

CREATING A VIBRANT IRON ORE INDUSTRY IN INDIA - A SURVEY

Over the last five years, there has been an increase in the export of iron ore driven by the steel demand in China. Seaborne trade of iron ore has increased from 500 million tons in 2002 to slightly over 800 million tons in 2007. Exports from India have also increased from 50 million tons to approximately 90 million tons during the same period. To enhance infrastructure, and community and environment development, the government is proposing an increase in royalty to a 10 per cent ad valorem rate on sales realization. Further, to ensure availability of iron ore for the domestic steel industry, the government is also proposing to increase the export duty to 10 to 15 per cent. There are three core beliefs behind these proposed increases in royalty and export duty rates by the government:

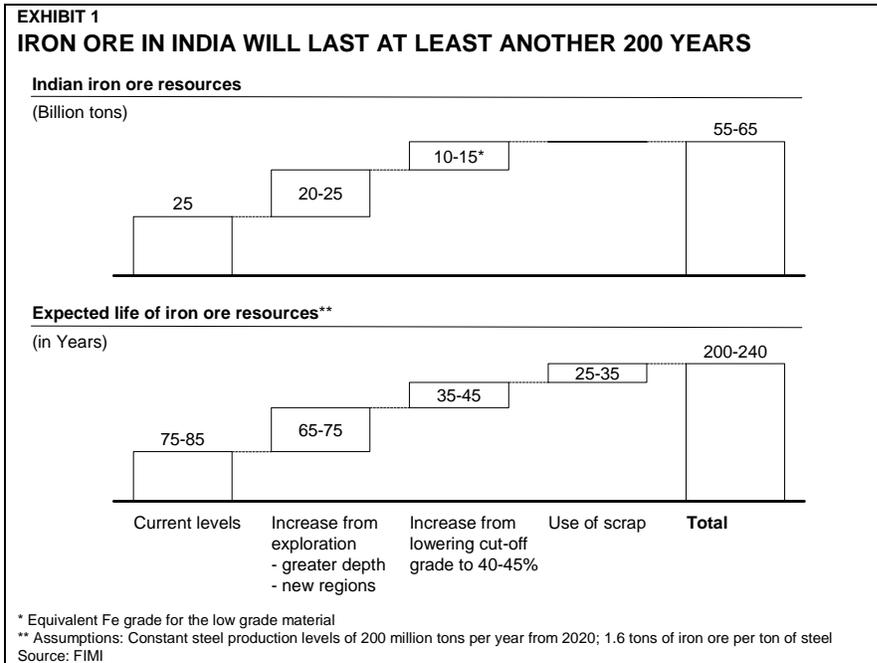
- **Belief 1:** Iron ore is a scarce resource in India and should be conserved for the domestic steel industry
- **Belief 2:** The iron ore industry is 'subservient' to the steel industry and cannot create significant value on its own
- **Belief 3:** Proposed increases in royalties and export duties will not hurt the industry as it is making 'windfall' profits

The Federation of Indian Mineral Industries (FIMI) submits that these beliefs are not consistent with the reality. Further, experiences of other mineral-rich nations, such as Brazil and Australia, support FIMI's view. FIMI believes that the proposed move to increase royalty and export duties will adversely affect the iron ore mining industry and would be ill advised. It will lead to closure of several mines thereby leading to unemployment and revenue loss for the government. This will ultimately hurt the domestic steel industry, especially the secondary sector. FIMI and its members believe that the iron ore mining industry can create significant value for the country and that with support from the government the mining companies can tap the full potential from this sector.

BELIEF 1: INDIA HAS SCARCE IRON ORE RESOURCES THAT SHOULD BE CONSERVED FOR THE DOMESTIC STEEL INDUSTRY

India has one of the largest iron ore resources in the world. In fact, in late 1980s its resources were larger than those identified in Australia and Brazil (the two largest producers and exporters of iron ore). With appropriate focus on exploration and technology, India will be able to identify enough resources to sustain projected steel consumption of approximately 200 million tons per annum for another 200 years. Even today, the domestic steel industry is not short of iron ore. On the contrary, exports have helped ensure supply of iron ore for steel companies (especially for the secondary sector with no captive mines that accounts for approximately half of India's steel production) and resulted in optimal utilization of the iron ore resources

