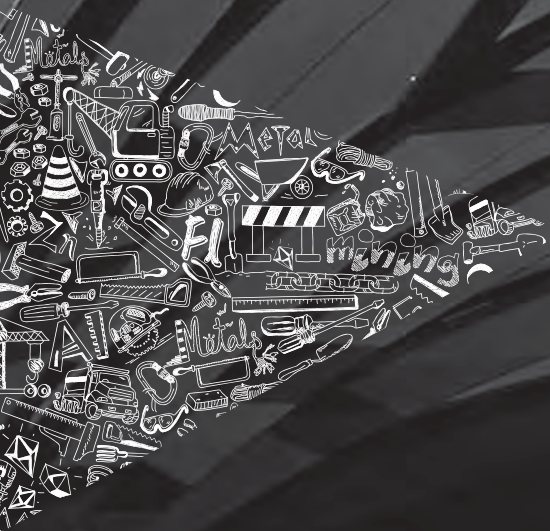


# Global steel 2013

A new world, a new strategy









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# Executive



“Controlling raw material costs is a benefit of vertical integration; however, steelmakers should critically assess the value of vertical integration and consider possible alternatives to help mitigate the cost of raw materials.”

**Mike Elliott**

Global Mining & Metals Leader, Ernst & Young

## Global steel – will 2013 be the bottom of the trough?

Despite a slight increase in demand for steel and the removal of some older steelmaking capacity in 2012, the global percentage level of excess capacity is greater now than it was 12 months ago due to the continued growth in new steelmaking facilities particularly in developing economies.

Capacity utilization rates in the sector remain below 80%, and in 2013 excess capacity will remain the most significant issue in the steel sector.

Growth in global steel demand is unlikely to improve significantly in 2013. Sluggish demand combined with excess steelmaking capacity and ongoing volatility in raw materials costs will challenge the sustainability of high-cost producers.

The continued closure of older, higher-cost steelmaking capacity and increased demand growth should lead to improved profitability for the sector in 2014 and 2015, driven by better utilization rates. The closure of inefficient capacity will require the sector to avoid political interference with commercially rational decisions.

## Restoring sustainable value

Ernst & Young's 2012 steel report detailed the importance of customer reach, operational agility, cost competitiveness and stakeholder confidence for producers to remain profitable. These remain priorities for 2013.

The big challenge for steelmakers in 2013 is how to be cost competitive while maintaining enterprise value. To achieve this,

producers need to assess and address whether they are best set up for the new operating environment:

- ▶ Is there value in vertical integration?
- ▶ Strategic cost reduction for survival and future growth
- ▶ The optimal capital structure for the future business model

## Is there value in vertical integration?

In recent years, many steelmakers have integrated raw material (coal, iron ore) mines into their supply chains. However, new analysis by Ernst & Young suggests that despite the benefits in controlling raw material costs, it may not always have a positive benefit on enterprise value.

Steelmakers should critically assess the value of vertical integration to their business and consider alternatives to managing raw material costs and supply, such as long-term contracts with suppliers and relocating production sites closer to upstream suppliers.

## Strategic cost reduction

With continuing weak market conditions, cost reduction activities are essential for steelmakers' sustainability and future growth. While these activities are necessary, it is crucial that steelmakers do not move away from their overall company strategy, thus potentially causing further value erosion.

In this report we discuss the different approaches that are currently being used to reduce cash operating costs, including:

- ▶ Reducing production volumes from loss making plants to stabilize steel prices and address oversupply in the market

# summary

- ▶ Restructuring labor
- ▶ Canceling or reducing supply contracts

## Optimizing capital

Today's economic environment is forcing steelmakers to assess whether their capital structure is optimized for the new operating environment. Companies must objectively review the alignment of their asset portfolios to their business strategies. The goal for companies is the optimal allocation of capital to maximize shareholder returns and achieve the most efficient capital structure. As a result, an increasing number of corporate boards are putting greater focus on the key drivers of efficient capital allocation.

This focus is extremely relevant to steelmakers because falling demand and oversupply in regional markets have led to short-term liquidity challenges that may threaten credit ratings and debt covenants. Capital management today includes:

- ▶ Building in options
- ▶ Capital raising
- ▶ Divesting non-core assets

## China restructuring

China remains the largest market in the steel sector, even though it experienced lower steel demand, overcapacity, a fragmented industry and weak profit margins in 2012. The Chinese government aims to address these challenges through its 12th Five-Year Plan (FYP), which represents China's goal to rebalance its economy and shift the focus from investment toward consumption and move development from urban areas to rural areas.<sup>1</sup> In terms of the steel sector, the 12th FYP focuses on promoting the use of modern technology, energy efficiency and improved product quality.

