A STUDY ON GROWTH AND DEVELOPMENT OF STEEL INDUSTRY IN INDIA

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Abstract

The Role of Iron and Steel Industry in India GDP is very important for the development of the country. Iron ore and steel industry is one of the basic industries of the country and plays an important role in strengthening the economy. Per capita consumption of steel is considers as an important indicator of socio-economic development of a country. Therefore, in the present study an attempt has been made to analyze the growth and development in Indian Steel industry. The study is descriptive in nature, data has been presented with the help of tables and graphs. Finally, it was concluded by the authors that steel industry playing an important role in the development of the economy and suggested that industry needed to be strengthen with better infrastructure with government investment as well as with private and foreign investment.

Key Words: Steel Industry, Production, Consumption, Import, Export.

Introduction

Steel is one of the world's most essential materials. It is basic to every aspect of our lives, from infrastructure and transport to the tinplated steel container that are used to preserves food.. Steel is crucial to the development of any modern economy and is backbone of human civilization. Steel is a cornerstone and key driver for the world's economy (Walters, October 2012).The level of per capita consumption of steel is used as an important index of the level of socio-economic development and living standards of the people in any country. All major industrial economies are characterized by the existence of a strong steel industry and the growth of many of these

economies has been largely shaped by the strength of their steel industries in their initial stages of development (Barad, 2005).

Economic growth of India is depends upon the growth of the Indian steel industry. Steel is continues to be used in traditional sectors such as construction, housing and ground transportation, special steels are increasingly used in engineering industries such as power generation, petrochemicals and fertilisers.(report planning commission, 2009).

The history of steel-making in India can be traced back to 400 BC when the Indian archers, recruited by Greek emperors, used steel tipped arrows. Archaeological finds in Mesopotamia and Egypt made up of steel and are more than six thousand years old. The Iron Pillar near Qutab Minar in Delhi built between 350 and 380 A.D and the famous Sun Temple at Konark in Orissa, built around 1200 AD, are the structures in India where steel was used (Sunitghosh).

Review of Literature

Yadav (2015) appraised and the performance of Iron and steel industry in terms of production, consumption and foreign trade and found that the industry had grown in manifold. In another study **Pal (2013),** examine the performance of Steel Industry in India and conclude that India had all potential to become top producer of steel in near future. **Burange & Yamini (2010)** analyzed the performance of selected firms in Indian Iron and steel industry in pre & post liberalization periods and found that the industry was mostly dominated by Tisco while SAIL had a greater market share.

Objectives of the study

- To measure the performance of steel industry of India in terms of production, consumption and foreign trade.
- To study the prospect of the Indian steel industry in terms of production and consumption.
- To study Indian Steel Industry in Global Perspective.

Research Methodology

The present study is descriptive in nature based on secondary data that has been collected from various annual reports, Ministry of Steel (Government of India), Steel Statistical year book, World steel Association and Economic Research Unit. The study has been conducted for a period of ten years ranging from 2004-05 to 2013-14. The data were described and analyzed with the help of tables followed by the interpretation.

Crude Steel Production and Consumption in India

Steel Production in India

Traditionally, producer of steel in India are mainly divide into three categories, Main Producers, Major Producers and Other Producers

Table – 1

Total production of steel (alloy and non-alloy) in million tonnes

Year	Main producer	Secondary producer	Less IPT/Own Consumption	Total (Finished Steel)	% Share of Secondary Producers
2003-04	15.383	27.966	2.640	40.709	60.8
2004-05	15.824	31.041	3.352	43.513	71.3
2005-06	16.413	34.809	4.656	46.566	74.8
2006-07	17.614	40.047	5.132	52.529	76.2
2007-08	18.020	43.332	5.277	56.075	77.3
2008-09	17.216	46.229	6.281	57.164	80.9
2009-10	18.038	51.093	8.507	60.624	84.3
2010-11	18.407	57.890	7.676	68.621	84.4
2011-12	17.978	66.426	8.708	75.696	87.8
2012-13	19.244	70.376	7.940	81.680	86.2

