Demand of Steel in India — Evolving Scenario

B P Sarkar
Publisher, 'Steel Tech' Journal, Kolkata
E-mail : sarkar.bp@gmail.com

ABSTRACT

The present production of steel in India is about 65 million tones and the per capita consumption of finished steel is 47.8 kg which is much below the world average of 180 kg. The rural consumption is abysmally low at 2 to 3 kg. However, India is now at the threshold of a significant increase in steel production and demand. India is now the happening place in the eyes of the outside world. It has huge resources of raw material for iron and steelmaking, enough skilled manpower, and labour cost is low. It has the potential of becoming the steel producer at lowest cost.

The sharp hike in demand for steel is arising from the larger disposable income of a large section of people, huge investments by the Govt. of India to improve the infrastructure and massive investments by both Indian and foreign companies to make India as the manufacturing hub for steel related items. If India can produce steel at lowest cost, there is huge scope for increasing exports.

The crude steel production target announced in 2006 by the Govt. of India was 110 Mt by 2010 and later revised it. Experts predict that the production by 2012 will be around 100 to 120 Mt and by 2020, it will be 180 to 250 Mt. The production of special steels like Stainless Steels, high strength steels, etc. will also increase proportionately for the automobile sector, consumer goods and construction. The demand of steel is predicted to grow at the rate of 10% each year from now onwards.

The present low per capita consumption of steel, the aspirations of people for higher standard of living, its raw material resources, export opportunities, etc. will make India surely the second highest steel producer in a short time which may not be comparable to China but implies significant achievement compared to the present position.

INTRODUCTION

The present production of crude steel in India is about 65 million tones (Mt) and the per capita consumption is very low at about 48 kg of finished steel. With the knowledge of metallurgy for last several Centuries and resource base in respect of raw materials, the production could have been much higher.

India had planned in mid-seventies to reach 100 Mtpa by 2000. But it was only a dream not backed by necessary actions. In 2006, the national Steel policy declared production target of 110 Mt by 2010 and later it was increased to almost double the original target.

In India, there is no dearth of demand for steel. India and China were the only countries in the world to have registered positive growth in recessionary period of 2009. According to World Steel Dynamics, India is the best place in the world to set up a steel plant. The steep increase in prices of steelmaking raw materials would ensure favourable condition to set up steel plants in India. Booming economy, low per capita consumption of steel and ability to produce steel at lower costs would ensure sustained demand for steel in India in many years to come. The demand is also elastic. Demand will get created if prices could be maintained at attractive level.

GLOBAL STEEL SCENARIO

The consumption of steel is taken as an indicator of development of a country.

Table 1 : Global crude steel production

Year	World Steel production Mt.	China Mt.	India Mt.
1950	191.6	1.0	1.0
1960	346.4	16.7	3.4
1970	595.4	17.0	6.4
1980	717.2	37.1	9.4
1990	775.0	68.0	15.8
2000	848.0	127.2	26.9
2002	904.0	182.2	28.8
2004	1069.0	272.5	32.6
2005	1144	353.4	40.9
2006	1244.0	422.7	49.6
2007	1344.2	489.2	53.1
2008	1329.7	500.5	57.8
2009	1227	568.0	62.8
2010	1414	626.7	66.8

Table 3 : Per capita consumption - 2003 to 2009 (kg. finished steel)

Country	2003	2006	2009
EU 27	328	385	241
Other Europe	183	244	210
Turkey	207	265	235
Russia	176	246	176
Ukraine	135	144	86.5
Mexico	144	159	125
USA	348	401	187
Brazil	86.8	96.8	93.1
Iran	230	225	245.6
Middle East	177	202	205
China	186.2	287.4	405
India	31.3	41.2	47.8
Japan	576.6	619.5	419
S Korea	952	1042.6	936
World	150.6	188.3	*179

*2009 year is an aberration when global steel production suffered
Source : World Steel

