CAPTIVE MINES FOR IRON AND STEEL INDUSTRY :

a boon or a bane?

OCTOBER, 2020

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PREFACE

The concept of captive mines for steel plants is endemic to India only, with its origin in the pre-Independence era. Unlike India, leading steel producing countries like Japan, South Korea were able to develop their steel industry without any captive mines by importing every tonne of raw material. Thus, raw material availability in a country, much less the captive mines, is not the prime consideration to develop steel industry; rather it is the demand for steel which is prime reason to set up the steel plant(s).

The policy of captive mines to steel plants has affected the growth of a viable mining industry. It has brought no benefit to the down-stream users of steel as inter-sectoral subsidy from mining sector to steel sector is not passed on to them and hence there are no multiplier benefits.

In this age of specialization, full potential of mining is realized only when it is developed as standalone industry. Independent development of mines helps to explore new resources, beneficiate lower grades and most importantly create surplus raw material capacity, both to meet domestic demand as well as earn foreign exchange by exporting the grades which are not required by domestic steel / metal companies.

FIMI has analysed and studied the subject in detail and has brought out a study: ***"Captive Mines for Iron and Steel Industry: a boon or a bane?"***. The study has revealed how the grant of captive mines has come in the way of exploration, optimum utilisation of resources, scientific and zero-waste mining, etc.

I am sure that this publication will immensely benefit the Government of India as well as State Governments and decision makers so as to prioritize focus on developing a stand-alone mining industry.

New Delhi
12th October, 2020

(R. K. SHARMA)
SECRETARY GENERAL

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I – ORIGIN OF THE CONCEPT

The concept of captive mines for steel plant has its origin in India and started with the efforts of visionary Mr. Jamshetji Nusserwanji Tata who was searching for raw materials for the steel plant which he wanted to set up. Tata Iron and Steel Co. Ltd. (now known as Tata Steel) which he founded but established by his son Sir Dorabji Tata on 26th August, 1907 at Jamshedpur is an area surrounded by raw materials. This was followed by Sir Rajen Mookerjee (later his son Sir Biren Mookerjee joined) who promoted Indian Iron and Steel Co. and located its plant at Burnpur in Asansol in West Bengal and incorporated it on 11th March, 1918. The promoters of both these companies scouted the country for raw materials and set up steel plants near about them. They took areas on lease and explored and developed them. After Independence, Government of India followed these examples and granted captive mines to various units of SAIL as and when they came up. Thereafter it became a fashion to seek captive mines for steel and other metals products / plants in India.

II – INTERNATIONAL PRACTICE

2. Outside India, we do not find steel industry having been developed based on captive mines; in fact, full potential of iron ore resources is realized only when it is developed as standalone industry. The steel industry developed in (resource-deficient) countries where there was / is demand for the metal: examples being US, Western Europe, (post-World War II) Japan, South Korea and now China (they mostly have low grade). On the other hand, resource-rich countries (such as Brazil, Australia, India, South Africa) having all (or most of) the raw materials were not able to develop sufficient steelmaking capacity. India does have sizeable steel production but not commensurate with the size of its resources and / or population.

3. Major steel companies in the world (such as in EU, North America, Japan, South Korea and China) do not have captive / controlled mines. However, they ensure their supplies by entering into long-term supply contracts with price negotiations on monthly / quarterly / annual basis and equity participation in iron ore mining companies. After Chinese demand came and prices soared and supplies not keeping pace with demand, the European and other steel plants scouted for iron ore mines in African countries to ensure iron ore supplies at reasonable prices consistently. Following table brings out production, export and import trade, about 85% of which is sea-borne.

Table – I
Iron ore: World Production and Export-Import Trade

(million tonnes)

