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# Role of iron and steel industry in the promotion of Indian economy: A study

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**Abstract**
India's economic growth is contingent upon the growth of the Indian Steel Industry. The iron and steel industry is often considered as the backbone of the economy, depicting the development and performance of the economy. Indian economy is in need of a device to boost employment opportunities, raise income and its standards of living and to bring a more balanced and integrated economy. Steel industry is the best solution for achieving all these goals. The prevailing capital for the promotion of steel industries and the plentiful supply of labour largely favour the development of steel industries. Hence, this sector of industry is playing a vital part in the economic structure in India. The Iron and Steel Industry in India contributes around 2 per cent of the Gross Domestic Product (GDP) and its weight in the Index of Industrial Production (IIP) is 6.2 per cent. India is also a leading producer of sponge iron with a host of coal based units, located in the mineral rich states of the country. Per capita consumption of steel in India is at 59kgs as against an average of 216kgs of the world and also the GDP growth rates in India reducing between 2005-06 to 2011-12. Even though Iron and Steel industry of India facing some challenges, The Government and Non – government organization give more concentration to improve Iron and steel authority of India.

**Keywords:** role of GDP, golden years, manpower, economic growth, consumption

## Introduction

India's economic growth is contingent upon the growth of the Indian Steel Industry. The iron and steel industry is often considered as the backbone of the economy, depicting the development and performance of the economy.

The world Steel Association is one of the largest and most dynamic industry association in the world. World Steel represents approximately 170 steel producers (including 9 of the world's 10 largest steel companies), national and regional steel industry associations, and steel research Institutes. The Iron and Steel Industry is the second biggest industry in the world after Oil and Gas with an estimated global turnover of 900 billion USD.

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.

Steel industry was in the vanguard in the liberalization of the industrial sector and has made rapid strides since then. The new Greenfield plants represent the latest technology. Output has increased, the industry has moved up in the value chain and exports have raised consequent to a greater integration with the global economy.

The new plants have also brought about a greater regional dispersion easing the domestic supply position notably in the western region. At the same time, the domestic steel industry faces new challenges. Some of these relate to the trade barriers in developed markets and certain structural problems of the domestic industry notably due to the high cost of commissioning of new projects.

The domestic demand too has not improved to significant levels. The litmus test of the steel industry will be to surmount these difficulties and remain globally competitive.

## Significance of Iron and Steel Industry

i) Indian economy is in need of a device to boost employment opportunities, raise income and its standards of living and to bring a more balanced and integrated economy. Steel industry is the best solution for achieving all these goals. The prevailing capital for the promotion of steel industries and the plentiful supply of labour largely favour the development of steel industries. It is also essential to provide large scale employment and utilize local raw materials and cater to the local market. Hence, this sector of industry is playing a vital part in the economic structure in India.
ii) While apprising the members about the future plans of the company, mentioned in the SAIL is finalizing its vision – 2025 Document. This will steer the company to increase its production capacity of Hot metal to 50 million tones, along with related /enabling business activities.
iii) The company achieved a turnover of Rs.50, 627 crore during the financial year 2014- 15 which was almost the same level as that previous year (RS.51, 866 crore). The profit after tax of the company for the financial year 2014-15, was Rs.2093 crore.
iv) The company acquires requisite technologies to process raw materials as well as to produce steel in an environment friendly manner in the carbon constrained world; the company is finalizing its Technology Vision and also the Environment Vision.
v) The India's iron and steel industry is the ready domestic availability of significant reserves of high quality iron ore (a key raw material input to steel making), predominantly in the east India. Although current steel production capacity is located in both the east (at production from large producers near iron ore supplies) and in the west (long

