

July 2009

Greenfield Steel Projects in India - Special Case Study - Social Cost Benefit Analysis of POSCO

Malay Kumar Mohanty

InterScience Institute of Management and Technology (IIMT), drmalaymohanty@yahoo.co.in

Chandan Kumar Tripathy

DRIEMS, chandan.tripathy@gmail.com

Follow this and additional works at: <https://www.interscience.in/imr>



Part of the [Business Administration, Management, and Operations Commons](#), and the [Human Resources Management Commons](#)

Recommended Citation

Mohanty, Malay Kumar and Tripathy, Chandan Kumar (2009) "Greenfield Steel Projects in India - Special Case Study - Social Cost Benefit Analysis of POSCO," *InterScience Management Review*: Vol. 2 : Iss. 2 , Article 3.

DOI: 10.47893/IMR.2009.1030

Available at: <https://www.interscience.in/imr/vol2/iss2/3>

This Article is brought to you for free and open access by the InterScience Journals at InterScience Research Network. It has been accepted for inclusion in InterScience Management Review by an authorized editor of InterScience Research Network. For more information, please contact sritampatnaik@gmail.com.

Greenfield Steel Projects in India - Special Case Study - Social Cost Benefit Analysis of POSCO

Malay Kumar Mohanty,

Interscience Institute of Management and Technology (IIMT)
Kantabada, Via – Janla, Dist – Khurda, PIN – 752 024. INDIA.

drmalaymohanty@yahoo.co.in

Chandan Kumar Tripathy
DRIEMS ,B School , Cuttack.

Abstract

India's efforts to maintain its rapid economic growth rate will depend largely on its Greenfield projects. The rising demand for steel in domestic markets as well as in the International markets have made the steel prices soar up in recent years. The Indian steel industry is receiving huge domestic and foreign investments in Greenfield projects in the steel sector. However, other than the already planned steel plant projects, most of the proposed steel Greenfield Projects in the country continue to struggle to see any progress. Development of Greenfield steel projects in India has virtually come to a standstill. Many of these projects have stagnated due to issues like land acquisition, rehabilitation and political interference.

Projects should either be rejected or, if approved, implemented with speed. We do need to boost Greenfield capacity addition in steel with holistic, coordinated policy design, and actualise long-pending investment proposals. This paper discusses the special case of POSCO and its Greenfield steelworks in Orissa. To catapult India into a steel superpower, POSCO would contribute 12 mtpa from its Greenfield project. There have been no progress in POSCO project since 2005 due to the land acquisition and environmental clearances problems. A special Social Cost Benefit Analysis study have been conducted to prove the economic benefits of the POSCO project for the people of Orissa and the employment and GDP growth it will bring along with it.

Introduction :

A Greenfield Project is a project that lacks any constraints imposed by any prior work. The analogy is to that of construction on Greenfield land where there is no need to remodel or demolish an existing structure. In other words, a Greenfield Investment is the investment in a manufacturing, office, or other physical company-related structure or group of structures in an area where no previous facilities exist. The name comes from the idea of building a facility literally on a "green" field, such as farmland or a forest. Examples of Greenfield projects are new factories, power plants, airports which are built from scratch on Greenfield land. Those facilities which are modified/ upgraded are called Brownfield projects (often the pre-existing site/facilities are contaminated/polluted.)

Current Scenario of Greenfield Steel Projects in India

The steel industry in India has been moving from strength to strength and according to the Annual Report 2009-10 by the Ministry of Steel, India has emerged as the fifth largest producer of steel in the world and is likely to become the second largest producer of crude steel by 2015-16.

Led by strong demand for autos and engineering services, the domestic steel demand in India remains robust, as per Moody's sectoral analysis on Asia's steel sector. According to the analysis, the outlook for the domestic operating environment is positive, driven by robust growth in infrastructure, autos and construction and constrains on additional supply by 2011.

