

Indian Mining & Metals

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Foreword

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The outlook for the global economy, although positive, has an overhang of the transitioning Chinese economy. Divergence of economic policies and performances across regions will therefore, be the key theme for the industry in the near future.

The Indian economy is on a recovery path and the Government is playing its part by trying to boost the manufacturing sector through its 'Make in India' campaign. The passing of the MMDR Act 2015 and the Coal Mines (Special Provisions) Act are positive steps which are expected to help untangle various policy issues facing the metals and mining sector and set it on a growth trajectory.

The global metals and mining landscape is getting increasingly intertwined and integrated, and the Indian industry, and steel in particular, which was relatively insulated until now, will have to factor in these global changes. This paper has highlighted several critical issues and success factors, which will enable the Indian metals and mining industry to become competitive and sustainable from a long-term perspective.

EY's Mining & Metals sector professionals have developed deep insights into the metals and mining industry and provide support on a wide spectrum of issues: strategy, regulatory, tax policy, risk management, mergers and acquisitions, supply chain advisory, process improvement, information technology, human capital and capital raising for the sector.

We hope this report provides you with insights to help you build your strategies. We express our gratitude to the Indian Chamber of Commerce and other organizations participating in the conference for giving us an opportunity to present this report at the conference.



Anjani K Agrawal
Partner and Global Steel Leader
Ernst & Young LLP, India



The resurgence in domestic economic growth will increase the metal consumption. The formation of new stable government at the Centre has reassured the corporate and consumer sentiment significantly. Moreover, adoption of various structural and pro-business reforms is likely to put the economic growth back on track in a phased manner. Expected improvement in domestic GDP growth is likely to improve both domestic demand for the various base metals such as iron & steel, aluminum and copper. GDP growth in first two quarters of FY 2015 has improved as compared to corresponding period in FY 2014. Additionally, expected reduction in interest rate in early CY 2015 in the wake of moderation of inflationary pressure is likely to boost the credit off take and improve overall investment on one hand and augment the demand of end-user segments on other. Thus, we expect domestic demand for metals to improve in 2015 following a recovery in the end-user industries such as industrial construction, civic infrastructure, power, automobiles, industrial machinery, and consumer goods, among others.

With the Indian economy expected to grow by approximately 7% in the years to come, sectors such as infrastructure and automobiles will receive a renewed thrust, which would further generate demand for power and steel in the country. This is expected to provide a major boost to the demand of minerals and metals.

Minerals like manganese, lead, copper, aluminium are also expected to witness double digit growth in the years ahead. There is significant scope for new mining capacities in iron ore, bauxite, and coal.

India has an advantage in the cost of production of steel and aluminium. Sustained growth in India's automotive sector has been driving demand for steel and aluminium. The power sector accounts for a large share of the consumption of aluminium and coal in the country. Infrastructure projects continue to provide lucrative business opportunities for steel, zinc and aluminium producers.

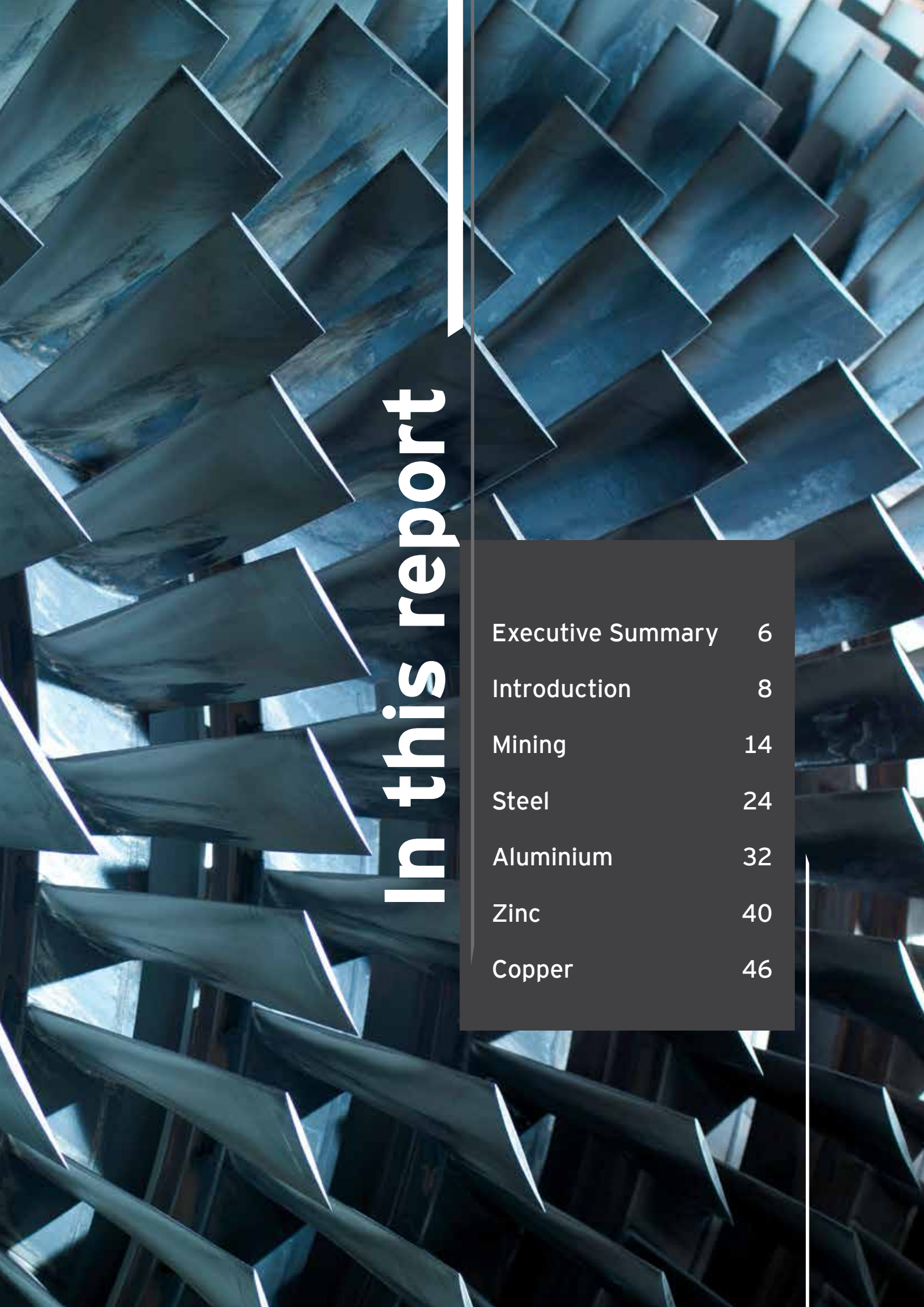
Demand for iron and steel is set to continue, given the strong growth expectations for the residential and commercial building industry. However, some of the challenges like depleting resources and reserves of iron ore, steel, increasing competition, lack of eco-friendly technologies in the mining and production process needs to be addressed.

In this context, Indian Chamber of Commerce to further strengthen its support amongst industry representatives and policy-makers presents the 4th India Minerals and Metals Forum during 24th June, 2015 at New Delhi. Ernst & Young Pvt Ltd is the Knowledge Partner of this initiative. I trust the conference would be able to generate new ideas and new thoughts among the various stakeholders to discuss, share and evolve suitable strategies and development models.



Mr Roopen Roy
President
Indian Chamber of Commerce





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Executive summary

The outlook for the global economy is positive with growth momentum picking up in the US, India and South East Asia. However, the structural shift in the transitioning Chinese economy, could cap this momentum. Divergence of economic policies and performance across geographies and sectors will therefore, be the key theme in the near future. This sets the scene for continued volatility in currency, commodity and capital markets.

Globalization: no more a choice but an imperative

Globally, mining and metal companies continue to struggle with depressed prices and oversupply in majority of commodities. Many projects have been put on hold or are being re-planned given the current economic scenario. Companies across sectors are under pressure to review their strategies, business models and portfolios in order to remain competitive and seize unique opportunities presented by the dynamic and complex market conditions. The only way ahead for companies is to transform, expand and operate on a truly global setting. Companies have realized that globalization is no longer a matter of choice – indeed their long-term success depends upon it.

India: on road to recovery

In case of India, leading economic indicators are pointing toward green shoots. While there are many economic parameters apart from a projected deficient rainfall, which can stoke inflation and derail the modest recovery, the broad consensus is that, the worst is behind us. GDP growth is now in an upward trajectory, and the Government is set to give a boost to manufacturing with its “Make in India” campaign. This is expected to give a fillip to base metal consumption, which mirrors GDP growth. Moreover, rapid growth in user industries such as infrastructure, power, construction and automobiles is expected to propel growth in the Indian mining and metals industry, signifying rising secular demand for steel, zinc, aluminum and copper in future.

Mining in India: myriad challenges affecting the sector

Mining in India has not achieved its potential. Low reserves to production ratio (indicating significant unexplored area), limited funds for exploration activities, land acquisition, procedural and permit delays in mining operations, inadequate infrastructure facilities, corruption, sustainability and country's relatively complex mining policy environment have all constrained the sector from fulfilling its true potential. Furthermore, coal, the largest mined mineral in India, was never opened to commercial mining. Due to unsustainable and illegal mining activities, the downstream sectors were also affected, since many Indian steel players had to resort to import of even iron ore. Limited exploration has also led to large-scale import of copper ore. Simultaneously, social and land acquisition issues have constrained bauxite mining for major aluminum producers.

MMDR Act and auctions: a game changer in the making

However, with the promulgation of the MMDR Act, investment in mining and metals sector is expected to improve as it ushers in an increased transparency and speed in licensing and permits. While there may be unknown challenges in the way, the Indian Government has set the stage for a paradigm shift in the Indian power and mining sector with the recent Supreme Court directed coal auctions and the proposed auction of other minerals. These reforms proposed by the Government are expected to increase mineral exploration, production and availability, aid significant wealth transfer from the

private sector to state governments from the auction of mineral resources and provide a more stable and predictable regulatory environment. The Government has also addressed business continuity concerns of the mining industry in the Act. With a view to get in commercial miners into the sector, the Government has inserted an enabling provision in the Act. While this may take time to operationalize, the Government has set a roadmap for the industry to move ahead.

Steel: global headwinds forcing the industry to transform

The global steel industry continues to face innumerable challenges including excess capacity, low access to capital amid high debt levels, enhanced competition due to low market concentration and increased trade protectionism. This is preventing the sector from undergoing the transformation necessary to drive steel companies to expand and globalize their operations. Steel is probably the most important among base metals, which will need to globalize, since it is directly linked to global economy and trade patterns. In fact some of the steel majors and niche manufacturers are re-writing traditional ways of steel business by linking into the already established global supply chains of customers, like some automotive and machinery manufacturers, to improve their long-term competitiveness.

Indian steel sector: steady for now but will have to weather global developments

In the next two years, India's steel consumption is forecast to grow annually by ~ 5%-6%. Indian steel capacity is also expected to rise to around 125mt in 2016, registering a CAGR of 8.8%. The Indian steel sector, which has been relatively insular so far, is expected to be increasingly affected by developments in global steel, which include cheap energy sources, raw material price volatility, capital availability constraints, shifting global cost curve, bilateral trade arrangements, trade protection measures and stringent environmental regulation to name a few.

Being competitive: vital for the Indian steel sector

Competitiveness is necessary for survival and success. To achieve sustainable growth and success in the Indian steel landscape, several critical success factors, enablers and building blocks are essential. To even come close to meeting Government's target of 300mt steel capacity by 2025 the sector will require:

Government support and policy framework: This will help to facilitate land acquisition, various clearances etc.

Infrastructure and logistics: This will facilitate transportation linkages to evacuate raw material and finished goods.

Capital: The Government will have to create a supportive environment for investors, lenders and steelmakers to raise the capital required at competitive costs.

Raw materials security: Availability of resource at competitive prices will be a critical success factor.

Supply chain optimization: This will reconfigure supply chain operating models to create competitiveness and an enabling infrastructure.

Sustainability and environmental reforms: It will be an imperative for steelmakers to align their growth with a sustainability agenda.

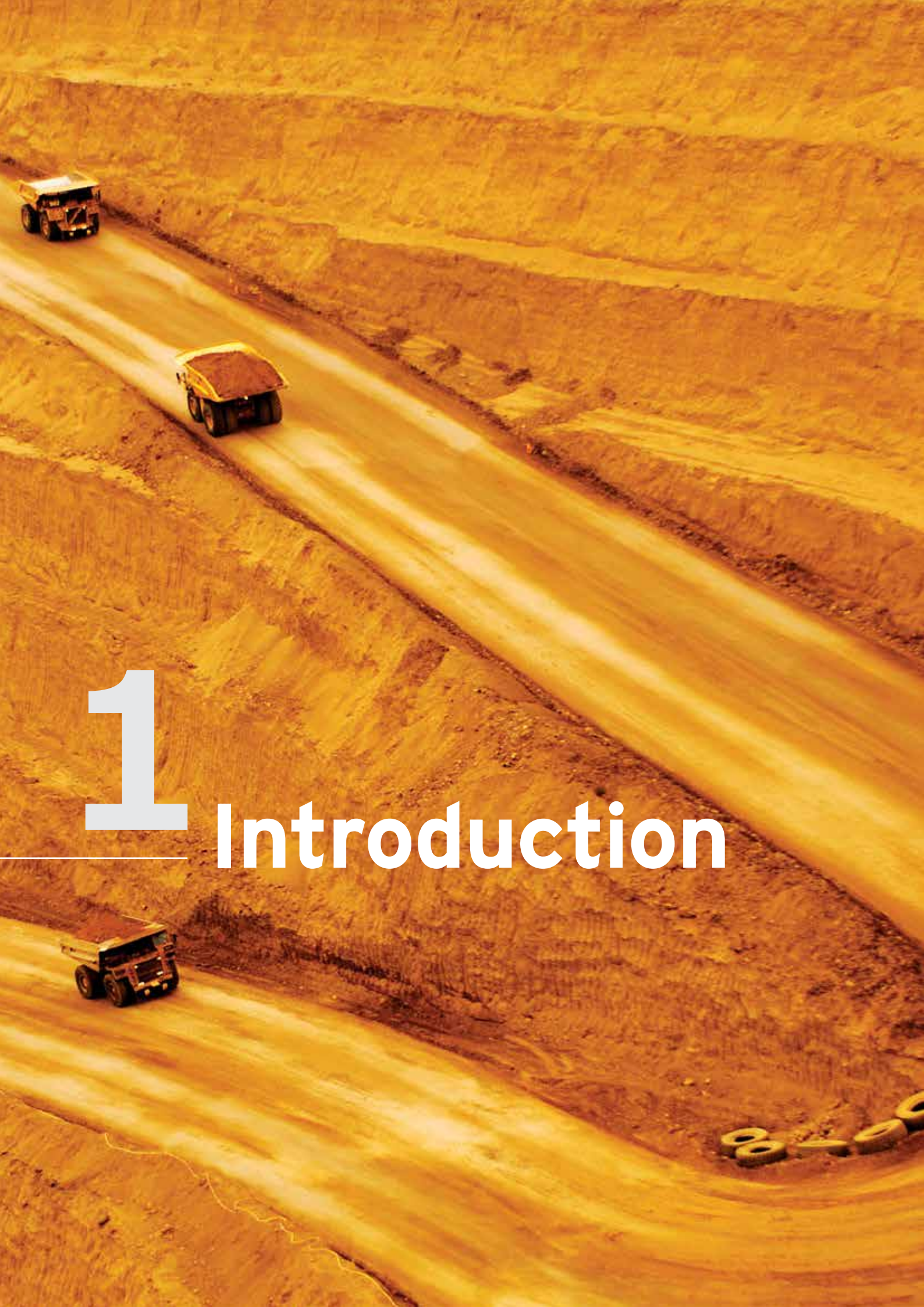
Despite global overcapacity, potential growth in domestic demand will continue to fuel ambitions in the Indian steel landscape. The steel intensity curve, socio-economic indicators, coupled with announced directional plans of the Government, all indicate a potential to multiply the industrial activity in India.