Year	Production	Exports			Imports	
		Total	Brazil	Australia	Total	China
2000	**959.31**	**499.03 (52.02%)**	160.11	157.33	**510.78 (53.24%)**	69.71
2005	**1,314.02**	**745.67 (56.75%)**	225.13	238.76	**752.48 (57.27%)**	275.26
2010	**1,876.72**	**1,123.63 (59.87%)**	310.93	427.38	**1,071.80 (57.11%)**	618.91
2011	**1,945.10**	**1,149.95 (59.12%)**	330.83	465.62	**1,140.38 (58.63%)**	686.74
2012	**1,953.61**	**1,213.86 (62.13%)**	326.51	524.05	**1,206.33 (61.75%)**	745.43
2013	**2,004.60**	**1,341.34 (66.91%)**	329.63	613.37	**1,276.19 (63.66%)**	820.17
2014	**2,103.83**	**1,485.85 (70.63%)**	344.38	754.30	**1,435.34 (68.23%)**	933.10
2015	**2,057.70**	**1,510.84 (73.42%)**	366.19	810.52	**1,465.07 (71.20%)**	953.37
2016	**2,112.80**	**1,584.62 (75.00%)**	373.96	854.44	**1,528.12 (72.33%)**	1,024.70
2017	**2,212.91**	**1,638.20 (74.03%)**	383.53	872.75	**1,577.96 (71.31%)**	1,075.39
2018	**2,227.99**	**1,652.05 (74.15%)**	394.24	887.43	**1,586.25 (71.20%)**	1,064.56
2019	**NA**	**NA**	340.43	836.22	**NA**	1,068.94

Source: World Steel Association, Brussels and Tex Report, Japan
Note: Figures in parenthesis show percentage to the total production

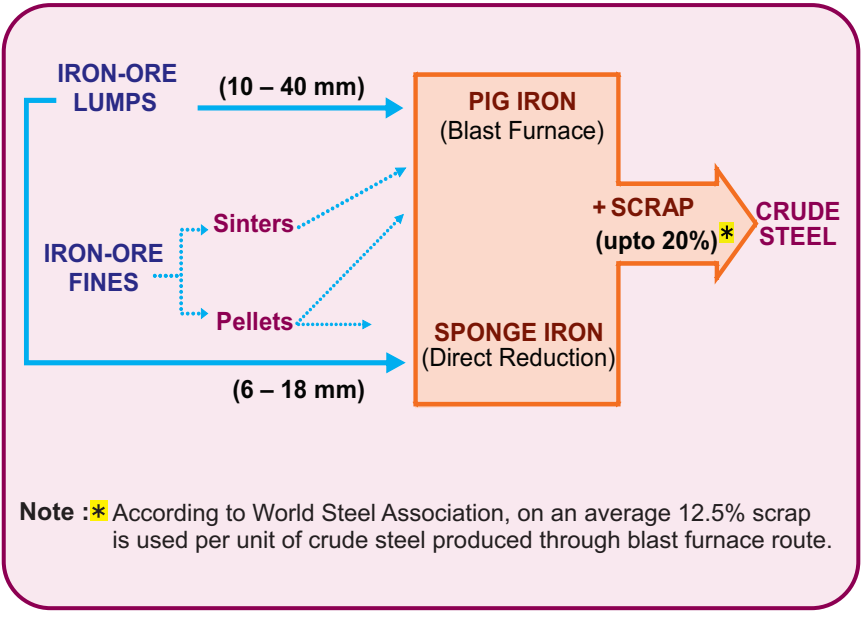
III – MINING : A SPECIALISED VOCATION / DISCIPLINE

4. The reason, why steel (or for that matter aluminium) plants do not have captive mines is the fact that mining is a separate discipline (vocation). The mineral resources buried deep down in the earth, unless extracted, have '*no value*'. The job of the miner is to locate them geologically with latest technologies and then extract them with appropriate state-of-the-art techniques. Thus a miner creates value out of '*no value*'. However, all that is extracted from the earth (run-of-mine) is not saleable as it is. The ore has to be sorted out, washed (if necessary) and sized as per the requirements of the buyer. A miner thus adds value to the value created by him. This is a full-fledged discipline encompassing all branches such as geology, mining, mechanical and electrical engineering, etc.

5. To *add* value to the value created by a miner is done by metallurgist who converts iron ore (along with other materials like manganese ore, chromite, limestone, dolomite, ferro-alloys, etc.) into metal (crude steel / pig iron). To *further add* to the value added by a metallurgist is to make down-stream products like white goods, automobiles, house-hold utensils, construction / housing etc. which are independent subsequent activities / disciplines.

6. Following is the schematic diagram showing the use of iron ore lumps and fines:

Chart – I
Use of Iron Ore Lumps and Fines



Note : * According to World Steel Association, on an average 12.5% scrap is used per unit of crude steel produced through blast furnace route.