2013-14*	21.099	72.442	8.487	85.054	85.2

*Provisional, Source: Various annual reports, Ministry of Steel, GOI

Table - 3.7 showing production of finished steel for sale in India. Production for sale of total finished steel (alloy + non alloy) was 85.054 MT (provisional) in 2013-14 as compared to 81.68 MT in 2012-13. The share of secondary producers, which includes major and other producers, was 85.2 percent in 2013-14. This high share of secondary producer in total finished steel production for sale was mainly due to availability of raw materials like sponge as well as due to the expansion of capacities and emergence of new units in these segments.Production of finished steel for sale has been continuously increasing in India; in 2003-04 its production was 40.709 MT with 60.8 percent share of secondary producer in total finished steel production. In the year 2004-05 production increased to 43.513 MT, in 2005-06 it became 46.566 MT, in 2006-07 total finished steel production reached 52.529 MT and in 2007-08 it increased to 56.075 MT. Further, production of finished steel for sale increased, in 2008-09 production was 57.164 MT and in 2009-10 production was 60.624 MT. In 2010-11 Total finished steel production for sale was 68.621 MT and in 2011-12 it was 75.696 MT.

Table – 2

Trend in Crude Steel Production in Public and Private Sector in India (in million tonnes)

Year	Public sector	Private sector	Total production	Share of public sector
2003-04	15.788	22.939	38.727	41 %
2004-05	15.912	27.525	43.437	36 %
2005-06	16.964	29.496	46.46	36 %
2006-07	17.003	33.814	50.817	33 %
2007-08	17.09	36.77	53.86	32 %
2008-09	16.37	42.07	58.44	28 %
2009-10	16.71	49.13	65.84	25 %
2010-11	16.99	53.68	70.67	24 %
2011-12	16.48	57.81	74.29	22 %
2012-13	16.48	61.94	78.42	21 %
2013-14*	16.78	64.76	81.54	21%

*Source: Annual Reports Ministry of steel GOI, *provisional*

The table 3.8 highlights the total production of crude steel in India by the private and public sector. It is observed from the table that in public sector, the production of crude steel in India increased from 15.788 MT in 2003-04 to 17.09 MT in 2007-08, but the production decreased to 16.37 MT in 2008-09. The production of crude steel by public sector, again increased in 2009-10 to 16.71 MT and in 2010-11 to 16.99 MT, but the production again declined in 2011-12 to become 16.48 MT. The above table depicts a continuous decrease in share of crude steel production by public sector during last decade. Public sector produced 15.788 MT of crude steel with market share of 41 percent in 2003-04 and the production of crude steel by public sector increased to 16.78 MT in 2013-14, an increase of 1.0 MT, but the share of public sector in total production of crude steel reduced to 21 percent in 2013-14. The private sector produced 22.939 MT of finished steel, with market share of 59 percent in 2003-04. The production of steel by private sector during 2013-14 was 64.76 MT, 79percent of the total production. The private sector of steel industry is currently playing an important role in production and growth of steel industry in India. It can be concluded that the trend percentage of public sector is in declining stage when compared to private sector.

Steel consumption in India

Real Consumption of steel is obtained from apparent consumption (i.e production + imports – exports +/- variation in stocks) of total finished steel after adjusting for double counting in flat products (Ministry of steel, GOI). The year-wise trend in real consumption of total finished steel is shown below.