Aluminum remains one of the fastest growing metals in the base metals complex with robust global end market growth. Increasing traction in automotive applications promises considerable incremental usage for aluminum in future, similar to the demand generated by beverage can market in previous decades.

Zinc remains the only metal in the base metals complex that has seen price appreciation thanks to closure of major mines that are constricting supply. While near-term demand is expected to slow down due to slowing Chinese construction sector, long-term demand will still be driven by China and other emerging markets.

In case of copper, there will be an oversupply in 2015 despite production downgrades constraining supply. Only a sharp upturn in demand, if not from emerging economies, then from developed countries such as the US and Europe, will swing the industry fundamentals toward a balance.

India has limited presence, in terms of global production, in base metals such as copper, zinc and aluminum with a few large players dominating the landscape. However, the basic issues in terms of land availability, raw material security, access to capital, infrastructure and logistics remain the same. While domestic demand is expected to pick up in the near future, supply side issues can be sorted by the Government and industry with a long-term outlook to create a win-win situation for all stakeholders.

An aerial photograph of a mining operation. A wide, straight dirt road runs diagonally across the frame. Three large yellow mining trucks are visible: one in the upper left, one in the middle of the road, and one in the lower left. The surrounding landscape is a vast, open-pit mine with terraced, reddish-brown earth walls. In the bottom right corner, there is a pile of discarded tires.

1

Introduction

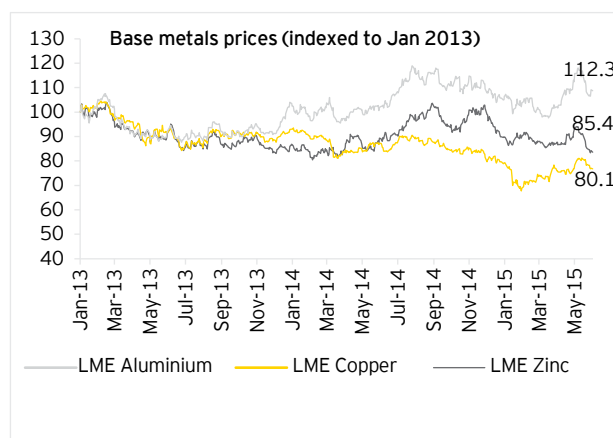
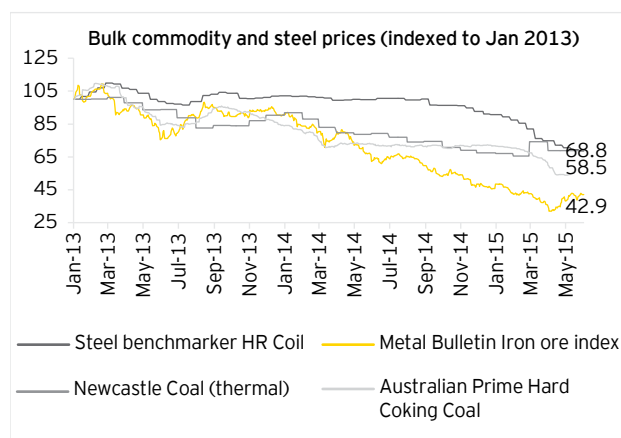
1.1 Global economic scenario: divergence of policies and performance across geographies and sectors

The outlook for the global economy is positive with a growth forecast of 3.4% in 2015. Growth momentum seems to be picking up, particularly in the US, India and South East Asia. However, the structural shift in Chinese economy, as it transitions into a consumption-driven economy, could cap the global economic growth.

Divergence of economic policies and performance across geographies and sectors will therefore, be the key theme for 2015. This sets the scene for continued volatility in currency, commodity and capital markets, and for shifting capital flows, as investors react to rapidly changing risks and opportunities. Companies across sectors will be under pressure to review their strategies, business models and portfolios in order to remain competitive and seize unique opportunities presented by dynamic and complex market conditions.

Mining and metal companies continue to struggle with depressed prices and oversupply in majority of commodities. Many projects have been put on hold or are being re-planned given the current economic scenario. Access to capital remains a challenge, despite generally strong liquidity in debt markets and low borrowing rates. The positive sentiment that led equity markets to play with new highs in early 2015 are yet to extend to the commodities sectors as they struggle under the weight of oversupply. Moody's revised its outlook on global base metals and North American coal to negative in 2015, underlining continued vulnerability to credit risk in the absence of near-term catalysts for a rapid or meaningful recovery in earnings.

Prices of all major commodities have either registered a sharp fall or are under pressure, since January 2013. Weak global demand and economic uncertainty have played their part in the decline in prices. Aluminium, which has posted marginal gains in the same period, is also expected to remain under pressure in the near future.



Source: EY analysis and Thomson Datastream

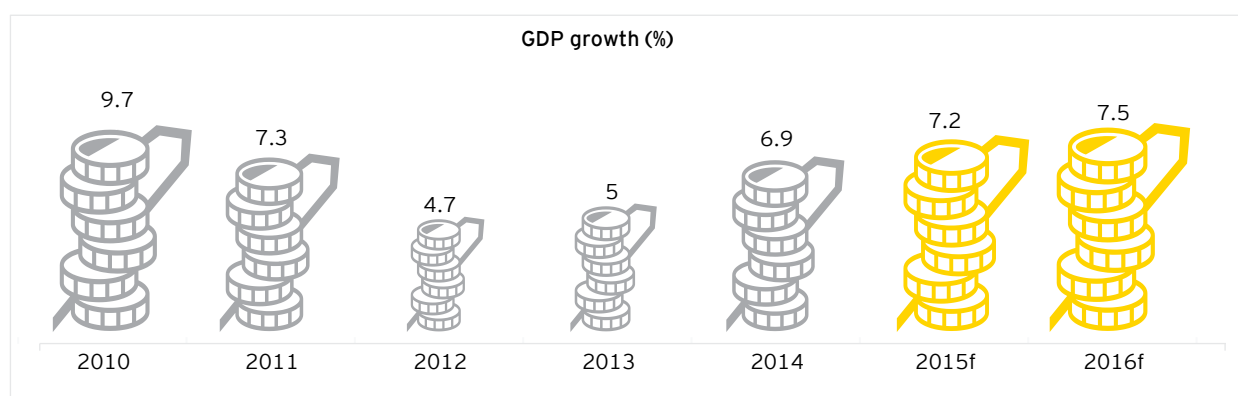
1.2 Indian economic scenario: favorable external environment and political stability paving way for optimism



In 2014 India elected a new government with a single party enjoying parliamentary majority – a first in the last 30 years, heralding a five-year term of political stability. A stable central government, relatively free from the constraints of coalition politics, naturally instilled high expectations of India being able to realize its mining potential by overcoming the policy paralysis that has plagued the Indian economy in general and the mining sector in particular for the past several years.

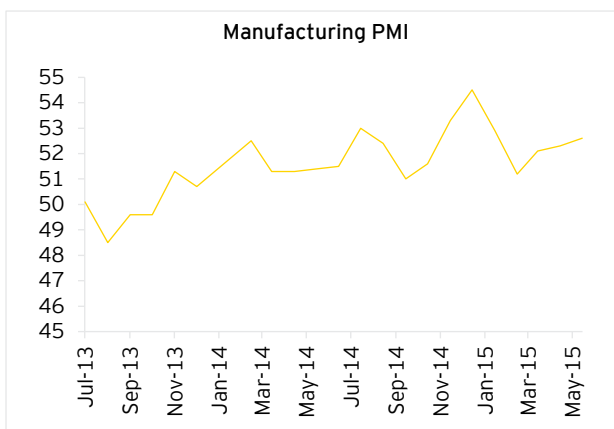
A year down the line, wild exuberance has given way to a more realistic optimism as the Government starts implementing its reform agenda amid obvious structural challenges in order to unlock investments. The Government's reform measures are focused on improving the business environment, liberalizing foreign direct investments (FDI), enhancing investment in infrastructure, rapid resolution of corporate tax and other issues.

Leading economic indicators are pointing toward green shoots with the World Bank opining that the Indian economy seems to have “turned the corner”. The GDP growth is projected to accelerate to 7.2% in FY15 and 7.5% in FY16 compared to 6.9% in FY14 signifying a healthy pace of economic growth.

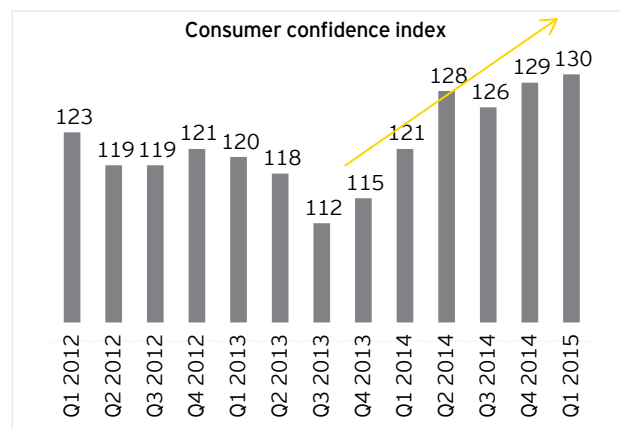


Source: World Bank

Manufacturing PMI has been on an upward trend, since May 2014 touching the highest of 54.5 in December. A marginal decline has been reported in 1Q15 due to slow improvement in operating conditions across the manufacturing sector. Specifically in the mining and metals sector, recent developments in the Government's reform agenda such as the MMDR Amendment Act and Land Acquisition Bill are expected to push the growth agenda forward. The general investor mood in India is also upbeat and hopeful of seeing growth and progress as evidenced by the rise in consumer confidence index.

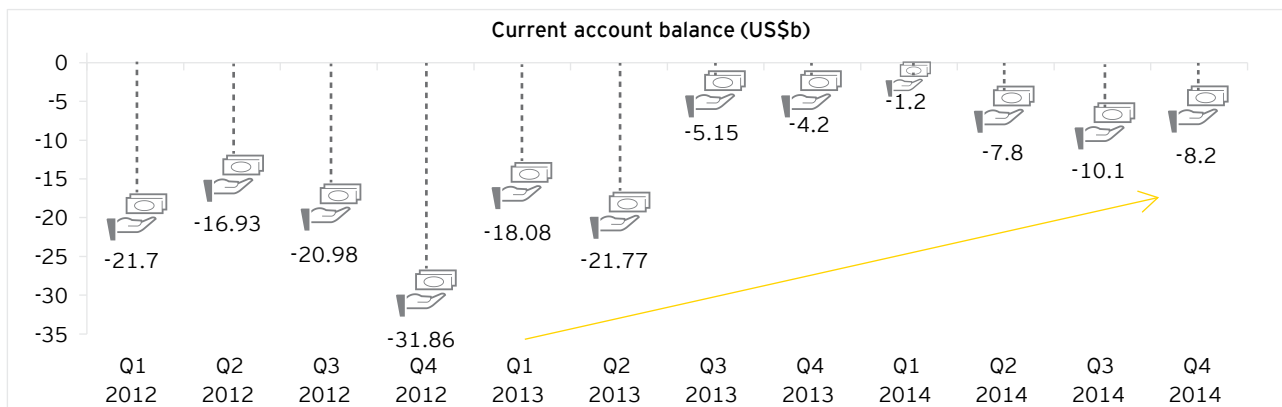


Source: HSBC Emerging Markets PMI and EY analysis



Source: Trading Economics

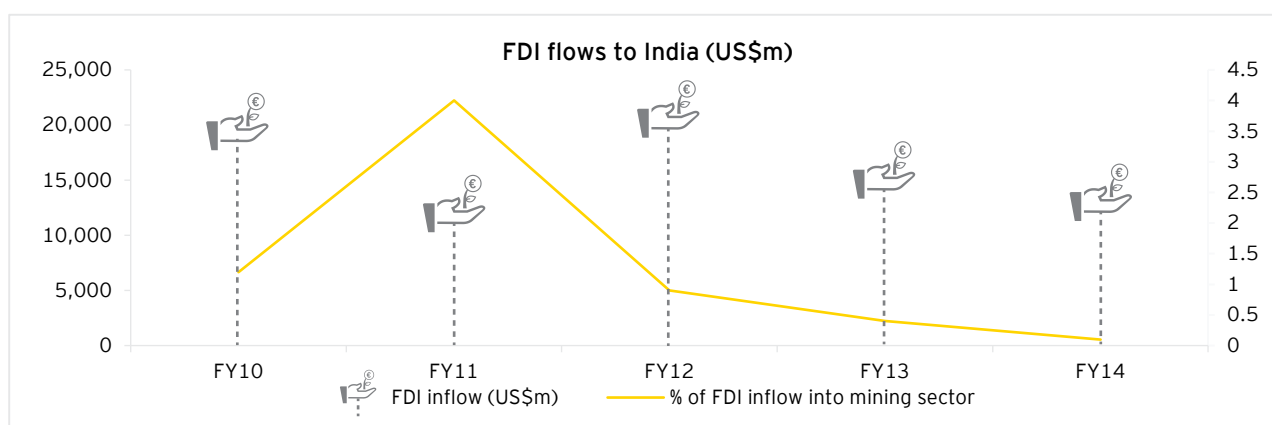
Another area of concern, India's current account deficit, that had risen to unsustainably high levels in 2012-13, has improved significantly as the significant decline in oil prices (by almost 50% since mid-2014) and the decline in gold imports have greatly eased the current account deficit. This has helped elevate the problem of excessive capital outflow and consequent weakness in rupee, thereby stabilizing the economy.



Source: Trading Economics

Sourcing funds for growth: the new MMDR Act expected to bring in much needed foreign investments

India is in dire need of foreign investment to boost growth in various sectors particularly in mining and metals, infrastructure and construction. To achieve this, the Government has been opening up various sectors for foreign direct investment (FDI), since the last few years. However, in the last two fiscal years, FDI inflow declined by 17%, while FDI into the mining sector declined to a paltry US\$24m in FY14 from US\$204m in FY12. Procedural and permit delays in mining operations, regulatory and administrative procedures, inadequate infrastructure facilities and sustainability have led to very low FDI inflows in the mining sector historically. Moreover, coal, the largest mined mineral in India, was never opened to commercial mining, resulting in zero interest by global mining majors. However, with the promulgation of the MMDR Act, investment in mining and metals sector is expected to improve as it ushers in improved transparency and speed in licensing and permits.



Source: Reserve Bank of India

Secular growth trends indicate rise in demand: Is Indian mining and metals sector ready to supply?

The Indian economy is poised to shift gear onto a high growth trajectory, with rising urbanization, a flourishing service sector and a decisive policy agenda for accelerated development of industries. In the long term, rapid growth in user industries such as infrastructure, power, construction and automobiles is expected to propel growth in the Indian mining and metals industry. The Government of India plans to spend US\$1 trillion on infrastructure development during the Twelfth Five Year Plan. This, coupled with domestic automobile sector growth, indicates rising secular demand for steel, zinc, aluminium and copper in the near future.

Currently, growth in the mining and metals industry lags behind the country's overall economic growth. Growth in major commodities, especially iron ore, coal and steel industry is considerably constrained primarily due to infrastructure bottlenecks, use of obsolete technology, governance issues and mining ban that was in force until recently in a few mining states. Together with that, social unrest and land acquisition issues have constrained bauxite mining for major producers.

Even as broad economic indicators hint toward recovery and improving business optimism, the Indian economy stands at a cross-road with growth and opportunity being challenged by economic volatility, crisis in foreign countries and dire need for policy reforms. Deft handling of these issues by the Government and the Reserve Bank of India (RBI) will determine the pace and direction of growth for all sectors in India and especially for the mining sector, which had been struggling with legislative inaction, weak regulatory environment and lack of investment.





2 Mining

2.1 Indian mining industry

Scarcity amid plenty: vast reserves remain unexplored signifying high potential for growth

India is endowed with vast reserves of key metallic and non-metallic minerals including iron ore, bauxite, coal, limestone and manganese, and is among the top 10 countries globally for these ores. Mineral reserves are well distributed across the country with Andhra Pradesh and Rajasthan accounting for the highest number of mines in the country. However, India's eastern states, particularly Jharkhand, Chhattisgarh and Orissa, are the most mineral-rich regions in the country, with exhaustive untapped coal and mineral ore reserves. The reserves-to-production (r/p ratio) of various minerals in India remain low, reflecting significant unexplored opportunities in India. Consequently, there is an urgent need to expedite the exploration process. Lack of investment in exploration and inadequate information on resources are among the key issues facing the mining industry. India has explored only around 5%-20% of its mineral resources to date, compared with almost 100% geophysical and geochemical surveys in Australia (according to data from NSW Mining and Indian Bureau of Mines). Limited funds for exploration activity and the country's relatively complex mining policy environment have constrained survey and exploration activities.

