

48 Iron & Steel and Scrap

Steel 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 59.69 million tonnes in 2009-10. 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 of finished steel from 45% in 1992-93 to 78.4% in 2009-10.

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 iron & steel as against 6.12 million tonnes in 2009-10 including finished steel exports of 3.1 million tonnes. 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 to achieve a positive growth.

NATIONAL STEEL POLICY-2005

The National Steel Policy (NSP) was announced in 2005. The salient features of the NSP 2005 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:
 - (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 contract.

- (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 Odisha. 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 seeks to examine and formulate corrective measures to obtain fiscal incentives which are usually available to other infrastructure projects as also the rationalisation of customs and excise duty structure for reducing the fiscal and revenue deficits. NSP 2005 is presently under review and a new document, namely, National Steel Vision, is being drafted.

STRUCTURE AND ROLE OF INDIAN STEEL INDUSTRY

India has risen to the fifth position as largest crude steel producing country in the world since 2006. 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 13 integrated steel plants in the public and private sectors.

The secondary sector constitutes Electric Arc Furnace/Induction Furnace, pig iron/sponge iron 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 of 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 2009-10 is given in Table-1. Production of iron & steel by main producers and others during 2005-06 to 2009-10 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. Prices of steel are provided in Table-6.

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Table – 1 : Structure of the Indian Steel Industry, 2009-10

(In million tonnes)

Sector	Type of units	Working		Non-working		Total		Production	
		No. of units	Annual capacity	No. of units	Annual capacity	No. of units	Annual capacity	2008-09	2009-10
Primary	Integrated plants (Crude/Liquid Steel)	13	35.55	–	–	13	35.55	32.24	36.36
Secondary	Electric Arc Furnace (EAF)	38	17.99	1	0.05	39	18.04	14.32	15.48
	Induction Furnace (IF)	1114	24.40	–	–	1114	24.40	18.05	19.86
	Pig iron	>19	+4.83	–	–	>19	+4.83	6.21	5.73
	Sponge iron	324	30.09	NA	NA	324	30.9	21.09	20.74
	HR (sheets/strips/plates rerolling units)	1720	30.98	568	4.21	2288	35.19	23.11	NA
	HR steel (sheets, strips, plates units)	12	14.39	–	–	12	14.39	15.79	16.03
	CR Mills (sheets & strips)	65	9.55	–	–	65	9.55	4.62	5.74
	Steel wire drawing units	35	0.71	65	0.73	100	1.44	0.59	NA
	GP/GC/PVC - coated sheets/strips	20	5.06	–	–	20	5.06	4.55	4.47
	Tin plate	1	0.10	2	0.11	3	0.21	0.20	0.21

Source: Annual Report of Ministry of Steel, 2010-11.

Table – 2 : Production of Iron and Steel, 2005-06 to 2009-10

(In '000 tonnes)

Item/producers	2005-06	2006-07	2007-08	2008-09	2009-10(P)
I. Pig Iron : Total	4695	4993	5314	6207	5734
Main Producers	1007	860	936	589	731
Other Producers	3688	4133	4378	5618	5003
II. Sponge Iron : Total	14825	18345	20376	21091	20738
Gas Based	4545	5265	5845	5516	6161
Coal Based	10280	13080	14531	15575	14577
III. Crude Steel : Total	46460	50817	53857	58437	64875
Main Producers	21402	21868	21789	21755	22969
ASP + VISL	292	309	315	263	308
Other Producers					
EAF Units (Including Corex & MBF/EOF)	11273	13250	14820	18365	21738
Induction Furnaces	13493	15390	16933	18054	19860
IV. Finished Steel for Sale (Alloy/Non-alloy) : Total	46566	52529	56075	57164	59692
Main Producers	16413	17614	18020	17216	17900
Other Producers	34809	40047	43332	46229	47565
Less: Inter Plant Transfer/Own Consumption	4656	5132	5277	6281	5773

Figures rounded off.

Source: Ministry of Steel, Annual Report, 2009-10 and 2010-11.

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

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**Table – 3 : Production of Iron and Steel, 2005-06 to 2009-10
(By Sector)**

Item/producers	(In '000 tonnes)				
	2005-06	2006-07	2007-08	2008-09	2009-10(P)
I. Pig Iron : Total	4695	4993	5314	6211	5734
Public Sector	1007 (21.4%)	860 (17.2%)	936 (17.6%)	589 (9.5%)	731 (12.7%)
Private Sector	3688 (78.6%)	4133 (82.8%)	4378 (82.4%)	5622 (90.5%)	5003 (87.3%)
II. Crude/Liquid Steel : Total	46460	50817	53857	58437	64875
Public Sector	16964 (36.5%)	17003 (33.5%)	17091 (31.7%)	16372 (28.02%)	16714 (25.76%)
Private Sector	29496 (63.5%)	33814 (66.5%)	36766 (68.3%)	42065 (71.98%)	48161 (74.24%)
III. Finished Steel for Sale (Alloy/Non-alloy) : Total	46566	52529	56075	57164	59692
Public Sector	12585 (27%)	13176 (25.1%)	13521 (24.1%)	12673 (22.2%)	12881 (21.60%)
Private Sector	33981 (73%)	39353 (74.9%)	42554 (75.9%)	44491 (77.8%)	46811 (78.40%)

Figures rounded off.