Successful execution of the 12th FYP policies will not only help contribute to the domestic and global steel demand, but also promote the production of value-added steel.

## Is India on track to becoming the next steel powerhouse?

Although China is the dominant market in the steel sector, India is increasing its presence in the global steel market as a result of domestic steel consumption. The rising middle class population coupled with increased urbanization will grow steel intensity in the economy. India has seen a rapid rise in production over the past few years, which has resulted in India becoming the fourth largest producer of crude steel and the largest producer of sponge iron in the world.

There are many opportunities that are helping grow the Indian steel market. These opportunities include:

- ▶ Rural demand picking up
- ▶ Investment planned in road sector
- ▶ Indian railway expansion
- ▶ Automobile and power sectors offer opportunity for specialized steel
- ▶ Refocus on manufacturing

However, there are also some challenges that India must overcome in order to continue on the path of becoming the next steel powerhouse. These challenges include:

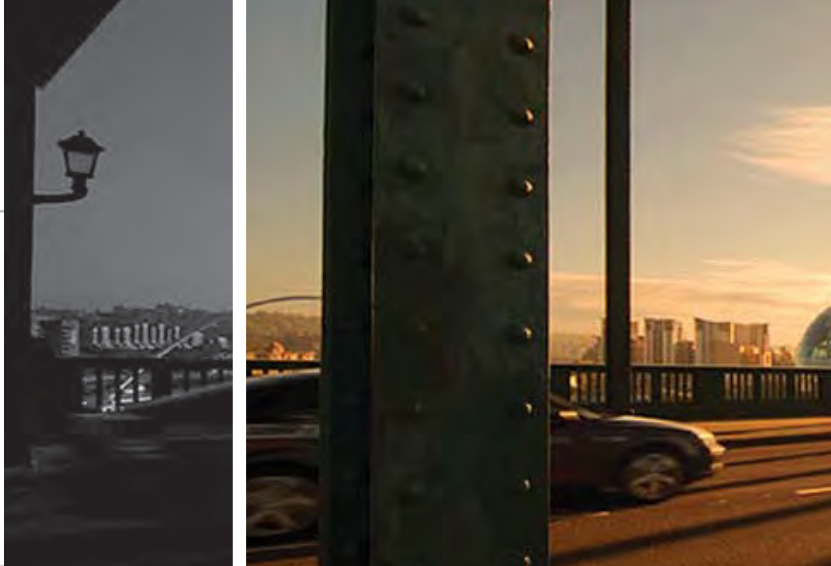
- ▶ Land acquisition and environment regulations
- ▶ Shortage of coking coal
- ▶ Availability and pricing of domestic iron ore
- ▶ Downstream value addition
- ▶ Insufficient infrastructure and logistics
- ▶ Overburdened port facilities
- ▶ Adoption of modern technology

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<sup>1</sup> "China's rebalancing push needs tailor-made policy," *Shanghai Daily*, 20 December 2012, Factiva, <http://global.factiva.com/ha/default.aspx>.

# 01.

## Maintaining value in volatile economic conditions – a look at the year ahead



Steelmakers are challenged by weak global growth; need for structural change, limited availability of finance and high raw material prices. The existing paradigm for steel production does not really work well for this new operating environment.



**Ramona Cheng**  
Americas Markets  
Leader – China  
Business Network,  
Ernst & Young

“As the world’s largest supplier and consumer of steel, China’s structural adjustments and sustainable transformation in its steel sector will have global ramifications.”

In addition to the adaptation factors raised in Ernst & Young’s *Global steel 2012: competing for growth in the steel sector*, steel producers must also be considering for 2013:

- ▶ The continued appropriateness of the vertically integrated model
- ▶ The embracing of more flexible cost structures and overall reductions
- ▶ Optimizing capital structures and allocations

As the largest and most dominant market in the steel sector, China continues to surprise, both in its size and dynamism. But as China heads toward its peak, India is picking up the pace and increasing its presence in the global sector. This silent achiever is becoming the market to watch.

### Steel takes its place in the global economy

The world economy is expected to have grown by 3.3% in 2012 and grow 3.6% in 2013.<sup>2</sup> This growth is primarily driven by the BRIC nations, with most of this growth coming from China and India. They expect to have grown, respectively, at 7.6% and 5.1% in 2012 and will grow 7.8% and 5.8% in 2013.<sup>3</sup> But these consolidated growth numbers are less than revealing of the underlying uncertainty in the global economy, especially in Europe and the US. The US economy is expected to grow by around 2% in 2012 and 1.8% in 2013.<sup>4</sup> The European Union (EU) is expected to decline 0.5% in 2012 and 0.3% in 2013.<sup>5</sup>

<sup>2</sup> IHS Global Insight.