Table – 3

Apparent Consumption of Finished Steel (In Million Tonnes)

Year	Production for sale	Import	Export	Apparent consumption	Growth rate
2004-05	38.99	2.29	4.7	36.38	9.84
2005-06	42.16	4.31	4.81	41.43	13.88
2006-07	49.58	4.93	5.24	46.78	12.91
2007-08	56.08	7.03	5.08	52.12	11.42
2008-09	57.16	5.84	4.44	52.35	0.44
2009-10	60.62	7.38	3.25	59.34	13.35
2010-11	68.62	6.66	3.64	66.42	11.93
2011-12	75.69	6.86	4.59	71.02	6.92
2012-13	81.68	7.93	5.37	73.48	3.46
2013-14*	85.05	5.45	5.59	73.89	0.55

*Source: various Annual reports ministry of steel GOI, *provisional*

The apparent consumption of finished steel is given in table 2.7.Apparent consumption of steel in India showed an increasing trend in last decade. Domestic Real consumption of steel was 36.38 MT in 2004-05. Domestic real steel consumption grew 13.88 percent in the year 2005-06 to become 41.43 MT. In 2006-07 it further grew 12.91 percent and the real consumption of steel reached the level of 46.78 MT. In 2007-08, real steel consumption was 52.12 MT, an increase of 11.42 percent on previous fiscal year. In 2008-09, domestic real consumption grew just by 0.44 percent to become 52.35 MT. The low growth rate in 2008-09 was due to world economic crises that started in October 2008.With the recovery from the crises domestic steel consumption grew 13.35 percent in 2009-10 and reached the level of 59.34 MT. Further, it grew 11.93 percent in 2010-11 to become 66.42 MT. Domestic real steel consumption's growth started to decline in 2011-12 and India's steel consumption grew by just 0.6% in 2013-14 fiscal, lowest in five years, to 73.89 MT. The growth in real steel consumption was mainly impacted by a slower expansion of the domestic economy and lower imports.

Table – 4

Per capita consumption of apparent steel in India (in kg)

Year	India	World average
2005	35.0	174.0
2006	39.4	188.5
2007	43.9	199.3
2008	43.2	197.2
2009	47.9	182.3
2010	53.0	206.4
2011	56.2	219.9
2012	56.9	221.9
2013	57.8	225.2

Source: Steel Statistical year book, World steel Association

Table 3.8 demonstrates per capita steel consumption in India. India's per capita consumption of steel has gone up by around 65 per cent in the last nine years to 57.8 kg in 2013 against 35.0 kg in 2005.India's per capita consumption of finished steel stood at 35 kg in the year 2005, which was low when compared to the world average per capita consumption of finished steel of 174 kg in 2005. In 2006 it increased to become 39.4 kg as against world average of 188.5 kg. in 2007 per capita consumption of steel in India was 43.9 kg while world average steel consumption was at 199.3 kg. In 2008, per capita steel consumption decreased to 43.2 kg and so as the world average steel consumption to become 197.2 kg. This decrease was due to global economic crises which started in October 2008. In 2009, domestic per capita steel consumption increased to become 47.9 kg but world average showed further decreased to become 182.3 kg. In 2010, per capita steel consumption reached the level of 53.0 kg against 206.4 kg of world average consumption. It further grew to 56.2 kg in 2011 and 56.9 kg in 2012 against world average steel consumption of 219.9 kg in 2011 and 221.9 kg in 2012. In 2013 domestic per capita steel consumption stood at 57.8 kg while the world average was at 225.2 kg. Low per capita consumption of steel in India is related to low per capita income level, large size of the population and less development of infrastructure.

Export and Import of steel from India (in million tonnes)

Iron and steel products are importable freely as per the extant policy. Advance licensing scheme allow duty free import of raw material for export. Iron and steel are freely exportable. Duty entitlement pass book scheme was introduced to facilitate exports. Under this scheme exports based on notified entitlement rate, are granted due credit which would entitle them to import duty free good. The benefit on export of various categories of steel items scheme is currently applicable for steel exports.

Steel imports have increased in India due to deregulation and reduction in import duties on steel imports, surge in domestic demand and reduction in price differential between imported steel and domestic steel. Import volumes have been fluctuating during the last decades. Liberalization and free trade policy helped growth of steel exports from India. Steel exports from India declined during 2008 and 2011 due to decrease in demand of steel globally.

