CHAPTER – 1

INTRODUCTION
ABSTRACT

This Chapter begins with the development of Steel sector in India along with the sector reforms. It further discusses significance of Steel sector in India’s economic growth with Industry structure in India. It discusses context and motivation of Steel sector in India and its significance in India’s economic growth. The later part of the chapter draws attention towards the delay in projects in India majorly construction projects, challenges they face and overview of reasons for projects schedule delay during the execution discussed. At the end it discusses the problem during the infrastructure development and the business problem for the proposed research is summarized.
CHAPTER – 1

INTRODUCTION

1.1 BACKGROUND

The establishment of Tata Iron and Steel Company (TISCO) in 1907 was the starting point of modern Indian steel industry. Afterwards a few more steel companies were established namely Mysore Iron and Steel Company, (later renamed Visvesvaraya Iron & Steel Ltd) in 1923; Steel Corporation of Bengal (later renamed Martin Burn Ltd and Indian Iron & Steel Ltd) in 1923; and Steel Corporation of Bengal (later renamed Martin Burn Ltd and Indian Iron and Steel Co) in 1939.¹ All these companies were in the private sector.

<table>
<thead>
<tr>
<th>Key Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>1907*: Tata Iron and Steel Company set up.</td>
</tr>
<tr>
<td>1913: Production of steel begins in India.</td>
</tr>
<tr>
<td>1918: The Indian Iron &amp; Steel Co. set up by Burn &amp; Co. to compete with Tata Iron and Steel Co.</td>
</tr>
<tr>
<td>1923*: Mysore Iron and Steel Company set up</td>
</tr>
<tr>
<td>1939*: Steel Corporation of Bengal set up</td>
</tr>
<tr>
<td>1948: A new Industrial Policy Statement states that new ventures in the iron and steel industry are to be undertaken only by the central government.</td>
</tr>
</tbody>
</table>

1954: Hindustan Steel is created to oversee the Rourkela plant.

1959: Hindustan Steel is responsible for two more plants in Bhilai and Durgapur.

1964: Bokaro Steel Ltd. is created.

1973: The Steel Authority of India Ltd. (SAIL) is created as a holding company to oversee most of India's iron and steel production.

1989: SAIL acquired Visvesvaraya Iron and Steel Ltd.

1993: India sets plans in motion to partially privatize SAIL.

Source: * Government of India, Joint Plant Committee Report 2007 and rest of the dates from:


At the time of independence, India had a small Iron and Steel industry with production of about a million tonnes (mt). In due course, the government was mainly focusing on developing basic steel industry, where crude steel constituted a major part of the total steel production. Many public sector units were established and thus public sector had a dominant share in the steel production till early 1990s. Mostly private players were in downstream production, which was mainly producing finished steel using crude steel products. Capacity ceiling measures were introduced. Basically, the steel industry was developing under controlled regime, which established more public sector steel companies in various segments.

Undoubtedly there has been significant government bias towards public sector undertakings. But not all government action has been beneficial for the public sector companies. Freight equalization policies of the past were one example. The current governmental ‘moral-suasion’ to limit steel price increases is another.
However, after liberalization—when a large number of controls were abolished, some immediately and others gradually—the steel industry has been experiencing new era of development. Major developments that occurred at the time of liberalization and thenceforth\(^2\) were:

1. Large plant capacities that were reserved for public sector were removed;
2. Export restrictions were eliminated;
3. Import tariffs were reduced from 100 percent to 5 percent;
4. Decontrol of domestic steel prices;
5. Foreign investment was encouraged, and the steel industry was part of the high priority industries for foreign investments and implying automatic approval for foreign equity participation up to 100 percent; and
6. System of freight ceiling was introduced in place of freight equalization scheme.

As a result, the domestic steel industry has since then, become market oriented and integrated with the global steel industry. This has helped private players to expand their operations and bring in new cost effective technologies to improve competitiveness not only in the domestic but also in the global market. Private sector contribution in the total output has since been increasing in India. Development of private sector has caused high growth in all aspects of steel industry that is capacity, production, export and imports. During the last decade more than 12 mt of capacity has been added in the steel industry, this is mostly in the private sector. Recently, the steel industry is receiving significant foreign investments such as POSCO—South Korean steel producer—and Arcelor-Mittal Group—UK/Europe based steel producer—announcing plans for establishing about 12 mt production units each in India.