Source: Ministry of Steel, Annual Report, 2009-10 and 2010-11.

**Table – 4 : Capacity and Production of Hot Metal and Crude/Liquid Steel, 2008-09 and 2009-10
(By Principal Producers)**

Unit	Annual installed capacity		Production			
	Hot metal	Crude/Liquid steel	Hot metal		Crude/Liquid steel	
			2008-09	2009-10	2008-09	2009-10
Public Sector						
Bokaro Steel Plant (Jharkhand)	4585	4360	4021	4066	3577	3599
Bhilai Steel Plant (Chhattisgarh)	4700	3925	5387	5370	5183	5108
Rourkela Steel Plant (Odisha)	2120	1900	2200	2258	2083	2128
Durgapur Steel Plant (West Bengal)	2088	1802	2111	2174	1886	1966
IISCO Steel Plant, Burnpur (West Bengal)	550	500	598	502	417	400
Visvesvaraya Iron Steel Plant (Karnataka)	205	118	125	126	95	103
Salem Steel Plant (Tamil Nadu)	–	320	–	–	180	NA
Alloy Steel Plant, Durgapur (West Bengal)	–	264	–	–	168	205
Visakhapatnam Steel Plant (Andhra Pradesh)	3400	3000	3546	3900	3145	3205
IDCOL Kalinga Iron Works Ltd (Govt. of Odisha Undertaking)	170	–	NA	NA	–	–
Private Sector						
JSW Steel Ltd (Karnataka)	NA	6800	NA	NA	3218	5257
Tata Steel Ltd (Jharkhand)	NA	6800	6254	7232	5646	6563
Ispat Industries Ltd (Maharashtra)	2000	3000	NA	NA	2201	2689
Essar Steel Ltd (Gujarat)	NA	4600	NA	NA	3342	3474
Jindal Steel & Power Ltd (Chhattisgarh)	1670	3000	NA	NA	1457	1961
Lloyds Steel Industries Ltd (Maharashtra)	–	850	–	–	460	506
Jindal Stainless Steel	–	NA	–	–	470	517

Figures rounded off.

Source: Annual Report of Ministry of Steel, 2009-10, 2010-11 and individual plants.

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**Table – 5 : Production of Crude/Liquid Steel, 2005-06 to 2009-10
(By Route)**

(In '000 tonnes)

Route/plant	2005-06	2006-07	2007-08	2008-09	2009-10
All Routes : (A+B) Total	46460	50817	53857	58437	64875
A. Oxygen Route : Total	24398	25394	25966	26063	29329
Bhilai Steel Plant (Chhattisgarh)	5054	4799	5055	5183	5108
Durgapur Steel Plant (West Bengal)	1801	1869	1914	1886	1966
Rourkela Steel Plant (Odisha)	1661	1990	2093	2083	2128
Bokaro Steel Plant (Jharkhand)	4228	4067	4127	3577	3599
IISCO Steel Plant (West Bengal)	434	472	458	417	400
Visvesvaraya Iron Steel Ltd (Karnataka)	152	159	158	95	103
Visakhapatnam Steel Plant (Andhra Pradesh)	3603	3606	3322	3145	3205
Tata Steel Ltd (Jharkhand)	4730	5174	5013	5646	6563
JSW Steel Ltd (Karnataka)	2268	2643	3147	3218	5257
Other Oxygen Route	576	724	872	995	1000
B. Electric Route : Total	22062	25423	27891	32374	35546
Electric Arc Furnace	8569	10033	10958	14320	15686
Alloy Steel Plant, Durgapur (West Bengal)	140	150	157	168	205
Essar Steel Ltd (Gujarat)	2510	3006	3564	3342	3474
Ispat Industries Ltd (Maharashtra)	2190	2761	2827	2201	2689
Jindal Steel & Power Ltd (Chhattisgarh)	564	803	1219	1457	1961
Lloyds Steel Ltd (Maharashtra)	515	537	463	460	506
Jindal Stainless Ltd (Haryana)	542	585	585	470	517
Other Electric Arc Furnace Route	2108	2191	2143	6222	6334
Electric Induction Furnace	13493	15390	16933	18054	19860

Figures rounded off.

Source: Ministry of Steel, Annual Report, 2009-10 and 2010-11.