Table – 5

Export and Import of steel from India (in million tonnes)

Year	Import	% Growth	Export	% Growth	Net
2004-2005	2.29		4.70		Export
2005-2006	4.31	88.2	4.81	2.3	Export
2006-2007	4.93	14.4	5.24	8.9	Export
2007-2008	7.03	42.6	5.08	-3.1	Import
2008-2009	5.84	-16.9	4.44	-12.6	Import
2009-2010	7.38	26.4	3.25	-26.8	Import
2010-2011	6.66	-9.7	3.64	12.0	Import
2011-2012	6.86	3.0	4.59	26.1	Import
2012-2013	7.93	15.6	5.37	17.0	Import
2013-2014*	5.45	-31.2	5.59	4.1	Export

*Source: Various Annual Reports, Ministry of Steel, GOI, *Provisional*

Table 3.12 explains imports and exports of steel in India. In 2004-05, India's total imports were 2.29 MT while the figure for exports was 4.70 MT and therefore India was a net exporter of steel in 2004-05. In 2005-06, imports increased by 88.2 percent to become 4.31 MT and exports increased by 2.3 percent to become 4.81 MT, but still India was a net exporter of steel in 2005-

06 as the exports were more than the imports. In 2006-07, again steel exports were more than its imports. Total imports increased to 4.93 MT while total exports increased to 5.24 MT in 2006-07. India had been a net steel importer since 2007-08. India's exports were more than its imports. In 2007-08 India's steel imports stood at 7.03 MT, an increase of 42.6 percent as compared to 2006-07 while exports stood at 5.08 MT, a decrease of 3.1 percent on 2006-07. In 2008-09, a decline of 16.9 percent and 12.6 percent were recorded in steel imports and exports respectively. In 2009-10, India's steel imports increased to 7.38 MT but exports decline to 3.25 MT. In 2010-11, total steel imports were 6.66 MT, a decline of 9.7 percent on previous fiscal while the exports stood at 3.64 MT. In 2011-12, steel imports in the country became 6.86 MT and exports became 4.59 MT. In 2012-13, steel imports in India became 7.93 MT and its export stood at 5.37 MT. India became net steel exporter in 2013-14 after a period of six years. Total steel exports by India during fiscal 2013-14 stood at 5.59 MT as against imports of 5.44 MT. About 4.1 percent higher exports and 31.3 percent decline in imports helped India to become net exporter of steel. Higher exports were driven by mismatched demand supply situation in the country and imports were lower mainly due to slowdown in the domestic economy.

Forecasting Steel Demand and Supply in India

There are many studies projecting steel demand growth scenario over the next couple of decades. In a recent study, the Boston Consulting Group (BCG) has made the following observations. :

1. On the present pattern of growth - the real GDP of India grew from 2002 to 2013 was at 7.4per cent and the steel consumption grew by 8.2 percent in the said period. Over the next 12 years at a GDP growth of 6 – 6.5per cent, and a GDP elasticity of steel demand at 1.1, the likely growth of steel consumption growth rate was estimated at 7.3 percent per year and the finished steel consumption in 2025-26, on this basis, was estimated to grow to 155 – 170 million tonnes by that year.

2. Bench marking India's stage of economic growth with other countries – On another model, following established trajectory of growth as seen in other countries, the per capita consumption of steel in India would move from the level of 59 kgs in 2011 to 175 kgs in 2025-26, and given the fact that the population of India is projected to grow to 1.43 billion that year, the steel consumption in 2025-26 is likely to be around 250 million tonnes.

3. The goal of India to increase share of manufacturing to 25per cent of GDP by 2025 – The above target if achieved can propel the usage of finished steel from 16 kgs / $ PPP in the year 2012 to 22 – 25 kgs / $ PPP in the year 2025-25. This would mean a growth in steel consumption of 9 -10per cent and the steel consumption in 2025-26 is likely to be around 230 – 255 million tonnes.