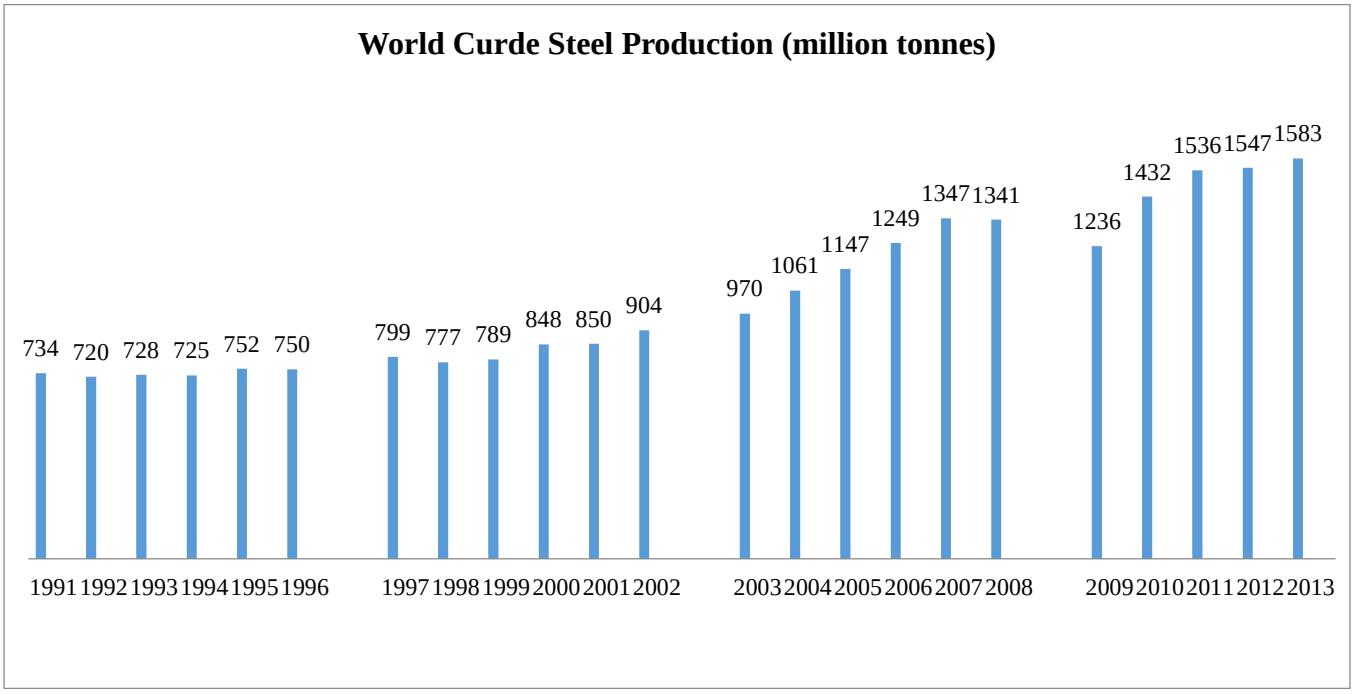
products from smaller producers nearer large construction centers), most significant forthcoming developments are planned in the east to take advantage of low cost iron ore supply.

vi) The government introduced Special Economic Zones's in June- 2005, with aim of creating internationally competitive regids in which exporting business can base their operations. Eight of these Zones are functional or under construction and approval has been given for an additional eighteen zones. This provisions existing 'Export Processing Zones (EPS) has been converted to Special Economic Zones (SEZ).The proposed new Economic Zones will be relatively small, which may limit their effectiveness given that economics of scale are one of the advantages of such zones.

**Performance at International Level**

The World Economy is fairly clear that while there has been a continuous strong growth, year on year, in China. However, the trends in Japan and USA have not been so. The European Union has not been out of the financial mess and the emerging economies do not hold any strong promise to the global investor community in the short run as their macro management has been far below expectation. The latest report of IMF also point to gloomy prospects of the emerging economies while at same time, they have in fact seen some stability creeping into the economies of the developed world.

Global crude steel production reached an all-time high of 1583 million tonnes in 2013. Nearly 67 per cent of the same accounted for by Asia.