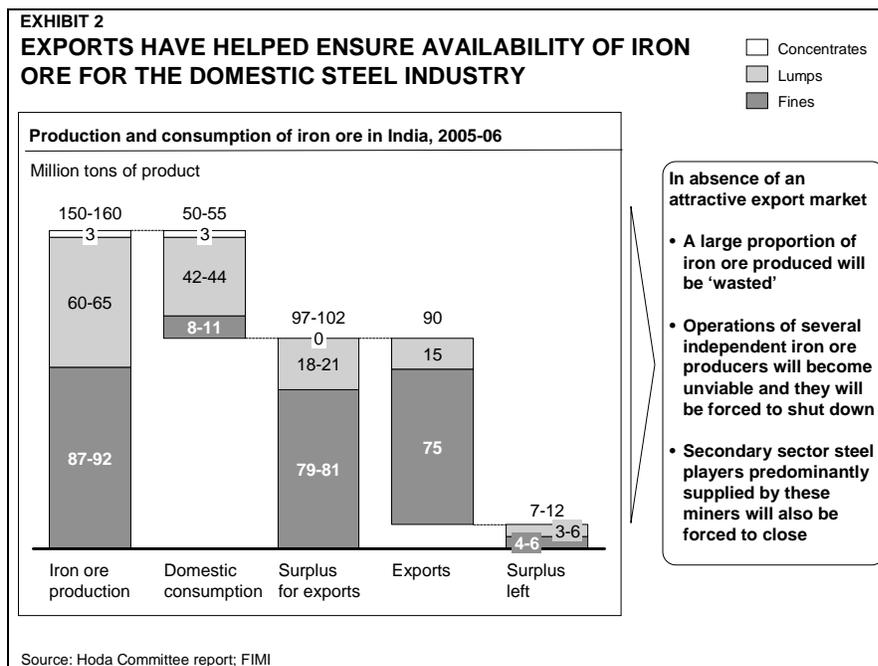
- **India should be able to sustain the projected domestic steel demand for over 200 years.** The current iron ore resources of about 25 billion tons will last 75 to 85 years as steel production touches 200 million tons by 2020. Further, with more exploration, development of technology to economically treat lower grade ores and increased use of scrap India's iron ore resource could sustain the domestic steel industry for another 125 to 150 years (Exhibit 1). Even the magnetite resources can be beneficiated economically and in an environment friendly manner with technologies available today. Australia, Brazil, China and even USA have several large magnetite operations today
- **Intensification of exploration could add another 20 to 25 billion tons of resource and sustain targeted steel production for another 65 to 75 years.** Over the last twenty five years, while India has increased its iron ore resources by about 45 to 50 per cent, Australia and Brazil have each grown their resources ten-fold (both have added over 30 billion tons of resources compared to about 8 billion tons in India). If India was to increase the spend on exploration (India spends US\$ 5 million annually on mineral exploration predominantly on coal versus US\$ 500 million and US\$ 150 million spent in Australia and Brazil respectively), deploy best-in-class technology (such as aerial mapping or drilling up to depths of 400 to 500 meters versus current resources identified up to an average depth of 50 meters) and explore in new areas (resources added since 1980s are predominantly from brown field exploration), it could add another 20 to 25 billion tons of resource (on a very conservative basis)



- **Development of technology to treat lower grade ores could further sustain the resource for another 35 to 45 years.** The current resource estimate is based on a cut-off of 55% Fe since Indian steel mills do not feed lower grades. Chinese steel mills, on the other hand, meet 30 to 40 per cent of their total Fe units from domestic iron ore that has an average run-of-mine grade of 30 to 35 per cent Fe (beneficiated to 55 to 60 per cent Fe). Despite the higher costs of beneficiating this ore and with their imports at 5 to 10 times the cost of delivered ore to Indian steel mills (45 to 50 per cent of whom have captive mines providing ore at cost), Chinese steel mills are more competitive than their Indian counterparts
- **Increased availability of scrap as the Indian economy matures could add another 25 to 35 years to life of iron ore resources.** While projecting the iron ore requirement for steel production, scrap use has not been considered. Unlike the Oil and Gas industry, a significant share (more than 60 to 70 per cent) of steel ultimately gets recycled. The use of scrap not only ensures better utilization of iron ore, the technology to use scrap in steel making is also more environment friendly than the direct use of iron ore. World over, 35 to 40 per cent of steel production is from scrap (a significant share of steel becomes available as scrap in approximately 20 years). In comparison, scrap use in steel making in India is still quite low (about 20 to 25 per cent) and should be significantly enhanced as the economy matures

- **The steel industry has access to adequate iron ore. Moreover exports, contrary to common belief, have helped sustain the steel industry and ensure optimal utilization of resources**
 - **Exports of iron ore have not ‘starved’ the Indian steel industry.** India has been producing sufficient iron ore to meet the requirement of the domestic steel industry. In fact, India has been generating a surplus of 10 to 15 million tons each year over the past three years. Further, a large percentage of the exports are grades lower than 62% Fe and fines (approximately 84 per cent of exports are fines; 30 to 40 per cent of these are 62% Fe or lower grades). The steel industry, on the other hand, uses more of lumps than fines, and typically uses higher grades. However, even the stocks of high grade lumpy ore have doubled in the last three years, reiterating the point that there is no shortage of ore for the Indian steel industry
 - **Instead, exports have helped ensure availability of iron ore for the domestic steel industry and optimally utilize iron ore resources.** Fines are 55 to 60 per cent of Indian iron ore production. The domestic steel industry, on the other hand, does not consume as much of fines as lumps. Similarly, 62% Fe and lower grades constitute a fair share of the run-of-mine production and would be ‘wasted’ in the absence of the export market. In fact, even the steel producers with captive mines are selling (and even exporting) iron ore from these captive mines. This reiterates two points – i) the domestic steel mills are not faced with any scarcity of iron ore, and ii) exports or sales of iron ore in the open market are critical to ensure optimal utilization of the resources.

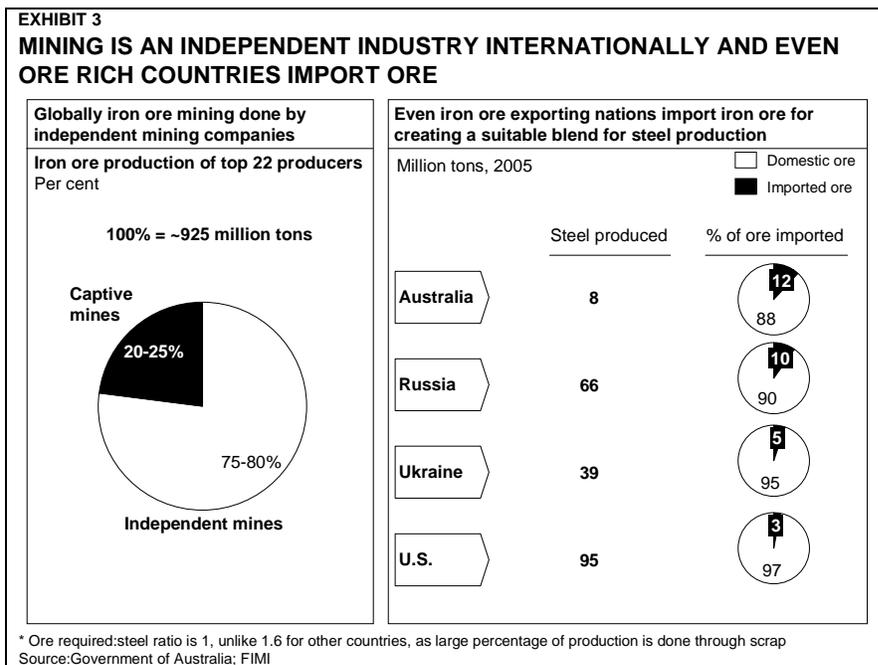
By marketing the surplus fines and lower grades in the export market, the independent iron ore miners have been able to economically meet the requirements of the domestic industry, especially the secondary sector players with no captive mines. In the absence of the export market, the independent miners would be forced to shut down, forcing the secondary steel sector to follow suit. Further, this would encourage miners towards selective / ‘rat hole’ mining (as done by some mines primarily serving the domestic market) and render the lower grades uneconomical to mine in future (Exhibit 2).



