

Capacity Expansion Banes in Indian Steel Industry

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ABSTRACT

It is a known fact that a large number of Steel Industry Expansion 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 Steel Sector 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.

Keywords-- Project, Management, Steel, Industry, Challenges

Investment in the steel sector has a multiplier effect on the GDP due to the associated supply chain as well as consumption-related industries. The iron and steel industry is a basis for the development of a number of industries in the global economy: the defense industry, transportation and heavy engineering, energy and construction (including aeronautical and shipping construction). Moreover, the iron and steel industry is closely related to the chemical industry and light industry. It shows that the iron and steel industry has the potential to contribute to the competitiveness of national producers and to the growth of the national economy. The Indian Steel Industry is witnessing capacity expansion with top industry players like Tata Steel, JSW Steel, SAIL, and Arcelor Mittal among others looking to up the ante and expand production capacity. Present capacities are shown in Fig. 1. However, a plethora of issues as shown in Fig. 2 confront the steel industry projects at the moment ranging from investment, long term availability of raw materials at competitive prices, infrastructure to environmental and logistics related.

I. INTRODUCTION

The Indian Steel industry plays an integral role in the growth of the country and its economy and currently contributes to nearly 2% of the entire National GDP.

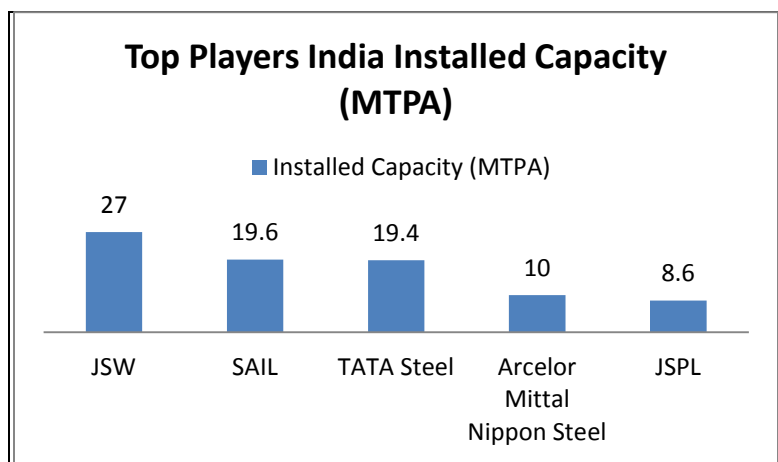


Figure 1: Top Players India Installed Capacity (MTPA)

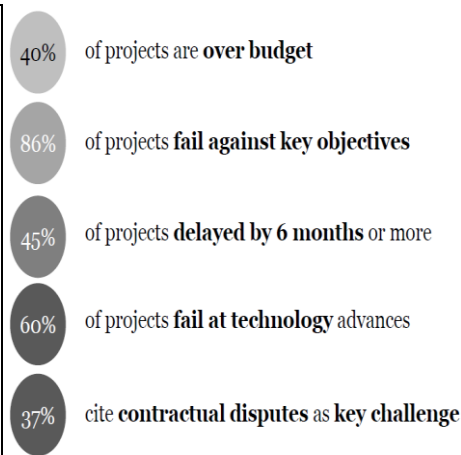


Figure 2: Challenges faced by Project (PwC survey)

The project performance in India when compared to global standards is very poor. Cost over-run in India is

3-4 times global standard whereas planning and engineering cost is on the lower side compared to

developed nations. Poor planning in project management is the number one mistake that leads to project failure as

shown in Fig. 3.