R/P ratio of key minerals

Mineral	Production (2012-13)	Proved Reserves (as on 1.4.2013)	R/P ratio
Bauxite (kt)	15,360	321,258	20.9
Diamond (carat)	31,989	1,045,318	32.7
Copper metal (kt)	124	1,605	12.9
Gold metal (kg)	1,588	71,020	44.7
Iron ore (kt)	136,019	5,998,015	44.1

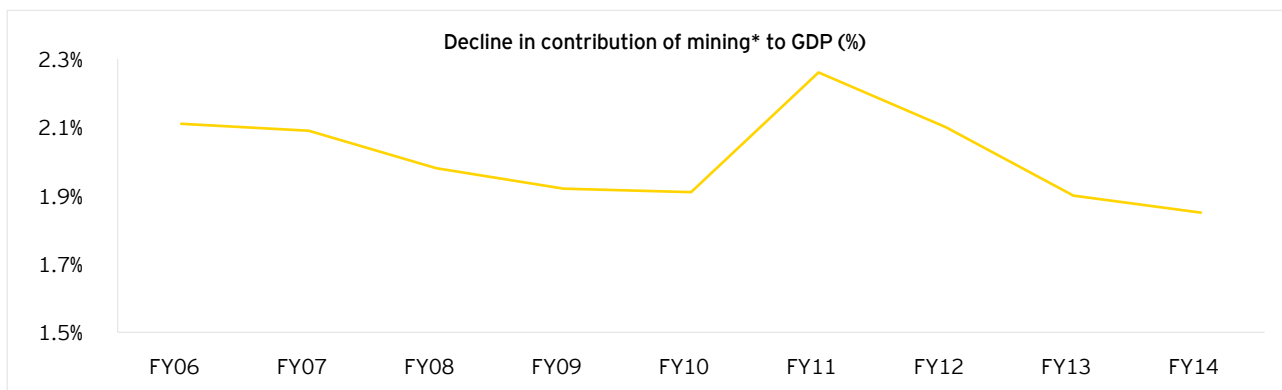
Source: Ministry of mines 2013-14 annual report

Production trend of key minerals

FY14	Production (2013-14)	Y-o-y growth (%)
Iron Ore (mt)	133	-2.1%
Coal (mt)	492	-11.7%
Bauxite (mt)	19	24.6%
Gold (kg)	1,411	-11.2%
Lead concentrate (kt)	192	4.4%
Manganese ore (kt)	2,310	-0.5%
Chromite (kt)	2,087	-29.3%
Diamonds (carats)	36,591	14.4%

Source: Ministry of mines 2013-14 annual report

Despite a large base of natural resources, India's production in key mineral categories has declined over the past few years. In FY14, the total mineral production declined 2.23% y-o-y, primarily due to mine closures on account of regulatory changes and lack of new mine allotments. As a result, mining and quarrying sectors contributed approximately INR1,063b to the GDP, a decline of 1.9% y-o-y in FY14. Growth in the industry lags behind the country's overall economic growth. Diminishing supply levels have created paucity of raw material for downstream industries in aluminium and steel.



*Excluding coal

Source: Ministry of Mines FY14 annual report

2.2 Challenges in the Indian mining sector

Low exploration expenditure: Despite being a mineral rich country, India accounts for a very low share in the global exploration budget – only 0.6% in 2014. Although the exploration budget for the country increased by 9.9% y-o-y to US\$61.9m in 2014, it is much lower than major regions including Canada and Australia, which stood at US\$1,487m and US\$1,254m, respectively.¹ There exists a pressing need to raise investment and expedite the exploration process. Only 5%-20% of the available mineral resources have been explored in India to date, compared with almost 100% geophysical and geochemical surveys in Australia.²

Inadequate infrastructure facilities: Lack of sufficient transportation and logistics facilities remains a key differentiator particularly for the development of mining areas in remote locations. For instance, poor railway connectivity and its inadequate capacity are major bottlenecks in output growth expansion for companies, e.g., Coal India. In order to increase its production, the Government has to focus on developing an integrated network and significantly improve rake availability. The FY16 railway budget, proposes an investment of US\$140b over the next five years with US\$16 billion, around 52% y-o-y increase in FY16 and a CAGR of 27% in the remaining years.³

1. "Overview of exploration trends," SNL Metals Economic group, November 2014

2. "Mining reforms: Awakening a giant," Barclays, 13 March 2015, via Thomson One

3. "Coal India: Initiation of coverage," UBS research, 15 April 2015

Procedural bottlenecks/regulatory challenges: Regulatory challenges and policy gridlocks are significant hurdles in the growth of the Indian mining sector. Time consuming multi-level processes and feeble enforcement of existing laws are major challenges. As on October 2014, a total of 63,946 applications for various mining concessions including 43,216 for mining leases (ML), 20,088 for prospecting licenses (PL) and 645 for reconnaissance permits (RP) are pending for approval with states.⁴ Weakness in legislative environment has also majorly deterred investment. For instance, India has not reported any large commitment of capital especially in the exploration industry from foreign players, despite 100% FDI permitted in the sector.

Several projects have been abandoned due to delays in acquiring land and obtaining environmental and forest clearances. According to the Fraser institute's Policy Potential Index (PPI), that surveys mining and exploration companies to assess the impact of public policy factors on investment, India is ranked low at 63 out of 122 provinces/countries. The PPI score stood at 47.5, reflecting an immediate need for improvement.⁵ The MMDR Act is expected to serve as a major step in resolving these issues. However, the progress to resolve policy related bottlenecks remains slow.

Corruption: Indian mining and metals companies are constantly exposed to fraud and corruption challenges and consequently suffer losses not only in terms of revenue generated but also in terms of loss in material supply. The issue is highly pertinent in the mining sector, where corruption has been frequently reported, given the complicated processes and little transparency. In the Transparency International's (TI) Corruption Perceptions Index 2014, India ranked 85 out of 175 countries, achieving a score of 38, on a scale of 0-100 where 0 implies that the country is perceived as highly corrupt.⁶ The TI score has marginally improved, since 2013, indicating the positive impact of government measures and judiciary intervention.

Social unrest: The Naxalite movement has been stated as the biggest internal security challenge and has had a detrimental impact on the Indian mining sector. Incidentally, around 70% of CIL's extractable reserves are located in three states – Orissa, Jharkhand and Chhattisgarh – which are plagued by the Naxalite movement. The development of mineral deposits and infrastructure across Naxal-dominated areas has been delayed due to recurring extortion and attack threats. For instance, NMDC's INR6.07b Bailadila expansion project was significantly delayed after Naxals burnt part of a conveyor belt meant for evacuating the raw material from the new mine.⁷

4. "Expedite 63,946 pending mines leases: Centre to states," The Economic Times, 6 October 2014, via Factiva.

5. "Survey of Mining Companies," Fraser Institute, February 2015

6. "Corruption Perceptions Index 2014," Transparency International, <http://www.transparency.org/cpi2013/results>, accessed on 11 May 2015.

7. "Naxalite problem hits NMDC's Bailadila mine expansion," The Economic Times, 4 September 2014, via Factiva.

MMDR Amendment Act 2015: unlocking Indian mining and metal sector's true potential

The Government of India promulgated an ordinance on 12 January 2015 on amendments to the MMDR (Mines and Minerals Development and Regulation) Act, 1957 in effect enforcing the much awaited policy reforms in the mining sector in India. The ordinance was passed by the Loksabha and signed by the President and became an act effective from 12th January 2015

The Act is expected to usher in a stable mining regime by fostering increased transparency, competitiveness and efficiency in the system.

The main features of the Act are as follows:

- ▶ Promoting transparency:
 - ▶ All mineral concessions will be granted by respective state governments through auction, thereby, removing discretionary allotments and improving transparency.
 - ▶ There will be no renewal of mining concession and at the end of 50 years the concession will be put for auction.
- ▶ Improving efficiency:
 - ▶ State governments no longer require Central Government approval for granting mineral concessions for ten minerals including iron ore, manganese, bauxite, copper and gold.
 - ▶ However, Central Government will have the power to intervene where the State Government does not pass order within prescribed timelines, eliminating the possibility of delays.
- ▶ Upholding continuity of operation:
 - ▶ Mining leases will be deemed to be extended from the date of last renewal to 31 Mar 2030 for captive miners and till 31 Mar 2020 for merchant miners, or till completion of the renewal already granted, if any, whichever is later. This will help many mines to re-start operations that had been closed due to delays in renewals.
- ▶ Fostering social licence to operate:
 - ▶ A District Mineral Foundation (DMF) will be established in districts where mining takes place. The DMF will address the grievances of local population that are affected by mining activity. There is a separate provision for contribution to the DMF not exceeding one-third of the royalty rate in various minerals.
- ▶ Curbing fraud and corruption:
 - ▶ Penalties have been increased and jail terms imposed to counter illegal mining. Moreover, special courts will be constituted by state governments to fast-track trials of cases related to illegal mining.

2.3 Recent developments

The Indian Government has set the stage for a paradigm shift in the Indian mining sector with the recent Supreme Court directed coal auctions and the proposed auction of other minerals. These broad-based reforms proposed by the Government would have several implications, some of them being:

- ▶ An increase in mineral exploration, production and availability, which are likely to aid the commissioning of many stalled projects
- ▶ Significant fundraising for state governments from the auction of mineral resources (around US\$250-300b over a 25-30 year period, according to many prevalent estimates)
- ▶ A more stable and predictable regulatory environment facilitating growth in the sector

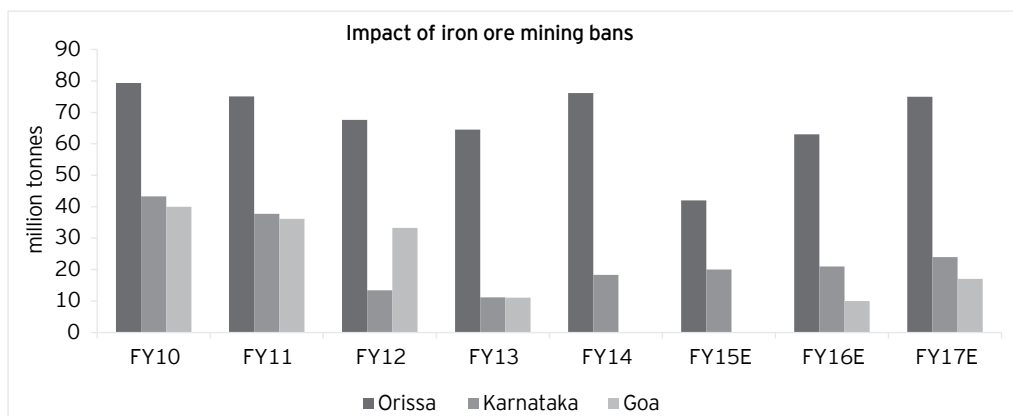
After formulating the MMDR Act, the Government in April 2015, has come out with draft rules for auction with an intention to implement them for all further auctions of minerals. This is further expected to clarify any ambiguity and simplify procedures in the MMDR Act and provide a fillip to mining activity in the country.

The Government has taken into account the apprehensions of many existing miners and addressed the business continuity concerns in the MMDR Act. Accordingly, it has extended the existing and pending leases of mines for captive purposes till 31 March 2030 and for commercial mines till 31 March 2020 or a period of fifty years, whichever is later. This has eliminated uncertainty to a large extent in the minds of various players, thereby protecting their substantial investments.

2.3.1 Iron ore: as restrictions on iron ore mining are lifted, India progresses toward achieving pre-ban production levels

The iron ore production declined from 219mt in FY10 to an estimated 116mt in FY15.⁸ The supply has been adversely affected due to mining bans imposed by the Supreme Court. Moreover, major iron ore producing states have put in restrictions in the form of production caps as a part of the Government's efforts to curb illegal mining and conserve environment.

8. "Indian iron ore sector: At a melting point," Macquarie research, 27 February 2015, via Thomson One



Source: Macquarie research

Despite partial lifting of bans in iron ore producing regions, production volumes remain low.

Iron ore mining states	Peak production (mt) (Post- 2010)	Production FY15E (mt)	Capped production (mt)
Karnataka	43.3	20.0	30.0
Goa	40.0	0.0	20.0
Odisha	76.1	42.0	57.0
Jharkhand	23.9	16.0	-
India	219.0	116.0	-

- **Karnataka:** Although the Supreme Court lifted the 21-month ban on iron ore mining in April 2013, the production growth remains slow, mainly on approvals for reopening of mines and category 'C' mines waiting to be auctioned.
- **Goa:** Miners are still awaiting some approvals and statutory clearances to restart operations, although the Supreme Court has lifted the 18-month iron ore ban in Goa in April 2014.
- **Odisha:** The ban was partially lifted in June 2014 after the state government granted express clearances to 8 of 26 iron ore and manganese mines that were running on automatic renewal of leases. The mining leases of the remaining 18 mines are also expected to be renewed soon according to recommendations of a panel of state mining ministry.
- **Jharkhand:** In September 2014, the State Government ordered the closure of 12 of 17 iron ore mines, since their leases expired. The move was a part of the government's efforts to amend the mineral concession rules of 1960, which led to the temporary closure of mines owned by Tata steel, SAIL and Orissa Manganese. However, in December 2014, the Jharkhand High Court permitted both Tata Steel and SAIL to restart mining operations.

Going forward, iron ore production is expected to recover on restart of mining operations in Goa, ramp-up of category A/B mines in Karnataka and 17mt capacity expansion in Odisha.

2.3.2 Coal: Indian coal sector on its way to major transformation

Inadequate infrastructure and regulatory hurdles around statutory clearances have continued to adversely impact production growth in the Indian coal sector. As the industry struggles to bridge the demand-supply gap, the reliance on imported coal has increased significantly, in-turn affecting the country's import bill. With coal production growing at a sluggish 5% CAGR over FY05-FY14, the coal imports recorded a 16% CAGR over the same period.⁹

In order to address the coal shortage and alleviate major bottlenecks hindering growth, the Government continues to introduce multiple reform measures. (With a view to eliminate transaction costs and quality verification disputes associated with different grades of coal, the Government rationalized the duty structure of non-agglomerated coal at 2.5% basic customs duty and 2% countervailing duty.)

Coal de-allocation and following auction:

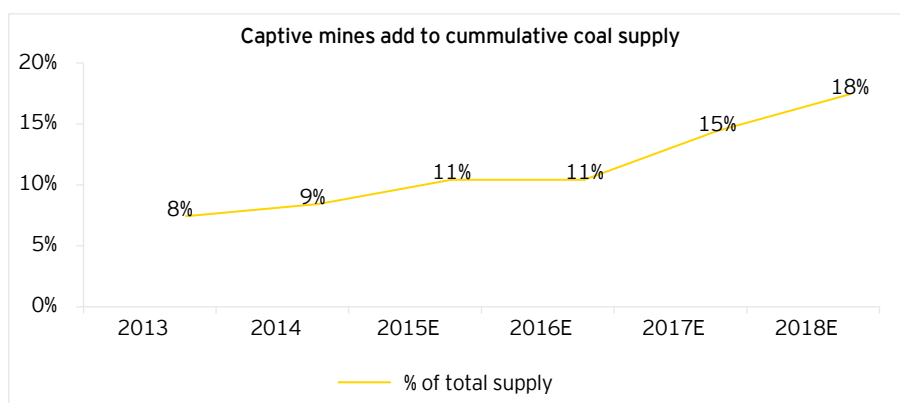
In September 2014, the Supreme Court declared the allotment of 204 coal mines between 1993 and 2010 as illegal. Following the decision, the Government issued an ordinance to auction the de-allocated coal blocks. This judgment and subsequent re-distribution is expected to have significant benefits for the Indian coal sector.

