

# Raw Material Insecurity to Hit Indian Industry

- Steelworld Research Team



**D**espite ample of mineral reserves available in the await exploration, steel mills in India are facing acute shortage of raw materials resulting into rising dependence on imports steadily.

Till few years ago, a large quantity of coking coal was imported to feed steel mills. Most of domestic coking coal reserves being unmatched the quality required for steel mills, Indian ferrous metals industry was feeding their plants with over 80% of imported coking coal. Other raw materials including iron ore and ferro alloys, however, were excavated locally to meet domestic demand and also a huge quantity of these raw materials was exported.

But, the scenario changed in the last few years. The Supreme court ban on mineral excavation in three major states i.e. Karnataka, Goa and Odisha, has brought the entire industry to stadstill. India today imports even iron ore and ferro alloys to meet its domestic requirements. Their exports have diminished. Domestic steel mills's cost of production has ramped up rapidly.

## Hurdles

Steel production is a raw material intensive process. For every tonne of steel production in the blast furnace route, the producer requires somewhere between 1.5 to 1.7 tonnes of iron ore and around a tonne of coking coal. Consequently, the dynamics between prices of the finished product and raw materials is a key determinant of the profitability of the steel producer.

The Indian iron ore industry has faced severe difficulties in the last 3-4 years. After having reached a peak production of around 220 million tonnes (mt) during FY10, iron ore production declined sharply every year since then. The 3 year CAGR between FY10 and FY13 has been around -9%. The production during April-October of FY14 at 80.4 mt is also around 13% lower compared to the production in the corresponding previous, with production in each month being lower than that in the corresponding previous. This reflects a further slowdown over the 11% decline suffered in annual production in FY13. This declining

trend in iron ore production in the country has restricted the supply of ore for domestic steel makers without captive mines, thus impacting their capacity utilization levels and also necessitating imports in FY13. The lower production was a result of various restrictions<sup>2</sup> imposed on the mining activities in the key iron ore producing states of Odisha, Karnataka and Goa. Compared to FY10, when there were 319 reporting mines all over the country, the number of reporting mines itself reduced to 270 by FY13.

Although mine production somewhat improved in Odisha in H1FY13 following production cuts in FY12, a series of notifications issued by the Odisha State Government during H2FY13 resulted in substantial uncertainties and led to production cuts. Mining activities, however, picked up to an extent in H1FY14. Nonetheless, there are uncertainties regarding the outcome of the MB Shah Commission investigation. Although the findings and the recommendations of the same have been submitted to the Government of India, final outcome of the investigations are

uncertain as of now. However, ICRA notes that any significant restriction imposed on mines in Odisha may at least partially offset potential gains from a resumption in mining in Karnataka going forward.

In Karnataka, although the Supreme Court (SC) lifted the ban on Category A mines from September 2012, and on Category B mines from April 2013, and allowed these miners to resume mining operations after fulfilling the prescribed pre-conditions, actual increase in mining output is yet to take place. In addition, the SC has imposed a mining cap of 30 mt on the total production from the state, thus limiting the possibility of any large scale mine expansions in the medium term. This would continue to impact steel mills in the state, where the current ore requirement is estimated to be around 35 mt per annum (mtpa). Given the complete shutdown of mining activities in Goa following a ban imposed by the Supreme Court in October 2012, iron ore production from Goa saw a YoY decline of 50% to around 17 mt in FY13. Since the ban is continuing at present and the next hearing is scheduled in February 2014, negligible production from Goa is expected during FY14.

Whereas iron ore lumps mined in the state of Odisha was mostly used by the domestic steel makers, given its lumpy nature and high iron content, the iron ore mined in Karnataka was largely exported, given its lower iron content and higher percentage of fines generation. Iron ore from Goa was almost entirely exported, given its low iron content and absence of large scale merchant beneficiation or pelletization facilities in India. However, as discussed earlier, the mining bans mainly affected the production from the chief iron ore exporting states of Karnataka and Goa, thus reducing availability of iron ore for exports. Imposition of a high 30% export duty and high railway freight rates for iron ore meant for exports have made exports less attractive. Even at the current realizations of around USD 132/MT cfr at China for iron ore fines with 62% iron content and a value of INR at around Rs 62/