Table 2 : Country-wise share of steel production in 2009

Country/ Region	% Share of steel production
China	46.4
Japan	7.2
Other Asia	11.7
EU 27	11.3
CIS	8.0
NAFTA	6.7
Others	6.4

Hence there is importance of steel production and consumption. The world steel production increased mainly from 1960 as Japan started reconstruction and in the process built modern steel plants. Steel production in other countries also increased. The real jump in steel production started from 2000 onwards when China started raising steel production at breakneck speed to build huge infrastructure and trying to catch up with the developed countries in respect of infrastructure and increased supply of automobiles and consumer goods for their people. The crude steel production in last 60 years are as given in Table 1.

China's growth has been phenomenal, especially in the last 10 years as shown in Table 1.

The per capita consumption in developed countries are above 500 kg. In S. Korea, this is over 900 kg and China has achieved over 400 kg. The world average is 185 kg.

The industry landscape has been changing rapidly, particularly after the global financial crisis. The developed countries are in a transitional period: emerging economies like China, India, Latin American countries and Russia are bolstering their shares in steel output and consumption while demand in developed economies remains in the doldrums.

Table 4 : Global steel consumption - Sectorwise

Sector	% use
Construction	48
Machinery	24
Transport Vehicles	14
Metal Product	8
Oil & Gas	3
Others	3
Total	100

Table 5 : Exports of Steel - Country wise, Mt.	
Country	2008
China	56.3
Japan	38.1
EU 27	34.5
Ukraine	28.6
Germany	28.6
Russia	28.4
Belgium	25.9
S Korea	19.7
Turkey	18.5
Italy	18.0
France	17.1
USA	12
Brazil	9.2
India	7.5
World	436.2 (35%)

INDIAN STEEL SCENARIO

India is currently the fifth largest producer of crude steel in the world after China, Japan, Russia and USA as per latest estimates. India's crude steel production has been rising much faster than world steel production. CAGR in steel production for India in last nine years was 10.5% compared to 5.8% for the world. Production has been especially strong since 2005.

Growth in crude steel production from public sector has been much slower than private sector in the past five years. For a long time, there have been no additions to the steel capacities in the public sector and the total capacity in the public sector has been stagnating at 15.75 Mt. However, with likely implementation of brown field capacity additions in SAIL and RINL in next two/three years, production of crude steel is likely to register a quantum jump.

The annual growth in production from private sector has been much robust at 12.25% as compared to a growth of less than 1% in the public sector (CAGR from 2005-06 to 2010-11).

Demand Outpacing Supplies in Recent Years

While compounded annual growth rate of finished steel production between 1999-2000 and 2004-05 was 9.8%, the CAGR for apparent consumption was only 7.7%. Strong steel demand was recorded subsequently between 2004-05 and 2010-11 when CAGR for finished steel has risen to 10.33%. The production growth for finished steel was recorded only 7.19%.

While the net import of steel in 2008-09 was 1.4 Mt, it increased to 4.13 Mt in 2009-10 and 3.33 Mt in 2010-11. Currently, Indian imports are double the exports.

Drivers of Steel Consumption Growth

- Urbanisation : Housing, urban infrastructure such as over-bridges, mass transport systems, water and power distribution systems, etc.
- Massive government efforts to create transport and industrial infrastructure across the country: the Government is expected to invest US$ 514 billion on infrastructure by 2012.
- The government efforts at poverty alleviation and generation of rural income through historic rural employment guarantee and other development programmes will raise consumption demand for goods bearing steel to raise steel demand in turn.
- Most of the steel demand are likely to emanate from infrastructure, housing, automobile, gas and oil pipelines, capital goods (machinery) and consumer goods.
- Private Sector Investment is growing at above 15% annually.