BELIEF 2: IRON ORE INDUSTRY SHOULD BE SUBSERVIENT TO THE STEEL INDUSTRY

Mining is regarded as an independent industry in all major mining geographies and this has allowed mining players to create significant value in their economies. Even in India, companies engaged in exploration and mining (such as NMDC, OMC, Coal India or for that matter even ONGC in oil & gas) have contributed significantly in generating value for the economy. Further, unlike the steel industry that drives development around major consumption centers where plants are located (and hence in already developed areas), mining helps develop areas around the source of the mineral (typically less developed, remote areas). Globally, most steel companies source iron ore from independent mining companies (except in Russia and India, where there is a high share of steel companies with captive iron ore mines). Korea and Japan, with no iron ore resources of their own, are today the leading exporters of steel and have some of the world's best and lowest cost steel plants, reinforcing the argument that the steel industry can create significant value as an independent industry

- World over, mining is an independent industry and has created significant value in the local economy.** Approximately 75 per cent of the major iron ore producers are independent mining companies. Even large iron ore producing countries, such as Australia, Russia and Ukraine, import iron ore for steel production to get the right blends, and hence better efficiencies, for their steel plants (Exhibit 3). States that have recognized mining as an independent industry have witnessed rapid economic growth. For example, Western Australia has grown value of mineral output in the state from AUS\$ 0.013 billion in 1964 to AUS\$ 17 billion in 2003 (over a thousand fold increase). The state has 17 per cent share of global iron ore production, 19 per cent of alumina production, 22 per cent of diamond production and 18 per cent of nickel production. The sector accounts for 18 per cent of employment and 55 per cent of investments in the state



- Recognition as an independent industry has encouraged mining companies to focus on exploration, infrastructure and new capacity creation, and environment and community development.** The steel industry, itself being very capital intensive, is typically unable to deploy the required resources on developing the iron ore sector. It is the independent mining companies that typically drive such investments. Iron ore mining industry adds significantly value along the iron ore value chain by driving exploration and thereby increasing the resources available for value addition (Australia and Brazil have increased iron ore

resources ten-fold in less than three decades by focusing on this). Further, by creating new infrastructure around the resources, the iron ore industry helps bring mines even in remote areas online (steel industry would typically not develop these areas away from consumption centers and hence away from their plants). Finally, large independent mining companies have the ability to create downstream pig iron and steel capacities in multiple locations across the country or region, in addition to beneficiation and processing of run-of-mine ore. On the other hand, steel companies with captive mines typically underutilize the iron ore resources in the country and remain restricted / focused around a particular region.

– **Exploration and infrastructure creation is at the core of the mineral sector, and is best done by independent mining companies.**

Over the last four decades, Australia has increased its iron ore resources from 0.4 billion tons to over 40 billion tons (a 100-fold increase) due to exploration efforts by key mining players. Annual exploration spend on minerals in Australia is more than US\$ 500 million. New advanced technologies (such as satellite imagery, aeromagnetic data techniques, modern core-drilling methodologies, and Type-I and Type-II series horizon of up to 500 meters) have been developed and introduced rapidly. The large mining companies have also made significant investments in infrastructure creation. CVRD, for example, is investing US\$ 30-35 billion over the next five years in creating infrastructure around its mining areas. India will require exploration investments of approximately US\$ 5-10 billion over the next 10 to 12 years. It will require an equal amount of investments in mining infrastructure. A thriving mining sector is, therefore, all important

– **Independent mining companies help develop areas around the mineral resource (typically remote and less developed regions of the country).**

World over, some of the most thriving towns have been created around mineral rich regions as a result of the mining industry. Perth (in Australia) and Bela Horizonte (in Brazil) are cases in point. Large mining companies have consistently driven community and environment development initiatives in and around the mining areas (Exhibit 4). Even in India, the iron ore industry has been core to the development of the Goan economy. The steel companies with captive mines tend to focus more on development around the plant location that is typically in areas significantly more developed than the mining areas in the remote regions of the country.