### RAW MATERIAL REQUIREMENT FOR PROJECTED CRUDE STEEL PRODUCTION IN 12TH FIVE YEAR PLAN (MT)

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Crude Steel Production	73.70	85.90	94.50	101.00	114.50	125.90
Pig Iron For Sale	6.13	6.88	7.66	8.54	9.38	10.00
Iron Ore	115.03	135.70	149.43	166.66	185.25	206.18
Coking Coal	43.25	52.29	57.91	67.49	77.23	90.16
Non-coking Coal (for Sponge Iron Sector)	35.31	37.86	36.50	34.71	33.92	28.41
PCI Coal	1.95	2.40	2.66	3.20	3.83	4.54
Manganese Ore	2.47	2.96	3.40	3.98	4.57	5.19
Chromite	2.64	2.90	3.19	3.52	3.93	4.31
Ferro Chrome	0.56	0.61	0.67	0.74	0.84	0.92
Ferro-manganese	0.38	0.43	0.47	0.52	0.57	0.63
Silico Manganese	0.89	1.03	1.13	1.25	1.38	1.51
Ferro Silicon	0.23	0.26	0.28	0.31	0.34	0.38
Refractories		1.29	1.42	1.56	1.72	1.89

USD, exports of iron ore fines results in lower profits vis-à-vis domestic sales. Additionally, creation of pellet capacities gradually has also consumed an increasing amount of iron ore fines within the country, which has somewhat supported the domestic prices of fines.

#### Pruning Exports

Given the current economic disadvantage that exporters face, iron ore exports are unlikely to go up even if the availability of the same improves. The domestic industry has exported only around 7 mt of iron ore in H1FY14, the lowest in the last several years on an annualised basis. Although the mining ban still exists in Goa, the SC recently allowed the auction of 11 mt of iron ore fine dumps lying at various mines in the state. However, given the rather low grade of these dumps and China's (largest importer of fines globally) stricter environmental norms emphasizing cutting down on use of low grade polluting iron ore fines, there is considerable uncertainties whether these can lead to any meaningful increase in exports in H2FY14.

Growth in Chinese steel production during CY13 also fuelled a growth in iron ore imports by the country, which grew by 10% YoY. A 15% YoY growth in the monthly iron ore imports in September 2013 at around 74.5 mt led to some buoyancy in the sea-borne iron ore prices, with 63.5% Fe reaching around USD 140 per tonne on cfr basis at Chinese ports. Although imports declined to around 67 mt in October 2013, prices of ore have remained largely range-bound, hovering around USD 135 per tonne since then. However, with substantial newer capacities likely to be commissioned in Brazil and Australia during CY2014, and a slower steel production growth expected in China, a supply overhang in iron ore could emerge, thereby depressing prices in the medium term.

### IRON ORE RESOURCES AS ON APRIL 1, 2010 (MT)

Grade	Reserves	Remaining Resources	Total Resources
Hematite	8093.5	9788.6	17882.1
Magnetite	21.8	10622.3	10644.1
<b>Total</b>	<b>8115.3</b>	<b>20410.9</b>	<b>28526.2</b>

Source : Indian Bureau of Mines

It is to be noted that international iron ore prices have declined to around USD 126 per tonne in January 2014.

The lower production of iron ore since July-August, 2011 curtailed iron ore supply in the domestic market and initially led to an increase in domestic iron ore prices. A large number of steel makers dependent on the ore mined in Karnataka scurried for iron ore resources elsewhere, which kept domestic prices buoyant. Subsequently, given the weakness in the demand from end user steel industry, and a crash in the iron ore prices in the international market, domestic ore prices also started declining, which continued till H1 FY14, as indicated by the NMDC declared iron ore prices. However, in recent months, a combination of an improvement in demand from Indian steelmakers and an increase in iron ore prices in China has lent some support to domestic prices as well. NMDC increased prices of its lump ore by Rs. 100/tonne in October 2013, followed a subsequent hike of Rs. 200/tonne in December 2013. However, despite these increases, domestic iron ore prices have remained lower than the levels one year back, given that production growth of steel in the first nine months of FY14 has been largely driven by the production growth from two large players with captive sources of iron ore, with the growth from non-integrated players being negligible. In addition, with the

commissioning of a number of merchant pellet plants in the country, iron ore lumps are also facing competition from the competitively priced iron ore pellets. ICRA believes that with the higher demand for fines from these pellet plants, the gap between lump and fine prices in the country would reduce to an extent in the medium to long term.

China imported around 7.25 mt of coking coal in September 2013, up 15% from August and three times higher than September 2012. This led to a firming up of prices of coking coal in the spot market in September 2013, with prices reaching around USD 150 per tonne, fob Australia, towards the end of the month. This resulted in the Australian coking coal producers entering into contracts with Japanese steel makers at USD 152 per tonne; fob Australia, for the premium variety coking coal for Q3FY14. However, coking coal prices in the spot market declined in Q3FY14, prompting contract prices to be fixed at USD 143/ tonne for Q4FY14, which is around 6% lower than that in the previous quarter. Although the global coking coal contract prices declined in Q3FY14 compared to Q1FY14, the benefit of the same for India blast furnace players, who are largely dependent on the imported coking coal, would largely be offset by the depreciation in the value of the INR in the intermediate period. However, a further decline in prices of coking coal in Q4FY14