**Table – 6 : Prices of Iron & Steel, 2007-08 to 2009-10
(Domestic Markets)**

(In Rupees per tonne)

Grade	Market	2007-08	2008-09(P)	2009-10 (P)
CTD Bars (ISI, 8mm)	Delhi	31848	38114	31600
Joists (150 x 75 mm)	"	30752	34986	29367
Channels (75 x 40 mm)	"	29956	35590	29437
MS Squares (8mm)	"	30343	37657	30796
MS Angles (25 x 3mm)	"	30950	26100	29965
Melting Scrap	"	20658	25875	19333
Blooms (SAIL, 150 mm)	Mandi Gobindgarh	32432	44329	40583
Heavy Slab (BOKARO)	"	27327	34850	26560
Melting Scrap (rolling)	"	21715	26631	20815
MS Rounds (10 mm)	"	29046	35631	28127
CTD Bars (ISI 8 mm)	"	33896	41581	34446
MS Squares (8 mm)	"	27998	34796	27742
MS Angles (25 x 3 mm)	"	31117	37113	30965
Joists (150 x 75 mm)	"	29983	34077	28473
Induction ingots (round)	"	27190	32227	25190
Old Ship Breaking Scrap	"	26021	30433	22962

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Table - 6 (Concl.d.)

Grade	Market	2007-08	2008-09(P)	2009-10 (P)
Joists (150 x 75 mm)	Mumbai	30475	34618	28587
MS Angles(40 x 6 mm)	"	30273	35514	29046
Induction ingots	"	25223	29959	23244
Melting Scrap	"	19969	24584	18121
CTD Bars (local 8 mm)	"	30377	37551	30985
MS Rounds (8 mm)	"	29496	35657	28792
CTD Bars (ISI, 8 mm)	Kolkata	25992	32141	25727
MS Squares (8 mm)	"	26512	32892	25881
MS Angles (25 x 3 mm)	"	26260	31724	25227
Channels (75 x 40 mm)	"	27625	33196	26446
Joists (150 x 75 mm)	"	25662	31635	22606
Induction Ingots	"	23038	24259	18729
Melting Scrap	"	18802	19573	15204
Arc Ingots	"	23313	24460	19131
Concast Billet Ingots	"	23623	24737	19223

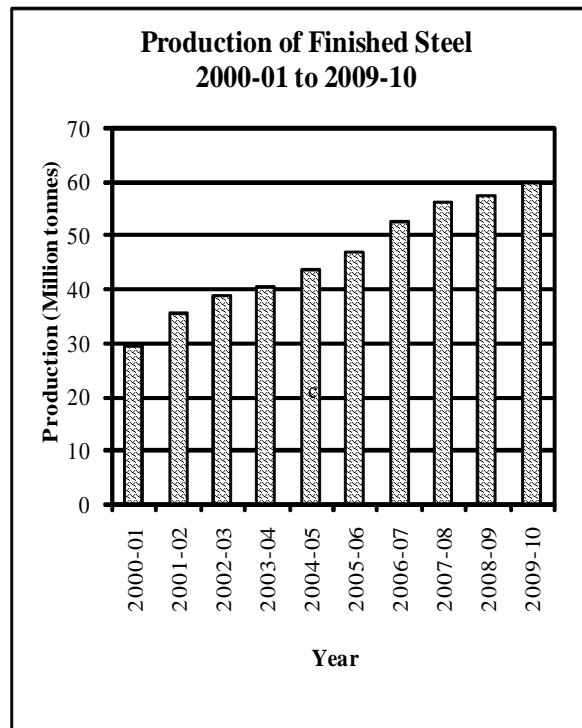
Source : Minerals & Metals Review.

Finished Steel

The Indian Steel Industry continued to record increased production of finished steel from 46.57 million tonnes in 2005-06 to 59.69 million tonnes in 2009-10. Finished steel produced by the steel plants of SAIL in 2009-10 was 9.92 million tonnes. In 2009-10, Visakhapatnam Steel Plant of Rashtriya Ispat Nigam Ltd produced 2.96 million tonnes and Tata Steel produced 5.02 million tonnes. JSW Steel is the largest finished steel producer among private sector integrated steel plants. However its production is not available. 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). Presently, there are 39 EAF



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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 (Odisha)	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.

based steel plants in operation in the country, with an aggregate capacity of 18.04 million tonnes per annum. One unit with a capacity of 0.05 million tonnes is reportedly closed. The production of steel ingots/concast billets by EAF units reporting production in 2009-10 was estimated at 15.48 million tonnes as against 14.15 million tonnes in 2008-09 (Table-5).

The recent developments in EAF technology viz, to increase oxygen consumption, to reduce power consumption and to reduce 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. 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

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(sponge iron). There are 1,114 induction furnaces with an aggregate capacity of 24.40 million tonnes. These units reportedly produced about 19.86 million tonnes steel in 2009-10 as against production of 18.05 million tonnes in 2008-09.