EXHIBIT 4
INTERNATIONAL MINING COMPANIES CONTRIBUTE SIGNIFICANTLY IN ENVIRONMENT CONSERVATION AND COMMUNITY DEVELOPMENT
ILLUSTRATIVE

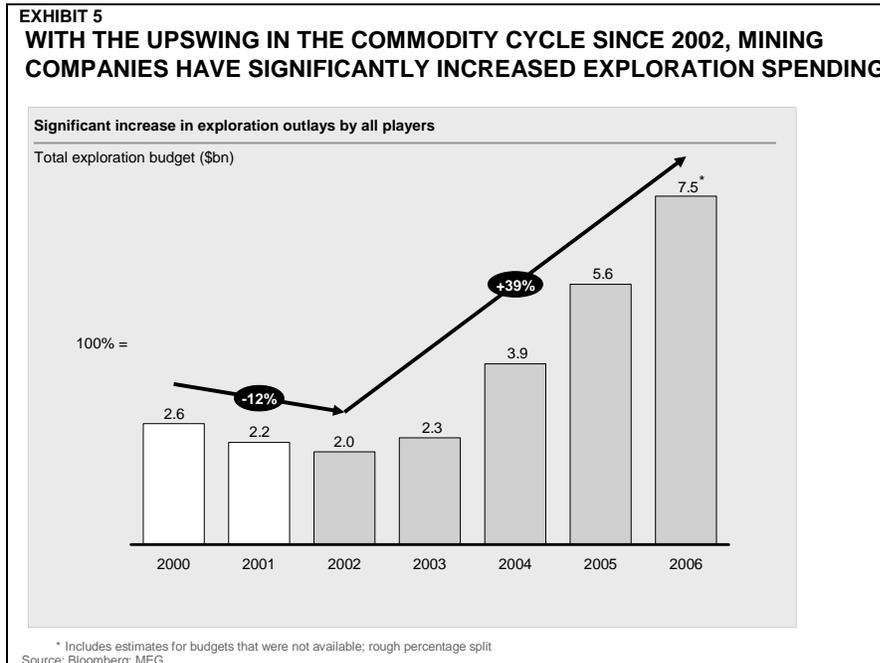
	<u>Company</u>	<u>Initiatives</u>
Environment conservation	BHP Billiton	<ul style="list-style-type: none"> • Launched the "Revive our Wetlands" project in Australia <ul style="list-style-type: none"> – Contributed 17,000 volunteer days and A\$1.5 million in financial assistance to rehabilitate 100 wetlands; mobilized additional A\$0.9 million of funding – 30,000 plants propagated; over 190,000 native seedlings planted
	Rio Tinto	<ul style="list-style-type: none"> • Managing rehabilitation of an area of 35,000 km² (less than 5 per cent of this area was disturbed for mining purposes in 2006) • Improved air quality by reducing sulphur oxide (SOx) emissions by 12 per cent
Community development	CVRD	<ul style="list-style-type: none"> • Established Vale Foundation to foster sustainable territorial development • Contributed R\$ 12 m in labor qualification and R\$ 119 m on infrastructure • Started primary schools and provides free education in many areas • Started hospital for the population of Canaã
	Rio Tinto	<ul style="list-style-type: none"> • Initiated several programs to combat spread of AIDS, especially in southern Africa

Source: Press searches; Company websites

BELIEF 3: PROPOSED ROYALTIES AND DUTIES WILL NOT HURT THE INDUSTRY AS IT IS MAKING ‘WINDFALL’ PROFITS

The iron ore exporters have reported higher profits in the past two to three years compared to the historic profitability of the industry. However, this is part of a normal industry cycle. The profitability is not significantly higher than previous cycles or for that matter as compared to several other sectors such as real estate, telecom, oil & gas, and even the steel industry. Further, the current level of profitability will not hold for Indian players as significant new capacity comes online in Australia, Brazil and South Africa, and thereby reducing the demand-supply gap, and hence the prices. Increasing tax burden at rates higher than those in other mining geographies will make it difficult for Indian exporters to compete in the global market. Players will be unable to invest in exploration, infrastructure, value addition, and community and environment development initiatives, hurting the longer term existence of this industry. Experience of similar measures adopted in other countries shows that higher tax rates directly resulted in impeding growth of the mining industry

- **The higher profitability of iron ore exporters in recent years is part of a normal industry cycle and in line with that experienced by other sectors in India.** Across industries, especially in commodity industries, it is the profits made during the upturn in industry cycles that create the ‘war chest’ for companies to invest in activities such as exploration, and infrastructure and new capacity creation (Exhibit 5)



- **Current profitability of the iron ore players is not significantly higher than that during the peak of previous industry cycles for the iron ore industry (Exhibit 6).** In fact, for most independent iron ore miners only about 10 per cent of the US\$ 40 to 50 per ton increase in realizations since 2003-04 has gone to the bottom-line. Increase in the logistics costs for road and rail movement by about US\$ 30 per ton, the appreciation of the Rupee against the dollar by over 10 per cent in the last two years, and the export duty of US\$ 7.5 per ton introduced earlier has eaten into almost 90 per cent of the increased price realization. The proposed increases in royalties and export duties, would in fact reduce the profitability of these players to below the 2003-04 levels (Exhibit 7)

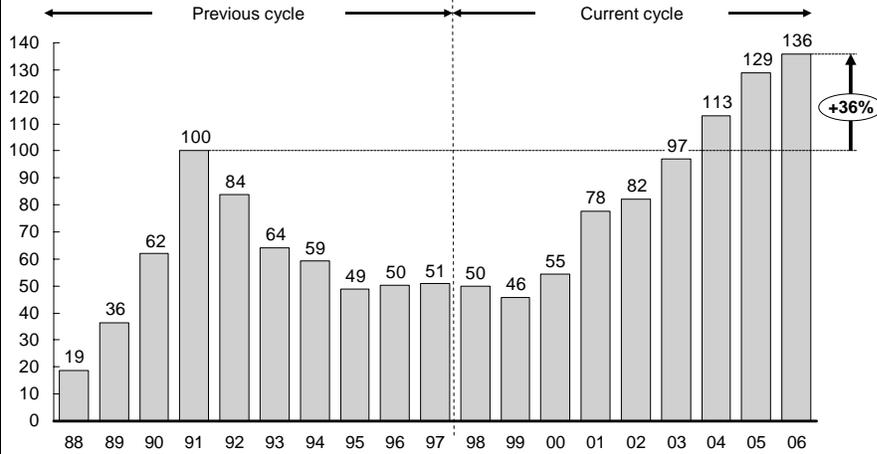
EXHIBIT 6

HIGH PROFITABILITY IN RECENT YEARS IS PART OF A 'NORMAL' INDUSTRY CYCLE

ILLUSTRATIVE

Average profitability of some major iron ore players

Indexed EBITDA margin (Indexed to profitability of last peak in cycle, 1991)