- **Boost coal supply:** The ongoing coal auctions are expected to boost coal production at a 12.2% CAGR over FY15-FY20e from newly auctioned mines. The captive mines, which contributed 9% and 11% of coal output in FY14 and FY15e respectively, are expected to witness an increased output during FY15-FY18.¹⁰



9. "Mining reforms: Awakening a giant," Barclays, 13 March 2015, via Thomson One

10. "India Coal- Mine Auctions: Harbinger of a New Era," Morgan Stanley, 24 April 2015, via Thomson One



Source: Morgan Stanley

- **Decline in dependency on imports:** The import share of thermal coal is likely to decline from 23% in FY15 to 12% in F20e. The decline in imports will affect the power sector more, in comparison to non-power sectors such as steel.
- **Decline in average coal price in medium term:** The coal procured from captive blocks is expected to be more cost effective than the imported coal, with the incremental coal proving 19% cheaper than average coal costs.¹¹

Summary highlighting the distribution of auctioned coal blocks across the power and non-power sectors:

31 coal blocks were auctioned during Phase 1 and 2			
	Schedule II	Schedule III	Total
Power			
Chhattisgarh	1	1	2
Jharkhand	1	2	3
Madhya Pradesh	1	-	1
Odisha	1	2	3
West Bengal	2	-	2
Total	6	5	11
Non- power			
Chhattisgarh	5	1	6
Jharkhand	1	5	6
Madhya Pradesh	3	1	4
Maharashtra	2	1	3
West Bengal	1	-	1
Total	12	8	20
Grand total	18	13	31

Note: please find the individual details of the Phase 1 and 2 results in the appendix

11. "India Coal- Mine Auctions: Harbinger of a New Era," Morgan Stanley, 24 April 2015, via Thomson One

Bid values

The recently held auctions for 31 coal blocks were largely successful with considerable accruals to the state and central governments over the life of the mines (estimates peg it to be INR2t). Depending on their need and other parameters such as grade of coal, distance of mine etc. companies bid aggressively to secure the vital raw material for their plants. While a few bids were rejected by the Government and a judicial process is currently underway, the auctions were largely successful and with a few modifications, is the way ahead for the sector to unlock its immense potential.

Enabling provision for merchant mining of coal

The government, it seems, is moving toward a philosophy of opening up the coal sector to merchant mining. The Coal Mines Act has a provision enabling commercial mining. However, it will be some time before this is operationalized. Furthermore, this seems to be the road ahead for all minerals as the Government seeks to unlock value and bring in transparency and efficiency in the mining sector.

CIL aggressively pushing for volume growth

In addition, the Government is also focusing on removing hindrances for Coal India (CIL) to achieve its 1 billion ton excavation target for coal by 2020. CIL has been battling with infrastructure development, environmental clearance and labor management issues from last few years, leading to loss of productivity and slow growth in output. In order to boost volume growth, CIL is also investing in infrastructure development and using other production modes such as mine developer cum operator (MDO) model.



A close-up photograph of several large, coiled steel coils. The coils are arranged in a way that creates a strong sense of depth and repetition, with the metallic surfaces reflecting light in a way that highlights their texture and the circular patterns of the coils. The colors range from dark grey to a bright, almost golden-yellow where the light reflects off the surfaces.

3 Steel

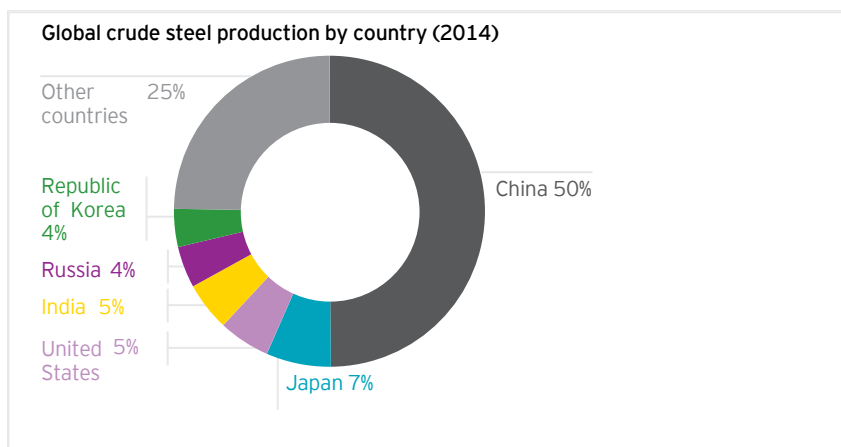


Persisting supply glut globally amid slow economic growth in China poses the biggest threat to the steel industry. In the long term, steel industry fundamentals are expected to stabilize from demand growth in emerging economies driven by rapid urbanization and increased investment in housing, infrastructure and manufacturing, while China rationalizes its steel capacity.

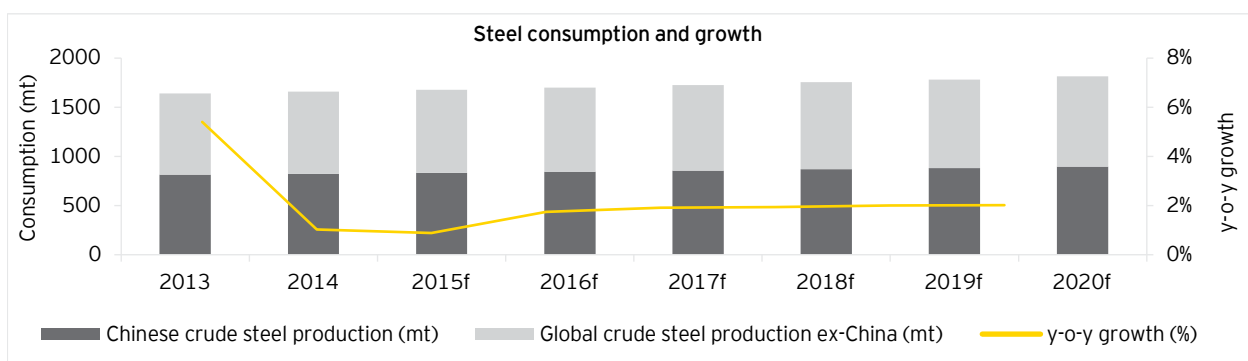
3.1 Global steel industry

The global steel industry continues to face myriad challenges including excess capacity, low access to capital amid high debt levels, increased competition due to low market concentration and increased trade protectionism. This is preventing the sector from undergoing the transformation necessary to drive steel companies to expand and globalize operations.

In 2014, growth in steel consumption declined to 0.67% y-o-y down from 6.1% in 2013, on weak demand from China's faltering property sector. In China, 6% y-o-y contraction in residential construction in 2H14 due to demand weakness and subsequent inventory build-up led to a decline in domestic steel consumption. In addition, consumption in the EU and Japan also declined by 0.5% y-o-y and 2% y-o-y, respectively on weakness in economic activity. Although consumption in the US, India and Brazil remained firm, it was not strong enough to offset the decline in Chinese consumption.



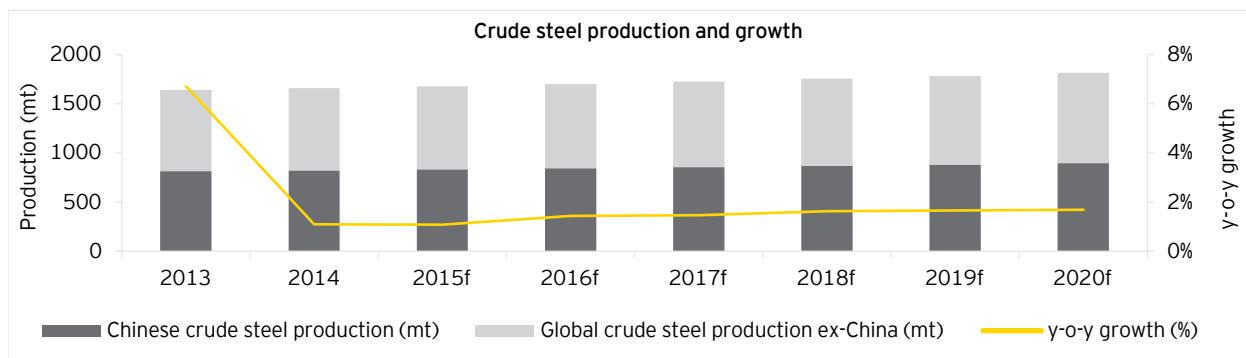
Source: USGS



Source: BREE

In 2014, global steel production increased by 1.1% y-o-y to 1.66 billion tonnes, despite several capacity cuts and governments' efforts to rein in the excess capacity. The increase in total global production was mainly driven by 1% y-o-y growth in China's steel production. Moreover, steel production in the US rose by 1.5% to 88mt driven by increased domestic consumption and reduced energy costs. In addition, output in India and South Korea grew by 2.5% and 7.6%, respectively bolstering global volume growth.





Source: BREE

Global steel industry outlook

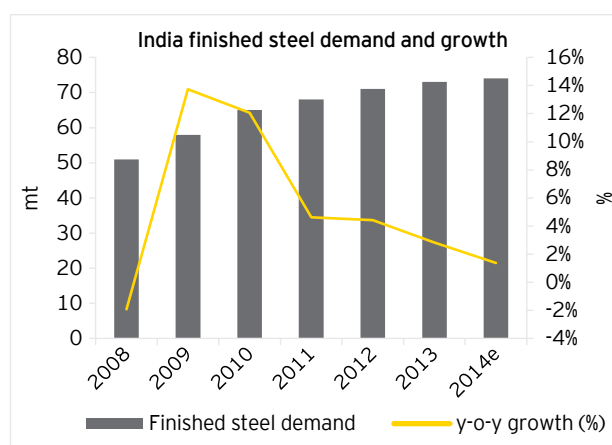
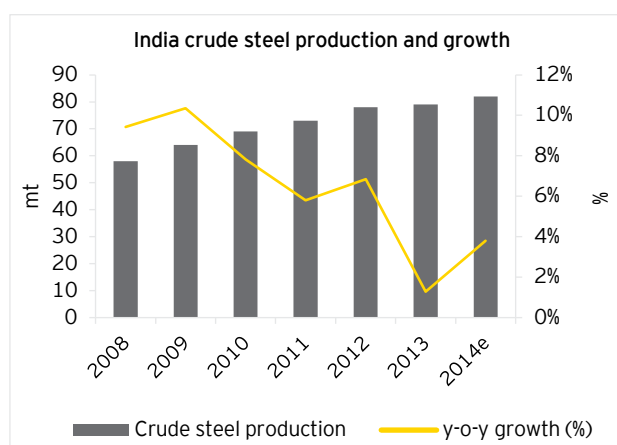
While the outlook for steel in the global economy is generally positive, with a growth of ~3% forecasted in 2015, there are several risks in the medium term. We think that steel companies will need to restructure to face global headwinds such as uneven growth patterns across geographies, excess capacity, low market concentration, high debt, lack of access to capital, increased environment regulation, trade protectionism and increased competition from digital platforms, all of which are changing continuously. Companies will now have to understand that globalization is no longer a matter of choice – it is a matter of survival. They are now forced to adapt to global supply chains based on rules of minimum costs and production efficiency. For example, by linking into the already established global supply chains of customers, such as some automotive and machinery manufacturers, steelmakers will be able to improve their long-term competitiveness.

The industry fundamentals are expected to balance in the medium term with steel consumption projected to grow at an average of 1.6% p.a. to 1.8 billion tonnes in 2020, driven by investment in fixed assets primarily in emerging economies. Steel consumption in China is expected to remain subdued, due to slowdown in China's economic growth. However, Government measures such as reduction in interest rates and deposit ratios to support the residential construction may support steel demand. On the other hand, the global steel sector will continue to face the overhang of excess capacity, which is expected to continue in 2015, with crude steel production forecasted to increase by 1.1% y-o-y to 1.68 billion tonnes.



3.2 Steel industry in India

Steel consumption in India rose by 2.5% in 2014 to 83mt driven by increased investment and growth expansion in infrastructure and housing sectors.



Source: Morgan Stanley

Global developments will shape the Indian steel landscape

To date, the Indian steel sector has been relatively insular; however, it will increasingly be affected by developments in global steel, raw material and energy spaces. Some of the key global factors that will influence the extent, speed and form of domestic growth, from a medium- to long-term perspective, include:

- ▶ Sizeable surplus of steel scrap in China in future
- ▶ Shale gas emerging as cheaper source of fuel
- ▶ Emission norms for end-use products driving innovation in steel
- ▶ Stringent environmental regulation impacting feasibility and locations of new capacity
- ▶ Developments in project pipeline of iron ore, coke and their global prices
- ▶ Capital availability and capital allocation challenges
- ▶ Flattening global cost curve and shifting manufacturing competitiveness for end-use sectors
- ▶ Bilateral trade agreements and trade protection measures

3.3 Domestic steel industry: challenges

Regulatory environment

Despite various upcoming projects, the Government's target to raise steel capacity to 300mt by 2025 faces several challenges. Delays in obtaining statutory, environmental and forest clearances and land acquisition problems have forced major steel players to stall or abandon projects worth more than INR900b in India.¹²

The Indian Government is already considering various measures to expedite the implementation of steel projects. Currently, the Government is focussing on expediting 85 infrastructure projects in sectors including steel, power, port/shipyard and roads.¹³ This move comes after the Centre eased the land acquisition process by ordinance, by exempting the requirement for consent of at least 70% of landowners, in order to accelerate stalled infrastructure projects for defence requirements, rural infrastructure, affordable housing and industrial corridors.¹⁴ In addition, other steps including introduction of a single e-window to submit and track the status of applications for grants of resources or clearances from multiple governmental agencies and creation of SPV to encourage the collaboration of various stakeholders, are underway.

Access to infrastructure

Inadequate infrastructure and low carrying capacity has limited the growth of steel industry in India since it not only affects raw material supply but also distribution of finished steel. The steel industry requires an increase in transportation capacity through both rail and roads cumulatively to 1,200mt by 2025 from 400mt in 2013, to achieve its target of 300mt of finished steel capacity by 2025-26.¹⁵ With the Indian railways accounting for 70% of the steel industry's transportation needs, the expansion and reach of railway network remains highly imperative for the growth of the steel industry. To cope with 300mt steel production levels, the freight handling capacity of railways needs to increase 200% to 800mt by 2025.

To manage this increasing demand, the Government is currently focusing on building rail network capacity in key mining areas as well as mobilizing funds to support growth with plans to invest US\$137b over 2015-19.¹⁶ Moreover, timely execution of infrastructure projects to ensure cost-effective availability of raw material including coal and iron ore is essential. Railways need source-to-destination pairs for integrated network, which needs visualizing and planning long-term economic activity around those regions.

Raw material availability

Of late, the Indian steel producers are facing new challenges in procuring raw material – primarily iron ore – to support increased steel production.

Domestic supply of iron ore has been severely affected, since the Supreme Court's ban on mining in Karnataka and Goa. As a result, Indian steel mills have been forced to import substantial volumes of iron ore, which is expected to increase to 15mt in FY'15, since it would be sometime before production resumes to pre-ban level.¹⁷

12. "No Promised land," Business Today, <http://businesstoday.intoday.in/story/narendra-modi-government-land-acquisition/1/206795.html>, accessed 6 May 2015.

