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Steel even today is decidedly the vital component of a country's economy and is considered as the crux of modernisation. The level of per capita consumption of steel is treated as one of the important indicators of socio-economic development and living standards in any country. Steel continues to be the foremost engineering material and is environment-friendly and is recyclable. It is a product of large and technologically complex industry having strong forward and backward linkages in terms of material flow and income generation.

The finished steel production in India has grown from a mere 1.1 million tonnes in 1951 to 56.08 million tonnes in 2007-08. The growth in the steel sector in the early decades after independence was mainly in the public sector units. However, following the adoption of new economic policy and subsequent deregulation and decontrol of Indian Iron & Steel Sector, the 1990's witnessed accelerated growth in the private sector catapulting its share from 45% in 1992-93 to 76% in 2007-08.

Steel exports from India began in 1964. Exports in the first five years were mainly as a result of recession in the domestic Iron and Steel market. Exports subsequently declined due to revival of domestic demand. India once again started exporting steel in 1975 only to witness slump again due to rising domestic demand. Post liberalisation, a rejuvenation in the steel sector, resulted in large-scale exports of iron and steel. In 1991-92, the main producers exported 3.87 lakh tonnes. Exports rose to 1.68 million tonnes in 1998-99 and to 8.25 million tonnes in 2007-08. Though the country's production of iron & steel is sufficient to meet the domestic demand, it imports mainly finished/semi finished steel and iron & steel (scrap) to meet requirements of supply of essential grades.

Liberalisation of the Indian Steel Sector

The Government's new economic policies have opened up opportunities for expansion of the Steel Industry. With a view to accelerating growth in the steel sector, the Government since 1991 has been initiating and implementing a number of policy measures. These measures have impacted the Indian steel sector as under:

- * Large-scale capacities were removed from the list of industries reserved for the public sector. The licensing requirement for additional capacities was also withdrawn subject to locational restrictions.
- * Private sector came to play a prominent role in the overall set up.
- * Pricing and distribution control mechanism were discontinued.
- * The iron and steel industry was included in the high priority list for foreign investment, implying automatic approval for foreign equity up to 50%, subject to foreign exchange and other stipulations governing such investments in general.
- * Freight equalisation scheme was replaced by a system of freight ceiling.
- * Quantitative import restrictions were largely removed. Export restrictions were withdrawn.

NATIONAL STEEL POLICY-2005

The National Steel Policy (NSP) was announced in 2005. The salient features of the NSP are as under :

1. The NSP has set a target of 110 million tonnes of domestic steel production by 2019-20. This would require about 190 million tonnes iron ore. To meet the additional iron ore requirement, the Government plans to take the following steps:

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- (a) Create additional mining capacity of 200 million tonnes iron ore.
 - (b) Encourage investments totalling to about Rs. 20,000 crore.
 - (c) Ensure that clearances from authorities of Environment & Forest be obtained within a specified time frame.
 - (d) To make investment plans for large number of iron ore leases which are idle.
 - (e) Renewal of existing leases only against credible mining investment plans.
 - (f) Grant of fresh leases only against new norms and stringent assessment of technical and financial capabilities of the applicants.
 - (g) Restrictions on long-term exports of iron ore to a maximum of 5-year contracts.
 - (h) Encourage sintering and pelletisation so as to use fines which make up about 90% of the present exports.
2. Projections for requirement of coking coal and non-coking coal were fixed at 70 million tonnes and 20 million tonnes, respectively, to achieve the target steel production. The NSP has recommended first priority to the Steel and Sponge Iron Industry in allocation of higher grade (below 12% ash content) non-coking coal. The policy makes it clear that 85% of the requirement of coking coal will have to be imported. Further, reduced rate of production of non-coking coal would necessitate import of non-coking coal as well for utilisation in the steel sector. The coal shortages have prompted the NSP to call for a constant review of allocation and pricing of natural gas as a suitable alternative.
 3. The NSP assumes that 60% of the new steel capacity would come up through blast furnace route, 33% through sponge iron & EAF route and 7% through other routes. Sponge iron units are expected to increase capacity from 13 million tonnes at present to 38 million tonnes by 2020, especially in Jharkhand and Orissa. The NSP envisages a judicious blend of exports and domestic supply of steel.
 4. The NSP also seeks the upgradation and modernisation of the refractory industry.
 5. The NSP has noted the anomaly wherein the steel sector is deprived of fiscal incentives which are usually available to other infrastructure projects. The policy seeks to examine the issue and formulate corrective measures, as also the rationalisation of customs and excise duty structure for reducing the fiscal and revenue deficits.

STRUCTURE AND ROLE OF INDIAN STEEL INDUSTRY

Steel sector represents around Rs. 90,000 crore capital and directly provides employment to over 5 lakh people in the country. The Indian Steel sector was the first core sector to be completely free from the licensing regime and the pricing and distribution controls. This was done primarily because of the inherent strengths and capabilities demonstrated by the Indian Iron and Steel Industry.

India has risen to the fifth position as largest crude steel producing country in the world in 2006 as against 8th position held three years back and retained its 5th rank during 2008 too. The Indian Steel Industry comprises integrated steel plants in the primary sector using BF-BOF route of iron & steel production. In the primary sector, there are 11 integrated steel plants in the public and private sectors.

The secondary sector constitutes Electric Arc Furnace/Induction Furnace, pig iron/sponge iron

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units, re-rolling units, HR units, CR units, galvanised/colour coated units, tin plate units, wire-drawing units, etc. for producing either semi-finished or finished steel.

Traditionally, Indian steel industry was classified into Main Producers (SAIL plants, Tata Steel and Vizag Steel/RINL) and Secondary Producers. However, with the coming up of larger capacity steel making units of different process routes, the classification has been characterised as Main Producers & Other Producers. Other Producers comprise Major Producers, namely, Essar Steel, JSW Steel and Ispat Industries as well as large number of Mini Steel Plants based on Electric Furnaces & Energy Optimising Furnaces

(EOF). Besides, the steel producing units, there are a large number of Sponge Iron Plants, Mini Blast Furnace units, Hot & Cold Rolling Mills & Galvanising/Colour Coating units which are spread across the country.

The structure of the Indian steel industry in 2007-08 is given in Table-1. Production of iron & steel by main producers and others during 2003-04 to 2007-08 is furnished in Table-2 and by public/private sector in Table-3. The details on plantwise capacity and production of hot metal and crude/liquid steel are given in Table-4. Table-5 elucidates the production of crude/liquid steel by BOF and EAF/ IF routes and prices of steel are provided in Table-6.

Table – 1 : Structure of the Indian Steel Industry, 2007-08

(Capacity in million tonnes per annum)

Sector	Type of units	Working		Non-working		Total	
		No. of units	Capacity	No. of Units	Capacity	No. of units	Capacity
Primary	Integrated plants	11	31.80	-	-	11	31.80
Secondary	Electric Arc Furnace (EAF)	36	13.81	3	0.05	39	13.86
	Induction Furnace (IF)	1020	22.18	-	-	1020	22.18
	Pig iron	19	4.83	-	-	19	4.83
	Sponge iron	324	26.39	NA	NA	324	26.39
	HR (sheets/strips/plates rerolling units)	1644	29.51	644	5.68	2288	35.19
	HR steel (sheets, strips, plates units)	10	11.65	-	-	10	11.65
	CR Mills (sheets & strips)	59	9.07	-	-	59	9.07
	Steel wire drawing units	35	0.71	65	0.73	100	1.44
	GP/GC/PVC - coated sheets/strips	23	4.78	-	-	23	4.78
	Tin plate	1	0.18	2	0.03	3	0.21

Source: Annual Report of Ministry of Steel, 2008-09.

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Table – 2 : Production of Iron and Steel, 2003-04 to 2007-08

(In '000 tonnes)

Item/producers	2003-04	2004-05	2005-06	2006-07	2007-08
I. Pig Iron : Total	3764	3228	4695	4993	5314
Main Producers	966	625	1007	860	936
Other Producers	2798	2603	3688	4133	4378
II. Sponge Iron : Total	9877	12537	14825	18345	20376
Gas Based	3976	4640	4545	5265	5845
Coal Based	5901	7897	10280	13080	14531
III. Crude Steel : Total	38727	43437	46460	50817	53857
Main Producers	19756	19738	21402	21868	21789
ASP + VISL	256	277	292	309	315
Other Producers					
EAF Units (Including Corex & MBF/EOF)	8238	10229	11273	13250	14820
Induction Furnaces	10477	13193	13493	15390	16933
IV. Finished Steel for Sale (Alloy/Non-Alloy) : Total	40709	43513	46566	52529	56075
Main Producers	15383	15824	16413	17614	18020
Other Producers	27966	31041	34809	40047	43332
Less Inter Plant Transfer/Own Consumption	2640	3352	4656	5132	5277

Source : Ministry of Steel, Annual Report, 2007-08 and 2008-09.