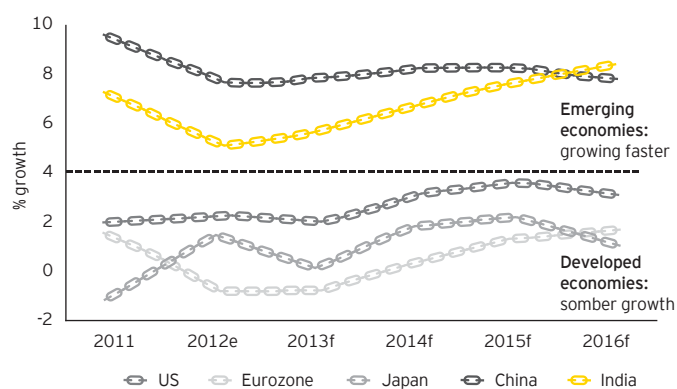
<sup>3</sup> IMF.

<sup>4</sup> IHS Global Insight.

<sup>5</sup> IHS Global Insight.



Figure 1. Real GDP forecast of major steel-producing countries



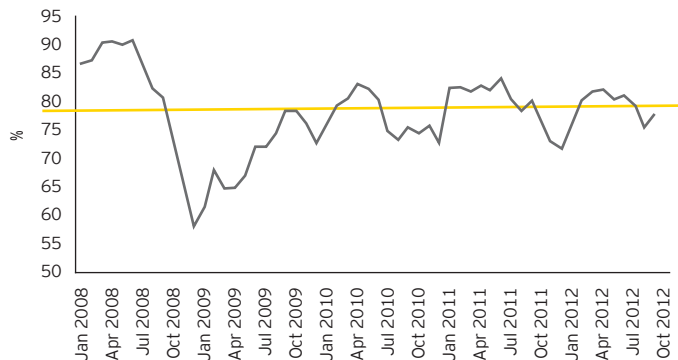
Source: IHS Global Insight, Ernst & Young analysis

## The steel market in 2012 and 2013

Sluggish demand growth and range-bound steel prices are predicted in 2013. Steel prices, which had significantly weakened in the last few months of 2012, will find support from production cuts and capacity reductions by global steelmakers and near-marginal production cost levels for Chinese steel producers.

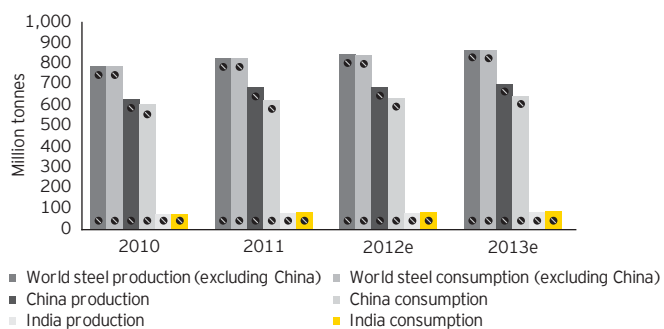
Excess capacity remains the most significant issue in the steel sector. Global steelmakers continue to witness supply growth outpacing demand, with capacity utilization rates remaining stubbornly below 80%. Slowdown in demand growth from China and subdued steel prices will continue to weigh on the global steel sector in 2013. The global steel market continues to be oversupplied, and the overproduction versus domestic demand from China is likely to persist as the country's steel mills are required to maintain employment and GDP targets. Building and machinery construction represented the highest demand for steel in China being 57% and 21% respectively.

Figure 2. Global steel capacity utilization



Source: World Steel Association (utilization data comprises 170 steel-producing companies)

Figure 3. Outlook – steel production and consumption



Source: Bureau of Resources and Energy, September 2012

Utilization is not expected to exceed 80% until 2014 and then only reach 83% by 2015/16.