7. If a miner is forced to go for metal making (value addition), he will prove be a bad metal-maker. Conversely, if a metal-maker seeks a captive mine, he will prove to be a bad miner. This is proved by the fact that BHP Billiton set up a steel plant in Newcastle in Australia but had to abandon the project in 1999 once they realised that steel plant was not their area of specialisation. In India also, NMDC has accorded in principle approval to demerge its Iron & Steel Plant (NISP) at Nagarnar, Chhattisgarh from its mining activity.

8. A professional, whole-time iron ore miner would certainly produce more iron ore at less cost compared with a captive miner. He is more likely to concentrate on his core competence that is mining and bring about technical and technological improvements that will increase efficiency and reduce cost. That will enable him to get correct and competitive market price for his product and contribute to the development of a robust and healthy mineral industry. In fact, the system of captive mining has been one of the major reasons why India, unlike other resource-rich countries such as Australia, Canada, Brazil and South Africa etc., has not been able to create world-class mining companies that would have ensured sustainable development of resources and other associated benefits.

9. This is an age of specialization: one has to choose one's area of specialization. In India captive mines to steel plants have led to distortion of market and affected the growth of robust stand-alone iron ore resource companies. Just as iron ore is a raw material to steel plant, crude steel is a raw material to down-stream industries. Each has to operate within their area of specialization.

IV – REPERCUSSIONS

10. The policy of captive mines to steel plants has led to serious repercussions and has affected the growth of a viable mining industry:

- no benefit to the down-stream users of steel as inter-sectoral subsidy from mining sector to steel sector is not passed on to them and hence there are no multiplier benefits.
- along with captive mines, subsidized land for steel plants has kept the Indian steel industry perpetually in animated oxygen tent unable to withstand world competition.
- subsidies in the form of captive leases or concessional land have hidden their inefficiencies and has covered up their windfall profits.
- growth / continuation of inefficient steel sector being subsidized by the mining industry at the cost of its own growth has affected stand-alone iron ore mining companies.
- has made iron ore unattractive to exploration companies.
- has deprived the country of world-class stand-alone resource mining companies which could have led to sustainable development of iron ore resources with attendant benefits such as development of infrastructure and socio-economic growth of tribal and backward areas.
- has excluded those companies with a proven track record and skills in mine development.

11. The grant of captive mine could have helped steel plants to promote steel usage because of its cheaper costs. Even when there was a surge in demand for steel, the steel plants have failed to rise to the occasion as that would have deprived them of maximum profit. The gap in demand and supply was thus filled by Electric Arc Furnace (EAF) and Induction Furnace (IF) units so much so that they constitute about 42.31% of the total domestic crude steel production in 2019–20 (out of 109.21 million tonnes). The IF units do not require iron ore and consume scrap and sponge iron.

12. In fact, grant of captive leases to a steel plant has led to either inefficiency or windfall profits such as in the case of TISCO which resulted in acquiring loss-making British steel company Corus on 20th October, 2006 at a cost of US$ 8.1 (£ 4.3) billion which provided jobs and investment in a foreign country rather than in India. If this surplus money had been utilised in reviving Gopalpur Steel Plant for which Odisha Government gave land at concessional price and captive iron ore mine to TISCO, it would have added to domestic steel production and created more jobs. Corus very shortly became a drain on the profitability of Tata Steel.

13. The captive mines also resulted in perpetuating inefficiency in SAIL where crude steel production hovers around 13–16 million tonnes for the last about 10 years despite having spent thousands of crores on modernisation. Captive mines could not also save IISCO which in the course of time closed, leaving 25–30 million tonnes of iron ore fines at its Gua mine head. The domestic consumers of steel thus get no benefit and procure steel at international (sometimes more) price.

14. It is also ironic in the sense that despite all the raw materials (except adequate quantity of coking coal) available in the country at cheaper than international prices and in abundance, which allows steel industry to indulge in profligacy of choosing best grade, Indian steel industry is not competitive against steel even from countries like Japan and South Korea who import every tonne of raw material. In order to safeguard Indian steel industry against international competition and to protect it, Government of India imposed import duty @ 15% on steel as per Indian Customs Tariff, in addition to other protectionist measures including minimum import price, anti-dumping and countervailing duties, Steel Import Monitoring System (SIMS), preference to domestically manufactured steel products in Government procurement etc.