EAF: Electric Arc Furnace MBF: Mini Blast Furnace EOF: Energy Optimising Furnace

**Table – 3 : Production of Iron and Steel, 2003-04 to 2007-08
(By Sector)**

(In '000 tonnes)

Item/producers	2003-04	2004-05	2005-06	2006-07	2007-08
I. Hot metal : Total	28165	28301	31812	34667	36758
Public sector	17618 (62.6%)	17123 (60.5%)	18756 (59%)	18652 (53.8%)	19112 (52%)
Private sector	10547 (37.4%)	11178 (39.5%)	13056 (41%)	16015 (46.2%)	17646 (48%)
II. Pig iron : Total	3764	3228	4695	4993	5314
Public sector	966 (25.7%)	625 (19.4%)	1007 (21.4%)	860 (17.2%)	936 (17.6%)
Private sector	2798 (74.3%)	2603 (80.6%)	3688 (78.6%)	4133 (82.8%)	4378 (82.4%)
III. Crude/liquid steel : Total	38727	43437	46460	50817	53857
Public sector	15788 (40.8%)	15912 (36.6%)	16964 (36.5%)	17003 (33.5%)	17091 (31.7%)
Private sector	22939 (59.2%)	27525 (63.4%)	29496 (63.5%)	33814 (66.5%)	36766 (68.3%)
IV. Finished steel for sale (Alloy/Non-Alloy) : Total	40709	43513	46566	52529	56075
Public sector	11828 (29%)	12309 (28.3%)	12585 (27%)	13176 (25.1%)	13521 (24.1%)
Private sector	28881 (71%)	31204 (71.7%)	33981 (73%)	39353 (74.9%)	42554 (75.9%)

Source : Ministry of Steel, Annual Report, 2007-08 and 2008-09.

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**Table – 4 : Capacity and Production of Hot Metal and Crude/Liquid Steel, 2006-07 and 2007-08
(By Principal Producers)**

(In '000 tonnes)

Unit	Annual installed capacity		Production			
	Hot metal	Crude/liquid steel	Hot metal		Crude/liquid steel	
			2006-07	2007-08	2006-07	2007-08
Public Sector						
Bokaro Steel Plant (Jharkhand)	4590	4360	4588	4658	4067	4127
Bhilai Steel Plant (Chhattisgarh)	4820	3925	4817	5268	4799	5055
Rourkela Steel Plant (Orissa)	2120	1900	2124	2229	1990	2093
Durgapur Steel Plant (West Bengal)	2060	1802	2064	2186	1869	1914
IISCO Steel Plant, Burnpur (West Bengal)	1460	500	775	640	472	458
Visvesvaraya Iron Steel Plant (Karnataka)	240	118	238	218	159	158
Salem Steel Plant (Tamil Nadu)	-	320 (Saleable steel)	-	-	183	231
Alloy Steel Plant, Durgapur (West Bengal)	-	234	-	-	150	157
Visakhapatnam Steel Plant (Andhra Pradesh)	3400	2910	4046	3913	3497	3129
IDCOL Kalinga Iron Works Ltd (Govt. of Orissa Undertaking)	170	-	147	-	-	-
Private Sector						
JSW Steel Ltd (Karnataka)	NA	6800	NA	NA	2643	3147
Tata Steel Ltd (Jharkhand)	NA	5000	5552	5507	5174	5013
Ispat Industries Ltd (Maharashtra)	NA	3000	NA	NA	2761	2827
Essar Steel Ltd (Gujarat)	NA	4600	NA	NA	3006	3564
Jindal Steel & Power Ltd (Chhattisgarh)	NA	2400	NA	NA	803	1219
Lloyds Steel Industries Ltd (Maharashtra)	-	-	-	-	537	463
Jindal Stainless Steel	-	-	-	-	585	585

Source : Annual Report of Ministry of Steel, 2008-09.

**Table – 5 : Production of Crude/Liquid Steel, 2003-04 to 2007-08
(By Route)**

(In '000 tones)

Route/plant	2003-04	2004-05	2005-06	2006-07	2007-08
All Routes : (A+B) Total	38727	43437	46460	50817	53857
A. Oxygen Route : Total	21924	22250	24398	25394	25966
Bhilai Steel Plant (Chhattisgarh)	4743	4582	5054	4799	5055
Durgapur Steel Plant (West Bengal)	1759	1806	1801	1869	1914
Rourkela Steel Plant (Orissa)	1572	1603	1661	1990	2093
Bokaro Steel Plant (Jharkhand)	3754	3835	4228	4067	4127
IISCO Burnpur Steel Plant (West Bengal)	301	357	434	472	458
Visvesvaraya Iron Steel Ltd (Karnataka)	115	127	152	159	158
Visakhapatnam Steel Plant (Andhra Pradesh)	3403	3452	3494	3497	3129
Tata Steel Ltd (Jharkhand)	4224	4103	4730	5174	5013
JSW Steel Ltd (Karnataka)	1608	1875	2268	2643	3147
Other Oxygen Route	445	510	576	724	872
B. Electric Route : Total	16803	21187	22062	25423	27891
Electric Arc Furnace	6326	7994	8569	10033	10958
Alloy Steel Plant, Durgapur (West Bengal)	141	150	140	150	157
Essar Steel Ltd (Gujarat)	1837	2360	2510	3006	3564
Ispat Industries Ltd (Maharashtra)	1663	2002	2190	2761	2827
Jindal Steel & Power Ltd (Chhattisgarh)	273	379	564	803	1219
Lloyds Steel Ltd (Maharashtra)	338	454	515	537	463
Jindal Stainless Ltd (Haryana)	484	535	542	585	585
Other Electric Arc Furnace Route	1590	2114	2108	2191	2143
Electric Induction Furnace	10477	13193	13493	15390	16933

Source : Joint Plant Committee, Annual Statistics 2007-08.

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**Table – 6 : Prices of Iron & Steel, 2005-06 to 2007-08
(Domestic Markets)**

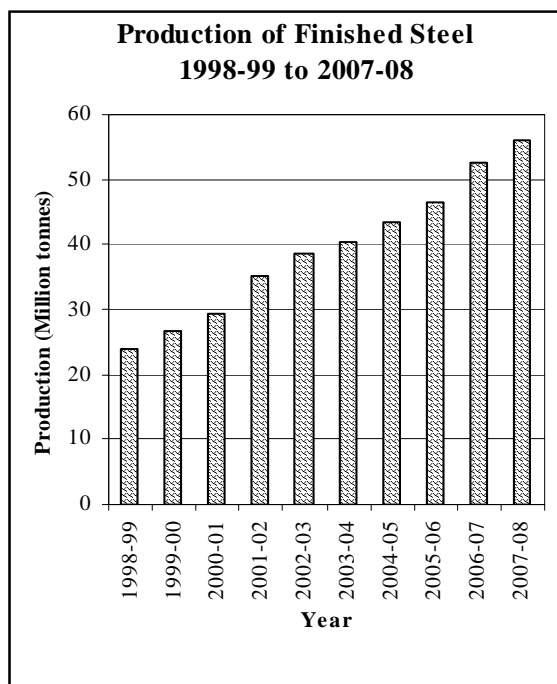
(In Rupees per tonne)

Grade	Market	2005-06	2006-07	2007-08
CTD Bars (ISI, 8 mm)	Delhi	25767	27854	31848
Joists (150 x 75 mm)	"	24614	25112	30752
Channels (75 x 40 mm)	"	28300	25639	29956
MS Squares (8 mm)	"	24153	26352	30340
MS Angles (25 x 3 mm)	"	23059	26361	30950
Melting Scrap	"	16300	16933	20658
Blooms (SAIL, 150 mm)	Mandi Gobindgarh	26779	28977	32432
Heavy Slab (Bokaro)	"	20986	22794	27327
Melting Scrap (rolling)	"	16700	17964	21715
MS Rounds (10 mm)	"	23065	24036	29046
CTD Bars (ISI 8 mm)	"	26984	28503	33031
MS Squares (8 mm)	"	22447	23115	27998
MS Angles (25 x 3 mm)	"	24322	25606	31117
Joists (150 x 75 mm)	"	25241	24188	29983
Induction ingots (round)	"	20645	22166	27190
Old Ship Breaking Scrap	"	20410	22083	26021
Joists (150 x 75 mm)	Mumbai	24880	24129	30475
MS Angles (40 x 6 mm)	"	22698	25122	30273
Induction ingots	"	19557	20669	25223
Melting Scrap	"	15673	16231	19969
CTD Bars (local 8 mm)	"	25088	26964	30377
MS Rounds (8 mm)	"	24718	26456	29496
CTD Bars (ISI, 8 mm)	Kolkata	20563	21611	25992
MS Squares (8 mm)	"	20629	21461	26512
MS Angles (25 x 3 mm)	"	20437	22635	26260
Channels (75 x 40 mm)	"	20229	22986	27625
Joists (150 x 75 mm)	"	20110	22064	25662
Induction Ingots	"	17908	18001	23038
Melting Scrap	"	13953	15369	18802

Source : Minerals & Metals Review, March, 2009.