Source: Prowess

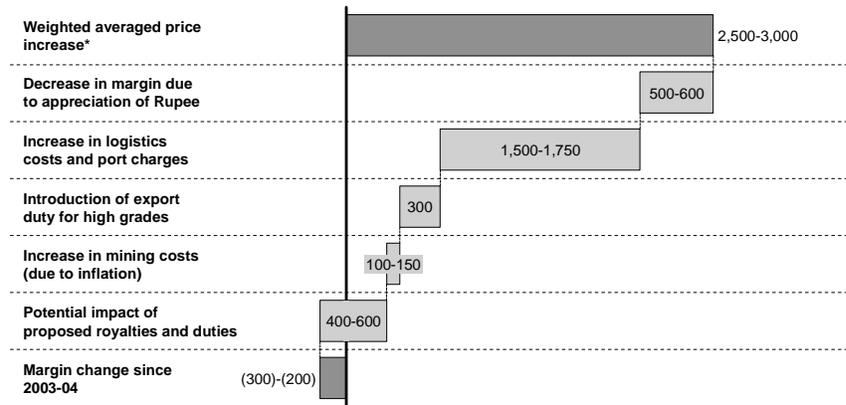
EXHIBIT 7

INCREASE IN REALIZATION DUE TO HIGHER PRICES HAS BEEN 'EATEN AWAY' BY INCREASE IN COSTS

EXAMPLE: EASTERN SECTOR

Movement in margins of iron ore producers in the Eastern sector since 2003-04*

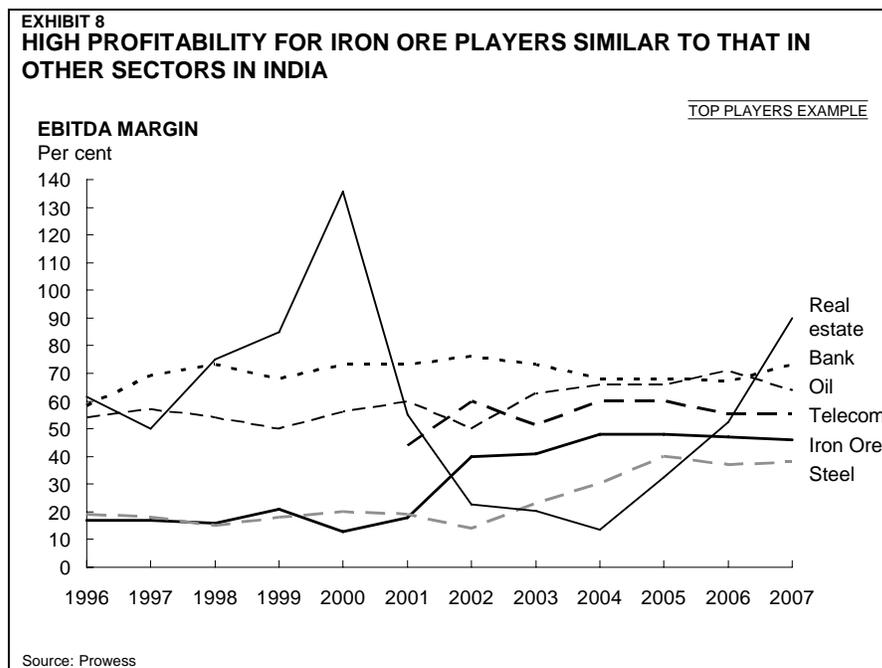
Rs per ton



* Exports of 65-70% of mine production (lumps predominantly sold in the domestic market)