The Indian steel industry, with a production of about 1 mt at the time of independence, has come long way to reach the production of about 57 mt in 2006-07. Moreover, the steel industry is showing promising future growth as major players in the industry have announced their plans for significant investments in expanding their capacities.

Impressive development of the steel industry with active participation of private sector and integration of India steel industry with the global steel industry has also induced the government to come up with a National Steel Policy in 2005. The National Steel Policy 2005 was drafted with the aim of establishing roadmap and framework for the development of the steel industry. The policy envisages steel production to reach at 110 mt by 2019-20 with annual growth rate of 7.3 percent. As later sections will show these expectations are not excessively high.

With increasing need for large investments in the industry private sector’s role would be crucial in the development of the steel industry. TISCO, public sector entities, POSCO, Jindals, Essar, and Arcelor-Mittal will be among the major players accounting for the bulk of the 100 plus million tons of production in the future.

There is a key factor behind the predominance of large units and oligopolistic industry structure, and that is the production process. The following section discusses the process and underlying technology.

The Indian iron and steel industry is nearly a century old, with Tata Iron & Steel Co (Tata Steel) as the first integrated steel plant to be set up in 1907. It was the first core sector to be completely freed from the licensing regime (in 1990-91) and the pricing and distribution controls. The steel industry is expanding worldwide. For a number of years it has been benefiting from the exceptionally buoyant Asian economies (mainly India and China). The economic modernization processes in these countries are driving the sharp rise in demand for steel.
The demand for steel in India is expected to rise 7 percent in the next financial year beginning April 1 as compared to the sluggish 5.5 percent projected growth in 2012-13. The overall outlook for the steel sector is positive and the demand was likely to pick up in the next financial year on the back of revival in economic growth and the government's measures to ease infrastructure investment rules.

In fiscal 2012-13, growth in domestic steel demand is expected to be around 5.5 percent. Total demand is expected to be around 75 million tonnes, up from 71 million tonnes in 2011-12. In 2013-14, demand is expected to be higher at around seven percent.

India is currently the world's fourth largest producer of crude steel after China, Japan and the US. Major public as well as private sector firms including Tata Steel, SAIL and JSW Steel are expanding production capacity. The steel production is expected to reach 200 million tonnes by 2020 as compared to 71 million tonnes recorded last year. In steel production, India is expected to leave behind USA and Japan in a couple of years. However, it will substantially lag behind China that produces almost 700 million tonnes of steel per year.

Steel being a basic commodity for all industrial activities, quantum of its consumption by a particular country is considered as an index of industrial prosperity of that country. Since independence, there has been a substantial growth in the steel production in India from 1.5 Mt/yr in 1950-51 to about 72.0 Mt/yr in 2013-14. Apparent consumption of finished steel in India was 14.84 Mt in 1991-92 which increased to 48.7 MT by 2006-07 and 57 MT in 2012.
Despite the above mentioned growth in the steel sector, the per capita steel consumption continues to remain at a level of about 57 kg only, compared to about 215kg as international average. Further, with nearly 20% of the world population, India’s contribution is only of the order of 4% of the world steel production. Hence, long term and short term strategies are necessary in planning the steel industry in the country to improve the level of per capita steel consumption.

While modernization of the existing steel plants in India may increase steel output marginally, setting up of new steel plant facilities will be essential to meet the increasing steel demand. The country now has a vision to achieve annual production of 180-200 Mt by the year 2019-20.

According to a recent press report of Ministry of Steel, Government of India, the rank of our country among the top steel producers of the world has moved up from 4th position in 2013 to 5th position. There is a considerable gap between the consumption and production of steel products in India, considering the per capita consumption of developing country.

1.1.1 INDUSTRY STRUCTURE

Indian Iron and steel Industry can be divided into two main sectors Public sector and Private sector. Further on the basis of routes of production, the Indian steel industry can be divided into two types of producers.

Integrated producers: Those that convert iron ore into steel. There are three major integrated steel players in India, namely Steel Authority of India Limited (SAIL), Tata Iron and Steel Company Limited (TISCO) and Rashtriya Ispat Nigam Limited (RINL).

Secondary producers: These are the mini steel plants (MSPs), which make steel by melting scrap or sponge iron or a mixture of the two. Essar Steel, Ispat Industries and Lloyds steel are the largest producers of steel through
the secondary route.