PROJECTION OF DOMESTIC DEMAND (MT)				TYPEWISE COAL RESOURCES (BT)				
	GDP Growth Rate (%)	2016-17	2019-20	Type	Category			Quantity
					Proved	Indicated	Inferred	
Crude Steel Production	6.5	125.9	154	Prime Coking	4.62	0.70	0.00	5.31
	7.0	125.9	157					
	7.5	125.9	159					
	8.0	125.9	162	Med Coking	12.57	12.00	1.88	26.45
	8.5	125.9	164					
	9.0	125.9	167					
Iron Ore Requirement	6.5	206.2	252	Semi Coking	0.48	1.00	0.22	1.71
	7.0	206.2	257					
	7.5	206.2	260					
	8.0	206.2	265	Non-Coking	95.74	123.67	31.49	250.90
	8.5	206.2	268					
	9.0	206.2	273					
				Tertiary Coking	0.59	0.10	0.80	1.49
				<b>Total</b>	<b>114.00</b>	<b>137.47</b>	<b>34.39</b>	<b>285.86</b>

DEMAND FOR COKING AND NON-COKING COAL FOR 12TH PLAN (MT)						
	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Crude Steel Production	73.7	85.9	94.5	104	114.5	125.9
Coking Coal Demand	43.2	52.3	57.9	67.5	77.2	90.2
Production of Coal Based Sponge Iron	21.0	21.2	20.3	19.2	18.7	15.3
Non Coking Coal Demand for Coal Based Dri And Corex Plants	35.3	37.9	36.5	34.7	33.9	28.4
Pci Coal Demand	1.9	2.4	2.7	3.2	3.8	4.5

could favourably impact the profitability of the Indian blast furnace players in the quarter, given the relative stability that the INR has seen in recent times. Table 2 captures the effect of INR depreciation and reduction in contract prices on the landed cost of coking coal for Indian players.

### Ferro-Alloys

Ferro alloys are the principal deoxidising agents in steelmaking and an important alloying element used for the production of ordinary mild steel as well as alloy steels. Depending upon the product quality envisaged, the requirement of ferro-alloys varies widely. The ferro-alloys are primarily classified into two categories – bulk ferro-alloys and noble ferro-alloys. Indian producers lean heavily towards the production of bulk ferro alloys (~99% of the total production by volume). The major components in the bulk ferro-alloy series are silico manganese (~44% by volume of bulk ferro-alloys) followed closely by ferro chrome & charge chrome (~36% by volume) and ferro-manganese (~15% by volume). Ferro silicon magnesium contributes the largest in the share of production of noble ferro-alloys (~55% by volume of noble ferro-alloys), followed by a distant second ferro-aluminium (~23% by volume).

The manganese ferro alloys consists of the following three major products: Silico

manganese (SiMn, 60 - 77% manganese content), high carbon ferro manganese (HC FeMn, 65 - 79% manganese content) and refined ferro manganese. The demand and prices of ferro alloys depend on the production and consumption of steel which in turn depends upon its user industries.

### Margins Under Pressure

Given a moderate increase in domestic steel prices towards the end of Q2FY14, the consolidated operating income of the industry (a universe of 7 large Indian companies in the steel sector, together accounting for over 40% of the domestic capacity) showed a moderate increase during the quarter. Industry operating profits however grew at a slower rate, leading to a compression in operating margins, which declined QoQ from 20.4% in Q1FY14 to 19.83% in Q2FY14. However, net profitability for the industry improved on a QoQ basis, on account of the lower forex losses suffered by various players. Notwithstanding such improvement, net margins of these players have remained depressed, given the high depreciation and financial charges on the back of substantial capex incurred by almost all players. While many of the large players are well capitalised because of their high net worths, weak profitability, coupled with the large debt contracted to part fund the above capex led to progressive weakening of

coverage ratios over the years.

### Conclusion

The near term outlook on the profitability of Indian steel players however has improved, given the soft price trends of key raw materials. A further price hike announced by the industry in January 2014 should also help, provided a weak steel market can absorb such a price hike. The steel industry being highly raw material intensive, ICRA expects the near term benefits from lower raw material costs to more than neutralise the adverse impact of a low volume growth, even if a part of the benefits of lower costs are passed on to customers to protect sales volumes. Over a longer term, volume growth however would be critical, given that substantial fresh capacities are likely to be commissioned in the next two years. Unless demand conditions improve significantly, overall capacity utilisation levels and profitability of players would be impacted. Due to factors such as continuing weakness in demand conditions since FY12, limited iron ore availability due to regulatory restrictions, which led to significant cost pressures, largely debt-funded nature of the capital expansions which resulted in leveraged balance sheets and reduced net profitability, financial performance of steel companies has been adversely impacted in recent years.