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 87% by 2009-10. In 2009-10, about 5.73 million tonnes pig iron was produced. The production of pig iron by public and private sector plants is furnished in Table-3. The share of private/secondary producers in the years 2008-09 and 2009-10 was around 91% and 87%, respectively, in spite of the unprecedented increase in the price of imported metallurgical coke that the industry was constrained with. Location and capacity of principal pig iron units in private sector are furnished in Table - 8.

Table – 8 : Location and Capacity of Principal 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.	JSW 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.	KIOCL Ltd	Mangalore, Karnataka	2.27
10.	Usha Ispat Ltd	Redi, Maharashtra	3.00
11.	Ispat Metallics India Ltd	Dolvi, Raigad, Maharashtra	20.00
12.	Kalinga Iron Works	Barbil, Keonjhar, Odisha	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 30.9 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 20.74 million tonnes in 2009-10. Over the years, the coal based route has emerged as a key contributor to overall production; its share has increased from 63% in 2004-05 to 70% in 2009-10. 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 a considerable saving in foreign exchange. The available data on annual installed capacity of principal sponge iron units are given in Table-9.

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

(In lakh tonnes)

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, Odisha	2.50
Adhunik Metaliks Ltd	Chandrihariharpur, Sundergarh, Odisha	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, Odisha	1.05
Bhushan Steel & Strips Ltd	Meramandali, Dhenkanal, Odisha	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, Odisha	1.44
Gallant Metal Ltd	Samakhilal, Kachchh, Gujarat	1.70
Global Hi-tech Industries Ltd	Gandhidham, Gujarat	1.05
Goa Sponge Iron & Power Ltd	Santona, Sanguem, Goa	1.00

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Table - 9 (Concl.d.)

Unit	Location	Capacity
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, Odisha	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, Odisha	1.20
Orissa Sponge Iron Ltd	Palaspanga, Keonjhar, Odisha	2.50
Prakash Industries Ltd	Champa, Jangir Champa, Chhattisgarh	4.50
Rungta Mines Ltd	Karakola and Kamando, Sundergarh, Odisha	3.30
Sarda Energy & Minerals Ltd	IGC Siltara, Raipur, Chhattisgarh	2.10
Scaw Industries Pvt. Ltd	Gundichapara, Dhenkanal, Odisha	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, Odisha	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, Odisha	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, Odisha	3.00
Zoom Vallabh Steels Ltd	Dughda, Saraikela-Kharswan, Jharkhand	1.20

I.G.C.: Industrial Growth Centre.

Source: Sponge Iron Manufacturers' 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 2000-01 is given in Table-10.

Table – 10 : Domestic Consumption of Finished Steel

(In million tonnes)	
Year	Consumption
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%)
2008-09	52.35 (0.42%)
2009-10	57.68 (10.18%)

Source: Annual Report, Ministry of Steel, 2009-10. 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.

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 2012-13 as given below:

Plant	Hot metal capacity by 2012-13 (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 Furnance (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 permission to a proposal in principle, 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 2012-13 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 2012-13 from 2.12 million tonnes. 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 2012-13 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 2012-13.

Salem Steel Plant

Expansion and modernisation of the Salem Steel Plant is presently on. The plan envisages installing Steel Melting and Continuous Casting facilities to produce 180,000 tpy slabs along with expansion of Cold Rolling Mill complex for Stainless Steel products from 60,000 tpy to 146,000 tpy and an additional Roll Grinding Machine for Hot Rolling Mill for enhancing the production to 364,000 tpy.

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. The new units are set to come on stream progressively from 2012-13.

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 9.7 million tonnes by 2011-12. The 2.9 million tpy expansion inter alia comprises a 2.9 million tpy blast furnace,

6 million tpy pellet plant, 2.4 million tpy Linz - Donawit (LD) basic oxygen converter, etc. Setting up of a new integrated steel plant with 6 million tonnes capacity in Kalinganagar, Jajpur, Odisha at an investment of Rs. 15,400 crore by TSL is currently underway, which the company plans to complete in two phases of 3 million tonnes per phase. Government of Odisha 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 it is expected to be 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 4.54 million tonnes and 5.02 million tonnes of finished steel and 5.65 million tonnes and 6.56 million tonnes of crude steel in 2008-09 and 2009-10, respectively.

JSW Steel Ltd

JSW Steel Ltd has an installed crude steel capacity of 6.8 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. 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 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 9.6 million tpy at Vijaynagar works by 2011-12. 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 longest 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 1.67 million tonnes and captive power plant 623 MW. As expansion projects, JSPL is setting up a 6 million tpy integrated steel plant at Angul in Odisha. The plant is expected to be commissioned in March 2012 (Phase I). Other plants being set up are : 6 million tpy integrated steel plant at Patratu, Jharkhand and 7 million tpy steel plant at Raigarh, Chhattisgarh. It is planned to implement these projects in phases. The present plant at Raigarh is also under expansion to 7 million tpy (3 million tpy through EF route and 4 million tpy through BOF route) comprising 3 million tpy flat products and 4 million tpy long products. It will also have 6 million tpy gas-based DRI plant with matching coal gasification unit and 4 million tpy hot metal capacity.