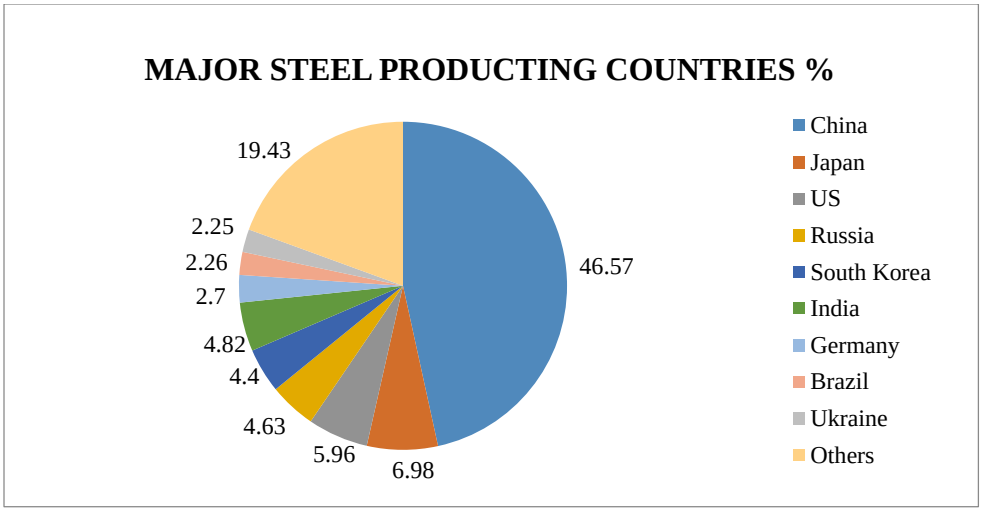

***Source*:** WSA

**Fig 1:** World Crude Steel Production

The steel industry worldwide a CAGR of 3.65 per cent during 2008-2012. This is fairly respectable compared to the corresponding figure of 1.6 per cent during 1973-2008 and 2.86 per cent during 1991-2008, despite the fact that the global economies have been under tremendous stress following the financial crisis and economic meltdown beginning 2008. However, despite a reasonable stability in production growth, barring the financial, crisis years, annual production growth rates over the period has exhibited significant volatility with wide swings observed over the past years.

The first was during the rapid growth of the US economy. By 1901, the US steel industry comprised around 50 per cent of the then global production – very similar to China in current times. Today, the US steel market comprises about 5 per cent of the global steel market.

The period of reconstruction and development following the Second World War provided additional stimulus to a global steel industry that had already experienced substantial growth during the war. This growth – phase was more diversified geographically and by application and effectively came to an end in the economic recession following the energy crises during the 1970s. At that stage Western Europe comprised 26 per cent of the global steel market. Today it is 10 per cent.




***Source*:** Steel_industry_report-26 sep-13

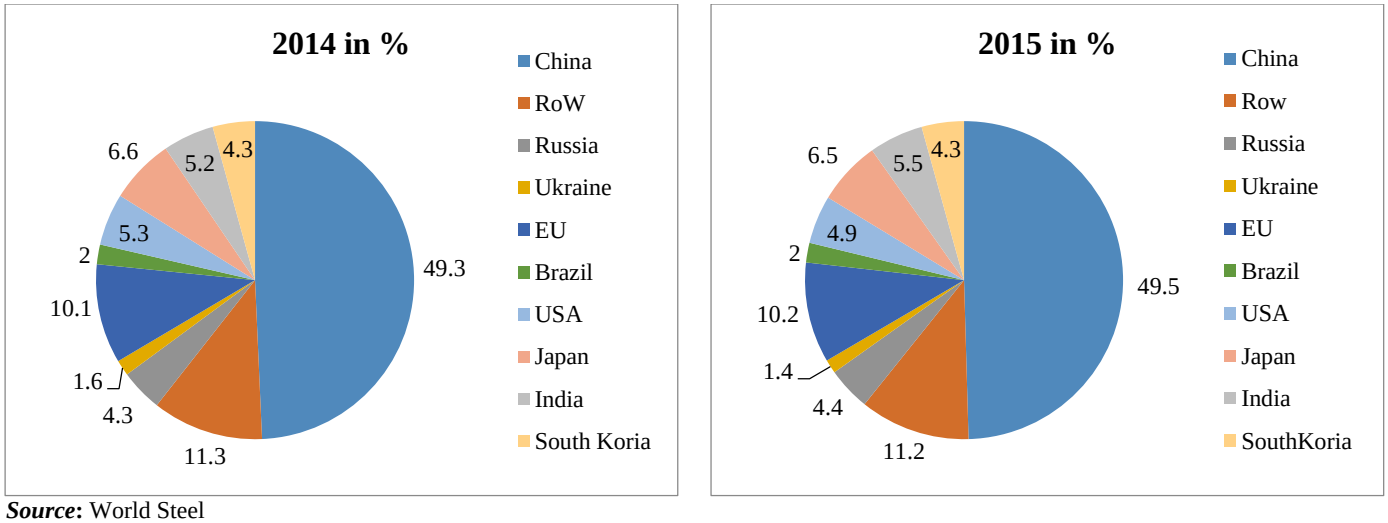
**Fig 2:** Major steel Producing Countries