Upcoming Greenfield Projects

A host of steel companies have lined up major investment proposals. Furthermore, with an expanding consumer market, the Indian steel industry is likely to receive huge domestic and foreign investments. Development of Greenfield steel projects in India has virtually come to a standstill. Many of these projects have stagnated due to issues like land acquisition, rehabilitation and political interference. India plans an annual steel production capacity of 124 million tonnes (MT) by end of 2011-2012.

However, other than the already planned steel plant projects, most of the proposed steel plant projects in the country continue to remain in limbo. These are those Greenfield projects, which simply refuse to gain momentum due to political, local, and rehabilitation issues.

1. Arcelor Mittal's steel project in Khumti district of Jharkhand has been marred by land acquisition issues for the past couple of years. Unable to sort out the local issues, the company now plans to shift the plant to another district in Jharkhand.

2. JSW Steel Ltd's most talked about steel plant in West Bengal is facing delays, thanks to the Maoist issue. The company is developing a 10MT steel project at Salboni in West Bengal. It is facing political issues in continuing with the construction work of this project. The proposed steel project was expected to start construction work in 2008. However, company officials from JSW have been quoted in media reports stating that the work will begin in the next six months. Thus, the first phase of the plant is now likely to be completed in three years.

3. POSCO's steel plant in Orissa has stagnated. The steel company has been unable to acquire land for its Orissa project since 2005. POSCO Steel had proposed setting up a 3MT steel plant five years back, but there is absolutely no development on the same.

4. Similarly, Tata Steel Ltd's project in Orissa too is at a standstill. The company is developing a Rs.21,000-crore steel plant in Kalinganagar. The plant was facing opposition due to displacement and rehabilitation issues. Construction work on this project, which has been delayed by four years, is expected to commence soon.

Ironically, all these companies which are still to see any concrete development on their proposed greenfield projects, have also announced joint ventures with other steel majors or mining related companies.

According to a PTI report, POSCO India has teamed up with Steel Authority of India (SAIL) for its Jharkhand project. Given that SAIL has the required iron ore inputs, with this tie-up, POSCO's steel project may now turn out to be feasible. The company had been struggling with its Orissa steel plant project from the past few years.

Tata Steel has signed a joint venture with state-run NMDC Ltd to explore possibilities of entering into joint ventures for the acquisition, exploration and development of mines, extraction and processing of minerals, setting up of integrated steel plants and any other business of mutual interest.

The projected GDP growth will push up the steel demand by an additional 25 million tonne while the brownfield projects will increase availability by an additional 17 million tonne to 18 million tonne thus leaving gap of about 7 million tonne to 8 million tonne.

If the present situation was allowed to continue, the country's dependence on imports would only increase adding that we're already a net importer of steel. Land, though a major problem is not the only problem pointing out that there were many others including politics and vested interests. Unfortunately, some of these obstacles could not be removed through adoption of confidence building measures for the local people. In such cases, the Government intervention is needed.

Indian steel industry in the global context

A lot has been written and discussed by way of comparison of growth stories of economies of China and India. Whereas India occupies a pre eminent position in the software field, China has become the global manufacturing centre. In spite of the steady but possibly because of slow implementation of economic reforms in India for almost two decades, the Indian growth rate, pre-global meltdown was hovering around 8-9% only as against Chinese of over 12%. Post recovery after the global economic slowdown, India has bounced back to around 7.5%, whereas China continues to grow faster. Major steel producing nations' output dipped in 2009 and has been as follows:

Country	Production
China	568
Japan	87.5
Russia	60
US	58
India	56.6
South Korea	48.6
Germany	32.7

Table 1 Global Steel Production 2009 (Source: World Steel Association)

India faces a massive shortfall in domestic steel capacity in the foreseeable future, according to LN Mittal of ArcelorMittal, the world's largest steel producer. This would imply huge national cost and forgone industrialisation. Fortunately, there's stepped up Brownfield addition and expansion in steel, to feed strong demand growth.

In any case, despite the expansions total capacity pan-India would fall far short of the steel ministry's projections of 124 mt by 2011-12. Meanwhile, Japan remains the world's second-largest producer of steel and is especially strong on value-added products — with a capacity of 87.5 mt.