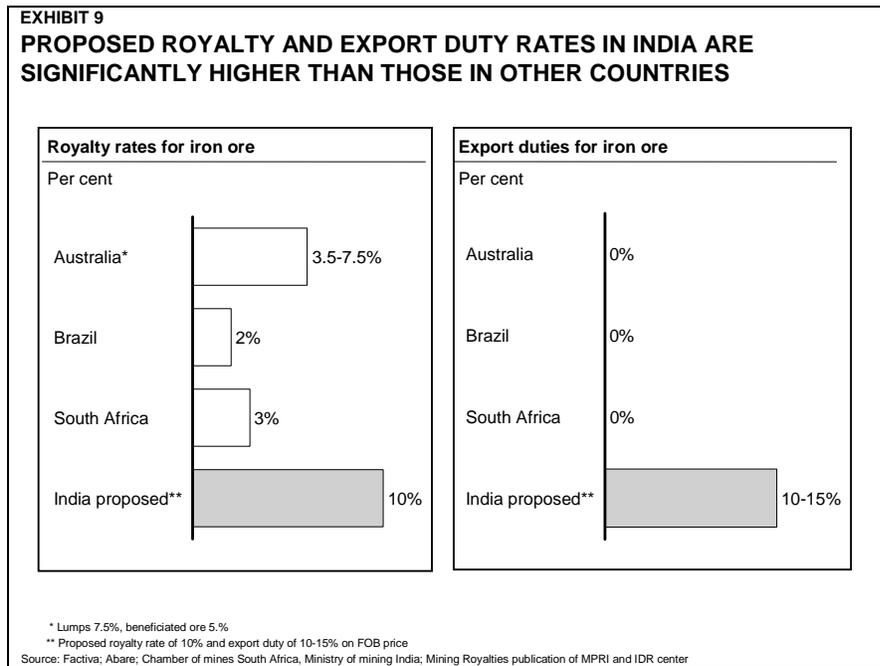
Source: FIMI

- **More importantly, the profits made by top iron ore players in recent years are similar to those made by their counterparts in the other high-growth sectors** such as telecom, real estate, oil and gas, and banking (Exhibit 8). In fact, the steel industry itself has seen a sharp rise in profitability since 2002. Despite the access to low cost raw materials such as iron ore, dolomite, coking coal and limestone from captive or government owned mines, the Indian steel industry (especially the primary sector) has not passed on the benefit to the consumer. This is evident given the fact that the margins of the steel industry have increased significantly while the price of steel in India still is higher than international prices



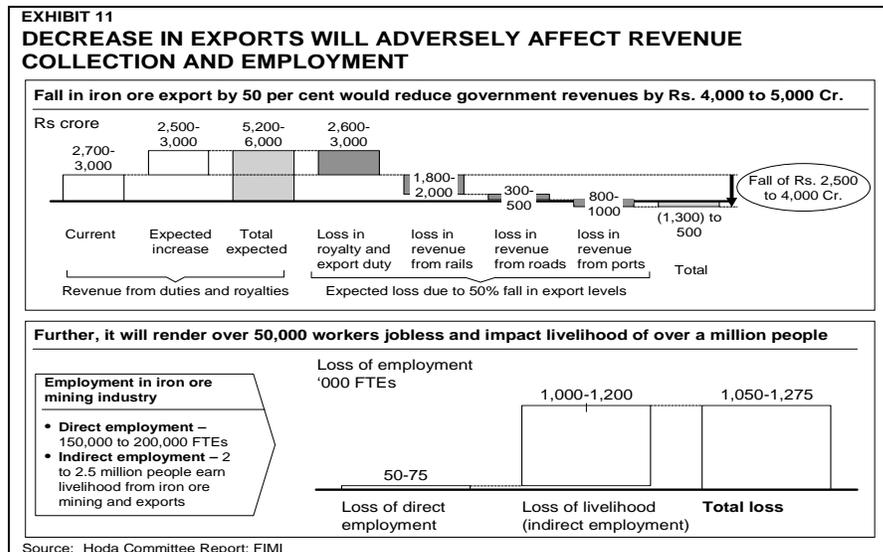
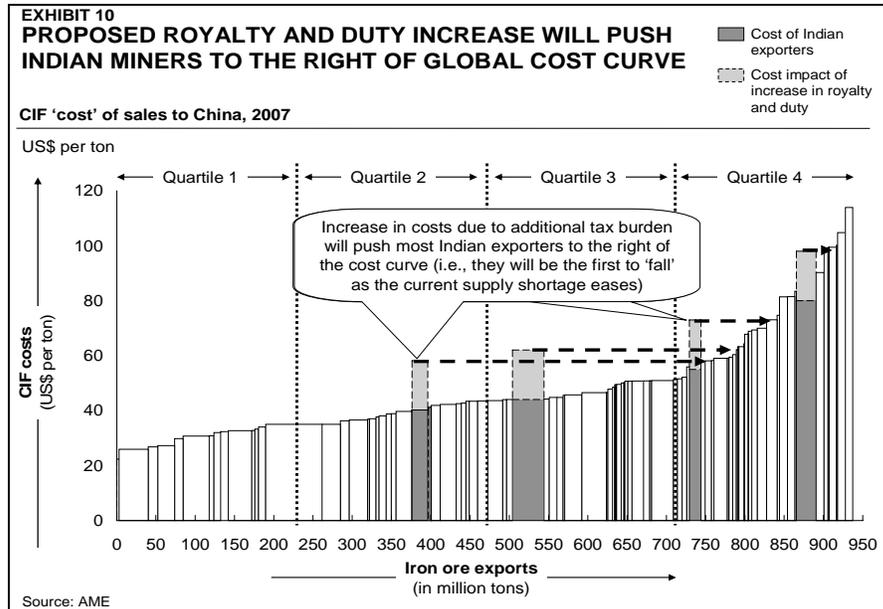
- **Current profitability levels will not hold for long as major players from Australia, Brazil and South Africa bring significant new capacity online in coming years.** As the large mining players in Australia, Brazil and South Africa bring an additional 250 million tons of iron ore capacity online in the next three to five years, the demand-supply balance will again tilt in favor of the steel industry and the margins of iron ore exporters will decline. The temporary ‘price flare-up’ driven by the Chinese demand will subside within a year or two, starting the downward trend for the current industry cycle.

- **Proposed royalty and export duty will be the highest amongst major iron ore producing regions and will marginalize Indian exporters in the export market, rendering thousands of workers jobless.**
 - **India will be the highest taxed country amongst major iron ore producing regions with the proposed royalty and export duty rates.** Brazil, the largest iron ore producer with a domestic steel production comparable to India, has a royalty of 2 per cent and no export duty. Similarly, Australia has a royalty of 3.5 to 7.5 per cent (depending on ore type) and no export duty. Even South Africa has a royalty of only 3 per cent and no export duty. The proposed royalty of 10 per cent and export duty of 10 to 15 per cent in India will be significantly higher than these major iron ore producing regions (Exhibit 9)