Finished Steel

The Indian Steel Industry recorded an increased production of finished steel from 46.57 million tonnes in 2005-06 to 52.53 million tonnes in 2006-07, and ultimately to 56.08 million tonnes in 2007-08. Finished steel produced by the steel plants of SAIL in 2007-08 was 10.62 million tonnes. In 2007-08, Visakhapatnam Steel Plant of Rashtriya Ispat Nigam Ltd produced 2.90 million tonnes, Tata Steel produced 4.47 million tonnes and JSW Steel produced 4.77 million tonnes of finished steel, thus becoming the largest finished steel producer among private sector integrated steel plants. Various finished steel products produced by principal steel plants are furnished in Table-7.



Electric Arc Furnace (EAF)

Steel produced in the Secondary Sector is mostly by recycling of steel scrap using Electric Arc Furnace (EAF). The total capacity of EAF is

Table – 7 : Various Finished Steel Products Produced by Principal Steel Plants

Plant	Products
Bokaro Steel Plant (Jharkhand)	Plates, HR coils, HR sheets, CR coils, CR sheets, GP/GC sheets, TMBP.
Durgapur Steel Plant (West Bengal)	Bars & rods, rails & railway materials, wheels and axles, fish plates, sleeper structurals, bars, rods, TMT bars, skelp, bloom, billets, slabs.
Rourkela Steel Plant (Orissa)	Flat products, bars and rods, plate, HR coil, CR coil, CR sheets, GP/GC sheets, electrical sheets, electrolytic tin plates, spirally welded large dimension pipes.
Bhilai Steel Plant (Chhattisgarh)	Billets, slabs, rails & railway materials, heavy structurals and squares, plates, merchant products, wire rods, plates and blooms.
IISCO Steel Plant (West Bengal)	Bars & rods, rail & railway materials, foundry & pipes and structural steel.
Visvesvaraya Iron Steel Ltd (Karnataka)	Stainless steel, tool steel, other alloys & steel, bearing steel, spring steel, free cutting steel, constructional steel (a) carbon steel, (b) case hardening steel & (c) heat treatable steel.
Visakhapatnam Steel Plant (Andhra Pradesh)	Steel products in long categories, finished steel (round & square), wire rods, re-bars, angles (equal & unequal), sections, channels, beams, saleable billets, flat products, light & medium merchant products (bars), medium merchant products (structural).
Tata Steel Ltd (Jharkhand)	Bars & rods, HR sheets and strips, CR coils, rolled/forged bars & structurals, plates, GP/GC sheets.
JSW Steel Ltd (Karnataka)	Plates, HR sheets, HR coils, CR coils/sheets, GP/GC sheets.
Ispat Industries Ltd (Maharashtra)	HR coils, CR coils/sheets, GP/GC sheets
Essar Steel Ltd (Gujarat)	Plates, HR sheets, HR coils, CR coils/sheets, GP/GC sheets
Jindal Steel & Power Ltd (Chhattisgarh)	Plates, structurals, HR coils, rails & railway materials.

Source: Annual Report of Ministry of Steel and information from individual plants.

13.86 million tonnes. Presently, there are 36 EAF based steel plants in operation in the country, with an aggregate capacity of 13.81 million tonnes per annum. Three units with a cumulative capacity of 0.05 million tonnes have been reportedly closed due to rising cost of inputs and increasing tariffs. The production of steel ingots/concast billets by EAF units reporting production in 2007-08 was estimated at 10.96 million tonnes as against 10.03 million tonnes in 2006-07 (Table-5).

The recent developments in EAF technology viz, to increase oxygen consumption, reduce power consumption, reduce to tap time have led to increase in metal production. The development of thin slab casting has made EAF route more productive. This route enables slab strips rolling at lesser cost, facilitating production of cheaper strips/sheets than those that can be achieved through BF/BOF route.

Induction Furnace (IF)

Presently, in India, EAF based industries are yet to switch over to induction furnace route. An induction furnace is an electrical furnace in which heat is generated through electromagnetic induction in an electrically conductive medium. An induction furnace essentially consists of a power source, a coil, a housing for the coil and a refractory lining inside the coil to form a crucible. The furnace is similar to a transformer. It consists of a cylindrical copper coil through which the high frequency current comes and acts a Primary as in a transformer. The charge of the metal to be melted which is placed inside the coil acts as the Secondary. When high frequency electric current passes through the primary coil it produces a rapidly alternating magnetic field. The metal charge subjected to electromagnetic induction generates huge amount of heat which causes the metal to melt. The ideal situation would be for the charge to completely fill the interior of the coil as there would then be no space between the coil and charge through which leakage of flux could pass. This, however is impossible as the crucible with refractory lining holds the metal when it is

molten and also provides insulation to protect the coil and prevent heat losses. Induction furnaces use steel melting scraps, sponge iron and pig iron/cast iron. On an average the proportion of these items is 40% sponge iron + 10% cast iron or pig iron and the remaining is steel melting scraps. Induction furnace has capability to operate on a charge up to 85% DRI (sponge iron). There are 1,020 induction furnaces with an aggregate capacity of 22.18 million tonnes. These units reportedly produced about 16.93 million tonnes steel in 2007-08 as against production of 15.40 million tonnes in 2006-07 (Table-5).

Pig Iron

Pig iron is one of the basic raw materials required by the foundry & casting industry for manufacturing various types of castings for the engineering section. The main sources of pig iron have traditionally been the integrated steel plants of SAIL besides plants of Tata Steel Ltd and Rashtriya Ispat Nigam Ltd. Domestic production of pig iron lags and is not in tandem with the demand. Efforts were, therefore, made to increase pig iron manufacturing facilities in the secondary sector.

As a result of various policy initiatives taken by the Government, private sector showed considerable interest in setting up new pig iron units especially in the post-liberalised period. This has resulted in drastic change, in the contribution of private/secondary sector units from merely 8% in 1991-92 to about 82% by 2007-08. In 2007-08, about 5.31 million tonnes pig iron was produced against 4.99 million tonnes in 2006-07. The production of pig iron by public and private sector plants is furnished in Table-3. The share of private/secondary producers in both the years 2006-07 and 2007-08 was around 82-83%, in spite of the unprecedented increase in the price of imported metallurgical coke that the industry was constrained with. Location and capacity of important pig iron units in private sector are furnished in Table - 8.

Table – 8 : Location and Capacity of Important Pig Iron Units

(In lakh tonnes)

Sl.No.	Unit	Location	Capacity
1.	Lanco Industries Ltd	Chittoor, Andhra Pradesh	1.65
2.	Sathavahana Ispat Ltd	Anantapur, Andhra Pradesh	1.20
3.	Jayaswal NECO Industries Ltd	Raipur, Chhattisgarh	7.50
4.	Sesa Goa Ltd	Bicholim, Goa	1.80
5.	Usha Martin Industries	Jamshedpur, Jharkhand	1.10
6.	Jindal Vijay Nagar Steel Ltd	Bellary, Karnataka	7.20
7.	Kalyani Ferrous Industries Ltd	Koppal, Karnataka	1.20
8.	Kirloskar Ferrous Industries Ltd	Koppal, Karnataka	2.40
9.	Kudremukh Iron Ore Co. Ltd	Mangalore, Karnataka	2.05
10.	Usha Ispat Ltd	Redi, Maharashtra	3.00
11.	Ispat Metallics India Ltd	Dolvi, Raigad, Maharashtra	20.00
12.	Kalinga Iron Works	Barbil, Keonjhar, Orissa	1.70
13.	Kajaria Iron Castings Ltd	Durgapur, West Bengal	1.10
14.	Electrosteel Castings Ltd	Khardah, West Bengal	1.10
15.	Tata Metaliks Ltd	Kharagpur, West Bengal	0.90

Source : Development Commissioner for Iron & Steel, Ministry of Steel, Kolkata, and individual plants.

Sponge Iron

India is the largest producer of sponge iron in the world. Sponge is produced from iron ore by using non-coking coal. Direct reduced iron (DRI), called as sponge iron is a metallic material of a manufacturing process formed by reduction of iron oxide at temperatures below the fusion point of iron. Hot briquetted Iron (HBI) is a product obtained after densification process where the DRI feed material is at temperature more than 650°C at the time of moulding (hot briquetting) with density more than 5.0 g/cm³.

During the early 1990s, sponge iron industry was specially promoted to provide an alternative to steel melting scrap which was increasingly becoming scarce. The production of sponge iron during the last five years is given in Table-2. The installed capacity of sponge iron has also increased over the years from 1.52 million tonnes in 1990-91 to currently at 31 million tonnes which includes 3 gas-

based units having 8.0 million tpy capacity. The production has risen from 0.9 million tonnes in 1990-91 to about 20.38 million tonnes in 2007-08. Over the years, the coal based route has emerged as a key contributor to overall production; its share has increased from 60% in 2003-04 to 71% in 2007-08. About 80% coal-based sponge iron produced in the world comes from India. However, the constraints faced by sponge iron industry include non-availability of right grade of iron ore and non-coking coal at affordable prices.