The way to move ahead of Japan in steel output is to focus on Greenfield investments construction. Instead, we need transparency in linkage for iron ore and other attendant clearances, to end routine distortions in mining and ore pricing.

Specifically, we need to phase out captive mining for steel plants, and have a thriving domestic market for minerals with ore prices duly reflecting international value. Arm's length ore prices would actually incentivize value-addition in steel.

For a number of years in the recent past, ArcelorMittal has tried entry into India by the initiative of signing MoU's for setting up Greenfield projects in the states of Jharkhand & Orissa. India has the competitive advantage in steel due to abundant availability of good quality iron ore within the country. Coking coal, of course, is not locally available in sufficient quantity and quality. Huge coal imports would

thus become a necessity for quantum jump in steel capacity, unless there is a breakthrough in technology of reducing iron ore or making steel directly through alternative routes.

Indian steel industry in the 21st century

While China is the leader of the world steel industry in the 21st century, India occupies the fifth place in terms of production volume in 2008. Projections are that India should move towards 100 mtpa and beyond in the next decade.

The projected steel capacity creation in India before the onset of global meltdown was as follows (in millions tonnes per annum):

on account of mining lease allocation, land acquisition problems as well as the global slowdown. Recently, after the visit of the South Korean President as the chief guest at the Indian Republic Day celebrations at Delhi, POSCO is reported to be back on fast track. The site work is expected to start in a few months.

Major Challenges for Greenfield Steel Projects

Several challenges lie before the upcoming Greenfield steel projects in India , major ones being :

1. Land acquisitions,
2. Environmental Clearances,
3. Resettlement & Rehabilitation Policy of displaced persons for Greenfield projects

The solution to the above problems is not easy and needs a well planned multi prong approach .This requires having a holistic view of the overall impact of the Greenfield on the economic and social conditions of all the stakeholders.

Another major step to reduce the tension related to the land acquisition will be to communicate with local people in local languages. This will require a mind-set change and the replaced people should be made aware of the long term as well short term benefits of the upcoming Greenfield projects. Fighting talent flight and managing talent is yet

Table II- Projected steel capacity creation in India – Reuters Survey

The global meltdown has somewhat affected this growth plan as much as it has affected the global steel industry very severely.

In terms of capacity creation in India, there are innumerable problems associated with land acquisition and rehabilitation of displaced persons for Greenfield projects, as was indicated earlier. As such, wherever Greenfield projects are planned, whether by global players like Arcelor Mittal, Posco etc or Indian entrepreneurs like Tatas, Essar,JSW etc, there has hardly been any progress on the ground. The only capacity expansion that is currently taking place, are at the existing locations whether of PSU’s like SAIL/RINL or private co’s like Tatas, JSW, Essar etc.

Greenfield projects of Posco and Arcelor Mittal are, therefore, not likely to be established in the near future (2011-12).

In fact, Arcelor Mittal has already announced its scaling down of capacity projections and unavoidable delays both

Company	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Posco	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
Essar	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
JSW	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3
Tata	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Jindal	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
Bhushan	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
West Bengal	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
Orissa	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Chattisgarh	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
Total	75.6	75.6	75.6	75.6	75.6	75.6	75.6	75.6	75.6	75.6

The leasing of iron-ore & coal mines as well as site related issues (land acquisition and rehabilitation of displaced persons) have appeared as serious bottlenecks in almost all the Greenfield projects.

On the whole, in spite of the global economic slowdown, it can be safely assumed that capacity expansion at the locations of the existing steel plants will catch up soon. What is not certain though, is the fate of Greenfield projects,

where apart from the entrepreneurial initiatives, a lot of government initiative and strong will is needed both at the central level at Delhi as well as the state capitals to resolve the issues of mining leases and land acquisition/rehabilitation problems expeditiously.

If India has to occupy its rightful place as a developed nation towards 2020, its business model and international trade pattern must change from raw material exporter to finished goods exporter- from a commodity producing nation to a value creating nation.