China's stable and fast growing economy has proved to be the primary impetus behind the growing steel industry over the past decade. Chinese government is focusing towards boosting household consumption of steel which will help in sustaining the crude steel consumption at high level currently, 46 per cent of steel is produced and used in mainland China.

There will be continuing growth in the volume of steel produced, particularly in developing areas such as Latin America, Asia, Africa and the Indian sub – continent, where steel will be vital in raising the welfare of developing societies. In these regions, more than 60 per cent of steel consumption will be used to create new infrastructure. And this demand will require converting virgin iron ore into steel as the demand cannot be met by of recycling of steel scrap.

In the below the Fig. shows that clearly comparison of world Crude Steel production in the 2014 & 2015. The China is the first place but in India 9th place of world crude steel production and however the china is only 0.2 per cent comparison of two years in India the increase value of crude steel production 0.3 per cent. So comparison of two countries India is good improvement.

**Share of World Crude Steel Production 2014 & 2015**




***Source*:** World Steel

**Fig 3**

**Performance at National Level**

The Iron and Steel Industry in India contributes around 2 per cent of the Gross Domestic Product (GDP) and its weight in the Index of Industrial Production (IIP) is 6.2 percent.

India is also a leading producer of sponge iron with a host of coal based units, located in the mineral rich states of the country. Per capita consumption of steel in India is at 59kgs as against an average of 216kgs of the world.

The country posted a 2.5 per cent growth in steel production to 39.63 MT in the six month period Jan – June 2013 against 38.68 MT in the same period, in 2012. During the same year World crude steel production was 789.8 MT, an increase of 2per cent compared to the same period of 2012. The World Steel Association forecasted local steel demand to grow at 5.9 per cent and 7 per cent in 2013 and 2014 respectively.

At a global level, supply would continue to be more than demand, as capacity additions continues, primarily in emerging economies. The trend is led by China and India.

Indian steel production has shown a strong growth over the last decade due to overall economic development and favorable industrial development and increasing investment trend. There has been a bulk of capacity addition which has contributed towards increased production.


***Source*:** WSA. EIU

**Fig 4:** Indian Steel Production

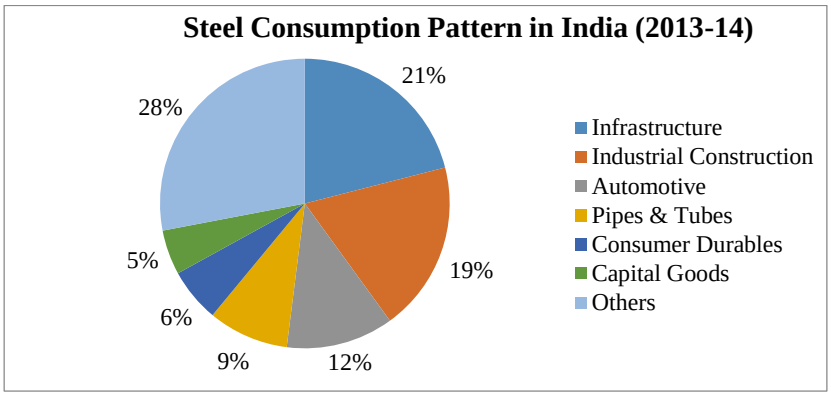
**Table 1:** Total Finished Steel (Alloy+Non Alloy) Production for sale (Millon Tones)