Steel Production and Supply

- The rising steel demand has brought in significant investments in both green-field and brown-field steel projects.
- Crude steel making capacity is set to grow from about 75 Mt in 2009-10 to 90.5 Mt in 2011-12, 116 Mt in 2013-14 and 172 Mt in 2020-21.
- Bulk of the immediate capacity expansions are on the brown-field sites and in final stages of completion. They are likely to be completed in next two / three years.
- Greenfield projects have been delayed due to stricter environmental regulations, delays in finalisation of rehabilitation, settle-ment and other compensation packages for the displaced from the land and issues related to mining concessions.
- To address the various implementation problems, GOI has set up Inter Ministerial Group (IMG) which consists of representatives of various ministries/agencies.

Indian Steel : Raw Materials

- Indian steel industry has the advantage of significant reserves of high quality iron ore that can be available to the steel producers at reasonable costs.
- But, excessive exports may deprive the local producers of high grade ores at competitive prices if they do not have captive resources.
- The most important constraint for the Indian steel industry's growth

could be shortages of high quality coking coal and continued dependence on imports.

- India's imports of coking coal have been in the range of 24-27 Mt and the same will shoot up sharply with the commissioning of the new capacities in the coming years.
- Indian companies are looking for investment to secure their supplies of coal. Several Indian companies have invested in coal assets in countries such as Australia, Indonesia, Mozambique, USA and Canada.
- The Investments have been in both coking and non-coking coal assets.
- Indian steel makers will additionally require to secure their energy demand and may have to also secure natural gas assets.

The current crude steel production in India is around 65 Mt which makes the

Table 6(a) : Production of crude steel in India (in '000 t)

Producers	April-March'10	April-March'09	Variation,%
Bhilai Steel Plant	5108	5183	-1.4
Durgapur Steel Plant	1966	1886	4.2
Rourkela Steel Plant	2128	2083	2.2
Bokaro Steel Plant	3599	3577	0.6
IISCO	400	417	-4.1
Alloy Steel Plant	205	168	22.0
SSP	0	0	--
VISL	103	95	8.4
Total SAIL	13509	13409	0.7
Tata Steel	6563	5646	16.2
RINL	3205	2963	8.2
Total Main Producers	23277	22018	5.7
JSW Steel	5257	3218	63.4
Ispat	2689	2201	22.2
Essar	3474	3342	3.9
JSPL	1961	1457	34.6
Total Major producers	13381	10218	31.0
Other Producers	28217	26201	7.7
Grand Production	64875	58437	11.0

Table 6(b) : Production for sale and demand for steel (in '000 t)

Category	Ap-March'09	Ap-March'10	Net Imports Ap-March'10	Demand in 2010-11e	Availability in 2010-11e
Pig Iron	6207	5734	-269	5130	6000
Semis	20162	23561	88	23060	22000
Finished Steel					
Bars & Rods	20427	22317	376	24350	25200
Structural	5366	5202	36	5850	6020
Railway materials	1182	1041	12	1330	1400
Plates	4004	3977	820	5720	6050
HR coil/Skelp	11167	11445	2400	14270	15330
HR Sheets	615	603	23	810	900
CR Coils/ Sheets	4615	5736	537	6220	6150
Galv. Coils/Sheets	4554	4470	-1000	3480	3770
Elect Sheets	146	166	277	446	480
Tin Plates	205	210	122	506	520
Pipe (Large dia)	1865	1636	-453	1542	1645
Alloy-Long	2025	1574	28		
Alloy-Flat	987	1315	850		
Grand Total	54152	56803	7296-3235=4061	57524	60465

per capita consumption level at about 50 kg. The urbane population consume about 79 kg per capita and in rural India, it is only 2 to 3 kg.

India possesses large reserves of iron ore with high Fe content. Although there is limited reserves of coking coal, there is abundant reserve of non coking coal. With GDP growth ranging from 6 to 9% in last few years, the demand for steel by infrastructure projects as well as automobile and consumer durable goods sectors are growing fast.