In the context of the steel and mining industry, it would mean that the iron ore export from India to China, Japan and other countries must stop and in stead, all of the iron ore produced must get converted into steel and steel products. To begin with, even commodity type steel production and export would be preferable to exporting iron ore but eventually, the steel ought to be custom and tailor made and better still, automobiles and appliance/gadgets export rather than steel per-se.

As far as the Indian steel industry is concerned, the government has to plan its mining lease and other policies in a manner that motivates entrepreneurs towards converting the iron ore into steel rather than exporting it as unfinished material. In stead of knee-jerk reactions of tinkering with the export duty on iron ore one way or the other, the government might consider fundamental changes in its approach like dividing the ore bodies into well demarcated blocks and putting them for auction by a transparent process of bidding by the steel companies. With the economic reforms processes getting due attention and priority, one hopes that the issues of Greenfield steel projects get resolved sooner than later.

Another aspect where we need to pay attention in the Indian steel industry in the 21st century is Research & Development. Austria, being a small country is credited with the development of the LD process, which is today by far the most widely used technology for steelmaking.

India has not been able to develop a technology to avoid usage of coking coal for iron making in an integrated steel plant. As a result, we are heavily dependent on import of coking coal to a large extent. For massive growth of the steel industry in the 21st century and beyond, it makes a great sense to invest in development of an indigenous technology for iron making or direct steel smelting on an industrial scale using indigenously available coal. There is an urgent need for encouraging innovation in the steel industry. Industry-academic interface also needs to be

strengthened for R & D as well as building human capital for the steel industry.

Upcoming Steel Projects in India

As per the ministry of steel , 222 MoUs have been signed by various state governments for setting up various steel units in their respective states for total capacity of approximately 276 million tonnes, out of which 65 investors have signed MoU or agreements with government of Jharkhand to set up iron and steel projects.

Impact of Project Delays on International Investors

It will be too early to predict the impact of project delays on international investors as India is an attractive destination since demand is so strong. But foreign direct investment this year is down 25 to 30 per cent year on year. There have been huge FII investments but FDI is actually going down which is definitely an area of concern.

All these uncertainties have caused de-ratings for a lot of Indian companies. Take the example of the Vedanta group. After having committed an investment of \$4 billion to \$5 billion, the environmental clearance was issued and even the Supreme Court had ratified it. If you take it back, it definitely hurts investor sentiment and most of the cases that we have seen in recent times have been post facto. Environmental clearances have been withdrawn after they were awarded. This has shaken the investor confidence a bit and it will take a while for it to be restored.

Government Initiative

As per the Press Information Bureau (PIB), during 2009, the government took a number of fiscal and administrative steps to contain steel prices. Central value added tax (CENVAT) on steel items was reduced from 14 per cent to 10 per cent with effect from February 2009.

Moreover, in the Union Budget 2010-11, the government has allocated US\$ 37.4 billion to the infrastructure sector and has increased the allocation for road transport by 13 per cent to US\$ 4.3 billion which will further promote the steel industry.

Social Cost Benefit Analysis of the Posco project.

For various reasons, the Posco project has constantly been in the news ever since the Orissa government and the South Korean steel major signed an MoU in 2005. Of late, this Rs 51,000 crore project - representing the biggest FDI investment in India has been in the news because of an alleged tussle between the Orissa government and the

central government over providing environmental clearances to the project.

While the debate over whether Posco's steel investment is environmentally sustainable or whether this is a classic example of industrialisation at the cost of tribal rights goes on, this article wishes to highlight an important aspect that has so far gone unnoticed. This is related to the fact that Posco is a South Korean company and thus any action that India (whether at the central or the state level) takes with regard to this company has to be compatible with India's obligations under the India-Korea Comprehensive Economic Cooperation Agreement (CECA). The India-Korea CECA is an international treaty aimed at regulating international economic matters such as trade and investment flows between the two countries. This treaty contains a chapter on foreign investment, which grants certain rights to foreign investors over their investments.