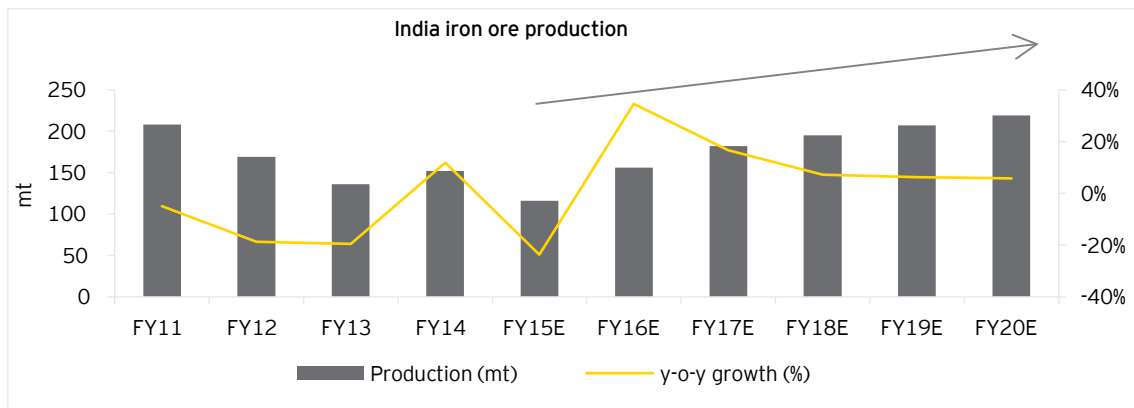
13. "Centre to get 85 stalled infra projects moving," The Hindu, 28 April 2015, via Factiva

14. "Indian Land-Acquisition Rules Eased by Modi Executive Order," Bloomberg, 29 December 2014

15. "Long Term Perspectives for Indian Steel Industry," Ministry of steel, <http://steel.gov.in/Long%20Term%20Perspectives.pdf>, accessed 11 May 2015

16. "India aims to invest \$137 billion in railways in next 5 years," Reuters, 26 February 2015, via Factiva

17. "Iron ore imports jump to record 15 MT in FY'15," The Economic Times, 6 April 2015, via Factiva



Source: "Indian iron ore sector: At a melting point," Macquarie research, 27 February 2015, via Thomson One

Competition from low-priced imports

Subdued domestic consumption in major steel producing countries such as China, has led to an increase in export by these countries. In FY14, China's steel exports increased by 50% to 94mt.¹⁸ Due to a price differential between domestic production in countries such as the US and Europe and low cost of imports, several countries are adopting protectionist measures to safeguard their steel producers. For instance, in India the difference in price between domestic and imported hot rolled coil was INR3000-4000/t or around 10% in April 2015.¹⁹ Major steel makers such as Tata Steel and JSW Steel reported a decline in quarterly profits, after an increase in low priced imports hurt their profitability; in FY15 steel imports grew 71% to 9.3mt.²⁰ In the wake of which, there is a demand for anti-dumping measures in India. A few steps that have been taken include:

- ▶ The Indian trade ministry is considering anti-dumping duties ranging from US\$180/t to US\$306/t for an industrial-grade stainless steel imported from China, Malaysia and South Korea.²¹
- ▶ The Finance Ministry has proposed to increase peak rate of customs duty on finished and semi-finished steel products to 15% from 10%, creating a possibility of increase in import duty.²² However, the Government needs to raise both, its tariff and non-tariff barriers, to protect the domestic steelmakers from surging imports.

Capital availability: Given steel making business's volatile margins, cash flows and sizable investment requirement for capacity additions, access to large capital at reasonable costs remains a challenge to steel makers.

3.4 Steel industry: opportunities

The Indian steel sector is expected to show modest demand growth at a CAGR of 8.9% between 2015 and 2020 supported by increasing urbanization, which is expected to bolster residential and infrastructure construction activity.

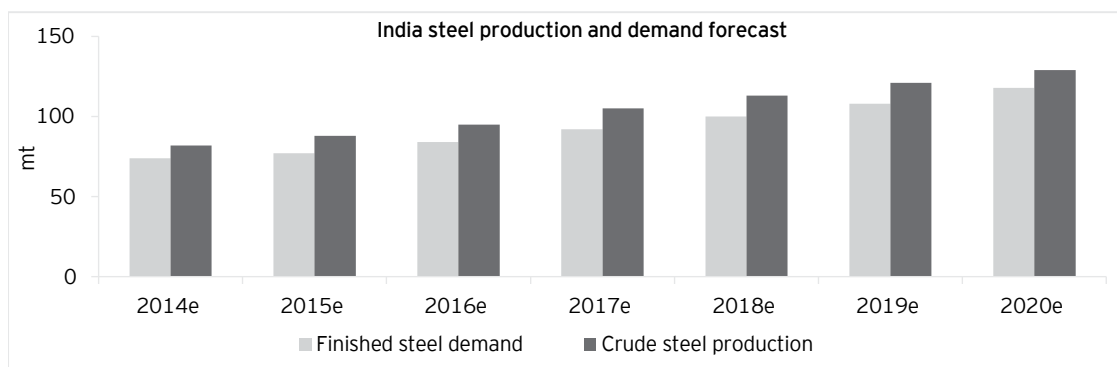
18. "Resources and Energy Quarterly," BREE, March 2015

19. "Govt mulls anti-dumping duty on China steel imports," Financial Express, 3 April 2015, via Factiva

20. "Steel imports climb 50% in April, exports fall," Business standard, 7 May 2015, via Factiva

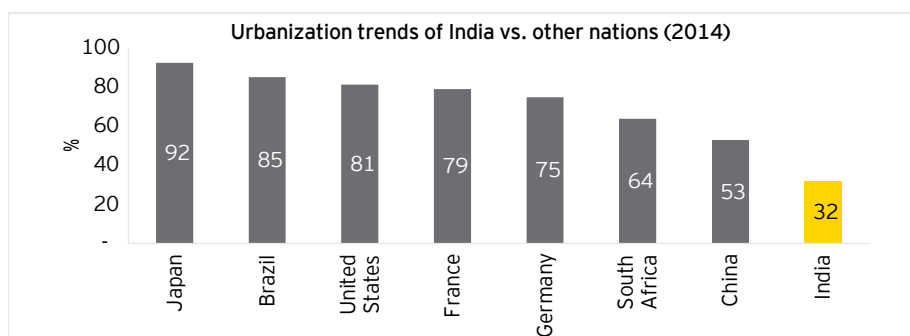
21. "India plans anti-dumping duty on some steel from China, others," Reuters News, 11 March 2015, via Factiva

22. "Government proposes to hike peak rate of customs duty on steel products," The Economic Times, 28 February 2015, via Factiva



Source: Morgan Stanley

Increasing urbanization will primarily drive steel consumption growth in the long term. In 2014, around 32% of India's population lived in urban areas, which is considerably lower than other countries, signifying the considerable demand potential for steel in India.



Source: Worldsteel.org

By 2050, the number of urban dwellers is expected to double to 800 million and will create a pressing need for infrastructure development. The Government has planned US\$1t investment to build 100 smart cities as satellite towns of large cities by 2022.²³ A constant growth in urbanization rate is expected to drive residential and infrastructure construction in the country. Infrastructure initiatives by the Government include an increase of INR700b investment in infrastructure for FY16, which is expected to provide a boost to steel demand.²⁴ The construction of the INR800b freight corridor will not only spur steel consumption but also ensure efficient transport and reduce dependency on the Indian railways by reducing 70% of the railways freight traffic.²⁵ Additionally, under the Twelfth Five Year plan, the Government aims to construct 1 million houses and provide interest subsidy for another 1 million houses.

The demand from the Indian automotive sector also remains robust with vehicle production expected to increase 7.1% to 4.3 million in 2015. Moreover, demand for auto grade and anti-rusting steel is expected to grow rapidly in the medium term.²⁶

Growth in the oil and gas industry will support the demand for steel pipes and tubes; with increasing investment in the sector expected to drive growth.

While robust demand over the long term will drive the demand need for additional capacity, the supply side response can be accelerated by addressing current challenges such as land acquisition, iron ore availability and cost of capital.

23. "India builds first 'smart' city as urban population swells," Reuters, 15 April 2015

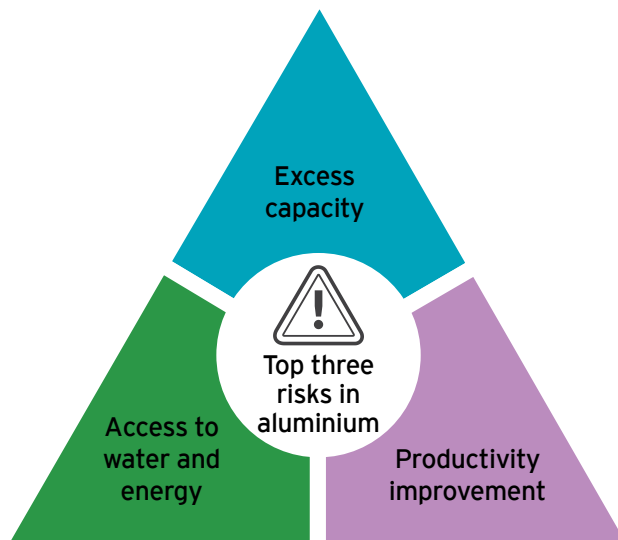
24. "Budget 2015: Infrastructure investment to be raised by Rs70,000 crore," The Mint, 28 February 2015, via Factiva

25. "Dedicated freight corridors will free up 70% of Railways' carrying capacity," The Hindu, 30 April 2015, via Factiva

26. "INDIA: AUTO REPORT- Q2 2015," BMI Research, January 2015



4 Aluminium



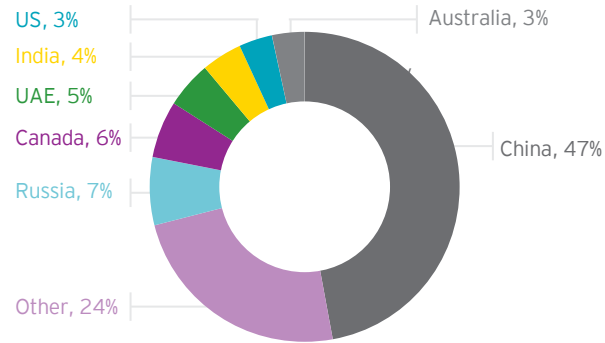
Aluminium remains one of the fastest growing metals in the base metals complex with robust global, end-market growth. Increasing traction in automotive applications promises potentially game changing incremental usage for aluminium in future, similar to the demand generated by beverage can market in the previous decades.

4.1 Global aluminium industry: Chinese overcapacity offsets the effect of supplier discipline by western producers; demand will see robust growth

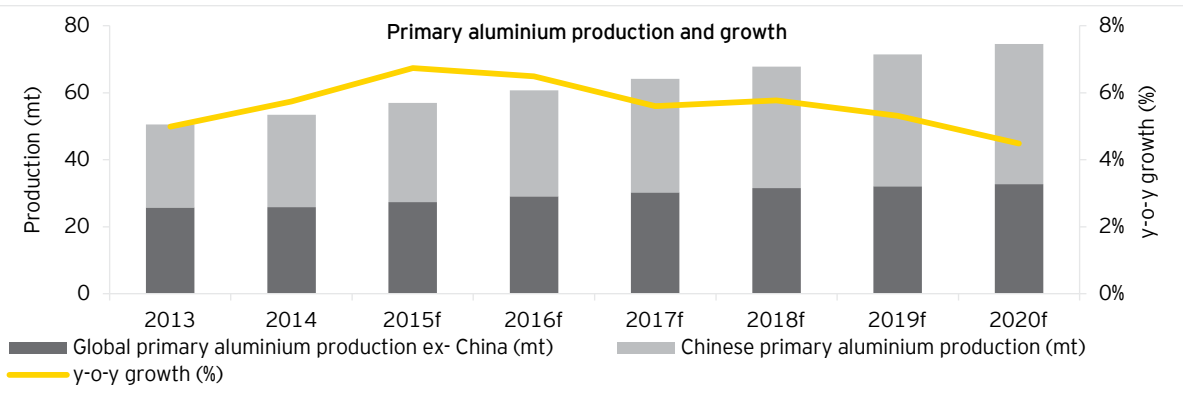
During 2014, global aluminium production increased by 6% y-o-y to 53.4 mt, compared to a 5% y-o-y growth to 50.5 mt in 2013.²⁷ Overcapacity and historically high levels of aluminium inventories in 2008-2013 prompted Western aluminium producers to significantly cut capacity over the past three years to control supply in an effort to arrest the steep decline in aluminium prices. However, overall global production has continued to increase as capacity is being added in China and the Middle East.

27. "Global Metals Playbook 2015," Morgan Stanley, 24 March 2015 via Thomson One

Global aluminium production by country (2014)



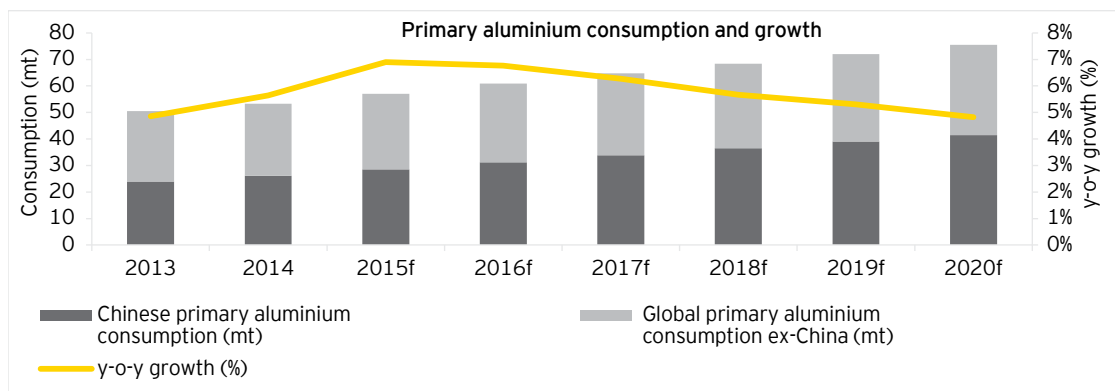
Source: USGS



Source: Morgan Stanley

During 2008-2013, global aluminium demand grew at a CAGR of 5%. Increasing application in transport, automotive and rising urbanization have underpinned this growth.





Source: Morgan Stanley

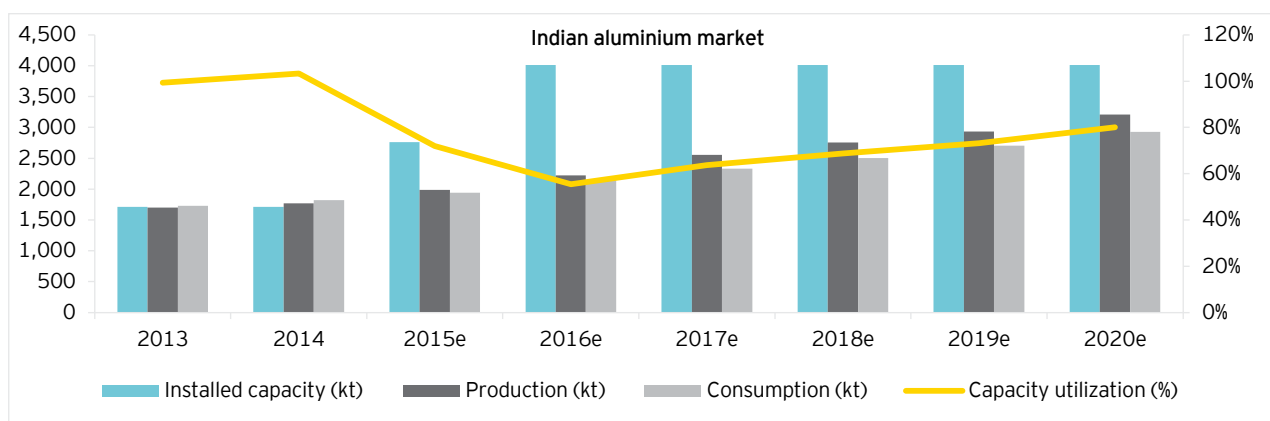
Outlook

Global aluminium production is projected to grow at a compounded annual growth rate of 6% to total 74.6 mt in 2020. Chinese aluminium production, growing at a CAGR of 7%, will contribute a major chunk of this growth such that by 2020, roughly 56% of the global production will come from China as compared with 52% in 2014. Application of aluminium in auto body sheets due to its lighter weight and increasing substitution of aluminium in copper applications, given its significant price advantage over copper is expected to sustain demand growth at 6% during 2014-20.

Despite healthy demand growth, LME aluminium prices are expected to be under pressure in the near term as overproduction from China offsets attempts by Western producers to regulate supply. Longer term aluminium prices at LME are expected to strengthen from current levels on robust demand, especially from emerging markets and increasing automotive applications.