15. Captive mining also creates inefficiency in processing. A steel producer with captive mines, for example, benchmarks his product against import prices, set by companies that have no captive iron ore or coal. As a result, they perform much lower value addition by converting the inputs they get at subsidised rates into their final products that their foreign producers sell at the same price without subsidy in their inputs. Additional complications arise in India as some steel producers have captive mines while other do not have captive facility. Companies which have captive mines either have become inefficient or have made windfall profits. At the same time steel companies which do not have captive mines clamour that they are not able to get their raw materials (iron ore) and charge high prices for their products.

16. The lesson is quite clear that availability of captive sources of raw material supply is not a necessary condition or a prop for increasing domestic steel production at competitive cost. In fact, the high tariff on the import of steel even from countries, who depend entirely on imported raw materials has provided cartel-like situation when the steel plants resort to increasing the price whenever there is slight revival of demand. However, it is worth investigation that despite all round protection and lower raw material prices, steel industry has India's largest share of non-performing assets (NPAs).

V – CAPTIVE MINES IN NEW DISPENSATION

17. The Mines and Minerals (Development and Regulation) Act, 1957 which was amended by MMDR (Amendment) Act, 2015 and made effective from 12th January, 2015 *inter alia* made auction of resources as a prime condition for grant of prospecting-license-cum-mining lease (PL-cum-ML) and mining lease. Following the MMDR (Amendment) Act in 2015, Mineral (Auction) Rules, 2015 and Minerals (Transfer of Mining Lease Granted Otherwise than through Auction for Captive Purpose) Rules, 2016 were promulgated. The Rule 6(4) of Mineral (Auction) Rules, 2015 provides :

> *"Where the State Government reserves a mine or mines for any particular specified end use, the minerals extracted under the mining lease shall,-*
>
> *i. be utilised solely for the specified end use; and*
>
> *ii. not be sold or transferred or otherwise disposed of, either directly or indirectly".*

18. However, on 30th November, 2017, a proviso was added to this Rule applicable to those auctions which were to take place on or after this date:

> "*Provided that quantity of mineral equivalent to twenty five per cent of total mineral excavated in the previous financial year, for which end use was specified can be sold in the current financial year*."

19. There is now a proposal to increase this limit for sale of iron ore by auctioned captive mines to 50%. The proviso thus goes counter to the very concept of captive mines. If this is allowed, it will lead to distortion of market and make a mockery of the concept of captive mines.

20. Further, 5 blocks out of 24 auctioned blocks in Odisha were reserved as captive blocks and competition was restricted only for companies producing sponge iron, pig iron, steel and / or pellets. As a result, effective price discovery was restricted in auction of these blocks. If these captive blocks are allowed to sell ore, it will forfeit the very purpose of restricting the non-captive players from auction, resulting in loss to the exchequer which would have accrued from increased competition in auction.

21. Rule 2(1)(e) of the Minerals (Transfer of Mining Lease Granted Otherwise than through Auction for Captive Purpose) Rules, 2016 defines:

> *"used for captive purpose" means the use of the entire quantity of mineral extracted from the mining lease in a manufacturing unit owned by the lessee".*

Rule 4(3)(d) emphasizes that one of the conditions for transfer of captive mining lease granted otherwise than through auction would be that:

> *"the transferee shall ensure that the entire quantity of mineral including rejects or tailings or slimes or dumps or overburden extracted from the mining lease shall be used exclusively for captive purpose and shall not be sold or exported".*

22. This sort of distinction between existing and auctioned mines goes counter to the concept of sustainable resource development. Dilution of 25% or 50% of the ore produced in auctioned captive mines will benefit the steel industry and disturb the market mechanism.

VI – PROTECTION TO DOMESTIC STEEL INDUSTRY HAS HURT DOMESTIC CONSUMERS AND SUBDUED USAGE OF STEEL

23. According to World Steel Association (WSA), the average consumption of iron ore per tonne of 'hot metal' is 1.37 tonnes. On the other hand, Indian steel industry on an average consumes 1.65 tonnes of iron ore per tonne of hot metal (National Steel Policy, 2017) and calculates its requirements on that basis. Average grade of iron ore consumed by Indian steel industry is +62% Fe whereas the world's average grade is 60% Fe. This is despite the fact that Indian steel plants are as modern as any steel plants abroad. This selective buying has resulted in unsold stockpile of iron ore to the tune of 162 million tonnes (including 94 million tonnes in Odisha and 43 million tonnes in Jharkhand) at mine-heads in the country as on 31st March, 2019 which the steel industry neither purchases nor allows mining units to export.