Although this treaty came into force on January 1, 2010, it also applies to investments already announced at that time. Thus, Posco's investment in Orissa is covered by the India-Korea CECA. The foreign investor, for example, has the right to 'fair and equitable treatment': Posco has to be treated 'fairly and equitably' by India. While the exact legal meaning of 'fair and equitable treatment' remains obscure, an important concept that has evolved relates to the 'legitimate expectations' of the foreign investor.

Take an example from Chile, where one arm of the government had given the go-ahead to a Malaysian foreign investment project, which was later red-flagged by another government arm on the grounds that the project was not environmentally sustainable.

This action was held, by an international arbitration tribunal, as frustrating the 'legitimate expectations' of the Malaysian investor and thus violating the right of the foreign investor to be treated 'fairly and equitably'—a right which the Bilateral Investment Treaty (BIT) between Chile and Malaysia recognised.

The above case has close resemblance to the Posco situation in India. We have the Orissa government clearly pushing for the Posco project, arguing that Posco's investment is legal and will bring enormous benefits to Orissa. On the other hand, the Union environment ministry is investigating the environmental dimensions of this investment and has not given the required clearance.

Let us assume, hypothetically, that after its investigation, the Union environment ministry concludes that this investment is not environmentally sustainable and refuses

to clear it. Such a situation, subject to other facts, could result in frustrating the 'legitimate expectations' of the foreign investor and thus could amount to a potential violation of the 'fair and equitable treatment' standard recognised in the investment chapter of the India-Korea CECA. In other words, such a situation could give rise to an actionable claim, which Posco can enforce at the international level. If the claim is successful, India may be required to pay millions of dollars as damages to the Korean giant.

These arguments should not be misunderstood as holding a brief for the South Korean company or to suggest that India should overlook any environmental violations that Posco might have committed or even to suggest that an international dispute with Posco is inevitable. The purpose of these arguments simply is to illustrate that India, as a state, has to be very careful in dealing with foreign investments by being cognisant of its international obligations under more than 60-plus BITs and many other CECAs. Else, India's actions could amount to international treaty (BITs and CECA) violations.

With the growth of the Chinese and Indian economies the Steel industry has been radically reshaped around the globe. India's high quality ore, growing domestic demand and more liberal attitude toward foreign investments has brought it within the sights of the global steel majors, including POSCO of Korea.

National Council for Applied Economic Research (NCAER) was approached to carry out a Social Cost Benefit Analysis of the POSCO project, which allows an assessment of the impact of a project on the national economy.

The economic impact of the project is estimated at USD 2.5 billion at the test discount rate of 12 per cent. POSCO has two alternatives. It could either stop the project at the iron ore mining stage, or, it may go on to use the mined ore for making steel. Therefore, we study the impact of both options, by calculating the Output and Employment Multipliers, taking into account backward linkages of the iron ore and steel sectors.

The Output Multiplier for iron ore is 1.40 while that for steel is 2.36. In other words, every Rs 1 lakh worth of output in the iron ore sector would result in Rs 1.4 lakh of output (including the Rs 1 lakh output of iron ore) in the economy. Similarly for each Rs 1 lakh output in the iron and steel sector, the economy would derive an output of Rs 2.36 lakh. The Employment Multiplier for iron ore is 0.35 and for steel it is 0.69. In other words, for every Rs 1 lakh of output, 0.35 man-year of employment is created in the case of iron

ore while it is 0.69 man-year for every Rs 1 lakh output of crude steel. Therefore, in terms of both output and employment, steel has a larger impact.

Table III: Orissa State-Level Output and Employment Multipliers

These multipliers imply that Posco's iron ore project would create an additional employment of 50,000 person years annually for the next 30 years. This translates into Rs 20 billion of additional output for Orissa. In terms of value addition, the iron ore project would contribute 1.3 per cent to Orissa's State Gross Domestic Product (or SGDP) by 2016-17. On the other hand, if POSCO puts up the steel project to utilise the entire iron ore mined in the State, the impact on the economy would be much greater - 8,70,000 person years of additional employment each year over the next 30 years.