| Period | ISP | Other Producers | Less: IPT/Own Construction | Grand Total |
|---|---|---|---|---|
| 2013 - 14 | 45.16 | 50.42 | 7.91 | 87.67 |
| 2014 - 15 | 46.82 | 53.16 | 8.53 | 91.46 |

***Source*:** www.steel.gov.in

The Steel Industry was de – licensed and de – controlled in 1990 - 91 and the production for sale of total finished steel (alloy+non-alloy) 14.23mt but 2014 – 15 91.46mt. Today India is the 3rd largest producer of crude steel in the World. And a growth of 4.3 per cent over 2013 – 14.

Infrastructure is India's steel consumer, accounting for 21 per cent of total consumption in 2013-14 due to the heavy usage of steel in this sector and industrial construction 19 per cent in the country.




***Source*:** Data derived from JPC; EXIM Bank Research

**Fig 3:** Steel Consumption in India

In the above fig. shows that steel consumption pattern of India in the year 2013 – 14, the major consumption of steel 21 per cent for the infrastructure and next more consumption of steel 19 per cent for the industrial construction. This consumption was low comparing the well developed countries like China and USA. So the Researcher said that increase the steel consumption in our country in following period.

**Skilled Manpower**

**Resent Situation and Challenges**

1. Shortage of Skilled Labour

India currently has a steel manufacturing capacity of about 100 million tonnes per annum (mtpa) in 2013–14. If the target of increasing the capacity to 300 mtpa by 2025 is to be met, the manpower requirement is likely to go up from the present 2 lakh to nearly 5 lakh by 2025. This demand is likely to come for all types of labour—unskilled, semi-skilled and highly skilled. Given the rapidly increasing labour force in India and huge migration of unskilled and low-skilled workers from agriculture, the availability of unskilled workers for the steel industry should not be a problem. However, the availability of skilled manpower such as engineers and metallurgists is an issue.

**a) Shortage of Medium-Skill Labour Force**

Despite sustained emphasis on the need for skill formation, progress in this category has been poor. The vocational training institutes are often poorly connected with practical training, and young people are often not interested in getting into these institutes. The steel industry, which is heavily concentrated in Odisha, Jharkhand and Chhattisgarh, can make a breakthrough in this area. There is an urgent need to provide education and training facilities for the tribal youth who could then become part of the industrial development including the steel industry in this region. The Kalinga Institute of Social Science in Bhubaneswar (Odisha) is a good example, which is working towards giving education, medicines and vocational training to around 62 communities of tribal's, thereby making them fit for semi-skilled jobs in the steel industry. Such training programmes can go a long way in providing a sufficient labour force of medium-skill workers for the steel industry. For this, the industry needs to come forward and collaborate with NGOs or training institutes so that the course structures can be amended as per industry requirements and, of course, skill development centers also have to be set up.

**b) Shortage of High-Skill Manpower**

The Indian steel industry is facing a massive manpower shortage, particularly in metallurgy and mining. Given that 15 per cent of the total manpower in a steel plant are engineers, the state run steel firm estimates that there would be an additional requirement of 43,000 engineers in the industry by 2024–25. In other words, the number of engineers required will increase from 30,000 in 2013–14 to 73,000 in 2025–26. Metallurgy might be a viable option for engineers, as the steel industry would fill up to 30 per cent of its projected need for engineers from among metallurgists. It is projected that there would be an additional requirement of around 15,000 metallurgists for the steel industry in the next decade, but such numbers are simply not available. At present, India has 30 institutes that teach metallurgy, with around 1,800 students graduating every year. Outside the IITs and NITs, very few engineering colleges offer metallurgy courses. The report on 'Mapping of Human Resources and Skills for Mining Industry in India' by the Confederation of Indian Industry (CII) projects that at present there are 23 institutes offering BE/ME courses and mining, of which nearly 70–80 per cent join the mining sector. This supply should be increased by three times by 2025 to meet the target. In the case of geology, there are 42 institutes that employ around 70 per cent of the students in the mining sector, which should be increased by 10 per cent. Hence, while increasing the supply of mining engineers and metallurgist is a big challenge, the supply of geologists will closely meet the demand.