24. Not only this, while working out the price, the Indian steel industry takes international price as base whereas it gets high grade raw materials at comparatively lower prices, either from domestic sources or captive mines (where it is only transfer price). The consumption of high grade raw material at lower than the international price, coupled with cheaper labour costs should give more and better quality steel at a competitive price. The domestic steel industry hides these vital information and reaps windfall profits.

25. The high cost of steel in India has deprived domestic consumers from common usage of steel, which is the prime reason for low per capita consumption of steel in India at 74 kgs compared to 229.3 kgs globally:

Table – II
Top 10 Steel Producing Countries in 2019
(covering 84% of global crude steel production)

Country	Rank	Crude steel production in 2019 (million tonnes)	% of global production	Per capita finished steel consumption in 2019 (kilograms)
China	1	996.3	53%	632.9
India	**2**	**111.2**	**6%**	**74.3**
Japan	3	99.3	5%	498.1
USA	4	87.8	5%	296.8
Russia	5	71.9	4%	298.2
South Korea	6	71.4	4%	1039.0
Germany	7	39.7	2%	417.9
Turkey	8	33.7	2%	313.4
Brazil	9	32.2	2%	97.8
Iran	10	25.6	1%	223
Others	-	299.6	16%	-
World		**1868.7**	**100%**	**229.3**

Source: World Steel Association, Brussels: World Steel in Figures, 2020

26. One tonne of steel consumption leads to the use of three tonnes of cement and other raw materials. Low per capita steel consumption in India results in lesser per capita consumption of cement and other metals. If the steel usage is promoted in the country by removing import duty on steel, the domestic consumer will get cheaper and better grade of steel. This will lead to massive construction activities (housing), infrastructure development (roads, bridges and ports) and boost automotive, railway and shipping sectors. Removal of the import duty will also push the complacent domestic steel industry to innovate and become more efficient to produce steel at a competitive price.

27. This inefficiency alongwith artificially inflated steel price in India has led to higher cost of infrastructure and construction projects both in the private and public sector. Further in case of all Government procurements, there is a preference to domestically manufactured steel products at a price higher than good quality imported steel products. It means that for the sake of benefiting the steel industry, the exchequer and taxpayers have to pay more, thereby leading to subdued demand and stunted economic growth.

28. The subdued demand for steel because of COVID-19 now and earlier because of the high cost of domestic steel seems to be the reason for IISCO's 2.5 million tonne plant at Burnpur dedicated by the Hon'ble Prime Minister on 10th May, 2015 not coming on stream so far. Even the fate of NMDC's 3 million tonne steel plant which started construction in 2009-10 at Nagarnar (Chhattisgarh) is not much different. India's record of availing an opportunity has been poor as can be seen from the trend of production of steel in India vis-à-vis China and Japan:

Table – III
Crude Steel Production : India vis-à-vis China and Japan

(million tonnes)

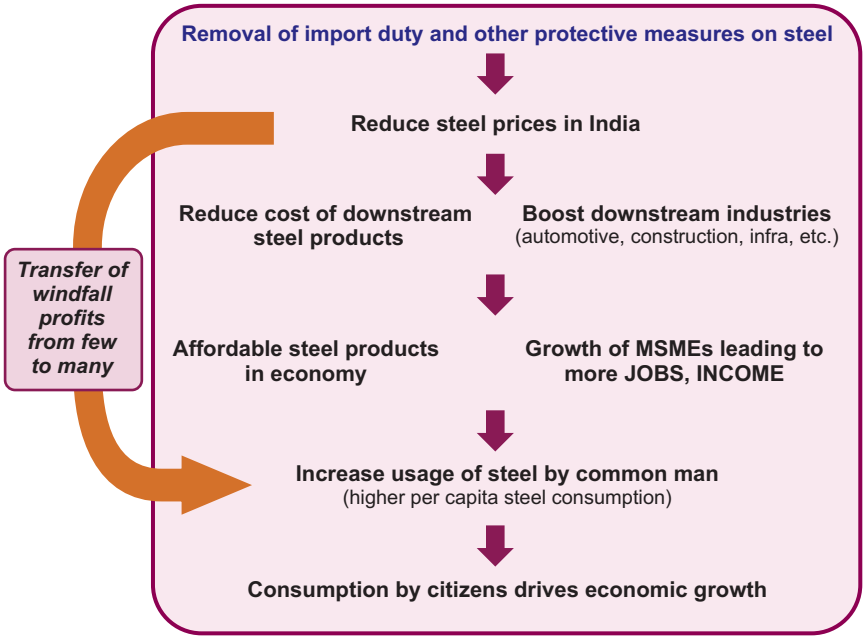
Year	India*	China	Japan
2000	26.87	128.50	106.44
2005	45.46	353.24	112.47
2010	70.67	638.74	109.59
2011	74.29	701.96	107.60
2012	78.42	731.04	107.23
2013	81.69	822.00	110.59
2014	88.97	822.30	110.66
2015	89.79	803.82	105.13
2016	97.93	807.60	104.77
2017	103.13	870.85	106.66
2018	110.92	920.26	104.31
2019	109.21 **(prov.)**	996.30 **(prov.)**	99.30
CAGR	**7.66%**	**11.38%**	**-0.36%**