4.2 Aluminium industry in India: growing affluence of consumers to underpin demand growth; producers adding capacity to tap into demand

India was the fifth-largest producer and fifth-largest consumer of refined aluminium in the world during, 2014. With major ramp-ups and new projects underway, total installed production capacity in the country is set to increase at a CAGR of 8% between 2015 and 2020. During the same period, production is set to increase at a CAGR of 10% while consumption is expected to grow at a robust 9% CAGR bolstered by increased demand from automotive, construction, consumer goods and packaging industries due to the growing affluence of Indian consumers. At the same time, as production outstrips domestic demand, India is expected to gradually turn into a net exporter of aluminium.



Source: HSBC Global Research

4.3 Aluminium industry: issues and challenges

Margin compression in face of falling price and premiums

The aluminium market has been highly volatile in the past few months with LME prices recovering to US\$2,000/tonne by November 2014 on production cuts by western producers, and then tumbling to below US\$1750/tonne by March 2015 and then recovering to over US\$1900/tonne by end of April 2015.

Premiums on spot delivery of the metal, which had thus far helped aluminium producers through a period of low LME prices, have declined substantially over the past few months such that premiums in the US declined by 20% in April 2015, reaching US\$308/tonne, lowest in more than a year and significantly lower than US\$400/tonne at the beginning of 2015. Spot Major Japan Port (MJP) premiums – a benchmark for premiums in Asia – were at US\$240-300/tonne amid abundance of stocks, while in Europe, Rotterdam daily duty-unpaid premiums dropped below US\$200/tonne in April for the first time, since December 2013.²⁸ Tapering down of premiums is mainly due to fear of unwinding of financing deals, which are not as profitable as before, causing a heavy flow of inventories from LME warehouses into the market (LME inventories have declined from 5.4MT in January 2014 to 3.9MT in February 2015). LME's warehousing reforms aimed at speeding up release of material out of its warehouses has also added to apprehension of legacy stocks hitting the market and depressing aluminium prices.

Aluminium producers therefore, face a particularly tough situation ahead as the slump in premiums have removed a major prop to profits, increasing pressure on them to further reduce costs by shutting high-cost capacity in order to stay above the red. Major global aluminium producers have announced fresh round of capacity cuts in 2015. For instance,

- ▶ UC Rusal is planning to idle 200,000 t of smelting capacity in 2015;
- ▶ Alcoa has announced plans to evaluate 500,000 t of aluminium smelting capacity and 2.8mt of alumina refining capacity;

28. "UC Rusal looks to idle 200,000t of smelting capacity, Q1 output up," Metal Bulletin News Alert Service, 22 April 2015 via Factiva

- Alcoa and its minority partner BHP Billiton have already decided to curtail the third and last of the running potlines at the 740,000 t/year Alumar smelter in Brazil.²⁹

In the current environment of low volatile prices, Indian aluminium producers face an additional challenge given that they have recently bid aggressively in coal block auctions. At the new input price for captive coal, Indian aluminium producers will be able to produce only sub-optimal results on new capacity compared to projections made before coal de-allocations.

Smelter re-starts and new capacity additions in China

China is continuing with capacity additions, which has significantly undermined efforts by Western aluminium producers to taper down supply in response to reduced prices. An estimated 4.3 mt/year of aluminium capacity is expected to be added in 2015 itself.³⁰ However, as domestic demand slows down China is expected to turn into a net exporter. As such, China's exports of primary, alloy and semi-finished aluminium grew by around 43% y-o-y in 1Q15. In particular, during the first two months of 2015, export of semis increased by 91% to 770,000 t on a 13% tax rebate.³¹ Exports are expected to increase given that China has repealed the 5%-15% tariff on aluminium strips and rods effective 1 May 2015.³² While this is expected to have more of a psychological effect, any move on reduction of export tax on primary aluminium will have far reaching consequences especially for high cost smelters outside China. Most of the Indian aluminium producers are operating in the first quartile of cost curve and may be able to counter low-cost imports from China. However, high cost smelters do face a tough time ahead until price recovery occurs.

Delays in ramp-up in India: policy hurdles and local community unrest

The key challenge facing domestic primary aluminium producers is that despite abundant reserves of bauxite in the country, producers are unable to secure bauxite to operate smelters at full capacity. While several players have announced their plans to make significant capacity additions in coming years, not many of these planned projects have taken off due to issues related to land acquisitions, mining leases, forest clearances and, relief and rehabilitation (R&R) policies. For instance, Sesa-Sterlite's Lanjigarh project has been stalled due to local protest against operation of Niyamgiri mine during the last few years. The company has now been forced to look for alternate mines besides considering procuring bauxite from alternative sources.

Coal auctioning and its impact on captive power cost

The recent Supreme Court intervention resulting in coal de-allocation and ensuing forward bidding for securing coal blocks have left major Indian aluminium producers sitting higher on the cash cost curve than previously for planned expansions. However, this is not expected to discourage producers from bringing new capacity online as they are still likely to operate in the first quartile of the global cost curve even at the increased cost of captive power.

29. "Alcoa's Brazil aluminum smelter latest victim of high costs," Reuters News, 31 March 2015, via Factiva.

30. "China copper output rises in March, aluminium hits record," Reuters News, 17 April 2015, via Factiva.

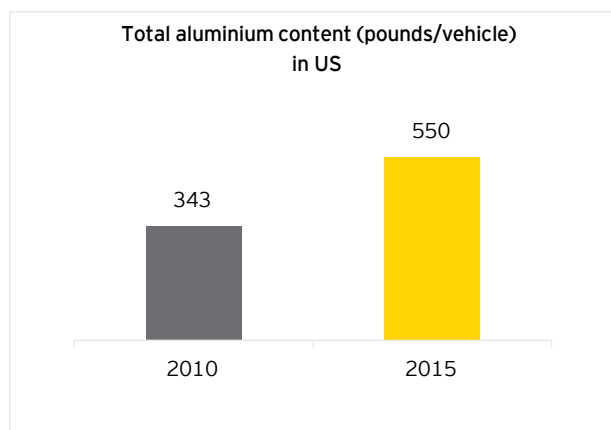
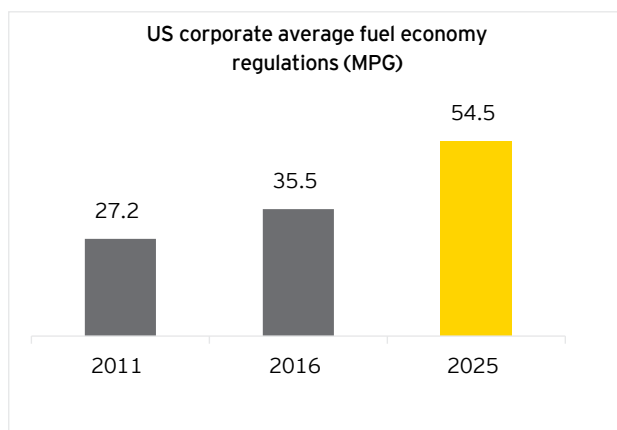
31. "China copper output rises in March, aluminium hits record," Reuters News, 17 April 2015, via Factiva.

32. "Alcoa: China Export Tax Decision Sinks Shares -- Barron's Blog," Dow Jones Institutional News, 23 April 2015, via Factiva.

4.4 Aluminium industry: opportunities

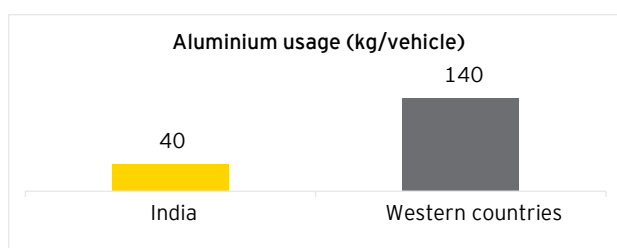
Switching gears: substitution of aluminium in automotive industry leading to demand boom

While aluminium players have been promoting the use of aluminium in automotive industry for several years, a significant breakthrough came with Ford's switch to aluminium in its best-selling F-150 pick-up truck in the US. With mandatory fuel efficiency norms, lightweight aluminium is turning into a metal of choice for automotive manufacturers. High-end luxury car makers such as Jaguar and Land Rover are already producing aluminium-intensive vehicles; however, its adoption into mainstream automobile manufacture holds a considerable potential for aluminium. In line with automotive demand forecasts, companies such as Alcoa, Norsk Hydro and Novelis have made significant investments in their value-added aluminium businesses.



Source: Alcoa website

As US and European fuel-conservation laws start to be adopted in Asian markets such as China and India, adoption of aluminium into low value-high volume small cars is expected to accelerate. Among Indian aluminium producers, with the exception of Hindalco, which has invested heavily in high-growth automotive sheet markets in the US, Europe and China, none of the other aluminium producers have significant downstream exposure. Additionally, given India's aluminium usage per vehicle and growing automotive demand, there is a considerable potential for domestic aluminium demand growth.



Source: Aluminium-india.org

Investment in Indian power and infrastructure sector

The demand for aluminium wire rods is driven by investments in the power transmission and distribution networks. More than 70% of aluminium demand from the electrical sector (which accounts for 48% of overall aluminium demand) is for manufacturing wire rods. The current power deficit in the country is likely to drive capacity additions in India. The Government has set a power capacity addition target of 88,425 MW for the Twelfth Five-Year plan (2012-17) period and launched several initiatives including the Ultra Mega Power Projects (UMPPs) to address chronic power shortages. Furthermore, India's demand for housing, retail and office space is expected to increase swiftly as the urbanization ratio increases. It is expected to increase from 31% in 2011 to 40% by 2030 with an estimated 610 million people living in the cities by 2030, which augurs well for aluminium demand.

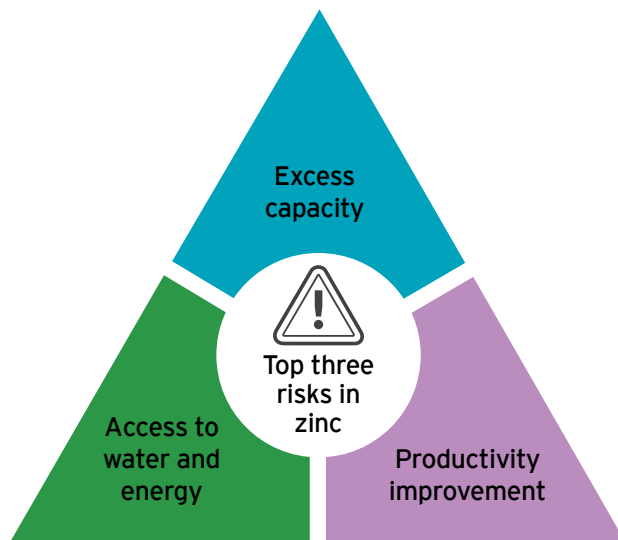
Growth of Indian consumer durables industries

Encouraged by the robust growth of the consumer durables industry in the last six years, driven by rising urbanization and consumption in the country, consumer durable majors in India such as LG, Sony, Videocon and Samsung are planning to ramp up production capabilities and investments in the country. The consumer durables market is anticipated to expand at a CAGR of 14.8% to US\$12.5 billion in FY15.³³ The increased production of consumer durables is expected to lead to increased demand for aluminium in India.

33. "Indian consumer durables industry analysis," Ibef website, <http://www.ibef.org/industry/consumer-durables-presentation>, accessed 12 October 2014



5 Zinc

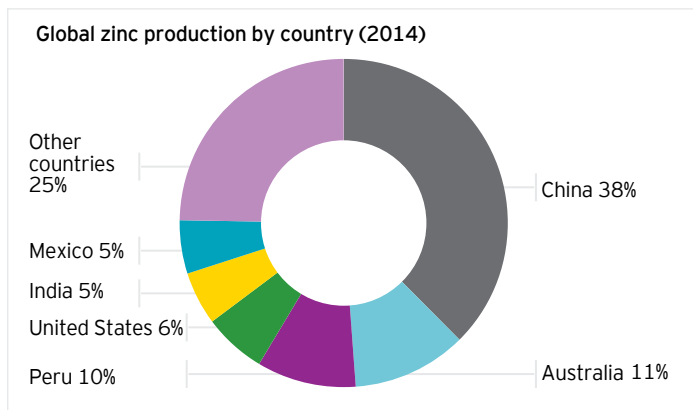


Zinc remains the only metal in the base metals complex that has registered a price appreciation thanks to closure of major mines that are constricting supply. While near-term demand is expected to slow down due to the slowing Chinese construction sector, long-term demand will still be driven by China and other emerging markets.

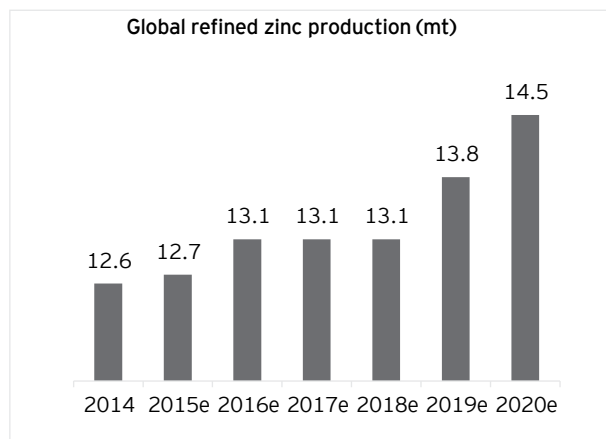
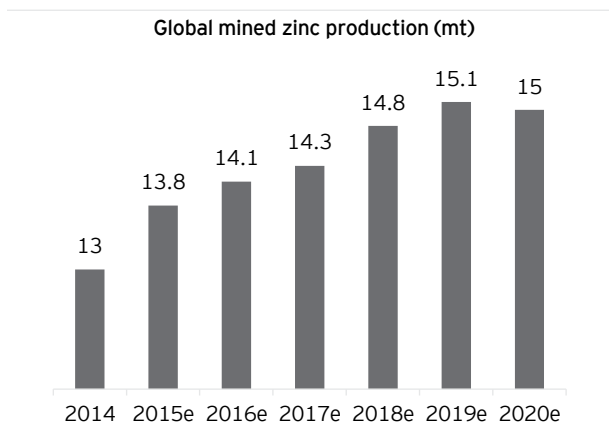
5.1 Global zinc industry: dwindling mine supply limits production growth; slowing demand in China dampens price potential

During 2014, global mined zinc output increased by 1% y-o-y to 13 mt, mainly driven by increase from China, while refined zinc production increased by 3% to 12.6mt.³⁴ Recent mine closures including Glencore's Brunswick and Perseverance mines in Canada and Terramin's Angas mine in Australia have offset the growth in zinc mine supply.

34. "Global Metals Playbook 2015," Morgan Stanley, 24 March 2015 via Thomson One



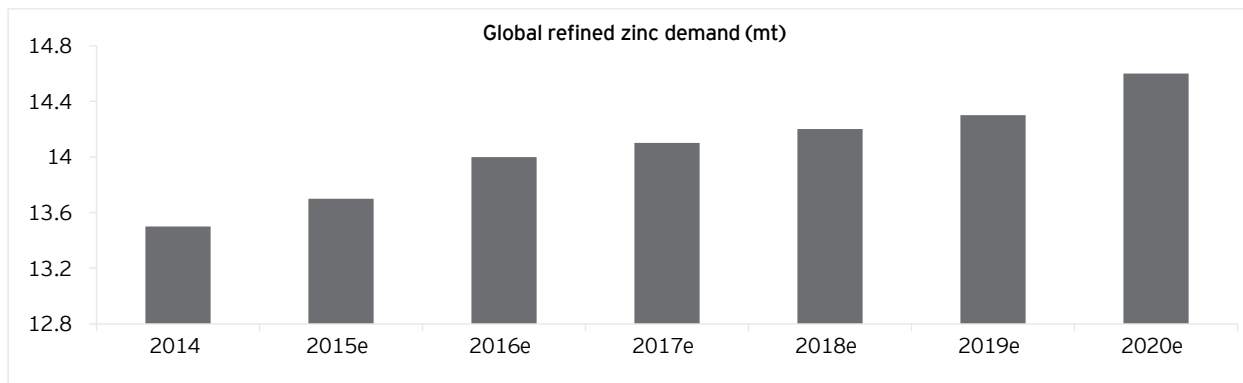
Source: USGS



Source: Morgan Stanley



During 2014, global refined zinc demand increased by 1.6% y-o-y as the Chinese property sector weakened considerably. Overall, moderating steel production has been a drag on zinc consumption growth. However, as demand is outstripping supply, LME zinc inventory is being drawn out, and is down 27%, since the beginning of 2015, it is lowest since late 2009 and equivalent to 13 days of demand signifying the tightness in supply of the metal.