1.1.2 CONTEXT & MOTIVATION

India is today witnessing growth of large number of integrated large scale projects both green field and brown field. As on date India is a net steel importer, but in the near future with commitments, for such huge capacity coming up will become a net exporter of steel. With the huge iron ore reserves of very high quality, the country will always have an edge in the world market provided that the production lines are made more and more energy efficient. The liberalized industrial policy and other initiatives taken by the government of India have given definite impetus to the private players. This has led to modernization / expansion of existing plants and a large number of new / green field plants coming up. New modern plants incorporating cost effective, state of art technology are coming up in different parts of the country at places close to natural resource supplies.

1.1.3 SIGNIFICANCE

India’s economic growth is contingent upon the growth of the Indian steel industry. Consumption of steel is taken to be an indicator of economic development. While steel continues to have a stronghold in traditional sectors such as construction, housing and ground transportation, special steels are increasingly used in engineering industries such as power generation, petrochemicals and fertilizers. India occupies a central position on the global steel map, with the establishment of new state-of-the-art steel mills, acquisition of global scale capacities by players, continuous modernization and upgradation of older plants, improving energy efficiency and backward integration into global raw material sources.

The great challenge now is timely completion and execution of these new projects so that the capitalization of the huge investments starts at the earliest
without cost overrun. The last two decades saw the development sector booming worldwide, especially in developing countries that are rich in natural resources which has pressurized the governments to develop large scale projects such as large scales that can accommodate newly emerging developments (Baydoun M, 2011). Due to lack of necessary expertise and financing, governments in most developing countries joint ventures with private sector for developing and commissioning of these projects (Koppenjan and Enserink, 2009).

In India, the steel industry is subject to more risks due to the unique features of construction activities, such as long period, complicated processes, abominable environment, financial intensity and dynamic organization structures hence, it becomes essential to know all the variables which are affecting project cost and are responsible for project cost overrun. As there has been less (Or no work) work done in Indian perspective to detect variables responsible for cost overrun, This study will help future Indian steel projects and can be used as a basic guide to avoid maximum possible variables responsible for impacting cost overrun.

1.2 DELAY OF PROJECTS IN INDIA

In India, construction projects are becoming bigger with a lot of complications. Though we have a lot of method to make sure that we finish project on schedule so that we improve our profit margins, still delay is inevitable, which ultimately results the reduction in profit margins.

So far lots of studies have been carried out by various researches to identifying the factors that affect the schedule and profitability of the project. Still there are a lot of projects which run behind schedule and suffer a heavy loss. Lot of study has been carried out by various researches to find out the factors that affect the schedule of the project, but the root cause of all these factors are the contract clauses which are the binding between the Employer and Contractor.
This factor made us to identify the clauses that affect the schedule performance and project profitability of the construction project.

It is a known fact that a large number of infrastructure projects in India have been delayed due to regulatory clearances, environmental issues and problems pertaining to land acquisition. Also, there are challenges in the tendering phase that affect viability of projects thus delaying implementation, construction phase is beset with over-runs and disputes and last but not the least; provider skills are weak all across the value chain. This report attempts to identify these pertinent issues and also brings out how professional project management practices can bring about a positive change in the completion of projects on time and within budget.

Nodal agencies in India tend to focus less on design and engineering excellence than their global counterparts. They usually select engineering consultants on a lowest price or L-1 basis, overlooking the quality aspect. This is evident in the fact that the cost of creating a detailed project report (DPR), as a percentage of project cost, is much lower in India compared with global benchmarks. Not surprisingly, this leads to bottlenecks and cost over-runs during the construction phase.

Majority of infrastructure projects in India are affected by time overruns. These overruns vary from a few months to as high as five or more years, placing the project viability at risk. Survey respondents identified the bottlenecks which affect their projects and the challenges they face in conquering them. These bottlenecks, as enlisted below, are divided into two phases –

(i) Pre-execution phase and
(ii) Execution and closing phase.
Reasons for project schedule delay in pre-execution phase:

- Land/ site handover
- Delay in regulatory approvals
- Lack of strong R&R policies
- Relationship with other projects
- Non-flexible country plan
- Delay in decision making
- Ineffective procurement planning.