Steel demand in India has been forecast mainly on the basis of past trends, taking into account the relationship between GDP and steel consumption, and then projecting specific assumed GDP growth rate for future years. The forecasts of steel demand for 2025-26 made by INSDAG as per standard methodology assuming 6 and 6.5per cent annual compounded average growth rate of the GDP seems fairly realistic. As per this, demand for finished steel is likely to rise to 165-171 million tonnes respectively. To meet this demand only, the country will require about 190-205 million tonnes of crude steel capacity to be set up. The estimates made by the ERU also are in the same order and the requirement of crude steel production to meet this demand is as below. The ERU, however, considers different growth rate assumptions in respect of the GDP at 6.5per cent and 7 per cent respectively (**Table-7,8**). In order to see the potential surge in the economy with the economy maintaining an annual average rate of growth of 8per cent, another scenario has been drawn up, which has also been included in the Tables mentioned.

Table- 6

Forecast of Finished Steel Demand (million tonnes)

	2013-14	2025-26	2032-33
Finished Steel Demand @ 6.5per cent GDP Growth Rate	74	176	273
Finished Steel Demand @ 7per cent GDP Growth Rate	74	186	298
Finished Steel Demand @ 8per cent GDP Growth Rate	74	208	339

Source: Economic Research Unit

Table- 7

Forecast of Crude Steel Production Derived from Forecast of Finished Steel Demand (million tonnes)

	2013-14	2025-26	2032-33
Crude Steel production @ 6.5per cent GDP Growth Rate	81	185	287
Crude Steel Production @ 7per cent GDP Growth Rate	81	196	314
Crude Steel Production @ 8per cent GDP Growth Rate	81	219	357

Source: Economic Research Unit

Indian steel industry in global perspective

Rapid rise in production has resulted in India becoming the 3 rd largest producer of crude steel in 2015 and the country continues to be the largest producer of sponge iron or DRI in the world. In 2014, the world crude steel production reached 1665 million tonnes (mt) and showed a growth of 1% over 2013. China remained the world's largest crude steel producer in 2014 (823 mt) followed by Japan (110.7 mt), the USA (88.2 mt) and India (86.5 mt) at the 4 th position.

Table- 8

Major steel producing countries (Production in million tonnes)

Rank	**Country**	**Production 2013**	**Production 2012**	**% Change**	**% share 2013**
1	China	779.0	731.0	6.6	48.5
2	Japan	110.6	107.2	3.2	6.9
3	United states	86.9	88.7	-2.0	5.4
4	India	81.2	77.3	5.0	5.0
5	Russia	68.7	70.4	-2.4	4.3
6	South korea	66.1	69.1	-4.3	4.1
7	Germany	42.6	42.7	-0.2	2.7
8	Turkey	34.7	35.9	-3.3	2.2

9	Brazil	34.2	34.5	-0.9	2.1
10	Ukraine	32.8	33.0	-0.6	2.0
11	Italy	24.1	27.3	-1.2	1.5
12	Taiwan	22.3	20.7	7.7	1.4
13	Mexico	18.2	18.1	0.5	1.1
14	France	15.7	15.6	0.6	1.0
15	Iran	15.4	14.5	6.2	1.0

Source: world steel in figures (2014), world steel association

The production of crude steel by major countries is given in table 3.2. The countries like China, Japan, India and South Korea are in the top in steel production in Asian countries.Much of Asia increased output, and apart from China it can also be seen that Taiwan was up 7.7%, India was up 5% and Japan increased by 3.2% with South Korea the only major Asian producing country to show a decline, down by 4.3%. Other notable increases were Iran, up 7%, France up 0.6 percent and Mexico, up 0.5%.In 2013, China accounts for nearly half of total production i.e. 779 milliontonnes, Japan accounts for 6.9% i.e. 110.6 Mt, India accounts for 81.2 Mt and South Korea is accounted for 66.1 Mt, which all totally becomes nearly one-third of global production. US produced 86.9 Mt of crude steel, 2.0 percent lower than that of 2012. Russia produced 68.7 Mt of crude steel in 2013, a 2.4 percent decrease on 2009 and Ukraine recorded a decrease of 0.9 per cent with a year-ended figure of 32.8 Mt. Germany showed a negative growth of 0.2 percent with production of 42.6 Mt of crude steel in 2013 while Turkey showed a negative growth of 3.3 percent with 34.7 Mt crude steel production. Brazil recorded a decrease of 0.9 percent with 34.2 Mt crude steel production in 2013. Crude steel production of Italy decreased by 1.2 percent and accounted for 24.1 Mt of crude steel production in 2013.