Source: For India: Ministry of Steel;
For China and Japan : World Steel Association, Brussels
Note: * : For India : Financial year

29. The Government of India has ambitious plan to achieve 300 million tonnes of crude steel production capacity by 2030–31. In other words, the country would have to add roughly 200 million tonnes to its present steel production. This would require creation of additional infrastructure facility to move 800 million tonnes of cargo (3 tonnes of raw materials and one tonne of finished product per tonne of crude steel or 200 million tonne × 4 = 800 million tonnes). Looking to the present high cost of steel, it is worthwhile to ponder whether the country would be able to generate the additional demand to achieve the production capacity of 300 million tonnes of crude steel by 2030–31.

30. It may be emphasised that just as iron ore is a raw material for steel, steel is raw material for downstream engineering and various other products, many of which are exported. High price of steel in India has deprived many downstream products their competitive edge in the international market. If the import duty is removed, it will lead to competitive production of domestic steel by elimination of windfall profits by handful of steel producers and thus benefit downstream industries and Indian citizens at large. This will lead to all round growth of all other materials that go alongwith the usage of steel.

Chart – II
Removal of import duty and other protective measures on steel : Cascading effect in the economy



VII – CONCEPT OF CAPTIVE MINE : COUNTER TO ZERO-WASTE MINING

31. It is a known fact that a deposit or a mine does not contain a uniform grade to maintain a consistent feed. The ore contains various grades with different chemical and physical composition. Even if a plant procures iron ore from more than one mine in the same area through auction route, it is quite possible that the proper feed may not work out. A plant therefore procures the ore from various sources, makes a feed for the plant which has to be consistent all through to make final product uniform in terms of quality at an economic cost.

32. If the conditions as stipulated in the present dispensation are adhered to, a steel / aluminium plant has to take necessary steps to utilise off-grade material by beneficiation or pelletisation or sintering or both to make proper feed for the blast furnace. All these steps would increase the cost of raw materials and the steel plants avoid it, leading to a large amount of stockpile of off-grade materials at mine-heads.

33. To overcome the cost and derive maximum value, the steel plants use higher grade (+62-63% Fe) as against world average feed of 60% Fe on the plea that alumina content in the Indian ore is very high which consumes more energy and to compensate for the higher energy cost, they have per force to use higher grade ore. This has resulted in generating lot of stockpiles of unused iron ore at mines in various States, particularly in Odisha and Jharkhand.

34. However, this lacuna can be overcome if the steel plants purchase ore from different mines to make proper feed for the blast furnace. This will give the plant optimum output at economic cost. This is how countries like Japan, South Korea and China overcome by importing iron ore from around the world to make a proper feed for the blast furnace which makes their product (crude steel) internationally competitive vis-à-vis Indian steel despite this country having all the raw materials except coking coal. The steel produced by Japan, South Korea and China is even more competitive as compared to steel produced by Tata Steel and SAIL, who have iron ore and coking coal mines, apart from other raw materials.

35. It would therefore be more prudent to encourage independent and stand-alone mines and create surplus capacity so that iron ore is available to steel plants at competitive price. The grant of captive mines to steel industry has led to wastage of iron ore and is against the concept of zero-waste mining. That is the reason why there is a large quantity of off-grade iron ore lying at the mine heads of the steel plants. The classic case is the stockpile of 25–30 million tonnes of iron ore fines of around 55% Fe lying at the Gua mine-head of IISCO for the last almost 100 years.