**c) Inadequate Gender Inclusion and Empowerment**

Indian law bans women from entering underground mines, working night shifts, and operating factory machinery. Ironically, these laws, which were passed to protect poor women, are holding back educated women from moving into core leadership positions in the mining and heavy engineering industries. Due to this law, mining training institutes prefer not to admit women into core mining/ mining engineering courses. Although IIT-Kharagpur and IIT- BHU have relaxed this rule, they found that no mining firm would hire its mining/ mining engineering women graduates, being wary of inspectors out to enforce the law. Thus, these women were forced to find IT jobs instead. For the same reason, women are not permitted to apply/ certify for a First Class Unrestricted Mining Certificate, which permits entry into any type of mine. They can only certify for a Restricted Certificate, which permits entry into over-ground mines. So, the law seems to have relegated women to 'second class status' professionally at a time when we are trying to radically boost manufacturing/mining sector development and bring more skilled women into the workforce. Other countries have done so in the past two decades, as a result of which women are now an integral part of the mining workforce and leadership in Chile, South Africa, Australia, etc. However, this is also because their mining industries are significantly more mechanized than ours. In fact, this is one area where semi-literate rural women could be extensively employed with focused training.

**d) Mismatch between Available Skills and Industry Requirements**

There are sufficient engineering colleges in India, with more than 4.5 lakh10 students graduating every year. However, a large proportion of these graduates are found to be unemployable in skill-intensive industries. Of the total number of engineering graduates, only 50–55 per cent is able to enter the job market due to the lack of skills required by industry. This could be a constraint on achieving the output targets of the industry by 2025. Companies often have to develop their own training and re-training programmes to convert these engineers in general and metallurgists in particular into employable categories. Given the time it takes to train skilled workers in general and metallurgists in particular, remedial measures have to be introduced in the near term. We should first look at best practices in this area for the steel industry and then go on to implement the recommendations (see Annexure for Best Practices).

**e) Metallurgy/Mining losing Attraction in Higher Studies**

In the past few years, geology, mining and metallurgy have become less popular subjects for students in higher education. The migration of the skilled workforce from manufacturing to the service sector has further aggravated the unavailability of a skilled workforce. The majority of engineering graduates are now moving to other sectors such as IT and automobiles, for various reasons. Salary is not the only issue. The work environment and a chance to work abroad are major incentives in some white-collar jobs, but the steel industry is not competitive in these two areas. The steel companies will have to design innovative mechanisms such as employee stock option plans (ESOPs), long-term deferred cash plans and safety plans to attract and retain talent.

Appreciating the contribution of the employees to the company. That is the company achieved the each Labour highest Productivity (LP) of 302 Tcs/man/year in 2014 – 15. As on 31-03-2015, the manpower strength of the company was 93,353 numbers with manpower rationalization of 4,544 numbers achieved during the year.

The enhanced productivity with rationalized manpower could be achieved as result of judicious recruitment, redeployment strategies, building competencies and infusing a sense of commitment and passion among employees to excel.

SAIL took up construction of toilet in schools under,"Swachha Vidyalaya Abhiyan": a drive to promote sanitation hygiene in

remote areas and construction of all the allocated toilets has been completed by the company in time. On medical facilities, SAIL approached the doorsteps of 1.5 lakh underprivileged populance through its Mobile Medical Units (MMUs) / Ambulances and 2500 health camps in 2014 – 15.