Source: Morgan Stanley

Outlook

Refined zinc production is expected to be constrained in 2015-16 due to shrinking mine supply, primarily due to closure of major mines – Century Mine (+500ktpa in 3Q15), Lisheen Mine (180ktpa in 4Q15) and Skorpion Mine (160ktpa in 2016). Opening of a few new big mines in 2018 such as Vedanta's Gamsberg (250ktpa) and MMG's Dugald River (200ktpa) will help improve concentrate supply. Overall refined zinc production is expected to increase at a CAGR of 2.7% from 2015 to 14.5mt in 2020.

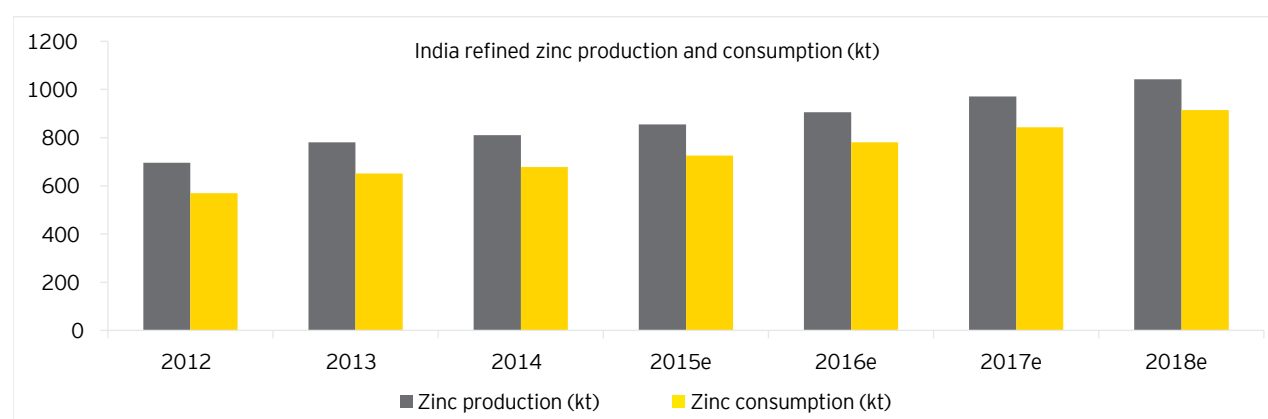
Zinc consumption is forecast to increase at a CAGR of 1.28% from 2015 to 14.8mt in 2020, driven by increased utilization of galvanized steel in infrastructure and automobiles mainly in China as well as other emerging economies.

Looming mine closures, modest new mine supply in the coming years and falling inventories are expected to squeeze zinc supply and underpin price increase.



5.2 Indian zinc industry

India is the fifth-largest producer of zinc concentrate, and has the world's largest zinc mine Rampura Agucha owned by Hindustan Zinc Limited (HZL). HZL is the sole integrated zinc producer in the country and dominates the zinc smelting industry representing more than 96% of total domestic output. Indian zinc reserves are mainly concentrated in the state of Rajasthan and the country accounts for 5.3% of the world production.



Source: Business Monitor International

Outlook

Zinc production in the country is expected to grow at a robust CAGR of 6.8% from 2015 to 1042kt in 2018 as HZL aggressively expands production capacity. At the same time, consumption is expected to grow at a CAGR of 8% from 2015 to 914kt in 2018 mainly driven by increase in steel production (which constitutes 70% of the domestic demand) due to increased infrastructure spending and rising automotive demand.

5.3 Zinc industry: challenges

New substitutes could potentially reduce zinc demand from automotive sector

Given the long-term mine supply constraint and potential for price increase, there has been an ongoing R&D for substitutes. ThyssenKrupp has introduced a new zinc-magnesium coating that could cut coating weights and zinc loadings in some applications of galvanized steel in the automotive sector. The reductions could amount to almost 33% by weight, which would translate into significant reduction in zinc consumption by a sector that accounts for 21% of worldwide use of zinc. However, the success of this coating remains to be seen, while increased penetration of coated steel in the automotive sector could partly offset zinc's weight losses if the new coating is successful.³⁵

Slow renewal of mining licences has historically impacted zinc production in India. However with the implementation of the MMDR Amendment Act, the situation is expected to turn for the better.

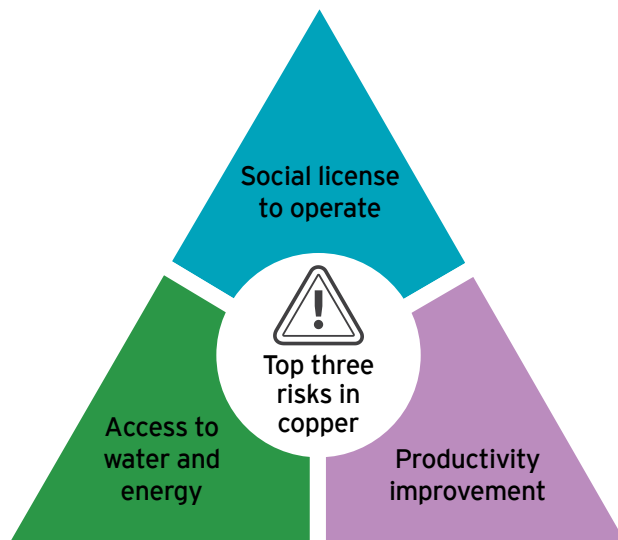
As such, given the monopolistic position of HZL in India, its high-quality world-class ore, resulting in zinc cost of production in the first decile of global cost curve³⁶ and cash-rich position limits most challenges for the producer.

35. "Commodities Forecasts: Marching to Different Beats," Credit Suisse, 23 June 2014 via Thomson One

36. "Hindustan Zinc FY15 Annual Report," Hindustan Zinc website, http://www.hzindia.com/common/pdf/Hindustan-Zinc-AR-2014-2015_Navigational.pdf, accessed 9 June 2015

A close-up, vertical view of a copper wire mesh. The mesh consists of many thin, coiled copper wires that create a series of horizontal, wavy ridges. In the center, a vertical tube or channel runs through the mesh. The lighting is warm and directional, coming from the side, which highlights the metallic texture and the undulating surface of the wires. The overall color palette is dominated by various shades of copper, from bright gold to deep, dark brown.

6 Copper



Despite production downgrades constraining supply, the market is likely to be oversupplied in 2015. Only a sharp upturn in demand, if not from emerging economies then from developed countries such as the US and Europe, will swing the industry fundamentals towards a balance.

6.1 Global copper industry

In 2014, world mined copper production grew only marginally by 0.8% to 18.4mt as expansion in mined copper output was significantly offset by several supply disruptions and delayed project start-ups. For instance, the implementation of restrictions on export of copper and other mineral concentrates in Indonesia led to a 27% drop in copper production to 353kt during 2014 although these restrictions were lifted after project proponents committed to developing domestic processing capacities.³⁷ The overall increase in production volumes was primarily driven by output growth in the US and Africa by 7% y-o-y and 10% y-o-y, respectively. Production in Chile remained stable as declining ore grades and labor disruptions countered supply growth.

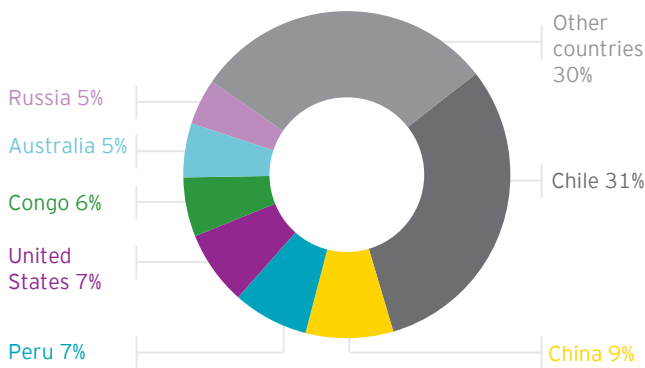
On the other hand, during 2014, global refined copper production increased 7.0% y-o-y to 22.6mt, driven by 17% y-o-y increase in China's refined copper production to 8mt.³⁸ Expansion in smelting capacity amid excess copper ore supply led to an increase in output. In addition, a 31% hike in processing fee globally incentivized producers to raise production levels.³⁹

37. "Resources and Energy Quarterly," BREE, March 2015

38. "Copper Market Outlook - Second Quarter 2015," RBC Capital markets, 15 April 2015

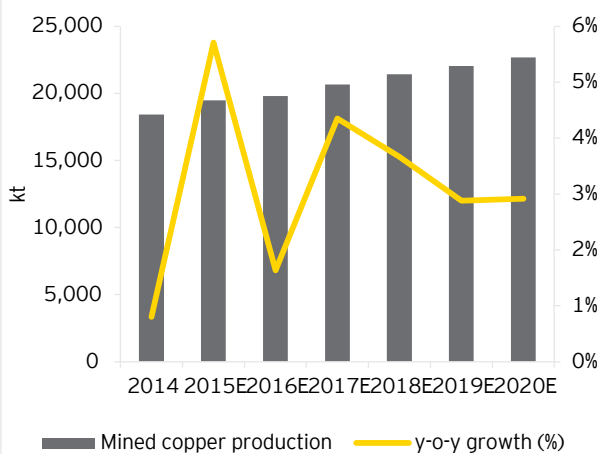
39. "China Refined Copper Output Rises to Record as Smelters Expand," Bloomberg, 21 January 2015

Mined copper production by country (2014)

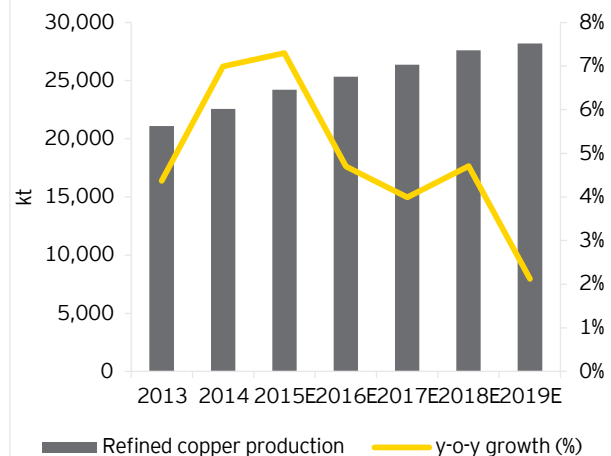


Source: USGS

World mine copper production and growth

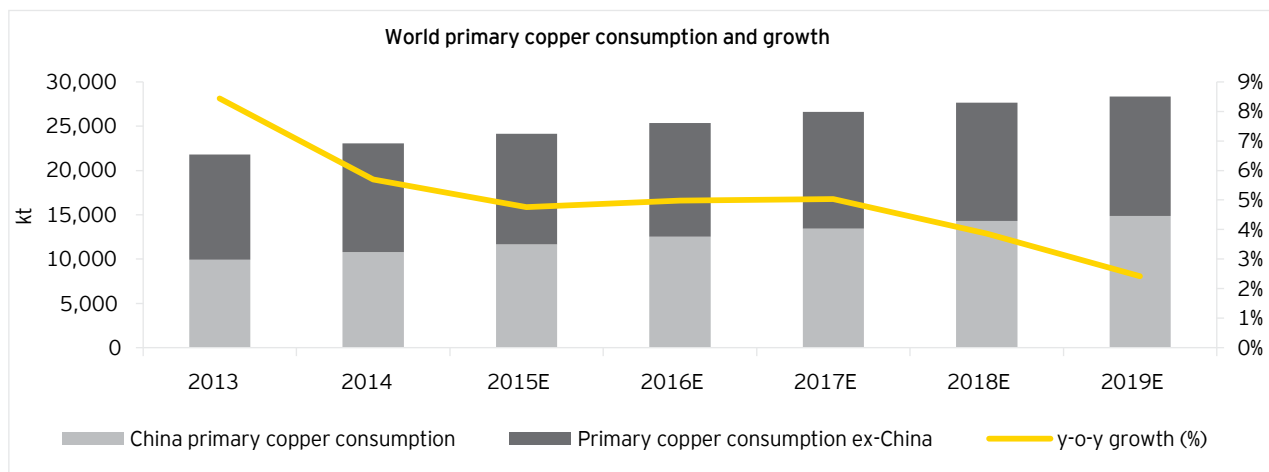


World refined copper production and growth



Source: BREE, RBC capital market

Global copper consumption exhibited an upward trend in 2014 rising by 6% y-o-y to 23mt. China accounted for 46.9% of the global consumption and remained the largest consumer in 2014 at 10.8mt. Despite a slowdown in economic activity and weakness in residential construction in China, growth in copper consumption was underpinned by an increase in infrastructure spend, particularly on rail and electricity networks and increased manufacturing output of copper-intensive products. In addition, copper demand in the US was spurred by favorable macro-environment underpinned by increased economic growth, rise in manufacturing output and a strong residential and commercial sector.



Source: RBC capital market

Outlook

Mined copper production is projected to increase by 6% y-o-y in 2015 to 19.5mt, on increased output from Indonesia, Africa, Peru and Chile. However, production growth will be pressurized by several supply disruptions, which continue to plague the copper industry. Disruptions due to adverse weather conditions, protests, technical-engineering problems and labor action, among others, are expected to lead to a decline in mine production.

- ▶ **Chile faces adverse weather conditions:** Heavy rainfall and flooding in northern Chile forced major miners to temporarily suspend operations at several mines. The supply disruption has put an estimated 1.5MT of copper capacity on hold. On the other hand, drought in southern Chile impacted copper concentrate production at major mines including Anglo American and BHP Billiton.
- ▶ **Mill outage at Olympic Dam mine following an electrical failure-** BHP Billiton's Olympic dam copper mine will suffer decline in copper output by 60-70kt majorly in FY15, as operations are suspended for at least six months due to repair and maintenance work.⁴⁰
- ▶ **Protest/strike actions at major copper mines** including Freeport's Indonesia Grasberg Mine and Antofagasta's Los Pelambres mine has affected output. For instance, Los Pelambres copper mine in Chile lost 8,500t of refined copper production after protests by local villagers blocked access to the mining complex.⁴¹ The protestors demanded an action by the mine operator and the local government to help alleviate the area's current drought conditions.

40. "BHP Billiton operational review," BHP Billiton company website, 22 April 2015

41. "Antofagasta sees forecast global copper surplus disappearing in 2015," Reuters, 14 April 2015

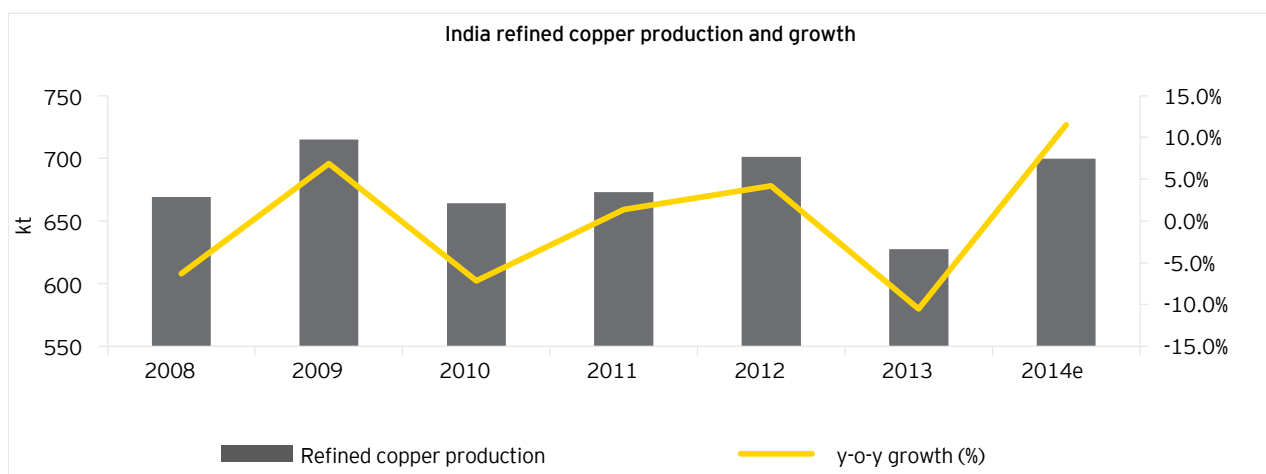
As copper prices remain pressurized currently due to the persisting oversupply in global markets, they are expected to improve in near to medium term on supply disruptions and anticipated demand growth.