Production of the sponge iron in the country has also resulted in providing an alternative feed material to steel melting scrap which was hitherto imported in large quantities by the Electric Arc Furnace units and the Induction Furnace units for steel making. This has resulted in considerable saving in foreign exchange. The available data on annual installed capacity of principal sponge iron units are given in Table-9.

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Table – 9 : Capacities of Important Sponge Iron (DRI) Plants

Unit	Location	Capacity
Gas-based		
Essar Steel Ltd	Hazira, Gujarat	55.00
Vikram Ispat	Salav, Raigad, Maharashtra	9.00
Ispat Industries Ltd	Geetapuram, Dolvi, Raigad, Maharashtra	16.00
Coal-based		
Action Ispat & Power Pvt. Ltd	Marakuta & Pandaripathar, Jharsuguda, Orissa	2.50
Adhunik Metaliks Ltd	Chandrihariharpur, Sundergarh, Orissa	1.80
Alliance Integrated Metallics Ltd	Bemta, Raipur, Chhattisgarh	5.00
Anjani Steel Ltd	Ujalpur, Raigarh, Chhattisgarh	1.02
API Ispat Powertech Pvt. Ltd	IGC Siltara, Raipur, Chhattisgarh	1.05
Beekay Steel & Power Ltd	Uliburu, Barbil, Orissa	1.05
Bhushan Steel & Strips Ltd	Meramandali, Dhenkanal, Orissa	3.00
Bihar Sponge Iron Ltd	Chandil, Singhbhum, Jharkhand	2.10
Crest Steel & Power Pvt. Ltd	IGC Borai, Durg, Chhattisgarh	1.15
Deepak Steel & Power Ltd	Topadihi, Keonjhar, Orissa	1.44
Gallant Metal Ltd	Samakhilai, Kachchh, Gujarat	1.70
Global Hi-tech Industries Ltd	Gandhidham, Gujarat	1.05
Goa Sponge Iron & Power Ltd	Santona, Sanguem, Goa	1.00
Godawari Power & Ispat Ltd	IGC Siltara, Raipur, Chhattisgarh	4.95
Goldstar Steel & Alloys Ltd	Srirampuram, Vizianagaram, Andhra Pradesh	2.20
Ind Synergy Ltd	Kotmar, Raigarh, Chhattisgarh	3.00
Jai Balaji Sponge Ltd	Baktarnagar, Raniganj, West Bengal	1.05
Jai Shri Balaji Steel Pvt. Ltd (HEG Ltd.)	Borai, Durg, Chhattisgarh	1.20
Jaiswal Neco Ltd	IGC Siltara, Raipur, Chhattisgarh	2.55
Janki Corporation Ltd	Sidiginamola, Bellary, Karnataka	1.80
Jindal Steel & Power Ltd	Kharsia Road, Raigarh, Chhattisgarh	13.70
Lloyds Metals & Engineering Ltd	Ghuggus, Chandrapur, Maharashtra	2.70
Mastek Steels Pvt. Ltd	Holakundi, Bellary, Karnataka	1.05
MGM Steels Ltd	Chintapokhri, Dhenkanal, Orissa	1.00
Monnet Ispat Ltd	Chandkhuri Marg, Hasaud, Raipur, Chhattisgarh	3.00
Monnet Ispat & Energy Ltd	Naharpalli, Raigarh, Chhattisgarh	5.00
MSP Steel & Power Ltd	Jamgaon, Raigarh, Chhattisgarh	1.92
Nalwa Steel & Power Ltd	Taraimal, Raipur, Chhattisgarh	1.98
Nova Iron & Steel Ltd	Dagori, Bilaspur, Chhattisgarh	1.50
OCL Iron & Steel Ltd	Lamloi, Sundergarh, Orissa	1.20
Orissa Sponge Iron Ltd	Palaspanga, Keonjhar, Orissa	2.50
Prakash Industries Ltd	Champa, Jangir Champa, Chhattisgarh	4.50
Rungta Mines Ltd	Karakola and Kamando, Sundergarh, Orissa	3.30
Sarda Energy & Minerals Ltd	IGC Siltara, Raipur, Chhattisgarh	2.10
Scaw Industries Pvt. Ltd	Gundichapara, Dhenkanal, Orissa	1.00
Shivshakti Steel Ltd	Chakradharpur, Raigarh, Chhattisgarh	1.00
Shri Bajrang Power & Ispat Ltd	Urla, Raipur, Chhattisgarh	2.10
Shraddha Ispat Pvt. Ltd	Santona, Sanguem, Goa	1.28
Shyam Sel Ltd	Dewabdighi, Burdwan, West Bengal	1.00
Singhal Enterprises Pvt. Ltd	Taraimal, Bilaspur, Chhattisgarh	1.94
Sree Metaliks Ltd	Loidapada, Keonjhar, Orissa	1.74
S.K.S. Ispat & Power Ltd	Raipur, Chhattisgarh	2.70
Sunflag Iron & Steel Co Ltd	Bhandara, Maharashtra	1.50
Sunil Ispat & Power Ltd	IGC Siltara, Raipur, Chhattisgarh	1.15
Sunil Sponge Iron Ltd	Chiraipani, Raigarh, Chhattisgarh	1.05
Tata Sponge Iron (Ipitata Sponge)	Joda, Keonjhar, Orissa	3.90
Topworth Steel Pvt. Ltd	IGC Borai, Durg, Chhattisgarh	1.65
Vandana Global Ltd	IGC Siltara, Raipur, Chhattisgarh	2.16
Vallabh Steels Ltd	Sahnewal, Ludhiana, Punjab	1.20
Visa Steels Ltd	KIC, Jajpur Road, Orissa	3.00
Zoom Vallabh Steels Ltd	Dughda, Saraikele-Kharswan, Jharkhand	1.20

I.G.C.: Industrial Growth Centre.

Source : Sponge Iron Manufacturer's Association (SIMA) and individual plants.

Apparent Consumption of Steel

India's per capita steel consumption increased from 31 kg in 2003 to 49 kg in 2008 and it is far below the level of other developed and developing countries. The world average of per capita steel consumption stands at 150 kg and that of developed country stands at 400 kg.

Apparent consumption of steel is calculated by taking into consideration export of steel, total domestic production and import of steel in the country. Sometimes change in stock is adjusted to arrive at the consumption figures. It is also treated as the actual domestic demand of steel in the country. The apparent consumption of finished steel since 1998-99 is given in Table-10.

Table – 10 : Domestic Consumption of Finished Steel

(In million tonnes)	
Year	Consumption
1998-99	23.54 (4.02%)
1999-2000	25.01 (6.24%)
2000-01	26.53 (6.08%)
2001-02	27.44 (3.43%)
2002-03	30.68 (11.81%)
2003-04	33.12 (7.95%)
2004-05	36.38 (9.84%)
2005-06	41.43 (13.88%)
2006-07	46.78 (12.91%)
2007-08	52.13 (11.41%)

Source : Annual Report, Ministry of Steel, 2008-09. Figures in parentheses indicate the percentage increase over the previous year.

The normal demand of steel for infrastructure is 23%, construction 22%, manufacturing 18%, automobiles 12%, consumer durables 6% and other sectors 19%. With the ongoing economic liberalisation resulting in faster economic growth, the steel consumption is expected to increase rapidly.

With the expansion of capacities in the integrated plants and installation of new plants, additional supply of steel in Indian markets has increased considerably. This has created an intense competition in the domestic market in the short run.

Measures taken by Ministry of Steel to boost Demand

The Ministry of Steel has been making all-out efforts to help the domestic steel sector to overcome the problems faced by the steel industry and boost demand for steel in steel consuming sectors. These include:

i) *Establishing of Training-cum-Service Institutes*

To help the steel industry by way of research and developmental support for boosting steel consumption and providing technical support and trained manpower to steel producing and consuming sectors, the following institutes have been set up:

- (a) Institute for Steel Development and Growth (INSDAG), Kolkata, West Bengal, meant to promote usage of steel, primarily in the construction industry by producing working designs.
- (b) National Institute of Secondary Steel Technology (NISST), Mandi Govind Garh, Punjab, meant to promote upgradation of manpower in the secondary steel industry; and
- (c) Biju Patnaik National Steel Institute, Puri, Orissa.

ii) *Reduction in Rail Tariffs*

In order to make despatches of iron and steel material more attractive through railways, the Railway Board has been requested to consider lowering the classification of steel, give freight discount to bulk users and to bring down freight rates of iron and steel commodities.

iii) *Reduction in Input Costs*

The Ministry of Steel has also been able to rationalise the classification of coking coal in consultation with the Ministry of Coal so as to reduce the impact of royalty payable on this basic raw material. Import duties on several raw materials like scrap, ships for breaking and coke used by the steel industry has been reduced steadily over the past five years or so.

iv) Strengthening of Anti-dumping Mechanism

To check the increasing trend of cheap imports in certain categories of flat products, especially from CIS and South-East Asian countries, the Ministry of Steel has suggested a few necessary steps to Department of Commerce to strengthen the anti-dumping mechanism so that quick decisions to check dumping can be taken. India has already imposed anti-dumping duties mainly on HR products imported from Russia/CIS countries. Apart from the flat products, there has been imposition of anti-dumping duties on certain grades of alloy and non-alloy steel billets, bars and rounds from China and Russia. Indian Steel Alliance (ISA) had requested the Government to take anti-dumping measures against four countries namely, Ukraine, Russia, Egypt and Germany.