The prices of steelmaking raw material like iron ore and coal have risen steeply in early part of 2008 which resulted production of steel in countries having no raw material unviable. These steel plants located in Japan, S Korea and Europe are becoming uneconomical. In view of the increasing demand in India which is in possession of rich iron ore, there has been unprecedented rush for setting up steel plants in India, especially in the eastern part where rich iron ore reserves are located. A large number of coal based sponge iron units have come up to meet the demand for metallic which replaced costly imported scrap. This also has led to setting up of number of Induction furnace units for making ordinary steel billets/ ingots for supply to rolling mills producing long products and sometimes for rolling into flat products too.

According to World Steel Dynamics, India is the best place in the world to set up a steel plant. Booming economy and iow per capita consumption of steel would ensure sustained demand for steel in India in many years to come.

A push to expand basic services like power, housing and transport will boost India's annual steel demand by 10% in the fiscal year to March 2011 as per the Steel Secretary, Govt. of India. Steel demand will continue to rise because a lot of emphasis has been put in the budget on infrastructure development. In its federal budget announced, India proposed to invest 1.73 trillion rupees in infrastructure in 2010/11, a measure cheered by the steel industry.

India plans to build 20 km of highways a day, up from less than 4 kms a day now, even though land acquisition problems and lack of funds have delayed construction in the past.

Table 7(a) : Demand for Steel by 2011-12

Item	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
GDP Growth,%	9.6	9.0	6.7	7.0	9.0	9.0
Rate of growth in steel demand				8.4-9	10.8	10.8
Domestic Demand, Mt			52.1	56.5	62.6	69.3

Source-JPC

At 10% growth rate, it will be 140 Mt in 2019-20. If one includes export of 30 Mt, the total demand should be 170 Mt which will be equal to the production capacity one is envisaging.

As per the estimate made by INSDAG, the steel consumption matrix is shown in Table 7(b).

Table 7(b) : Steel consumption matrix

Sl. No.	Major Segment	Projected consumption in 2011-12 ('000 T)	Projected consumption in 2019-20 ('000 T)	CAGR (%) 2006-07 to 2019-20
1.	Manufacturing	16.0	37.0	10.6%
2.	Construction	31.0	70.0	13.6%
3.	Tube making	5.0	9.0	8.8%
4.	Cold reducing	8.0	17.0	9.5%
5.	Railways	2.0	4.5	8.8%
6.	Household appliances	2.5	5.0	9.7%
7.	Auto	3.5	8.5	8.3%
8.	Oil & Gas	8.0	25.0	18.3%
9.	Others	6.0	8.0	—
10.	Total finished steel	82	184	11.6%

India is presently importing about 5-8 Mt of steel in both ordinary and special grades. Ordinary steels like HR coil, billets are coming due to the price differentials between the landed price of imported materials and indigenous materials. The special steels are CRGO steel, very high strength steels for automobile components, large forgings, etc.

India is one of the lowest cost producer

of steel due to the availability of raw material and lower labor cost. There is a huge potential for the country to export. China which is importing iron ore exported ordinary steels of about 65 Mt in 2007 and 56 Mt in 2008. There is no reason why India can not do so.

India is also importing steel equipment from China, Germany, etc. India needs to be self sufficient in this area.

India is already exporting a sizable no of automobiles and there is good potential in exporting due to the economic advantage India has for production of automobile components at cheaper prices. Similarly, Nuclear reactors are getting imported. India should build expertise for its manufacture.