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 10 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 first phase of 1.6 million tpy brownfield expansion of Hazira plant is to be commissioned in October 2010.

The company has plans to set up a steel plant of 6 million tonnes per annum capacity at Paradip, Odisha. 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 per annum capacity at Bastar, Chhattisgarh, (In first phase, a 1.6 million tpy steel plant with a captive power plant is to be set up), 3 million tonnes per annum in Jharkhand and 6 million tonnes per annum in Karnataka.

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. It also has a 2.24 million tpy sinter plant at Dolvi. 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 million tonnes sinter plant, a 1,260 tonnes/day oxygen plant and a new electric arc furnace have also been commissioned at IIL Dolvi. The company additionally has plans to set up 5.0 million tonnes per year integrated steel plant at Paradip, Odisha. JSW Steel has acquired a 45.53% majority stake in Ispat Industries and considering to scale up the plant to 5 million tpy.

Neelachal Ispat Nigam Limited (NINL)

NINL has a 1.1 million tonnes per annum capacity iron & steel plant located at Duburi, Jajpur district, Odisha. 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 Odisha Government will be setting one million tonne steel plant at Kalinganagar, Jajpur, Odisha. 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 pipeline 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 Odisha 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 near Nagarnar, Bastar district. Being a greenfield 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.

KIOCL Ltd

The company is operating 350 cu m capacity blast furnace at Panambur, New Mangalore Port for production of pig iron with 2.27 lakh tpy capacity and a Ductile Iron Spun Pipe (DISP) plant of 100,000 tonnes per year capacity. 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. The company also operates a 3.5 million tpy pellets plant at Mangalore with hematite ore purchased from NMDC.

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, Odisha. 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. It is also consumed by some major steel plants. Scrap—especially that from the ship breaking industry—supplies substantial quantity of re-rollable steel and steel scrap for the iron & 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 and 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.

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. It increases the availability of semi-finished material which otherwise would have to be produced using the ore. Thus, it helps in conservation of natural resources.

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. Private entrepreneurs handle the task of ship breaking in India. It is a labour intensive job and in India, it is cost efficient activity. Ship breaking in India has grown into a full fledged industry by 1979. Location of present ship breaking activities are:

- i) Alang and Sosiya yards in Bhavnagar district, Gujarat,
- (ii) Sachana in Gujarat
- (iii) Mumbai and
- (iv) Kolkata.

Alang & Sosiya yards account for 90% concentration of the ship breaking industry in India. During 2007-08, 2008-09 and 2009-10, a total of 140, 267 and 379 ships were beached by the industry accounting for 0.60 million tonnes, 2.00 million tonnes and 3.1 million tonnes, respectively, in terms of LDT (Light Displacement Tonnage, viz, physical weight of a ship). 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. 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.

The recommendations of a committee of Technical Experts on Ship Breaking set up by the Government of India on the directions of the Hon'ble Supreme Court have been accepted by the Hon'ble Supreme Court on 06.09.2007 on the issue of handling & management of the hazardous industrial waste generated during ship breaking. The court has also directed the Government to formulate a comprehensive Code incorporating the

recommendations which are operative till the statutes are amended. The Code is under formulation in the Ministry of Steel.

MSTC Ltd

(Formerly Metal Scrap Trade Corp. Ltd)

Presently, the company undertakes trading activities, e-commerce, disposal of ferrous and non-ferrous scrap, surplus stores and other secondary arising generated mostly from Public Sector Undertakings and Government Departments, including Ministry of Defence. The Company also undertakes import of raw materials in bulk required by large industrial houses on back-to-back basis. The items of import include petroleum products, LAM Coke, Coking Coal, DR Pellets, HR Coils and Melting Scrap, etc. It also undertakes trading in items within the country in competition with any other private trader.

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. Scrap is generated during iron & steel making and also in the Rolling Mills. In addition, the company provides steel mill services, such as scarfing of slabs and handling of BOF slag, etc.

The recovery of scrap by FSNL in 2009-10 was 2.37 million tonnes in comparison to 2.26 million tonnes in 2008-09.

TRADE POLICY

As per the modified Export-Import Policy incorporated under the Foreign Trade Policy (FTP) for 2009-14, 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

The world production of pig iron in 2009 was about 954 million tonnes as against 987 million tonnes in 2008. China, Japan, India, Russia, Korea, Ukraine, Brazil, Germany and USA were the principal producers (Table-11).

World crude steel production in 2009 decreased to 1,224 million tonnes from 1,331 million tonnes in 2008. China was the top producer accounting for 46% of world's crude steel production, followed by Japan (7%), and India (5%). Other important producers were Russia, USA, Republic of Korea, Germany, Ukraine, Brazil, Italy and Turkey (Table-12).