MODERNISATION & EXPANSION

Modernisation and expansion works undertaken by different plants are as follows:

SAIL

SAIL is in the process of modernising and expanding its production units. The objective is to achieve a production capacity of 26.2 million tonnes/annum of hot metal. The expansion plans would increase the capacity of SAIL from 14.61 million tonnes (in 2006-07) per annum hot metal production to 26.18 million tonnes by 2010-11 as given below:

Plant	Hot metal capacity by 2010-11 (Million tonnes)
Bokaro Plant	7.44
Bhilai Plant	7.50
Rourkela Plant	4.50
Durgapur Plant	3.50
IISCO Plant	2.91
VISL	0.33
Total	26.18

Order for all major packages of ISP & SSP and part packages for expansion of Bokaro, Bhilai, Rourkela and Durgapur Steel Plants have been placed and they are in various stages of implementation. Objectives of expansion plan are:

- * 100% production of steel through Basic Oxygen Furnace (BOF) route.
- * 100% processing of steel through continuous casting.
- * Value addition by reduction of semi-finished steel.
- * Auxilliary fuel injection system in all the Blast furnaces.
- * State-of-the-art process control computerisation/ automation.
- * State-of-the-art online testing and quality control.
- * Energy saving schemes.
- * Secondary refining and
- * Adherence to environment norms.

Bhilai Steel Plant

The Board of SAIL has given in principle to a proposal for modernisation and capacity expansion of Bhilai Steel Plant to 7.5 million tonnes of hot metal and 7 million tonnes of crude steel per annum at an indicative cost of Rs. 11,267 crore. The proposal includes: a) Installation of a new blast furnace, b) A new 7 metre tall coke oven battery and a new sinter machine, c) Phasing out of ingot route with 100% continuous casting by adding a new steel melting shop of 4 million tonnes capacity, d) Installation of a universal beam mill of 1 million capacity, e) Addition of a new bar & roll mill of 0.9 million tonnes capacity, f) Installation of a new universal rail mill of 1.2 million tonnes capacity, and g) capacity expansion of plate mill to 1.42 million tonnes.

Bokaro Steel Plant

The hot metal production capacity at Bokaro is likely to touch 7.44 million tonnes by 2010-11 from 4.59 million tonnes in 2006-07. The facilities as

planned for expansion include a) new Steel Melting Shop Complex (SMS III) with an installed annual capacity of 3.8 million tonnes crude steel, b) Cold Rolling Mills Complex of 1.2 million tpy capacity and c) Rebuilding of three coke oven batteries.

Rourkela Steel Plant

The hot metal production from RSP is to reach to 4.50 million tonnes by 2010-11 from 2.12 million tonnes 2006-07. The progress at RSP includes a) New half coke oven battery (0.23 million tpy), b) New Sinter plant (3.9 million tpy), c) New blast furnace (1.6 million tpy), d) Third BOF converter (150 tonnes), e) Third slab caster in SMS II, f) Upgradation of Hot Strip Mill and Plate Mill, g) New CRNO Line (0.1 million tonne) and h) New Pipe Coating Plant (0.06 million tonne).

Durgapur Steel Plant

DSP's hot metal production is projected to touch 3.50 million tonnes by 2010-11 from 2.06 million tonnes in 2006-07. The new facilities as planned are a) New Sinter Plant b) Bloom-cum-Round Caster, c) Medium Structural Mill, d) Additional finishing Mill and e) New Bar and Rod Mill (0.6 million tonne).

IISCO Steel Plant

The plant is set to undergo modernisation cum expansion through which its hot metal production capacity will be raised to 2.91 million tonnes by 2011-12.

Rashtriya Ispat Nigam Ltd (RINL)

Visakhapatnam Steel Plant (VSP) of RINL is the first shore-based integrated steel plant located at Visakhapatnam in Andhra Pradesh. The plant was commissioned in 1992 with a capacity to produce around 3 million tonnes of liquid steel per annum. The plant has been built to match international standards in design and engineering with state-of-the-art technology, incorporating extensive energy saving and pollution control measures. Visakhapatnam has excellent layout which allows expansion of the plant capacity. VSP is in the midst of implementing an expansion plan to double its annual liquid steel making capacity from the present level of 3 million tpy to 6.3 million tpy at an estimated cost of Rs. 12,228 crore.

Tata Steel Ltd (formerly TISCO)

The company has been rechristened as Tata Steel Ltd (TSL). The company has an integrated steel plant located at Jamshedpur, Jharkhand, with annual crude steel making capacity of 6.8 million tonnes which is slated to increase to 10 million tonnes by 2010. Setting up of new integrated steel plant with 6 million tonnes capacity in Kalinganagar, Jajpur, Orissa at an investment of Rs. 15,400 crore by TSL is currently underway, which the company plans to be completed in two phases of 3 million tonnes per phase. Government of Orissa has allotted 2000 acres of land for the plant at Kalinganagar. The company has further plans to set up a 5.0 million tonnes per year capacity integrated steel plant at Jagdalpur in Bastar region of Chhattisgarh at an investment of Rs. 15,000 crore. In the first phase, installation of a 2 million tonnes per year capacity plant is likely to be taken up and completed in 3.5 to 5 years. Capacity expansion to 5 million tonnes per year will be undertaken subsequently. The process of acquiring of land is under progress. The company also signed an MoU with the Government of Jharkhand for setting up of a 12 million tonnes per year integrated steel plant at Saraikela in two phases of 6 million tonnes each. The above projects are, however, subject to raw material linkages and receipt of requisite approvals.

TSL has achieved a production of 4.93 million tonnes and 4.86 million tonnes of saleable steel i.e. finished steel plus semis, and 5.17 million tonnes and 5.01 million tonnes of crude steel in 2006-07 and 2007-08, respectively.

JSW Steel Ltd

JSW Steel Ltd has an installed crude steel capacity of 4.8 million tpy with value added products constituting 1.8 million tpy spread across four locations; Toranagallu (Vijaynagar Works), Salem (Salem Works), Vasind, and Tarapur (downstream units). Vijaynagar works existing operations produce flat steel products, Salem Works focus only in long products and the downstream units produce CR/Galvanised, colour coated, value added flat products. The company commissioned the expansion project at Vijaynagar

works with increasing the capacity from 3.8 million tpy to 6.8 million tpy in February, 2009. All the existing operating facilities have been accredited with OHSAS-18001, ISO-9001: 2000 and ISO - 14001. Vijaynagar works has integrated operations from beneficiation plant to 1 million tpy Cold Rolling Mill Complex. The Salem works has an integrated manufacturing facility with an overall crude steel capacity of 1 million tpy, comprising of sinter plant, blast furnace, EOF, billet caster, bloom caster and rolling with associated facilities such as coke oven, power plant, oxygen plant, etc. The slabs and HR coil produced at Vijaynagar works are further processed in downstream units at Vasind and Tarapur into value added HR plates, CR, galvanised, galvalume and colour coated products.

Company has planned to increase the total capacity to 10 million tpy at Vijaynagar works by 2010-11. Two subsidiaries of the company M/s JSW Bengal Steel Ltd and M/s JSW Jharkhand Steel Ltd are incorporated to set up greenfield steel plants with 10 million tpy (each) capacity in West Bengal and Jharkhand, respectively. The company is in possession of required land in West Bengal while in Jharkhand it has obtained a mining lease for iron ore and also got the mining plan approved.

Jindal Steel & Power Ltd (JSPL)

JSPL has set up a rail & universal beam plant with capabilities to produce 120 m long finished rails, the largest in the world, for the first time in India. The company has captive coal mines at Dongamahua in Raigarh district, Chhattisgarh and coal washing unit with capacity of 6 million tonnes per year to wash 47-48% coal ash to 26%. The sponge iron plant at Raigarh, Chhattisgarh has capacity of 1.37 million tpy. Facilities at Raigarh also include capacities-steel 3 million tonnes (Rail and structurals - 0.75 million tonnes, plates - 1.00 million tonnes and slabs, rounds, blooms and billets - 1.25 million tonnes), hot metal - 1.5 million tonnes and captive power plant - 340 MW. As expansion projects. JSPL is setting up a 12.5 million tonnes integrated steel plant with a total investment of Rs. 40,000 crore at Angul in Orissa; 11 million tonnes integrated steel plant

with a total investment of Rs.30,000 crore at Patratu, Jharkhand and 7 million tonnes steel plant with a total investment of Rs. 26,000 crore at Raigarh, Chhattisgarh. It is planned to implement these projects in phases.