The factors affecting the project timelines primarily appear to be associated with external factors the underlying reason behind them remains the delayed or non-identification of pre-requisites to overcome these factors. In the absence of adequate identification of these dependencies the projects usually land in trouble at the start itself which in turn manifests into delayed project delivery or higher cost at completion.

Reasons for project schedule delay in execution and closing phase:

- Design/ scope change.
- Inadequate availability of skilled resources
- Contractual disputes.
- Industrial relations and law problems
- Geological surprises
- Pre-commissioning teething troubles.
- Coordination issues with Project Team/vendors.
- Geographical challenges and cultural differences.
- Delay in regulatory approvals( for commissioning)
- Ineffective programme management.
- Ineffective project monitoring
- Lack of awareness of modern technology
- Unavailability of funds.

Cost revisions and cost overruns are common across infrastructure projects. Project organizations have repeatedly failed to address the issues related to contracts administration and timely procurement which if handled effectively can help in reducing the costs substantially.

Over the last decade, the steel industry has experienced many challenges, especially regarding delay in implementation of projects in steel industry. Construction of Steel plants in India is plagued with complex issues which require immediate attention. As per Annual report of 2010-2011, Government of India out of 19 projects related to steel industry 11 projects are time over run which are at the range of 27-37 months and whose cost overrun is almost 50%. The time overrun in projects is coming down resulting in reduction in the cost overrun of the projects due to close monitoring, timely resolution of problems and systems improvements. An analysis of the last 19 years shows that the cost overrun has come down drastically.

Even in projects that are completed on time and within budget, substantial optimization opportunities are lost. This is mainly because best practices in engineering, procurement and construction are not widely followed. Inefficiencies in infrastructure implementation in steel industry have substantial negative impact on India’s economic growth.
Figure – 1.1: Typical Process-cum-flow sheet of a Steel Plant

Figure – 1.2

RMHS: WAGON TIPPLER 1-2 SLAB SHUTTERING AT (-)8.63 M LEVEL & TUNNEL SLAB SHUTTERING FOR ZONE 6 TO 10 IN PROGRESS.

Aug 2013
Figure – 1.3

Figure – 1.4
STRUCTURAL WORK IS UNDER PROGRESS AT COIL STORAGE BAY OF HSM

Figure – 1.7

OXYGEN PLANT: HORTON SPHERE 1 STRUCTURAL WORK IS IN PROGRESS.

Figure – 1.8
1.3 Business Problem:

Risk is never static. It is in a constant state of evolution. Risk management must always be seen against the business objectives that are sought.

The overall aim of this research is to increase the understanding of risk management in the different procurement options, design-bid-build contracts, design-build contracts and collaborative form of partnering. Deeper understanding is expected to contribute to a more effective risk management and, therefore, a better project output and better value for both clients and contractors.

It is a known fact that a large number of infrastructure projects in India have been delayed due to regulatory clearances, environmental issues and problems pertaining to land acquisition. Also, there are challenges in the tendering phase that affect viability of projects thus delaying implementation, construction phase is beset with over-runs and disputes and last but not the least; provider skills are weak all across the value chain. Given the critical role of infrastructure in ensuring a sustained growth trajectory for India, it is imperative that we identify the core issues affecting completion of infrastructure projects in India and chalk out initiatives that need to be acted upon in short term as well as long term. Almost 79% of our respondents felt that the infrastructure sector faces an acute shortage of skilled project managers. This absence of project managers with the requisite skill sets has emerged as the major cause for time and cost overruns. Young graduates today are being lured away be other seemingly lucrative opportunities and project management education and training is not yet getting the priority it requires.

As per Risk management - The commercial imperative, Sir Michael Latham 1994 “No construction project is risk free. Risk can be managed, minimized, shared, transferred, or accepted. It cannot be ignored.”
Hence therefore the business problem for the proposed research can be summarized as below;

“Non-identified risk factors for steel plant construction projects, causing delay in steel plant construction project which is resulting in to a significant project cost overrun.”
SUMMARY

This chapter explained the development of Steel sector in India along with the sector reforms and significance of Steel sector in India’s economic growth with Industry structure in India. It focused on context and motivation of Steel sector in India and its significance in India’s economic growth.

This chapter even covers the delay in projects in India majorly construction projects, challenges they face and overview of reasons for projects schedule delay during the execution. The problems faced during the infrastructure development and the business problems for the proposed research are summarized.