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

(In '000 tonnes)			
Country	2007	2008	2009
World : Total	1007300	987000	954000
Brazil	35571	34871	25135
China	469446	470674	543748
France	12426	11372	8104
Germany	31700	29105	20104
India	46884	49050	50681
Japan	86771	86171	66943
Korea, Rep. of	29437	31043	27475
Russia	51500	48300	43900
Ukraine	35650	30991	25683
USA	36300	33700	18000
Other countries	171615	161723	124227

Source: World Mineral Production, 2005-2009.

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

(In '000 tonnes)			
Country	2007	2008	2009
World : Total	1348000	1331000	1224000
Brazil	33782	33716	26506
Canada	15572	14845	8968
China	489660	500488	568033
France	19250	17879	12840
Germany	48550	45832	32670
India	53468	57791	62838
Italy	31506	30589	19847
Japan	120203	118739	87534
Korea, Rep. of	51517	53322	48572
Mexico	17573	17209	13957
Russia	72400	68700	59200
Spain	18998	18640	14357
Taiwan	20898	19882	15873
Turkey	25761	26809	25304
Ukraine	43647	38136	30302
UK	14392	13520	10080
USA	98102	91350	58142
Other countries	172721	163553	128977

Source: World Mineral Production, 2005-2009.

FOREIGN TRADE

Exports

Exports of iron and steel (total) decreased by 27% in 2009-10 to 6.12 million tonnes from 8.38 million tonnes in the previous year. Steel exports in 2009-10 comprised of finished steel (including cold rolled sheets) 3.1 million tonnes (51%) and semi-finished steel (including steel ingots) 1.7 million tonnes (28%). Other items together accounted for remaining 21% exports. Exports in 2009-10 were mainly to USA (10%), UAE (8%), Iran & Nepal (5% each) and Italy (3%). Exports of pig and cast iron including spiegeleisen increased to 6.2 lakh tonnes in 2009-10 from 5.4 lakh tonnes in the previous year. Exports were mainly to Malaysia (20%), Indonesia (19%) and Japan (13%) (Tables - 13 to 22).

Imports

Imports of iron and steel (total) in 2009-10 increased to 14.44 million tonnes from 11.78 million tonnes in the previous year. Imports in 2009-10 comprised of semi-finished steel including ingots 5.5 million tonnes (38%) iron and steel scrap 5.3 million tonnes (37%) and finished steel including cold rolled sheets 3 million tonnes (21%). Imports in 2009-10 were mainly from USA (11%), China (10%), Republic of Korea (9%), UK (8%),

IRON & STEEL AND SCRAP

Ukraine (7%) and Japan & Russia (5% each). The imports of pig and cast iron (including spiegeleisen) increased to 39 thousand tonnes in 2009-10 from 35 thousand tonnes in the previous year. Imports were mainly from South Africa (28%), Sweden & Italy (12% each) and China (8%) (Tables 23 to 32).

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

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	8381102	505364618	6115076	342946993
USA	1365300	96876328	625418	45470394
UAE	879083	52800140	505955	29660635
Iran	376524	15712426	310489	15234242
Germany	143790	18109127	131478	13783350
Italy	291032	17923413	212061	13066372
Algeria	140530	5793101	161085	10622249
Nepal	189726	7360313	284826	9046137
UK	255873	17229780	129477	8821587
Belgium	638639	30785697	148509	7860488
Saudi Arabia	294163	18527241	115431	6297940
Other countries	3806442	224247052	3490347	183083599

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

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	4187785	232711945	3143360	157564745
USA	902465	59443643	353846	22478739
UAE	358295	21947486	308346	15119784
Algeria	131422	4896495	146382	9448452
Iran	283514	10583309	156399	7529703
Italy	143449	7370825	165948	7210584
Oman	63186	3429937	93421	5314374
Iraq	98652	5517857	43829	3874811
Belgium	225490	10907308	86437	3719963
UK	96405	5506783	54400	2501450
Saudi Arabia	172672	10962201	41721	2127197
Other countries	1712235	92146101	1692631	78239688

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

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	83461	10567362	72363	7800739
USA	16378	2204732	13139	1492621
Germany	5485	1057255	5240	769074
Belgium	3259	602929	4332	568931
Italy	5810	845926	2913	396421
UK	2635	369482	3224	384488
France	2485	380580	3060	376897
UAE	8618	501967	4936	272048
Netherlands	1593	254239	1958	270508
Brazil	1849	253535	1544	247099
Turkey	1700	273409	1878	227254
Other countries	33649	3823308	30139	2795398

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

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	1392751	129401150	1111682	106184292
USA	240331	23104660	165478	16351074
UAE	180359	15433556	109650	11070456
Germany	95567	10431509	92179	8789392
UK	76946	7597193	61505	5455736
Saudi Arabia	50719	4291918	46911	3206006
Italy	28118	4353839	20896	3112428
Benin	12639	2345730	14343	2810349
France	22090	2645540	22193	2356007
Australia	30870	2457964	25244	2184058
Canada	30300	2902367	22793	1954105
Other countries	624812	53836874	530490	48894681