Essar Steel Limited (ESL)

A state-of-the-art hot rolled coil steel plant was set up at Hazira, Gujarat. This plant with 4.6 million tpy capacity is being expanded to 9.0 million tonnes per annum capacity. It is the largest fully-integrated manufacturer of high quality flat steel products in western India. Company's operations include an 8 million tpy beneficiation plant at Bailadila in Chhattisgarh, which has the world's second largest slurry pipeline of 267 km to transport beneficiated iron ore slurry to the pellet plant and 8 million tpy pellet complex at Visakhapatnam, Andhra Pradesh. The Essar Steel Complex at Hazira in Surat district, Gujarat houses the world's largest gas-based single location sponge iron plant with a capacity of 5.5 million tpy. The complex also houses 1.4 million tpy cold rolling complex, 4.6 million tpy electric arc furnace, 4.6 million tpy continuous caster and 3.6 million tpy hot strip mill. Outstanding performance has been observed in the 3 DRI-HBI modules of the company. Operating costs are likely to reduce in future via savings through hot DRI charging.

The company has plans to set up a steel plant of 6.0 million tonnes capacity at Paradip, Orissa. The scheme also includes installation of pellet plant and iron ore beneficiation plant. The company has plans to set up a steel plant of 3.2 million tonnes capacity at Bastar, Chhattisgarh. In first phase, a 1.6 million tonnes steel plant with a captive power plant is to be set up.

Ispat Industries Ltd (IIL)

Ispat Industries Ltd, with its associated companies, has set up one of the largest integrated steel plants in the private sector in India at Dolvi in Raigad district, Maharashtra. The plant has a capacity to produce 3 million tpy of hot rolled coils (HRC). The company also manufactures sponge iron and pig iron at their Dolvi complex. The company has a gas-based DRI plant of

1.6 million tpy capacity and an ultra-modern blast furnace of 2 million tpy capacity to produce hot metal/pig iron. The integrated steel plant functions on the Converter-cum-Electric Arc Furnace route (CONARC process) to produce steel through modern Twin Shell Electric Arc Furnace.

For the first time in India, the company has combined the use of hot metal and DRI (sponge iron) in the Electric Arc Furnace for production of liquid steel. For downstream casting and rolling of steel, it has incorporated the state-of-the-art compact strip production (CSP) process installed for the first time in India. The process yields high quality and specifically very thin grades of HRC.

IIL has plans to expand its HR coils capacity at Dolvi to 3.6 million tonnes per year. A new 2.24 million tonnes sinter plant, a 1,260 tonnes/day oxygen plant and a new electric arc furnace have also commissioned at IIL Dolvi. The company additionally has plans to set up 5.0 million tonnes per year integrated steel plant at Paradip, Orissa.

Neelachal Ispat Nigam Limited (NINL)

NINL has a 1.1 million tonnes per annum capacity iron & steel plant located at Duburi, Jajpur dist, Orissa. The NINL has also established itself as a major player in the domestic market with substantial sales of its products like pig iron to foundry and large institutional customers. The NINL and Orissa Government will be setting one million tonne steel plant at Kalinga Nagar, Jajpur, Orissa. The other product of the company that is sold in the domestic market is granulated slag which is consumed by several cement plants.

NEW STEEL PROJECTS

In the context of long-term demand projection of steel, the Government adopted a two-pronged strategy for increasing steel production in the country. Firstly, through modernisation and expansion of existing public sector steel plants in the country and secondly, by offering initiatives to private sector to install new steel capacities.

After the announcement of the Industrial Policy in 1991 and encouraged by the various other policy initiatives of the Government, substantial interest by several entrepreneurs to set up new steel plants has been witnessed. Besides the steel PSUs, massive capacity addition is in the pipe line by private steel producers including foreign direct investors. As per the latest information available, 222 MoUs have been signed in various states with intended capacity of around 275.70 million tonnes with an investment of over Rs. 11 lakh crore. Some projects were at various stages of implementation. POSCO is planning to set up 12 million tpy capacity steel plant in Orissa by using "Finex" process with direct utilisation of sinter feed iron ore (-8 mm) besides utilising the advantages of "Corex" technology. Similar expansion is also coming up in secondary steel sector consisting of spong iron, EAF, induction furnace, rolling mill etc. With these new steel plants, contribution of private sector units is gradually increasing and this trend is expected to continue.

National Mineral Development Corporation Ltd

NMDC is now directing its resources to diversifying into steel making. An integrated steel plant with a capacity of three million tonnes will be set up in the state of Chhattisgarh. Being a green-field project, the investment would be in the range of Rs. 14,000 crore. NMDC is also considering the techno-economic feasibility of setting up a two million tonnes steel plant in Karnataka.

Kudremukh Iron Ore Co. Ltd

The company is operating 350 cu m capacity blast furnace at Panambur, New Mangalore Port for production of pig iron and it is in the process of setting up a Ductile Iron Spun Pipe (DISP) plant of capacity of 1,00,000 tonnes per year. The hot metal from blast furnace will be the main feed stock for the DISP plant. The company was also in the process of selecting a joint venture equity partner for an integrated steel plant to be set up in Karnataka.

VISA Steel Ltd

The Kolkata based Visa Group was in the process of implementing a 500,000 tpy integrated special and stainless steel plant along with a 400,000 tpy coke oven plant. Its first blast furnace with 225,000 tonnes of pig iron per annum capacity was commissioned in 2005 at Kalinganagar Industrial Complex, Orissa. The 250 cu m blast furnace will have carbon hearth refractories, stoves & blowers and twin pig casting machines.

IRON & STEEL SCRAP

Iron & Steel scrap is one of the essential requirements for manufacture of steel in mini-steel industry. Iron scrap is available in the country in the form of pressed bundles, a mixture of used steel components (called as a commercial scrap), turnings and borings and heavy melting scrap. These are generated by industries of all sectors like automobiles, railways and engineering workshops.

The collection & processing of scrap in an organised manner is undertaken by a few units in the country. In the local market, scrap is supplied by dealers who in turn arrange to have scrap collected manually or through sub-dealers.

Ship breaking

Ship breaking has been a major source of scrap generation. Ship breaking activities are carried out at various places on the Indian Coast, the largest concentration is on the West Coast at Alang and Sosiya villages, Bhavnagar district, Gujarat. Today, there are 80 active yards along a 10 km coast line. This represents a substantial rationalisation of the nearly 200 small yards that operated in the early 1990s. Today Alang possibly represents the single largest concentration of ship breaking industry in the world. The life of an average ocean-going ship is about 20 years. About 40% of the ships broken are dry cargo ships, while remaining 40% of the ships broken are wet cargo, tanker and specialised ships. By ship breaking, recyclable steel of about 2.3 million tonnes or more are generated every year. These recyclable steels mainly as steel scrap provide feed to steel and foundry industry in India. The steel

generated from ship recycling contributes to around 1% to 2% of the domestic steel demand.

MSTC Ltd

(Metal Scrap Trading Corp. Ltd)

The company has two operational divisions, Foreign Trade and Domestic Trade. In Domestic Trade, the company undertakes disposal of ferrous/non-ferrous scrap and other secondaries arising from integrated steel plants under SAIL, Rashtriya Ispat Nigam Ltd, etc. and disposal of scrap and surplus stores from other public sector units and government departments including Ministry of Defence.

The MSTC Ltd is now endeavouring to enter into trade of finished steel products. MSTC is known internationally as one of the biggest importers of steel melting scrap in the country for use by secondary steel industry. It now undertakes, in competition with other private parties, import of scrap on behalf of large industrial houses on back-to-back-order basis and other items.

Ferro Scrap Nigam Ltd (FSNL)

FSNL has become a fully-owned subsidiary of MSTC Ltd under the Ministry of Steel. The company undertakes the recovery and processing of scrap, slag and refuse dumps, in the nine steel plants at Bhilai, Bokaro, Burnpur, Durgapur, Rourkela, Visakhapatnam, Dolvi, Duburi and Raigarh. The scrap so recovered is returned to the steel plants for recycling or disposal and the company is paid processing charges on the quantity recovered at varying rates depending on the category of scrap. In addition, the company provides steel mill services, such as scarfing of slabs and handling of BOF slag, etc.

The consumption of scrap is mainly reported by Induction Furnace and Electric Arc Furnace units, integrated steel plants and alloy steel & foundry industries. Scraps are used in the steel sector after recycling. Recycling scrap helps in conservation of energy as remelting of scrap requires much less energy than production of iron or steel from iron ore. Also, the consumption of

iron and scrap by remelting reduces the burden on land fill disposal facilities and prevents the accumulation of abandoned steel products in the environment. The recovery of scrap by FSNL in 2007-08 was at 2.38 million tonnes in comparison to 2.20 million tonnes in 2006-07.

TRADE POLICY

As per the modified Export-Import Policy incorporated under the Foreign Trade Policy (FTP) for 2004-09, effective from 1st April 2008, the imports of primary forms of pig iron, spiegeleisen, sponge iron, ferro-alloys, stainless steel, remelting scrap, as also the semi-finished products of iron, non-alloy steel or stainless steel (such as flat-rolled products, bars, rods, coils and wires), primary and semi-finished forms of other alloy-steels, etc. are unrestricted. Similarly, the exports are also allowed freely.