More than 1 lakh needy people availed free medical care including medicines at the exclusive Seven Health Centers (kaliyan chikitsalaya) for poor during last year. The efforts being made by the company in the field of providing education, Vocational training facilities, construction of roads, etc.., in and around plants and units of the company.

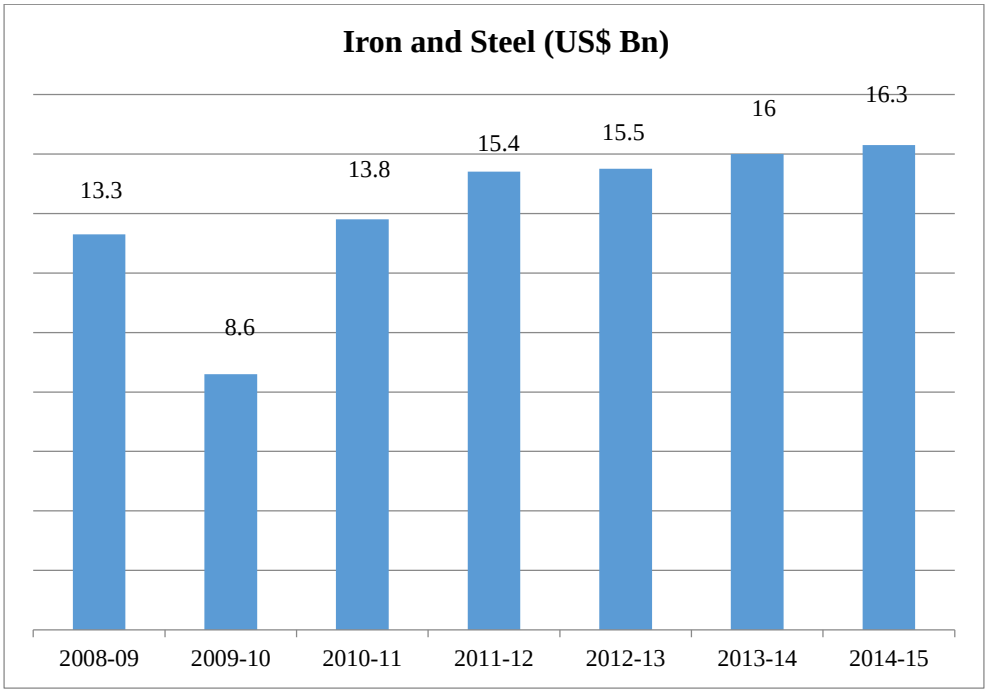
The employees of the company continue to maintain the tradition of winning maximum number of Prime Ministers Shram Award and Vishsakarma Rashtriya Puraskar in the country in recognition of their creative and innovative abilities. 19 out of 28 Viswakarma Awards were bagged by SAIL employees.

Similarly, 3 out of 17 Prime Ministers Shram Awards declared in the country for the public sector have been won by SAIL Employees this year.

**Export of Iron and Steel Industry**

Iron and steel are freely exportable Advance Licensing Scheme allows duty free import of raw materials for exports. Duty Entitlement Pass Book Scheme (DEPB) was introduced to facilitate exports under this scheme exporters on the basis of notified entitlement rates, and granted due credits which would entitle them to import duty free goods.

The DEPB benefit on export of various categories of steel items scheme is currently applicable for steel exports. Last five year's export of total finished steel (alloy + non alloy) is given below:




***Source*:** Ministry of Commerce EXAM Bank Research

**Fig 3:** Export of Iron and Steel

So, maximum use of the raw materials and manpower for final goods for increase our exports.

**Five Golden Years of the Economy and the Steel Sector**

The five years from 2003–04 to 2007–08 were golden years for the Indian economy as well as for the steel sector, confirming the synergy between the two. As noted in Table II.1, the GDP growth rate during this period was 8.8 per cent per year. All the growth components connected with steel consumption had healthy growth rates. Gross fixed capital formation grew at 16.2 per cent per year, construction at 12.4 per cent per year, manufacturing at 9.4 per cent per year and mining at 4.6 per cent per year. Finished steel consumption grew at 12 per cent per year, implying an income elasticity of steel consumption of 1.4. The profits of the steel industry, which were in negative territory in 2001–02 at Rs. (–)4397 crore and a modest Rs. 931.5 crore in 2002–03, grew to Rs. 6,554 crore in 2003–04 and to 19,615 crore in 2007–08 (implying a CAGR of 24.5 per cent during the five years).