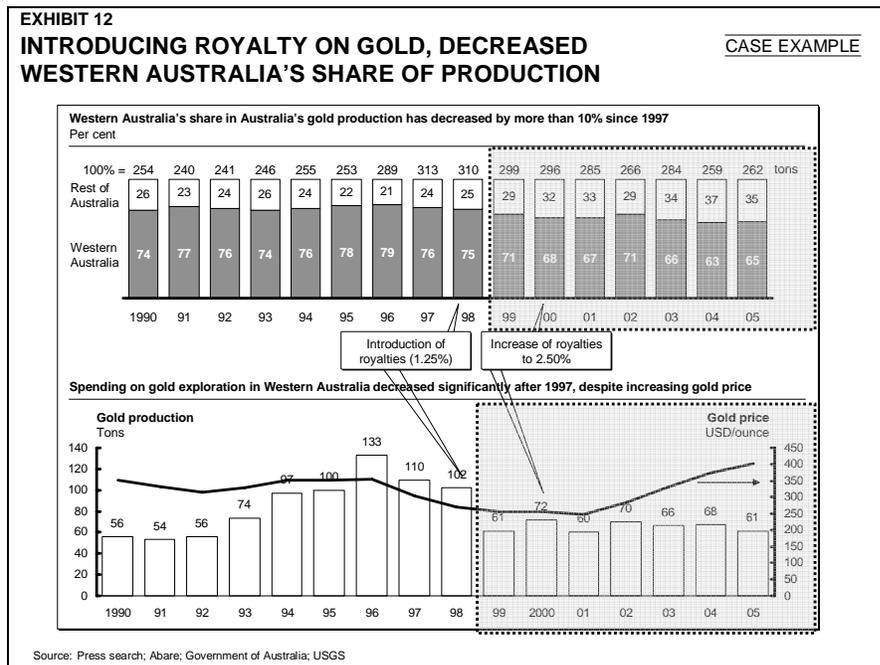


- **The additional tax burden on the Indian iron ore exporters will marginalize Indian exports, resulting in closure of many mines.** Historically, Indian iron ore industry has always been at a disadvantage to Australian and Brazilian exporters due to higher inland logistics costs (average inland logistics cost of US\$ 10 to 40 per ton in India versus US\$ 3 to 5 per ton in Australia and Brazil) and an inadequate port infrastructure leading to higher freight costs. The proposed royalty and export duty increases will push Indian exports to the extreme right of the global cost curve (Exhibit 10). As the current supply crunch eases, Indian exporters will be the first to be marginalized and pushed

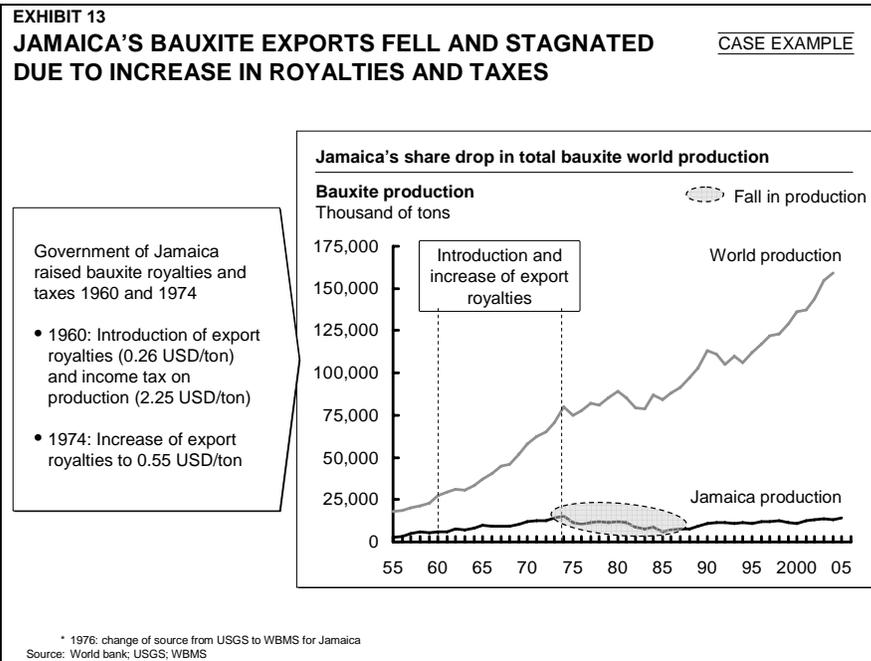
out of the market, making many Indian iron ore mines unviable. A 50 per cent fall in exports will render over 50,000 employees directly employed in iron ore operations jobless and impact livelihood of over a million people across the country (the mining value chain sustains people not just from the mining areas but from most part of the country). Further, net collections of government will in fact reduce from current levels (Exhibit 11)



- **Experience of other countries suggests that sharp increases in royalty and export duty in mining have typically impeded industry growth.** Even in India, the introduction of an export duty of Rs. 300 per ton resulted in the drop of India's share of the seaborne trade by 2.5 per cent in just two years (from 14 per cent to 11.5 per cent)
 - Introduction and increases in royalty on gold in Western Australia reduced its share of gold production from 76 per cent in 1996 to 65 per cent in 2005 (a 9 per cent fall in share in less than a decade). Further, spending on exploration in Western Australia decreased significantly despite increase in gold prices (Exhibit 12)



- Introduction of royalties and export tax on bauxite in Jamaica resulted in a stagnation of bauxite production, with its share decreasing from approximately 20 to 25 per cent in the 1960's to below 10% by 2005 (Exhibit 13)
- Introduction of copper royalties in British Columbia in 1973-74 resulted in closure of many mines and loss of over 5,000 jobs, exploration spend fell to one-tenth of its previous levels, and new mine development almost came to a standstill. The royalties were repealed in three years but had a catastrophic impact on the industry.