If one looks at the SWOT analysis, the picture comes out as follows:

SWOT

Strength

- Significant availability of high quality iron ore.
- Good reserves of non coking coal for making coal-based DRI or choosing coal gasification route for DRI production.
- Availability of highly skilled technical manpower at low cost.
- A history and experience in steel making.
- Govt's fund allocation for steel intensive projects-Higher allocation in budget for power, infrastructure, reduction of excise duty on steel, automobiles, cement, stimulus measures.
- Gas discovery in AP basin to boost demand for pipes.
- Lower production cost in India luring developed countries to set up shops in India. Overall, steelmaking in India is highly cost efficient and needs no protection from 'fairly traded' imports.
- Present low per capita consumption to increase both in urbane and rural sector.
- Strong domestic market growth potential reduces the risk in higher exposure to the global market.
- Export opportunities. Nations not having raw material, especially in Europe, Japan, etc. may not produce much of basic steel coupled with CO_2 emission and pollution.

Weakness

- Steep increase in price of energy, coking coal.
- Slower than expected pace of development of transport and logistics infrastructure in and around plant location areas.
- Power projects are delayed, although have taken off strongly.
- Land acquisition and operation of mines have been slow due to environment, habitat and forest issues. New mining policy to take care of policy issues.
- Concerns over depleting raw material reserves such as high quality hematite ores. Environmental issues holding down potential utilisation of large reserves of magnetite ores (as also hematite ores in certain areas) in the southern part of the country.
- Shortage of technical personnel in steel industry
- Project delays — Mr. L N Mittal said that India would remain net importer for next several years to come.

Opportunities

- Increased usage of steel inside the country due to present lower base.
- Steel demand going up due to higher GDP growth, higher disposable income of people going for automobiles, housings, consumer durables, etc.
- The vast deposit of raw material attracting both Indian and foreign investors.
- The potential of becoming the lowest cost producer will help export.
- Growing working age demography.

Threats

- Environment regulations and rise in input prices of raw material.
- Increased export of minerals-100 Mtpa of iron ore.
- The cost competitiveness of India may be thwarted by Brazil, CIS countries and even China as it is in spree of acquiring mines and oil/ gas abroad to get raw material at cheaper price.
- The red tapism, delay in acquiring land, water shortage, high logistic cost in India, delay in completion of projects and not fully utilizing the allocated fund for infrastructure.
- Import of cheaper steel from China, CIS countries.

CONCLUSION

- The future of steel demand and market in India is good.
- The allocation for infrastructure projects by Governments are very high- roadways, railways, ports, housing, bridges etc. There is also

boom in construction of private houses.

- The rural market has a lot of potential, as the present per capita consumption is so low. This need steel promotional activities as well as offering steel at competitive prices to substitute wood / plastics etc.
- Important Steel Producers in India must get Iron Ore Mines and get level playing field. If they are to buy ore from market, the whole advantage is lost and can not become lowest cost producer.
- Indians are innovative and capable of making steel and power with the raw material available in the country- Low Fe ore fines, high ash non coking coal, etc.
- The Govt. need to help through providing land, environmental clearance, creating better infrastructure for lowering logistic costs and keep congenial industrial atmosphere.
- The entrepreneurs need to look at the interests of local people, CSR activities, environment preservation and higher R&D spending to be more efficient steelmakers.
- India has bright future for increased steel production and consumption and this time, India will surely come up—if not like China but as a No. 2 biggest steel producer in the country and reach close to 150 kg per capita consumption by 2020.

ABOUT THE AUTHOR

Mr. B. P. Sarkar graduated in BE (Metallurgy) from BE College, Calcutta University in 1965 and went on to complete his PGDBM from IIM, Kolkata. He joined Tata Steel as a Graduate Trainee in 1966 and worked in various Departments like Production Planning, Marketing, Application Engineering, Market Research, etc. Later, Mr. Sarkar moved to the Purchase Department and then to the Ferro Alloy and Minerals Division to look after product and market development.

After superannuating from Tata Steel in 2003, he served as an Adviser in Metal Junction, Walzen Strips and Zoom Developers. He was the Chairman of IIM, Kolkata Chapter during 2008-2010. From 2006, Mr. B. P. Sarkar is the Publisher of 'Steel Tech', in which Dr. Amit Chatterjee, Adviser to the MD, Tata Steel is the Chief Editor.