Table – 17 : Exports of Iron & Steel (Semi-Finished Steel Including Steel Ingots) (By Countries)

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	2658246	130865923	1710812	69818464
Iran	84992	4077228	146755	6857404
USA	206049	12115847	92714	5126760
Nepal	120610	4671108	153246	5008962
Germany	28868	4794075	23775	3195575
UAE	325748	14651348	82584	3191922
Indonesia	94190	3634209	98095	2583024
Italy	113641	5351441	22291	2346249
Korea Rep. of	92149	5845062	45548	2307494
Belgium	392234	16978768	36677	1524800
Thailand	120595	4989457	17593	863069
Other countries	1079170	53757380	991534	36813205

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Table – 18 : Exports of Iron & Steel : Alloy Steel (Granules) (By Countries)

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	361	13927	155	19314
USA	7	328	47	11422
China	-	-	31	2885
Cameroon	-	-	15	1289
Netherlands	-	-	13	1045
Saudi Arabia	20	502	20	813
Nepal	237	7853	5	319
UAE	12	346	2	251
Oman	31	1513	3	170
Iran	9	997	2	123
Hungary	10	774	-	-
Other countries	35	1614	17	997

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

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	356	31493	571	26620
Thailand	-	-	206	11045
Bangladesh	-	-	200	4375
China	++	4	8	1607
Malaysia	4	352	4	1190
USA	19	1611	18	951
Italy	13	1076	13	679
UK	60	6917	5	312
Egypt	99	4605	-	-
Sweden	114	14201	-	-
Unspecified	-	-	20	1556
Other countries	47	2727	97	4905

Table – 20 : Exports of Iron & Steel (Scrap) (By Countries)

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	28548	1044012	23849	341729
Sweden	1939	327538	1602	179522
China	15821	305566	18712	47703
Netherlands	44	5154	860	33333
Germany	168	7876	193	28985
Oman	794	16114	1428	24677
UAE	5992	262343	406	4788
USA	51	5506	118	4640
Malaysia	116	4345	17	1323
Bangladesh	2750	66046	95	1099
UK	168	9222	7	375
Other countries	705	34302	411	15284

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

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	29594	728806	52284	1191090
Bangladesh	20368	474264	23265	745541
Malaysia	2105	61758	19785	317201
Bhutan	2667	64326	4757	54187
Sri Lanka	1850	42816	1785	25080
Mauritius	460	16075	1512	24712
Nepal	1	14	426	8397
Kuwait	600	17300	400	5554
Germany	85	4249	++	27
Indonesia	1031	32268	-	-
Netherlands	296	9910	-	-
Other countries	131	5826	354	10391

Table – 22 : Exports of Pig & Cast Iron (Including Speigeliessen) (By Countries)

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	541757	14671746	620990	10870770
Malaysia	6792	238232	123294	2094815
Indonesia	550	19780	118948	1942765
Thailand	137504	4174049	69269	1511334
Japan	50487	1231821	82644	1326766
Korea Dem. People's Rep. of	1	56	62500	955024
Vietnam	2150	64447	54242	925349
Korea, Rep. of	145174	4778336	54016	847430
China	137679	2157909	26319	405202
Chinese Taipei/ Taiwan	14060	465744	11157	204903
Bangladesh	9636	284470	3779	73719
Other countries	37724	1256902	14822	583463

Table – 23 : Imports of Iron & Steel : Total (By Countries)

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	11778361	603114119	14442652	511365616
China	1844004	116964208	1500292	69945284
Korea, Rep. of	1117011	72418818	1331050	58052913
Japan	667807	42761349	748045	42160222
USA	875282	36596838	1595957	40997606
Germany	517571	35704980	596458	32274515
UK	864957	25803779	1148203	27543727
Ukraine	399316	15952942	967060	23410413
Russia	505483	23857989	772319	21591213
Italy	124608	17448916	178253	20226557
France	182917	16850312	255788	19455880
Other countries	4679405	198753988	5349227	155707286

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**Table – 24 : Imports of Iron & Steel
(Finished Steel Including CR Sheet)
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	2230126	174889161	2986180	171605291
China	346801	26160236	669220	32268528
Japan	333734	25254642	328870	23458423
Korea, Rep. of	261722	18949084	377590	19940751
USA	121027	11425353	152040	12237733
Germany	216422	15723100	113065	10051803
Ukraine	89990	2056515	350998	8403488
France	53812	7997661	40072	8189732
Italy	77186	8892755	64804	7680259
Russia	83125	9320728	127238	5887627
Belgium	74717	5812567	87912	4443164
Other countries	571590	43296520	674371	39043783

