports

After liberalization of the economy, the Indian steel industry has become highly dependent on port infrastructure both in terms of imports of critical input materials like coal and coke and export of saleable steel. Keeping in view the strategic goal of achieving a production of 110 mt of steel per annum and an annual export level of 26 mt by 2019-2020, the port facilities would also have to be expanded substantially. The projected bulk to be handled at ports is shown below:
The current Government policy allows private capital in port development. Steel producers would be encouraged to develop port and berth facilities so as to improve productivity, turn around time, capacity to handle larger vessels and other operational parameters of efficiency.

**Power**

The additional requirement of power for the steel industry would be 7,000 MW by 2019-20, requiring an additional investment of Rs. 24,500 crore. The Electricity Act, 2003 and the National Electricity Policy allow captive generation of power and trading of surplus power. This will facilitate growth of investment in captive power plants by the steel industry. At the same time the Government would encourage the industry, and the secondary sector in particular, to bring down the specific consumption of power.

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**Table 1.4**

**Growth in Port Traffic, 2004-05 to 2019-20**

<table>
<thead>
<tr>
<th></th>
<th>Bulk to be handled at ports (mt)</th>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Import</td>
<td>Export</td>
<td>Total</td>
<td>Import</td>
<td>Export</td>
</tr>
<tr>
<td>Raw Materials*</td>
<td></td>
<td>19.3</td>
<td>78</td>
<td>97.3</td>
<td>85</td>
<td>100</td>
</tr>
<tr>
<td>Steel</td>
<td></td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>26</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>21.3</td>
<td>82</td>
<td>103.3</td>
<td>91</td>
<td>126</td>
</tr>
</tbody>
</table>

*Including iron ore
Financial Resources

In order to achieve the strategic goal of 110 mt of steel production by 2019-20, the industry would need additional capital to the tune of Rs.230,000 crore. In addition, funds would be required for technological upgrade of existing facilities. However, the outstanding advances of the banking sector to the industry at the end of 2003-04 were only Rs. 26,295 crore. The cost of capital in India is among the highest as shown in Table 6.

<table>
<thead>
<tr>
<th>COST OF CAPITAL (% per annum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan USA Germany China S. Korea Brazil India World</td>
</tr>
<tr>
<td>1.4 4.1 4.2 5-6 6 9.75 11 5</td>
</tr>
</tbody>
</table>


To mobilize such vast resources, direct foreign investment would be encouraged. In addition the external commercial borrowing norms would be reviewed periodically to facilitate smooth inflows of debt, and to bring down the cost of capital. Steel is one of the six sectors that figure in the index of industrial production for "infrastructure," but the fiscal incentives available to the infrastructure projects are not available to the steel industry. Suitable incentives would therefore be devised for the steel industry.
1.12 **STEEL PRICES**

Following de-regulation of prices for integrated steel plants in 1991-92, the domestic prices of steel have become market-determined. Market prices remain in step with international prices, though generally lower. During industry downturns, prices fall and during upturns, they rise. While rationalization of the customs and excise duty structure is aimed primarily at reducing fiscal and revenue deficits, it has an indirect influence on consumer prices. At present, there are around three thousand units manufacturing steel and steel products, which are marketed by over 100,000 traders for ultimate consumers. This dispersal of the distribution chain has been the principal reason why no price regulation of the steel trade has ever been in force. Government has recently set up a Competition Commission to look into complaints of monopolistic pricing.

**Steel futures**

The cyclical nature of the steel industry deters fresh investments due to risks of recession. The mismatch between demand and supply also leads to price volatility witnessed during recent times. Stagnation in steel prices for long periods followed by sudden spurt also affects the consumers and the infrastructure industry. Therefore, the efforts of various stakeholders to develop risk-hedging instruments like futures and derivatives would be supported.
1.13 PROBLEMS OF INDIAN STEEL INDUSTRY

After independence and during planning period and more with economic liberalization, the Indian Iron and Steel Industry made impressive growth and development and today India is the 10th largest steel producing country in the world. This sector represents around Rs.90,00 crores of capital and directly provides employment to over 5 lakh of people. In spite of such impressive growth, our steel industry's performance is not considered satisfactory as the country still remains the net importer. This is because the industry is facing many problems. Steel has been one of the worst hit sectors in the last 2-3 years due to the current economic slow down. It suffers from the lack of demand, unremunerative prices, increasing cost of inputs, technological obsolescence, increasing competition adopted by the government etc. However, the major reasons for the slow growth in the last few years include:

a. Sluggish demand in the Steel consuming Sectors: There was overall economic slow down in the country for last few years. The steel being the basic raw material for the construction industry, the capital goods and engineering goods industry like the auto sector and white goods sector, the growth of steel sector is depending on the demand for steel by these segments of the industry. (The real GDP growth was 4.5% in the year 1998-99 as compared to 5.1% in 1997-98 and 7.85% in 1996-97. In the same period growth of industrial production was at 3.7% in 1998-99
compared to 5.9% in 1997-98 and 6% in 1996-97). Since no major infrastructure or construction projects have been implemented in the last few years, no major projects in the oil sector, power sector, fertilizer sectors where intensity of steel consumption is high have come up in the recent past which forced the domestic steel producers to scale down their production.

b. **High operating cost**: power tariff, freight rates, coal prices etc., have been under the higher administered price regime. For instance, Indian industry has to pay heavily for power at the rate of US $0.085 - 011 per KWh as against US $0.04 per KWh paid by US industry. These rates have been frequently enhanced, thereby contributing to the rise in input costs for steel making.

c. **High cost of Capital**: The cost of capital in India is 16-17% per annum compared to 6-7% per annum in other countries. In Japan financial institutes provide loan at an interest rate of 3% to the industry.

d. **Lack of Investment by Government / Private Sector in Major Infrastructure Projects**: Due to budgetary constraints, no major construction activity in mega projects including fertilizer, power, coal, railway etc., have been planned by the Government. Despite liberalization of the economy and relaxation in the investment norms, private sector investment is yet to materialize in the core demand for steel.
e. **Low productivity:** The productivity in India's steel plant is below world norms by about 66% which pushes up the operating cost further.

f. **Greater Competition from Imports:** Due to the drastic reduction in import duties in iron and steel materials along with sharp fall in international prices, the imports of finished steel have shown an increasing trend.

g. **Dumping of finished steel in the country:** Taking advantage of lower tariff regime and the unrestricted import of all iron and steel materials with the liberalization of the EXIM policy on one hand, and the collapse of local steel demand in South East Asia as well as CIS countries on account of financial crisis there, some countries are reportedly dumping their finished steel products in India.

h. **Adverse conditions in Export Markets:** Due to economic crisis in South East Asian countries and new competition from Indonesia, Malaysia and Korea India's steel exports were severely affected.

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