This translates into Rs. 298 billion of additional output for Orissa. In terms of value addition, the steel project would contribute 11.5 per cent to Orissa's SDP by 2016-17.

Having established that steel production has a much larger impact on the economy in comparison to iron ore extraction, the next step would be to compare Posco's Finex technology for steel production with the standard Blast Furnace technology. The comparison is done using Least Cost Analysis (LCA) at economic costs using conversion factors to convert financial costs into economic costs. In doing the LCA, we take into account the depletion premium for high and medium grade iron ore. The economic cost of iron ore is derived by increasing the cost of extraction by the depletion premium which is the average incremental cost of depletion premiums computed year wise. Even though Posco's Finex technology turns out to be the least cost option, we would still have to check whether it is an economically worthwhile project.

In other words, we work out its EIRR and accept the project if it turns out to be greater than the hurdle rate of 12 per cent. The EIRR (Economic Internal Rate of Return) for the POSCO project works out to 16.6 per cent. Sensitivity Analysis indicates that even in the worst case scenario — sales 10 per cent lower than estimated — the EIRR at 13.9 per cent would remain above the hurdle rate of 12 per cent.

This implies that apart from being the least cost technology, Posco's project would yield attractive returns. The economic impact of the project is estimated at \$ 2.5 billion at the Test Discount Rate of 12 per cent. There is also a proposal for the construction of 6.7- km coastal road from Paradip to POSCO-India's SEZ site. POSCO-India also plans to construct 11- km access roads from the SEZ to NH-5A and SH-12. This connectivity would reduce the distance from NH-5A and SH-12 to the SEZ. It would make power receiving

equipment like towers, cables and transmission hardware in the DTA.

POSCO-India would build an "Indian township" and a "Korean township" with modern amenities to house all employees in the SEZ and the DTA. Thus, it would be beneficial for the state economy to offer incentives to lure investments to set up steel plants over the alternative of collecting the depletion premium of US\$ 27 per tonne of ore exported from the state for processing elsewhere.

Thus the Social cost benefit Analysis for POSCO shows that it would be beneficial for the state economy to allow POSCO to start its production in Orissa as soon as possible. This needs the proactive approach of the state government as well as the central government.

Conclusion

India is going through a transitional phase. Till now, environment approvals weren't taken seriously, and most companies took it for granted that once they got the approval they could expand capacities without having to take further approvals. Once people get into the mould of following rules and regulations that have been laid down till the last digit, things will work out.

Other than environment, the big issue is land acquisition. In India, land acquisition laws are very archaic and a new land acquisition law is awaiting Parliament's approval. The government has taken too much time to clear that.

The resettlement and rehabilitation policies of the states like Orissa, Jharkhand and Chhattisgarh which are rich in mineral resources are still in evolving stage. Till the government comes out with improved legislation on this issue, it would be difficult for companies to perform.

If the Greenfield projects and the upcoming FDIs are delayed due to the above reasons and the unprofessional attitude of the government machinery, not only the mining sector, all other investments will slow down. It could become a bottleneck for India to sustain an 8 per cent GDP.

References

- Ahuja, Sunil – "Greenfield steel projects in Bengal to require 23,950 acres", NDTV Profit
 Ben, Gregory – "Steel Projects and its issues" – An Indian Perspectives, CNN,,2010.
 Chakraborty, Aruna – "India's Future – Greenfield Projects " , 12 Aug,2010, The Hindu
 Pillay Amritha - Will Greenfield steel projects ever see the light of day ? CNN- 2010
 Nerurkar, HM - India needs Greenfield steel projects, 2010, Times of India
 Reuters - NALCO and Other Four Indian State Run Firm's Consortium and their contributions to Greenfield Projects in India.
 Roy ,Vijay C - Hyderabad-based IIL to set up Greenfield project, 2010,The Hindu
 Venu, Ramesh, - " Now, a steel constraint" , . The Economic times