**Table – 25 : Imports of Iron & Steel
(Steel Wire)
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	108309	8187717	126531	7783851
China	45236	2360509	54171	2388454
Japan	3345	672725	6607	872266
Sweden	1580	962186	1220	802630
Malaysia	7903	520851	15342	725379
Nepal	16894	859256	13281	694215
Korea, Rep. of	8325	700172	7783	580289
Italy	2119	205662	3838	268413
Germany	1994	286403	1462	254426
Brazil	3420	292094	1179	89510
Belgium	5554	452658	1638	68811
Other countries	11939	875201	20010	1039458

**Table – 26 : Imports of Iron & Steel
(Other Finished Steel, NES)
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	516958	102084686	374787	70723437
China	227231	26886034	154692	16934133
Italy	18318	6271843	22177	9079993
Germany	26139	7252130	26012	7306221
France	18783	4509305	13817	5752831
Korea, Rep. of	53313	14161138	33944	5459791
USA	29669	7031086	19325	5044601
Japan	16938	3878918	26343	4345346
UK	12603	2675183	12696	2872466
Thailand	16092	4468622	11998	2274317
Malaysia	16928	8543150	6326	935091
Other countries	80944	16407277	47457	10718647

**Table – 27 : Imports of Iron & Steel
(Semi-Finished Steel Including Steel Ingots)
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	4467284	211817689	5529733	162605997
Korea, Rep. of	769288	37207186	897395	31285032
China	1220006	61364592	615767	18055892
Russia	394401	12769409	607862	14802911
Ukraine	308088	13756514	612029	14780389
Japan	297224	12344080	368425	13089298
Germany	112320	8004796	259617	11006337
Brazil	472	61233	404024	10110914
Belgium	109882	7260385	122852	4341761
Romania	134792	5419526	156751	3925107
Mexico	216216	10775523	808	21246
Other countries	904595	42854445	1484203	41187110

**Table – 28 : Imports of Iron & Steel : Alloy Steel
(Granules)
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	11069	518159	12776	531453
Spain	3385	147144	4742	192440
France	2038	94729	2381	108051
Italy	1920	85398	1536	65556
China	915	41515	1220	45984
Thailand	625	32011	936	37977
South Africa	638	29790	830	29760
USA	184	13904	196	8988
Germany	350	15804	121	6654
Singapore	226	15876	1	45
Unspecified	211	12426	417	15505
Other countries	577	29562	396	20493

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

Country	2008-09		2009-10	
	Qty (t)	Value (Rs.'000)	Qty (t)	Value (Rs.'000)
All Countries	1247	265392	956	232944
UK	71	45066	115	64307
USA	310	56521	244	40085
China	44	14392	109	32841
Sweden	582	87268	165	26266
Netherlands	–	–	167	25619
Japan	3	2781	12	15604
Belgium	43	27958	21	11184
Germany	87	16043	45	7458
Canada	88	10935	71	7223
France	10	2935	1	1446
Other countries	9	1493	6	911

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

Country	2008-09		2009-10	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	4443073	105265307	5286225	96084087
USA	665279	15615703	1324872	20690845
UK	766725	16624878	1057434	20271202
UAE	677001	13339659	557778	9619404
Netherlands	73281	4347380	161320	6976893
South Africa	404840	8015972	245650	4037670
Germany	160259	4406704	196136	3641616
Malaysia	77526	2232064	101494	2377807
Belgium	78931	1781678	146917	2342358
Singapore	96149	2461234	83507	1669284
Kuwait	147987	3075097	99214	1616278
Other countries	1295095	33364938	1311903	22840730

**Table – 31 : Imports of Iron & Steel (Sponge Iron)
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	295	86008	125464	1798556
Qatar	5	67446	103886	1503785
Saudi Arabia	–	–	10177	140520
Libya	–	–	8892	120664
Russia	–	–	1980	24960
Sweden	216	7759	319	4315
USA	–	–	208	2800
UK	71	10551	2	1512
China	3	231	–	–
France	++	17	–	–
Indonesia	++	3	–	–
Other countries	++	1	–	–

**Table – 32 : Imports of Pig & Cast Iron (Including Speigeliessen)
(By Countries)**

Country	2008-09		2009-10	
	Qty (t)	Value (Rs. '000)	Qty (t)	Value (Rs. '000)
All Countries	35484	1780758	39013	1700708
South Africa	9383	310869	11041	258753
Sweden	3420	186202	4739	208996
Italy	3531	155995	4533	197168
Germany	441	151108	586	187350
China	2952	152481	3234	141086
Spain	3857	184866	2927	118005
France	2793	155613	1516	85801
USA	2528	135422	976	67435
UK	1091	94870	331	58357
Japan	271	53806	199	56902
Other countries	5217	199526	8931	320855

FUTURE OUTLOOK

India ranked fifth among the major crude steel producing countries in the world and is expected to become the 2nd largest producer by 2015-16, provided all requirements for fresh capacity creation are met. 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 also 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. 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 on 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.