WAY FORWARD

FIMI and its members believe that by treating iron ore mining as an independent industry, the country will be able to capture the true value of its iron ore resources. Not doing so, could create a situation similar to thermal coal in India where despite approximately 80 billion tons of proven reserves, the Indian power companies will be forced to import 20 to 25 per cent of their requirements by 2012 due to lack of adequate investments in exploration and infrastructure creation (Exhibit 14).

In Australia and Brazil, the mining companies have successfully worked with the government over the past several years to increase exploration of resources (both these countries have grown their resources ten-fold in two decades), and invest in infrastructure and, community and environment development. Even in India, the independent mining companies have been proactively driving community and environment development initiatives (Exhibit 15). Over 58 million trees had been planted by the independent mining companies until 2001-02 with a 70 per cent survival rate (close to 2 million each by Sesa Goa and MSPL each). Companies such as Essel Mining, MSPL Limited and Rungta Mining have been actively investing in partnership with Indian Railways to lay new tracks and double existing tracks between the mining areas around Barbil and the Paradip port.

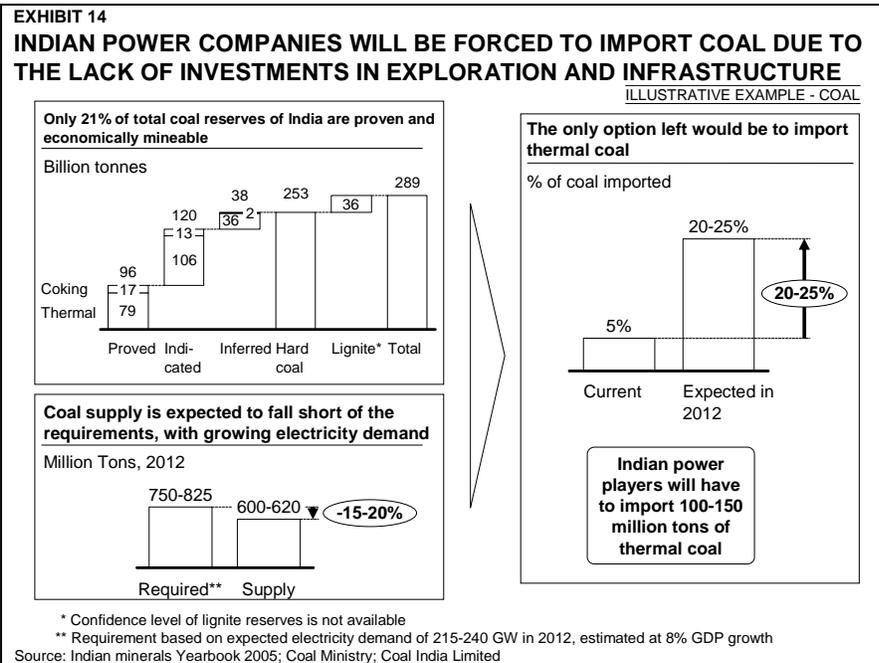


EXHIBIT 15
INDIAN IRON ORE COMPANIES HAVE PLAYED AN ACTIVE ROLE IN ENVIRONMENT CONSERVATION AND COMMUNITY DEVELOPMENT

Community development initiatives

Company	Initiatives
Sesa Goa	<ul style="list-style-type: none"> Established 1st football academy of Goa (initial capital of Rs. 80 lakhs, annual budget of Rs. 30 lakhs) Started Sesa technical school in '94 (initial capital of Rs. 50 lakhs, annual budget of Rs. 20 lakhs) Conducted a socio-economic study of surrounding communities and launched Gram Nirman (initiative to adopt villages around the mining areas) Opened two medical centers in vicinity of mining operations and regularly organizes health camps for more than 15 villages covering over 10,000 population Contributes Rs. ~1 Cr. every year to MFG, a NGO working for environment and social cause in Goa Provides books and uniforms to needy students from 3 schools, at an annual expense of ~Rs 1.5 lakhs
Essel	<ul style="list-style-type: none"> Adopted 24 villages, covering 35,693 population and supporting them through various social projects like poverty alleviation, healthcare, education, societal change and infrastructure development Mobilised more than Rs. 27 Cr. in Peripheral development activities like infrastructure, health, education and training facilities for surrounding villagers since 2003 Donated Rs. 4 crore for Cultural Heritage of Mahatma Gandhi Mobile Multi Museum
NMDC	<ul style="list-style-type: none"> Spends about Rs. 3 Cr every year on development around mining areas Established a 50 bedded multi-specialty hospital for the local population Contributed Rs. 16 lakhs for ensuring safe drinking water in neighboring villages
MSPL	<ul style="list-style-type: none"> Adopted 5 villages and supporting them on drinking water, health, hygiene, sports and education Organized and supported 30 Women Self Help Groups Donated Rs. 3.7 crore for Cultural Heritage of Hampi Utsav (2006-07) and Rs. 2.25 crore to Endoscopy Research Foundation (Mumbai) Founded the Abheraj Baldota Foundation to support health, education and social / cultural programs

Source: Environment in non-coal mines, FIMI, 2004; Company annual reports submitted to FIMI

FIMI and its members are committed to the growth of the iron ore industry and would like to work with the government to generate maximum value from the

Indian iron ore resources, and simultaneously help develop the community and environment around the mining areas. India has the potential to develop into a global player in both, steel production as well as mining. There is no rationale for looking at iron ore exports and domestic steel production as being alternatives that are mutually exclusive. In fact, they are mutually reinforcing. We believe the proposed increase in royalty and export duty rates will in fact destroy value across both the iron ore and the steel industries. Instead, creating the right enabling environment for the mining companies to encourage investments in exploration, infrastructure, value addition, and community and environment development activities would create more value for the economy.

We would be keen to engage in a productive dialogue with the government to work towards creating a thriving iron ore industry that meets the economic, social and environment objectives of the government.