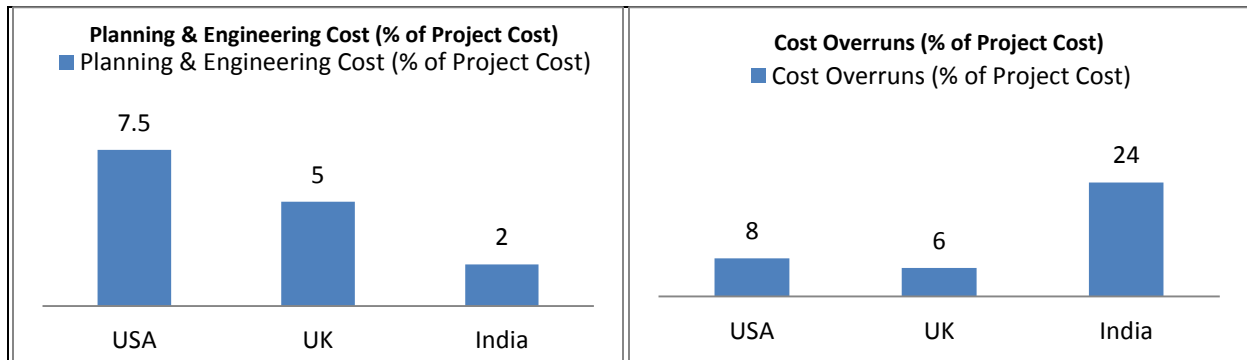
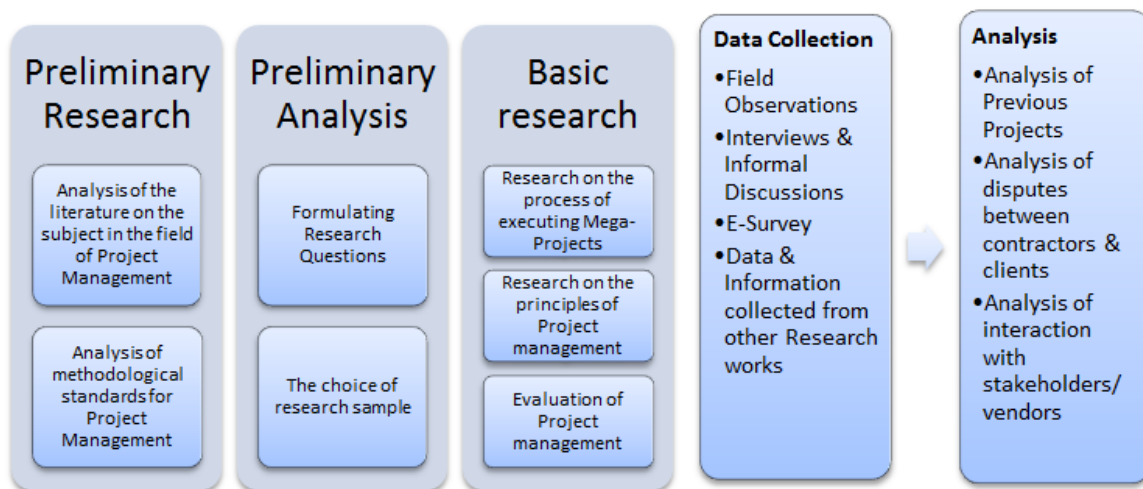


Figure 3: High Cost overrun in India and lesser focus on Planning & Engineering compared to US, UK

II. RESEARCH METHODOLOGY



III. ISSUES & CHALLENGES IN STEEL PLANT EXPANSION PROJECTS

3.1 Financial Issues

3.1.1 Cost of Capital - The cost of financing steel capacity expansion is mostly through borrowed capital. The cost of capital in India is a major hurdle as it is considered to be extremely high compared to developed nations such as China, Japan, and Korea. This results in India paying about USD 30–35 more. Moreover, banks charge 10% interest on loans to steelmakers, so an additional 1mn t/yr of steel capacity would require an investment of around \$700 mn, which makes funding capacity expansions an onerous task. Liquidity crunch in the economy and burden of Non-Performing Assets on banks are a big challenge as well. Also, the total outlay required to expand capacity to 300 MT (as per NSP 2017) would be around 10-11 lakh crore. The total debt component would come nearly INR

7.7 lakh crore. (considering a debt-equity ratio of 2:1) which will more than double the banking sector’s current exposure to the steel sector, at around 3.13 lakh crore.

3.1.2 High Import and Logistics Costs - High grade and value-added steel, used extensively in defense, automobile and power are currently imported. Also, coking coal, an important raw material for steel production, is imported as well. To achieve NSP’s steel production of 300 mt, the coking coal requirement should increase three-fold to 180 million tonnes from 60-70 mt currently. Difficulties in acquiring mining lease and heavy reliance on import of coking coal add to the cost of steel production. High logistics costs are a major constraint as well. Railways are the preferred mode of transportation for steelmakers. The freight cost of moving materials through the railways, both

raw materials and finished steel, is considerably high. According to NITI Aayog, the Indian steel manufacturers incur high expenditure and are at a cost disadvantage at USD 20–25 per tonne of finished steel. The freight cost from Jamshedpur to Mumbai can be as high as USD 50/tonne in comparison with USD 34/tonne from Rotterdam to Mumbai.

3.2 Infrastructure and Clearances Issue

3.2.1 Land Acquisition Issue- About 8% of 804 industrial projects—with a planned investment of Rs 421,062 crore (\$67.91 billion)—across India are in limbo because of land-acquisition problems, according to data released by the finance ministry. The data complement a 2014 Comptroller and Auditor General Report that says 38% of land acquired for special economic zones has not been used. Tata Steel conceived Kalinganagr plant in 2005-2006 but work was delayed owing to land acquisition problems and could start only in 2010. The delay increased the project cost.