WORLD REVIEW

Mergers and acquisitions continued all over the world in the steel industry. This relatively is a new development and often involved cross-border acquisitions and mergers. In the globalisation era, the more prudent approach is to make primary steel closer to raw materials and then ship the semi-finished steel to final makers for finishing. China has emerged as the most influential market in steel production and consumption.

The world production of pig iron in 2007 was about 1,005 million tonnes as against 935 million tonnes in 2006. China, Japan, Russia, India, Brazil, USA, Ukraine and Germany were the principal producers (Table-11).

World crude steel production in 2007 increased to 1,344 million tonnes from 1,232 million tonnes in 2006. China was the top producer accounting for 36% of world's crude steel production, followed by Japan (9%), USA (7%), Russia (5%), India and Republic of Korea (4% each). Other important producers were Germany, Ukraine, Brazil, Italy and Turkey (Table-12).

Table – 11 : World Production of Pig Iron (By Principal Countries)

(In '000 tonnes)			
Country	2005	2006	2007
World : Total	856200	934800	1004900
Brazil	33884	32452	35571
China	343752	412452	469446
France	12596	12874	12328
Germany	29294	30940	31700
India*	39177	43288	46884
Japan	83058	84270	86771
Korea, Rep. of	27920	27559	29437
Russia	51750	55022	51043
Ukraine	31700	32900	35600
USA	37200	37900	36100
Other countries	165869	165143	170020

Source : World Mineral Production, 2003-2007.

* India's production of hot metal in 2005-06, 2006-07 and 2007-08 was 31.8 million tonnes, 34.7 million tonnes and 36.8 million tonnes, respectively.

Table – 12 : World Production of Crude Steel (By Principal Countries)

(In '000 tonnes)			
Country	2005	2006	2007
World : Total	1144000	1232000	1344000
Brazil	31610	30901	33782
China	353240	419149	489660
France	19481	19852	19250
Germany	44524	47224	48550
India*	45780	49450	53080
Italy	29349	31625	31506
Japan	112471	116226	120203
Korea, Rep. of	47820	48455	51517
Russia	66146	69308	72220
Taiwan	18563	19975	20700
Turkey	20961	23307	25761
Ukraine	38641	27337	42830
USA	94897	98557	98181
Other countries	220517	230634	236760

Source : World Mineral Production, 2003-2007.

* India's production of crude/liquid steel in 2005-06, 2006-07 and 2007-08 was 46.5 million tonnes, 50.8 million tonnes and 53.9 million tonnes, respectively.

FOREIGN TRADE**Exports**

Exports of iron and steel (total) decreased marginally by 2% in 2007-08 to 8.25 million tonnes from 8.42 million tonnes in the previous year. Steel exports in 2007-08 comprised finished steel (including cold rolled sheets) 4.2 million tonnes (51%) and semi-finished steel (including steel ingots) 2.5 million tonnes (31%). Other items together accounted for remaining 18% exports. Exports in 2007-08 were mainly to USA (15%), Belgium (9%), UAE (8%), Saudi Arabia and Iran (4% each) and Italy, Indonesia and UK (3% each). Exports of pig and cast iron including spiegeleisen increased to 8.20 lakh tonnes in 2007-08 from 6.61 lakh tonnes in the previous year. Exports were mainly to Japan (26%), Thailand (23%), Malaysia (17%), Chinese Taipei (15%) and Indonesia (8%) (Tables - 13 to 23).

Imports

Imports of iron and steel (total) in 2007-08 increased to 11.70 million tonnes from 9.94 million tonnes in the previous year. Imports in 2007-08 comprised semi-finished steel including ingots 5.3 million tonnes (46%) iron and steel scrap 3.5 million tonnes (30%) and finished steel including cold rolled sheets 2.3 million tonnes (19%). Imports in 2007-08 were mainly from China (20%), USA and Republic of Korea (8% each), UAE (7%) and Japan (5%). The imports of pig and cast iron (including spiegeleisen) increased to 57 thousand tonnes in 2007-08 from 28 thousand tonnes in the previous year. Imports were mainly from China (24%), Mexico (22%), South Africa (18%), Italy (7%) and Spain (6%) (Tables - 24 to 34).

Table – 13 : Exports of Iron & Steel : Total (By Countries)

Country	2006-07		2007-08	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	8421409	381363178	8246268	415266584
USA	1348398	67302239	1271277	73606650
UAE	712268	28612803	697489	30943485
Belgium	829235	28807595	723062	25367203
Germany	97590	10912452	148758	17500444
Saudi Arabia	321448	12566944	340962	17072386
Italy	447784	20342780	274322	16120227
UK	276064	13420462	251893	14217404
Iran	271832	12126488	293270	11809980
Indonesia	261350	10937000	273342	9882131
China	314049	15839099	114406	3427349
Other countries	3541391	160495316	3857487	195319325

Table – 14 : Exports of Iron & Steel (Finished Steel incl. CR Sheet) (By Countries)

Country	2006-07		2007-08	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	4006026	179647088	4186946	195278361
USA	782663	34875284	839250	43642234
Saudi Arabia	119854	6255938	218075	11889876
UAE	298326	11237780	264042	11260662
Oman	80353	3671302	195065	11190934
Italy	268223	11497382	195196	8403222
Belgium	280488	11717964	201200	8164286
Iran	163970	8121724	155502	6476184
Indonesia	115298	6963557	135913	5799075
Spain	98364	3972040	129894	5077817
China	132919	8121148	20049	1306423
Other countries	1665568	73212969	1832760	82067648

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**Table – 15 : Exports of Iron & Steel
(Steel Wire)
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	102569	10628635	107514	12555218
USA	23868	2382041	22260	2621292
Germany	5575	1131735	7220	1618482
Italy	7454	968165	6085	891969
Belgium	6200	1105854	3350	648046
UK	3461	494213	3217	474502
Turkey	1351	199693	2741	422120
UAE	7641	328218	7785	368225
Netherlands	1992	375114	1680	319091
France	1860	337507	1683	317672
Australia	3079	236428	2001	316086
Other countries	40088	3069667	49492	4557733

**Table – 16 : Exports of Iron & Steel
(Other Finished Steel, NES)
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	1107812	86316854	1271936	104400344
USA	271460	19078834	286260	20013433
UAE	119874	8663552	137239	10340250
Germany	56314	5119691	83005	7879877
UK	92576	6274200	88863	7144721
Korea, Rep. of	2782	319853	78240	5732823
Italy	23201	3018348	26407	3418993
Saudi Arabia	32785	2333666	41357	2734648
Canada	27898	1874698	28928	2341047
Australia	29239	1950617	32596	2125870
Nigeria	26777	1914102	22711	1873393
Other countries	424906	35769293	446330	40795289

**Table – 17 : Exports of Iron & Steel
(Semi-finished Steel incl. Steel Ingots)
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	3060269	103540729	2521576	101149361
Belgium	528651	14783907	497646	14932218
UAE	286356	8378762	288197	8967547
USA	270197	10954385	123318	7319627
Germany	23446	3368055	43649	6097098
Iran	96670	3190117	127873	3920228
Italy	148764	4852002	46412	3393784
Indonesia	140541	3401411	121666	3053921
Spain	104091	2961310	97460	2842965
Saudi Arabia	168632	3956259	81171	2413829
China	118571	7102408	18378	1204816
Other countries	1174350	40592113	1075806	47003328

**Table – 18 : Exports of Iron & Steel Material
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	-	-	++	17
U A E	-	-	++	17

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**Table – 19 : Exports of Iron & Steel :
Alloy Steel (Granules)
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	346	9150	1384	31043
Bhutan	-	-	397	9264
Bangladesh	275	5489	458	8946
Nepal	-	-	386	7736
Nigeria	1	40	95	2246
USA	19	1595	7	1072
Australia	++	8	10	447
Canada	3	230	4	210
Kuwait	6	155	2	115
UK	14	556	1	53
Spain	4	272	-	-
Other countries	24	805	24	954

**Table – 20 : Exports of Iron & Steel :
Alloy Steel (Powder)
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	507	31917	555	29862
UK	2	94	68	5633
Bangladesh	-	-	172	5413
Italy	28	2081	74	5182
USA	81	4266	60	4145
Egypt	84	3732	91	3825
Mexico	40	3361	7	824
Brazil	51	2577	4	244
Malaysia	40	3591	2	196
Canada	50	2819	2	60
Sweden	70	7328	-	-
Other countries	61	2068	75	4340

**Table – 21 : Exports of Iron & Steel (Scrap)
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	84874	478344	106758	1099068
China	60041	348775	72658	556669
Sweden	-	-	5432	322379
Japan	-	-	25500	51128
Hong Kong	-	-	540	40864
Germany	193	11464	337	25406
Netherlands	402	17741	326	19493
Bhutan	-	-	144	15368
UK	786	9844	149	11606
Italy	100	4204	148	7077
Philippines	22000	42784	-	-
Other countries	1352	43532	1524	49078