VIII – RAW MATERIALS AVAILABILITY IS NOT A PRIME CONDITION TO SET UP A STEEL (ALUMINIUM) PLANT

36. The growth of steel (or aluminium) industry in a country depend on the demand for these metals. It is strange coincidence that the resource rich countries are sparsely populated where demand for these metals is limited. The growth of steel (or aluminium) industry depends on domestic demand. To put it straight, domestic availability of raw materials is not the prime condition for the growth of steel (or aluminium) industry. Had it been so, Australia or Brazil would have exported only steel (or aluminium) rather than raw materials. Despite exporting all the raw materials for steel and aluminium industries, Australia produced 5.5 million tonnes of steel and 1.57 million tonnes of aluminium in 2019. Similarly, Brazil produced 32.2 million tonnes of steel and 0.65 million tonnes of aluminium in 2019. The underlying reason is that there is not enough demand for steel and aluminium in these countries.

37. Because of high metal content in iron ore or bauxite, both these commodities can be transported over long distances using heavy mining and transport equipments and shipping them across countries using very large carriers. Despite being 10,000 miles away from China, Vale supplies a quarter of Chinese requirements of iron ore. Availability of raw materials at reasonable rate and making steel / aluminium on massive scale make the products cheap. Further, blending of raw materials from various sources makes an ideal feed for the blast furnace.

IX – CONCLUSION

Develop mining as a separate vocation for optimum / full utilisation of resources

38. Grant of captive mine amounts to inter-sectoral subsidy from mining sector to steel sector by enabling steel makers to have access to iron ore at extraction cost or at least one third / fourth of its market value and deprives the mining industry to plough back the surplus (much essential monies) required for exploration and mine development. Since the steel plants do not pass on the subsidy to primary users of steel, there is no multiplier effect and the difference in the extraction price and market price is absorbed by diseconomies within the steel industry or in making windfall profits. Since there is robust global supply and trading of steel, there is no significant advantage for domestic down-stream users to purchase steel from local sources at inflated cost which makes its products uncompetitive in domestic and world market, giving edge to Chinese products.

39. Grant of captive leases to steel plants has resulted in so many distortions:

- Since no mineral deposit is of uniform grade to provide a consistent feed for blast furnace, there is a tendency to grab more areas than are necessary, hence non-optimal utilisation of resources.
- No blending / beneficiation (manual or mechanical) is attempted because this will increase the cost of 'feed' to the blast furnace.

- Since area is large, there is selective or wasteful mining. Captive mining has always played second fiddle to the steel industry.

- There is tendency to mine high grades which gives better or high quality product at a cheaper price. Indian steel plants use high feed material of +62-63% Fe as against international norm of 60% Fe average feed grade.

- Till recently, Indian steel plants were tilted towards the use of lumps whereas fines were dumped aside. The result is that huge dumps of fines are reported at their mine sites.

- With the passage of time, there is gradually more production of fines along with lumps and steel plants having captive mines have started now using fines (sinter feed) along with lumps. However, despite this, the entire fines production is not utilized and they are stacked separately or sold leading to environmental hazards.

- Sintering or pellet capacity created by steel plants to consume all the grades mined from the deposit has not commensurated with total production and the excess production is either stacked or sold in the market – domestic or export.

40. On the other hand, stand-alone resource companies have the advantage of:

- sustainable and scientific mining, creating massive infrastructure in the form of rail / road, ports, etc. from the mines to the user industries.
- adoption of advanced mining techniques and R&D.
- utilisation of all grades in the mines and supplying them to the consumers at economic cost as per their requirements, thus leading to 'zero waste' mining.
- there is more intense exploration activity leading to the discovery of more resources: increase of iron ore resources from 17,564 million tonnes as on 1-4-1980 to 33,276 million tonnes as 1-4-2015 or a net increase of 15,712 million tonnes despite having mined 3,443 million tonnes during this period.

41. The above dissertation brings out clearly that it would be in national interest to develop stand-alone iron ore (bauxite) mining industry so that the resources could be developed optimally and sold in the domestic market. A miner is in a better position to provide the iron ore (bauxite) of the specifications and size required by various consumers, if necessary by beneficiation or otherwise. In case, if a particular grade or grades are not required in the domestic market, a miner should be allowed to export so that there is no wastage of resources.

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