3.2.2 Statutory Clearance Delays- Ambiguity in area of responsibility of purchaser & contractor for statutory clearances statutory authority of all areas including Environment, Central Electricity Authority, Explosive safety organization, factory and boiler inspection agencies, essentiality certificate for project registration. Also Involvement of railway for relocation and some other additional requirement from them delayed project due to long sanction / approval procedure. Posco had entered into a pact with the Odisha government on June 22, 2005 for 12-billion dollar Jagatsinghpur plant (12 MTPA), which included iron ore mine development but the project was called off in 2016 due to environmental regulatory issues

3.2.3 Lack of Indian EPC players in Steel Sector- There is lack of good equipment manufacturers in the country leading to heavy dependence on few foreign players like Danieli, SMS, Paul Wurth, POSCO, PrimeMetals. Availability of these contractors is a challenge as their order books are already overbooked. For instance the order book of one of the largest EPC contractor in India is overbooked by four times its current capacity. These situation arises as all steel plants undergo expansion together with limited resources of EPC contractors.

3.3 Project Management Issues

3.3.1 Scope & Design Change- Most steel projects are victims of change in project design and scope which often lead to project delays. Poor project planning coupled with lack of attention to details leads to prolonged discussions between project owners and contractors/ vendors. This

often leads to project delay despite the well intentioned efforts to restore to original schedule. The contribution of the market conditions requiring a revision in the project scope is generally low if a project has been planned well. In IISCO Steel Plant (ISP), Burnpur, Structural Work (MT) increased from 56045 to 101031 (Increase: 80%) leading to additional contracts and splitting of packages. ISP modernization was divided into 30 nos. main packages and 48 nos. auxiliary packages.

3.3.2 Geological data/ Soil Condition Mismatch- The basis of any fundamental calculation of project is based on soil investigation. Due to delay and improper Survey & soil investigation may add a drastic loss to the project. A huge delay may occur. Collected detail soil data was not properly done through reputed agencies due to which delay may occur for civil work such as foundation design & quantum of civil work etc. In Steel Authority of India Limited, boulders, skulls and conglomerate hard mass encountered during piling work up to 20 m depth underground, slag mixed iron and steel boulder recovered – 1,34,271T. Hence Piling Work area increased from 8566 TO 35840 (318%) which delayed the project schedule by 1 Year.

3.3.3 Ineffective Project Monitoring- A key concern during the project initiation and execution phase is ineffective project planning and monitoring practices and techniques being employed by owner as well as contractor organizations. The inadequate planning results in non identification of critical activities and concerns while the result of ineffective project monitoring manifests in form of delay in decision making due to lack of desirable information at the right time.

IV. SOLUTION

Taming giant projects in Steel Sector would need “**ISPAATI IRADA**” an abbreviation framed by us which stands for **I**ntegrated Digital PMO, **S**taggering Expansion Project Lifecycle, **P**erformance guarantee criteria customization for smooth handover, **A**daptive Scheduling, **A**dopting Hybrid PM approach, **T**ransforming Culture, **I**nformed & Empowered Decision Making, **I**nclusive Commissioning of all facilities, **R**esolution mechanism for Disputes, **A**dvanced Design management system, **D**evelop Comprehensive vendor selection Model, **A**dhering to Sustainable green steel.

Table 1: Steel Industry Expansion Project Issues & Solutions

S.No.	Issues	S.No.	Solution	Resolves
I1	Land Acquisition Issue	S1	Integrated Digital PMO	I9,I10, I11, I14
I2	One Go Expansion of all Units	S2	Staggering Expansion Projects Lifecycle	I2
I3	Splitting of Packages	S3	PG Criteria customisation	I10
I4	Technical Spec. & EC finalization	S4	Adaptive Scheduling of Packages	I9, I10, I14
I5	Statutory Clearance Delay/Issues	S5	Adopt Hybrid PM approach	I6
I6	Tender Mode/Finalization	S6	Transforming Culture	I11, I4
I7	Resolution of Commercial Disputes	S7	Informed & Empowered Decision making	I7
I8	Absence of Ancillary Units	S8	Inclusive Commissioning of all facilities	I7
I9	Timely Site Clearance Delay	S9	Resolution mechanism for Disputes	I1, I7
I10	Estimation & Planning Errors	S10	Advanced Design management system	I12
I11	Geological Data/Soil Condition Issue	S11	Develop Comprehensive vendor selection Model	I4,I8,I13
I12	Illogical sequence of Drawing & Procurement	S12	Adhering to Sustainable green steel	I5
I13	Engineering Strength of Contractor			
I14	Storage Facilities Inadequate			

V. CONCLUSION

Steel Industry Projects in the execution and closure phase are affected by non availability of funds resources and delay in delivery of preceding activities. In addition multiple changes in the scope and design of projects push project delivery timelines. However these factors point to the insufficient monitoring and inefficient project change management in. Furthermore lack of knowledge and application of tools and techniques for seamless integration of different functions of project/program among the project management professionals often lead to delays. India's steel sector lags behind its foreign counterparts in terms of knowledge and understanding of latest technologies in engineering as well as project management which results in slow progress of projects.

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