**Table 2:** Golden Years of Growth (2003–07) for the Indian Economy and Steel (GDP numbers in 2004–05 prices)

| Indicators | 2002-03 | 2003-04 | 2007-08 | CAGR(percent), 2003-2007 |
|---|---|---|---|---|
| GDP at market price | 3.8 | 7.9 | 9.8 | 8.8 |
| Gross Fixed Capital Formation | (-)0.4 | 10.6 | 16.2 | 16.2 |
| GDP in construction | 8.3 | 12.4 | 10.8 | 12.4 |
| GDP in manufacturing | 6.9 | 6.3 | 10.3 | 9.4 |
| GDP in mining | 8.4 | 2.7 | 3.7 | 4.6 |
| Finished steel consumption (million tonnes) | 31 | 33 | 52 | 12.0 |
| Industry profits (Rs. crore) | 932 | 6554 | 19615 | 24.5 |

***Source*:** CSO and CMIE

**Role of GDP**

The growth rate of the economy has been higher than 8% in three of the last five years. There is justified cause of optimism in performance of the economy. (At constant prices in 2004-05).

**Table 3:** GDP Growth rates in India during 2005-06 to 2011-12.

| | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 |
|---|---|---|---|---|---|---|---|
| GDP growth % | 9.5 | 9.6 | 9.3 | 6.8 | 8.0 | 8.5 | 6.5 |

***Source*:** Report of Working Group on Steel for 12th FYR

**Table 4:** Demand for the Year 2016 – 17 Finished Mild Steel. (Million Tonnes)

| | **Scenario I (GDP@8)** | | **Scenario II (GDP@ 8.5%)** | | **Scenario III (GDP@ 9%)** | | **Scenario IV (GDP@ 9.5%)** | |
|---|---|---|---|---|---|---|---|---|
| | **Explanatory variables** | | **Explanatory variables** | | **Explanatory variables** | | **Explanatory variables** | |
| | **GDP** | **GFCF** | **GDP** | **GFCF** | **GDP** | **GFCF** | **GDP** | **GFCF** |
| 2012 – 13 | 72.6 | 71.4 | 72.9 | 71.7 | 73.3 | 72.1 | 73.7 | 72.4 |
| 2016 – 17 | 102.9 | 95.2 | 105.6 | 97.3 | 108.3 | 99.4 | 111.2 | 101.6 |

***Source*:** Report of working Group on Steel for 12th FYP

GDP growth target of 9 per cent considered as base case out of the four scenarios. Demand for finished steel (Alloy+Non alloy) 113.3 Million Tonnes by 2016 – 17 of which carbon steel: 108.3 Million Tonnes and Alloy steel: 5MT Matching crude steel capacity of approx 140 Million Tonnes needed.

The role of Iron and Steel Industry in India GDP is very important for the development of the country. Iron and steel are among the most important components required in the country.

## Conclusion

The Iron and Steel Industry in India contribute around 2 per cent of Gross Domestic Product (GDP) and its weight in the Index of Industrial Production is 6.2 per cent. Indian steel production has shown a strong growth over the last decade due to overall economic development and favourable industrial development and increasing investment trend. The five years from 2003–04 to 2007–08 were golden years for the Indian economy as well as for the steel sector, confirming the synergy between the two.

Even though Iron and Steel industry of India facing some challenges a) Shortage of medium - skilled labour b) Shortage of high- skill labour c) Inadequate gender inclusion and empowerment d) Mismatch between available skills and Industry requirements e) Metallurgy / Mining losing attraction in higher studies. And also the GDP growth rates in India reducing between 2005-06 to 2011-12. The Government and Non – government organization give more concentration to improve Iron and steel authority of India.

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