On the other hand, world's refined copper consumption is poised to increase by 4.8% y-o-y to 24.1mt in 2015, driven by Chinese smelters, as Government increases investment in building infrastructure, particularly the electricity network.

6.2 Indian copper industry

The copper industry in India accounts for 3% of the world copper market at ~ 500kt by size in terms of annual consumption of refined copper.⁴³ Although India is among the top-10 exporters for refined copper, it imports ~94% of the concentrate to feed its smelters. This creates huge dependency on imports and also highlights the need for potential increase in copper mining capacity.

In comparison to major producing countries, India does not have sizable discovered copper reserves. Hence, India accounts for only 0.2% of the world's mined copper production. However, it ranks fifth in the share of world production and has the second-largest copper smelter, the Hindalco-owned smelter located in Gujarat, by capacity. In 2014, refined copper production in India spiked 11.5% y-o-y to 700kt after exhibiting a negative growth of 10.5% in 2013. This was mainly, since smelters ramped up their production to cash in on the 31% hike in the global processing charges, which are paid by miners to smelters for processing concentrate into refined copper metal. Due to an oversupply of copper concentrate in the global markets, the miners agreed to raise treatment and refining charges (Tc/Rc) to US\$92/t and 9.2 cents/lb in 2014, which proved to be a major advantage for Indian players, boosting their earnings.

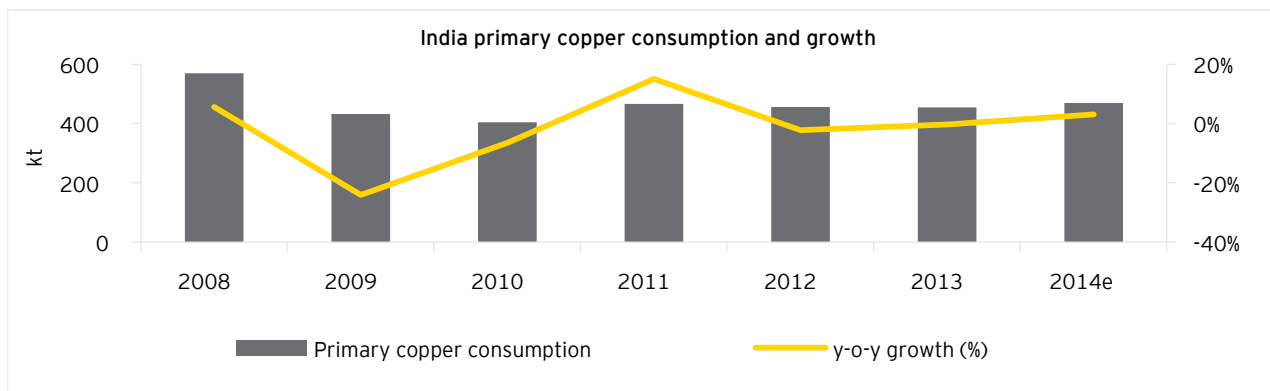


Source: BMI Forecast

42. "USGS," <http://minerals.usgs.gov/minerals/pubs/commodity/copper/mcs-2015-coppe.pdf>, accessed on 30 April 2015

43. "NON-FERROUS MINERALS & METALS," Ministry of mines website, <http://mines.gov.in/writereaddata%5CContentlinks%5Cf9c3881ab19e47f4b223464799e86806.pdf>, accessed 30 April 2015

India's copper consumption is projected to increase at an average annual rate of 8.4% to 802 kt by 2020 underpinned by rapidly increasing investment in electricity generation capacity and distribution networks. The newly elected Central Government is focussing on resolving the electricity supply shortages and raising heavy investments toward building the power generation capacity in order to ensure that all citizens have access to electricity, which will in turn, boost the demand for copper in the medium term.



Source: RBC capital

Challenges: securing raw material to reduce dependency on imports remains the primary challenge for the Indian copper industry

There is a massive mismatch, between the surplus in India's refining capacity and the deficit in its domestic mining capacity, with copper ore production accounting for less than ~5% of the country's demand.⁴⁴ The lack of sufficient copper ore supply, has forced smelters to rely on imported copper concentrate to feed domestic smelters.

Hindustan copper (HCL) is the only vertically integrated copper producer and is responsible for the country's total mine copper production as it owns all the operating mining leases; whereas other primary players including Hindalco and Vedanta, which have only smelting and refining plants, rely primarily on imported copper concentrates. With access to more than two-thirds of copper reserves in India, HCL has an adequate opportunity to augment its mining capacity. In line, the company has plans to raise its copper ore production level from 3.8mtpa in FY14 to 12.41 mtpa by 2017-18, through expansion of existing mines, development of new ore reserves and re-opening of closed mines.⁴⁵

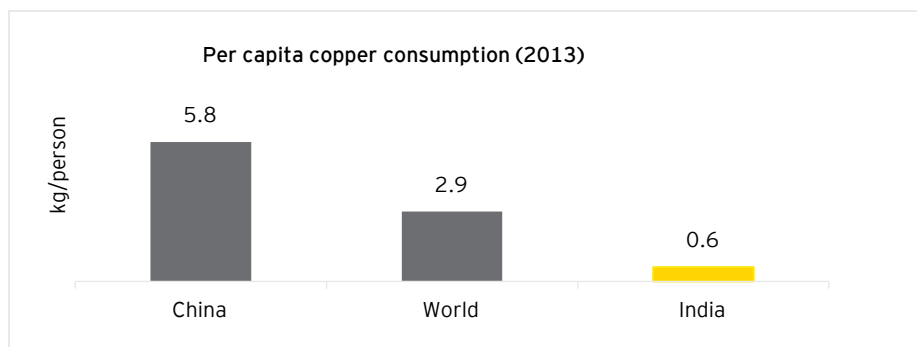
In addition, there is dire need to explore for new copper deposits in India and undertake a complete mapping of copper resources. The last copper mine was given out in 1982 and therefore, India has very limited known reserves of copper ore with its share of world reserve and resource at only 1.9%.

44. "Demand and supply of copper," Ministry of mines website, <http://mines.nic.in/writereaddata%5CContentlinks%5C3bd27ab1137c4e718cd14702c3c8b2a.pdf>, accessed 30 April 2015

45. "Corporate presentation," Hindustan Copper Ltd. website, http://www.hindustancopper.com/PDF/HCL_Road%20Show.pdf, accessed on 30 April 2015

Opportunities

India's copper market has huge potential for growth, given that its per capita consumption is significantly lower than the world average at 0.6kg and is expected to increase to 3kg by the year 2025.



Source: Hindustan Copper Ltd. website

Rapid rates of industrialization and urbanization have created a need for expansion and investment in the country's electrical and power infrastructure. According to the Twelfth Five Year Plan (2012-17), the Government is targeting a 43% increase in power generation capacity. Moreover, the Government has planned to set up five ultra-mega power projects of 4,000MW each.⁴⁶ This is expected to spur copper demand as the electrical and power sectors account for nearly one-third of the refined copper consumption.

Demand from other industries such as transport, consumer and electronic goods and industrial machinery is also expected to remain strong on the back of increased end-user demand and increasing investments. For instance, the Government announced an investment of US\$137 billion to upgrade India's rail network over the next five years.⁴⁷

46. "Five ultra mega power projects feature in Union Budget 2015," The Mint, 28 February 2015, via Factiva.

47. "Sesa Sterlite bets record copper on Narendra Modi's spending plan," The Mint, 10 March 2015, via Factiva.

Appendix

Results of Phase 1 and 2 of coal block auction process

Exhibit 1: Results of coal block auction process schedule II (Non - Power)

#	Coal block	Location	ER (mt)	Prod. (mtpa)	Winning bidder	End use	Winning bid (INR/t)	Coal GCV (kcal/kg)
1	Bicharpur	Sahdol, MP	29.1	0.8	Ultratech	Cement + CPP	3,003	4,750
2	Mandla North	Chhindwada, MP	84.0	1.5	Jaiprakash Group	Cement + CPP	2,505	5,050
3	Sial Ghoghri	Chhindwada, MP	5.7	0.3	Reliance Cement	Cement + CPP	1,402	5,050
4	Gare Palma IV/5	Raigarh, CG	42.4	1.0	Hindalco	CPP	3,502	4,750
5	Chotia	Korba, CG	18.5	1.0	BALCO	CPP	3,025	5,350
6	Gare Palma IV/4	Raigarh, CG	12.3	1.0	Hindalco	CPP	3,001	4,750
7	Kathautia	Palamau, JH	24.0	0.8	Hindalco	CPP	2,860	6,250
8	Gare Palma IV/1	Raigarh, CG	49.6	6.0	BALCO	CPP	1,585	3,850
9	Gare Palma IV/7	Raigarh, MH	52.9	1.2	Monnet Ispat	DRI + CPP	2,619	3,850
10	Ardhagram	Bankura, WB	18.0	0.4	OCL Iron & Steel	DRI + CPP	2,302	5,050
11	Belgaon	Nagpur, MH	7.1	0.3	Sunflag Iron & Steel	DRI + CPP	1,785	4,450
12	Marki Mangli III	Yavatmal, MH	3.8	0.2	BS Ispat	DRI + CPP	918	4,750

Exhibit 2: Results of coal block auction process schedule III (Non - Power)

#	Coal block	Location	ER (mt)	Prod. (mtpa)	Winning bidder	End use	Winning bid (INR/t)	Coal GCV (kcal/kg)
1	Moitra	Hazaribagh, JH	29.9	1.0	JSW Steel	BF	1,512	W- IV
2	Gare Palma IV/8	Raigarh, CG	11.8	1.2	Ambuja Cement	Cement + CPP	2,291	4,750
3	Mandla South	Chhindwada, MP	13.4	0.3	Jaypee Cement	Cement + CPP	1,852	5,050
4	Dumri	Hazaribagh, JH	40.9	1.0	Hindalco Industries	CPP	2,127	4,150
5	Nerad Malegaon	Yavatmal, MH	10.6	0.4	Indrajit Power	CPP	660	4,450
6	Lohari	Palamau, JH	9.0	0.2	Araanya Mines	DRI + CPP	2,438	5,650
7	Brinda Sasai	Hazaribagh, JH	25.4	0.7	Usha Martin	DRI + CPP	1,804	4,450
8	Meral	Palamau, JH	12.7	0.4	Trimula Industries	DRI + CPP	727	5,950

Exhibit 3: Results of coal block auction process schedule II (Power)

#	Mine	Winner	Winning Bid	Power tie-up Details	Road Distance from Mine (km)
1	Talabira - I Odisha (28.77 MT)	GMR Chhattisgarh (1370 MW)	INR 478/ton Forward auction*	Untied Power 5% to CG at variable cost	~ 300
2	Sarisatolli West Bengal (63 MT)	CESC Ltd.	INR 470/ton Forward auction	Prior Allottee / Cost plus PPAs (EUP Not known)	~ 250
3	Trans Damodar West Bengal (48.4 MT)	Durgapur Projects (WB Govt. entity)	INR 940/ton Forward auction	Cost plus PPA (Plant Capacity: 640 MW in Durgapur)	~ 12
4	Amelia North MP (70 MT)	Jaiprakash Power Ventures Ltd. (1320 MW - Nigrie)	INR 712/ton Forward auction	Cost plus - 530 MW Untied - 790 MW	~ 20
5	Tokisud North Jharkhand (52 MT)	Essar Power (MP) Ltd 1200 MW	INR 1110/ton Forward auction	Cost plus - 360MW Case 1 - 150MW Untied - 690 MW	~ 410
6	Gare Palma IV/2&3 Chhattisgarh (187 MT)	Jindal Power Limited (3400 MW - Tamnar)	INR 108/ton Forward auction	Case 1 - 600 MW Balance 2800 MW untied	~ 10

Exhibit 4: Results of coal block auction process schedule III (Power)

#	Mine	Winner	Winning Bid	Power tie-up Details	Road Distance from Mine (km)
1	Jitpur Jharkhand (65 MT)	Adani Power Limited	INR 302/ton Forward auction*	Imported coal based Mundra Plant Power fully tied-up under Case 1 PPAs EUP might be Korba West Power Co.	NA
2	Mandakini Odisha (288 MT)	Mandakini Mining and Exploration Company Ltd (Monnet + JITPL)	INR 650/ton Forward auction	Monnet - 5% at Var, 600 MW PPAs JITPL - 13% at Var, Untied	
3	Tara Chhattisgarh (167 MT)	Jindal Power Limited	INR 126/ton Forward auction	Untied Power (Won Gare Palma IV/2-3 coal block)	~ 250
4	Ganeshpur Jharkhand (92 MT)	GMR Chhattisgarh Power Ltd (1350 MW)	INR 704/ton Forward auction	Untied Power 5% to CG at variable cost	~ 20
5	Utkal - C Odisha (124 MT)	Monnet Power Co. Ltd. 1050 MW	INR 770/ton Forward auction	Variable cost - 5% (Gridco) Case 1 - 200 MW (PTC) / 400 MW (WB) Untied - 187 MW	~ 5

Notes

Indian Chamber Of Commerce

ICC Profile

Founded in 1925, Indian Chamber of Commerce (ICC) is the leading and only National Chamber of Commerce operating from Kolkata, and one of the most pro-active and forward-looking Chambers in the country today. Its membership spans some of the most prominent and major industrial groups in India. ICC is the founder member of FICCI, the apex body of business and industry in India. ICC's forte is its ability to anticipate the needs of the future, respond to challenges, and prepare the stakeholders in the economy to benefit from these changes and opportunities. Set up by a group of pioneering industrialists led by Mr G D Birla, the Indian Chamber of Commerce was closely associated with the Indian Freedom Movement, as the first organised voice of indigenous Indian Industry. Several of the distinguished industry leaders in India, such as Mr B M Birla, Sir Ardeshir Dalal, Sir Badridas Goenka, Mr S P Jain, Lala Karam Chand Thapar, Mr Russi Mody, Mr Ashok Jain, Mr. Sanjiv Goenka, have led the ICC as its President. Currently, Mr. Roopen Roy is leading the Chamber as its President.

ICC is the only Chamber from India to win the first prize in World Chambers Competition in Quebec, Canada.

ICC's North-East Initiative has gained a new momentum and dynamism over the last few years, and the Chamber has been hugely successful in spreading awareness about the great economic potential of the North-East at national and international levels. Trade & Investment shows on North-East in countries like Singapore, Thailand and Vietnam have created new vistas of economic co-operation between the North-East of India and South-East Asia. ICC has a special focus upon India's trade & commerce relations with South & South-East Asian nations, in sync with India's 'Look East' Policy, and has played a key role in building synergies between India and her Asian neighbours like Singapore, Indonesia, Bangladesh, and Bhutan through Trade & Business Delegation Exchanges, and large Investment Summits.

ICC also has a very strong focus upon Economic Research & Policy issues - it regularly undertakes Macro-economic Surveys/Studies, prepares State Investment Climate Reports and Sector Reports, provides necessary Policy Inputs & Budget Recommendations to Governments at State & Central levels.

The Indian Chamber of Commerce headquartered in Kolkata, over the last few years has truly emerged as a national Chamber of repute, with full-fledged offices in New Delhi, Guwahati, Patna, Ranchi and Bhubaneswar functioning efficiently, and building meaningful synergies among Industry and Government by addressing strategic issues of national significance.

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