**Table – 22 : Exports of Iron & Steel (Sponge Iron)
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	59006	710461	49599	723310
Bangladesh	53472	613703	41571	592139
Kuwait	1650	19871	2446	39257
Bhutan	824	6592	3022	36072
Sri Lanka	585	7279	831	17104
Germany	835	14207	198	5145
UK	191	4006	58	1576
Nepal	265	14397	76	1074
Peru	389	12394	-	-
Greece	240	6220	-	-
Yemen	25	269	339	8218
Other countries	530	11523	1058	22725

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**Table – 23 : Exports of Pig & Cast Iron
incl. Spiegeleisen
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	660842	9421777	819926	13541946
Japan	116920	1597603	212131	3458513
Thailand	140837	1785458	186503	2680130
Chinese Taipei/ Taiwan	139700	1927589	120685	2289249
Malaysia	22942	314789	142820	2149573
Indonesia	2454	49451	62904	1096709
Netherlands	-	-	24584	375188
Korea, Rep. of	55712	835442	21046	301361
Sweden	2952	131817	1036	131921
China	112094	1588213	8780	103149
Bangladesh	28517	400022	1410	28056
Other countries	38714	791393	38027	928097

**Table – 24 : Imports of Iron & Steel : Total
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	9942835	377449711	11699378	480903967
China	1687641	74276187	2351569	100667426
Korea, Rep. of	667099	29605821	903293	45639767
Japan	490509	25491575	639198	32539570
USA	673078	25346866	896233	31902715
Germany	315592	20562230	439938	30661191
Russia	624735	21059543	457257	19572706
Italy	178438	14630591	138880	15085261
Ukraine	583182	16000378	377782	12026057
UAE	705110	11308326	851900	11469046
Netherlands	94985	10208974	119658	10541555
Other countries	3922466	128959220	4523670	170798673

**Table – 25 : Imports of Iron & Steel
(Finished Steel incl. CR Sheet)
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	2117966	145757009	2269650	155900225
China	687283	43045973	433649	27525476
Japan	211831	14479408	361735	21499478
Germany	166044	9931306	197696	13140537
Korea, Rep. of	175852	9665117	224205	13091262
Italy	137404	10808477	97313	10071026
USA	107638	10069235	135297	9940504
Russia	51094	6360048	52707	6522929
France	30034	4232816	42097	5308814
Spain	23967	3233912	36993	5059033
Sweden	23421	3174720	26293	3782781
Other countries	503398	30755997	661665	39958385

**Table – 26 : Imports of Iron & Steel
(Steel Wire)
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	69338	4218130	108802	5845606
China	30817	1074111	46001	1606953
Nepal	3772	138956	16586	713983
Sweden	859	367153	850	591565
Japan	2377	530227	2726	467658
Malaysia	4830	244790	10312	435173
Korea, Rep. of	4707	284370	4923	320111
Belgium	3504	201035	4676	248674
Germany	2794	296199	2153	243247
Brazil	1847	123779	3063	180047
Spain	4954	288412	2463	125603
Other countries	8877	669098	15049	912592

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**Table – 27 : Imports of Iron & Steel
(Other Finished Steel, NES)
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	175217	38156419	419928	68151769
China	51462	6520744	230423	23846402
Korea, Rep. of	15297	3093905	31706	9609557
Germany	15957	4763007	24816	6175455
USA	13065	4243975	16039	4302465
Italy	8406	2466192	13988	3660951
Japan	11477	2684724	18343	3230321
UK	4394	1392258	7235	1835816
France	4335	1333551	6573	1757383
Singapore	4537	1186786	5051	1286385
UAE	9529	2358907	5354	837148
Other countries	36758	8112370	60400	11609886

**Table – 28 : Imports of Iron & Steel
(Semi-finished Steel incl. Steel Ingots)
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	4218937	122187600	5337552	168085357
China	889697	22850600	1632742	47442388
Korea, Rep. of	461293	16044142	629355	21894450
Ukraine	532060	14361915	373153	11737758
Russia	510841	12038042	380571	9702449
Romania	133591	4414929	239533	8423260
Thailand	84910	2396943	271862	7314252
Japan	225121	6959008	241488	6693035
Belgium	89287	3709693	158484	6535421
Germany	96485	4333086	130190	6327835
Iran	277820	6128977	88719	2252077
Other countries	917832	28950265	1191455	39762432

**Table – 29 : Imports of Iron & Steel Material
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	89	5169	-	-
Germany	51	3187	-	-
Malaysia	24	1229	-	-
Thailand	14	753	-	-

**Table – 30 : Imports of Iron & Steel :
Alloy Steel (Granules)
(By Countries)**

Country	2006-07		2007-08	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	11511	403456	11133	361749
Spain	2759	107455	3127	102249
Italy	2847	96200	2135	68998
China	2853	78271	2126	60879
Thailand	789	22810	1500	41660
France	331	12648	768	33877
South Africa	550	18787	554	17706
USA	301	11200	339	14394
Germany	414	29195	91	4837
Romania	252	8456	126	4336
UK	225	9958	96	3495
Other countries	190	8476	271	9318

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Table – 31 : Imports of Iron & Steel : Alloy Steel (Powder) (By Countries)

Country	2006-07		2007-08	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	1280	265516	2072	324305
Belgium	58	26655	64	29014
Canada	43	4942	40	5660
China	35	5520	42	13108
France	12	5908	4	4544
Germany	331	69106	145	22836
Japan	20	5677	18	6819
Spain	-	-	189	6316
Sweden	352	46983	833	95686
UK	142	64712	179	80097
USA	284	32997	461	49638
Other countries	3	3016	97	10587

Table – 32 : Imports of Iron & Steel (Scrap) (By Countries)

Country	2006-07		2007-08	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	3188060	64335290	3548202	82197925
USA	506329	9072906	670454	14595756
UAE	651711	7227418	816379	9731295
Netherlands	65420	8422316	70314	7520337
UK	264698	4106969	284466	5145161
Germany	33516	1137144	84847	4746444
Kuwait	214248	2669450	202018	3098916
Russia	62173	2473769	23714	3044005
South Africa	111313	1855348	139392	2940742
Singapore	87139	2367043	84609	2190084
Malaysia	75848	2208403	74984	2078845
Other countries	1115665	22794524	1097025	27106340

Table – 33 : Imports of Iron & Steel (Sponge Iron) (By Countries)

Country	2006-07		2007-08	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	160437	2121122	2039	37031
Sweden	208	6661	555	17087
Saudi Arabia	-	-	1155	15817
South Africa	-	-	314	2810
China	1	55	15	1317
Italy	++	11	-	-
Libya	53699	742700	-	-
Venezuela	106529	1371695	-	-

Table – 34 : Imports of Pig & Cast Iron (Incl. Spiegeleisen) (By Countries)

Country	2006-07		2007-08	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	28055	1121600	57120	1956276
China	5798	175089	13471	468708
Germany	500	89308	547	103583
Italy	5430	190355	3950	135943
Mexico	-	-	12458	349590
South Africa	4911	104648	10312	216475
Spain	2360	83814	3563	114185
Sweden	2118	121747	2375	135070
Thailand	1963	57303	1819	50138
UK	442	61252	404	54939
USA	1377	73087	2857	109728
Other countries	3156	164997	5364	217917

FUTURE OUTLOOK

India ranked fifth among the major crude steel producing countries in the world. The rapid growth of the Iron & Steel Industry and the changed global scenario are creating avenues for accelerated growth in the Industry. The Steel Industry in general is on the upswing due to strong growth in demand propelled by the strong domestic demand for steel particularly from the construction, manufacturing and automotive sectors. India is the largest producer of sponge iron in the world with production over 20 million tonnes. The economic reforms and the consequent liberalisation of the Iron & Steel sector brought a sea change in the industry, particularly in the field of greenfield steel plants in the private sector.

The Steel Industry has now exalted itself and is in a position of self-reliance and is also in a position to compete globally in terms of product range, quality and price. The growth of the steel sector is linked intricately with the growth of the Indian economy, especially with growth of the steel consuming sectors. India has become self-sufficient in iron & steel materials in the last five years. Exports are rising along with

production and capacities. This position needs to be consolidated further and issues affecting production and consumption need to be resolved expeditiously. At the same time, measures to match the productivity of our steel plants to that of international quality standards must be taken up as top priority. India is already recognised as a global player in the steel industry and is poised to play a key role in the international steel scenario. Besides, India has established herself as a key destination market for global steel and as emerging market in the field of mergers & acquisitions and is also reckoned as one of the major producers of steel of low manufacturing cost. The Government of India may consider to reopen the closed units of Electric Arc Furnace (EAF), Induction Furnace (IF) and Hot Rolled (HR) Mills for long products, so that the unutilised capacities of secondary sector can produce their products and Indian steel production can be enhanced. The National steel Policy, 2005 envisages to achieve global competitiveness not only in terms of cost, quality and product mix but also in terms of global benchmarks of efficiency and productivity in the Indian Steel Sector.