Table- 9

Per Capita Steel Consumption of Steel (in Kg)

Country/Region	**2012**	**2013**	**% change**
World Average	219.5	225.2	2.6
European Union	275.4	274.2	0.4
Taiwan	763.2	793.4	4.0
South Korea	1112.8	1057.4	-5.0

China	487.6	515.1	5.6
USA	304.6	300.2	-1.4
Russia	296.5	301.9	1.8
Canada	449.2	425.0	-5.4
Japan	505.7	516.4	2.1
India	57.5	57.8	0.6

Source: World steel in figures, 2014

According to World steel Association, Global per capita steel consumption was 225.2 kg in 2013 while in 2012 global per capita steel consumption was 219.5 kg, which showed an increase of 2.6 percent. Among larger economies, China's per capita steel consumption was 515.1 kg as compared to 487.6 kg in 2012 while EU showed an increase of 0.4 percent in per capita steel consumption in 2013 when compared to 2012. Per capita steel consumption of Taiwan was 793.4 kg in 2013, an increase of 4.0 percent when compared to 2012. South Korea, although showed a 5.0 percent decrease in per capita steel consumption, but still remain at top in per capita steel consumption. South Korea consuming more than double of that of China's per capita consumption. USA showed a decrease in per capita steel consumption by 1.4 percent in 2013 while Canada showed a decrease of 5.4 percent consuming 425 kg of steel per capita. Per capita steel consumption of Russia was 301.9 kg, increased by 1.8 percent in 2013 as compared to 2012 while Japan's per capita steel consumption was 516.4 kg in 2013. India's per capita steel consumption was 57.8 kg in 2013, a growth of 300 gm. India's steel consumption grew by just 0.6 percent as compared to 2012, mainly impacted by slow growth in domestic economy and lower imports.

FINDINGS

1. Production of finished steel has risen over the period of study.

2. However, the share of public sector enterprises in production of finished steel has declined over the period of study.

3. Installed capacity of plants has increased but the capacity utilization of that installed capacity has declined.

4. Apparent consumption of steel has risen during the study period but the growth rate of consumption has declined in the last years of the study.

5. Per capita consumption of steel increasing constantly but still there is a huge gap between India and world average per capita steel consumption.

6. India has been net importer of steel during the initial years of the study and net exporter of steel in later years, however India was a net importer of steel in the last year of the study

7. India continues to remain at Fourth position in the production of crude steel in the world in 2014. China continues to remain at first position with Japan and U.S at second and third respectively.

8. Per capital consumption of steel in India showed a Positive growth in 2013 as compared to 2012. However the growth rate was very low.

Conclusion

In recent time steel industry is one of the fastest growing industry in India and as well as in the world. The purpose of the study is to evaluate the actual condition and trend of steel industry in India. Result of the study found that India has all potential to become top producer of steel in near future. The steady growth of production and consumption indicates that India has set a higher growth path by the end of the decade. The Growth rate of production, consumption and foreign trade shows an impressive picture of the development of the industry for the study period.

Steel Industry is very much strategic for the development of an economy. Crude steel production in India has risen during the last decades but still there is a need to further hastened the production of crude steel in the country to cope with the demand of steel in the future. Public sector enterprises should increase their role in the production of steel. Installed capacity should be increased and companies should utilize that increased capacity. Industry required infrastructural development with the help of government as well as private and foreign direct investment.

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