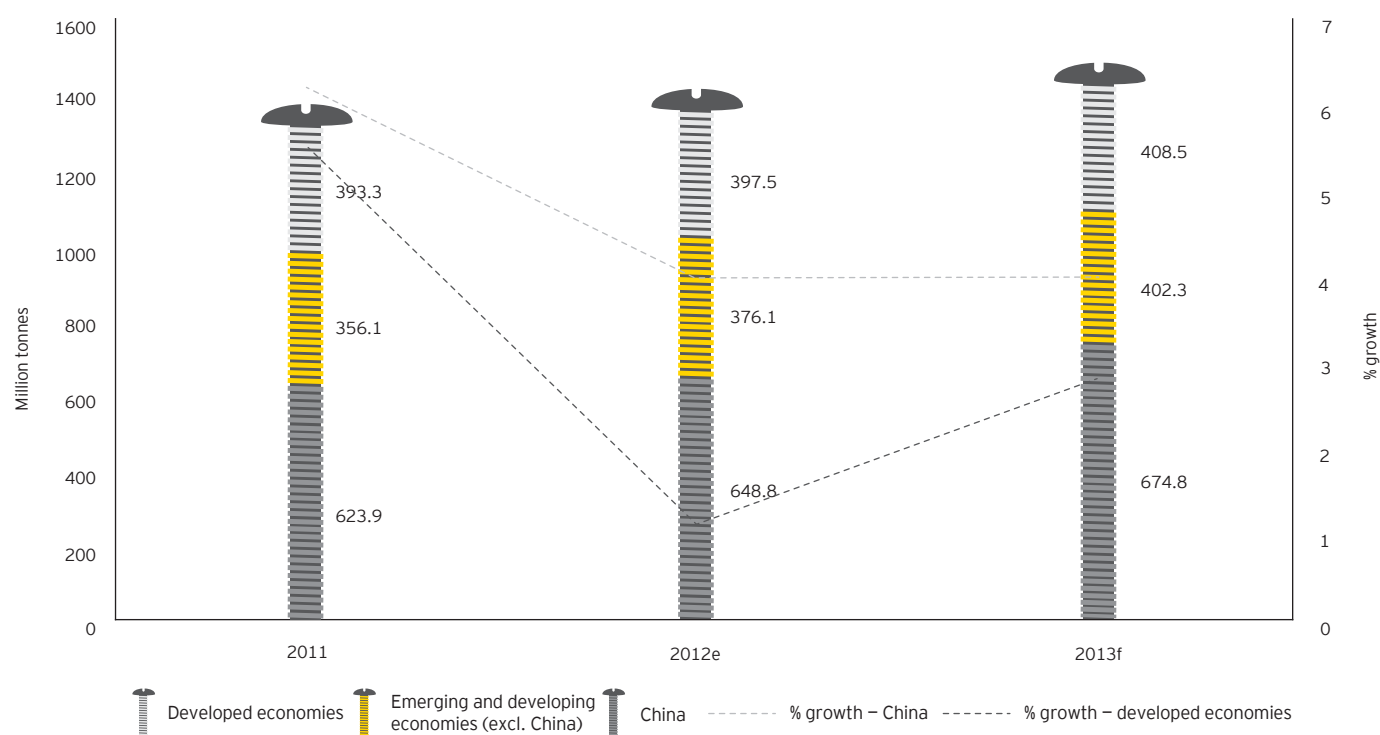


Lower industrial production and reduced investment in large-scale infrastructure projects have resulted in a marked decrease in the growth of steel demand from both the developed and emerging markets. Apparent global steel usage in 2012 is expected to have grown by only 2.1% (compared to 6.2% growth in 2011), and steel demand is expected to grow by only 3.2% in 2013.<sup>6</sup> The most affected region is the Eurozone. With the debt crisis weighing heavily on economic activity, apparent steel use in the EU is expected to have declined by 5.6% in 2012. Spain and Italy are expected to see particularly dramatic drops in 2012, with apparent steel use falling by 11.9% and 12.6%, respectively. Even Germany, the most resilient of European economies, is estimated to experience a decline of 4.7% in 2012.<sup>7</sup>

It is unlikely that steel demand will significantly improve in 2013, largely because of the continuing economic crisis in developed countries and the structural shift in the Chinese economy. Moderate recovery is only expected in 2014-15, although steel demand is likely to improve faster in emerging markets. We expect by 2015 demand growth to be reaching 3.5%p.a.

In Ernst & Young's *Global steel 2012: competing for growth in the steel sector*, we showed that success in the new economy will depend on whether steelmakers can respond to global challenges. We suggested a focus on four main areas: customer reach, operational agility, cost competitiveness and stakeholder confidence. In 2013, we look at how steelmakers can become cost competitive while maintaining enterprise value.

Figure 4. Apparent steel use



Source: World Steel Association

6 Short Range Outlook, World Steel Association, 10 November 2012, <http://www.worldsteel.org/media-centre/press-releases/2012/worldsteel-short-range-outlook.html>.

7 Short Range Outlook, World Steel Association, October 2012.

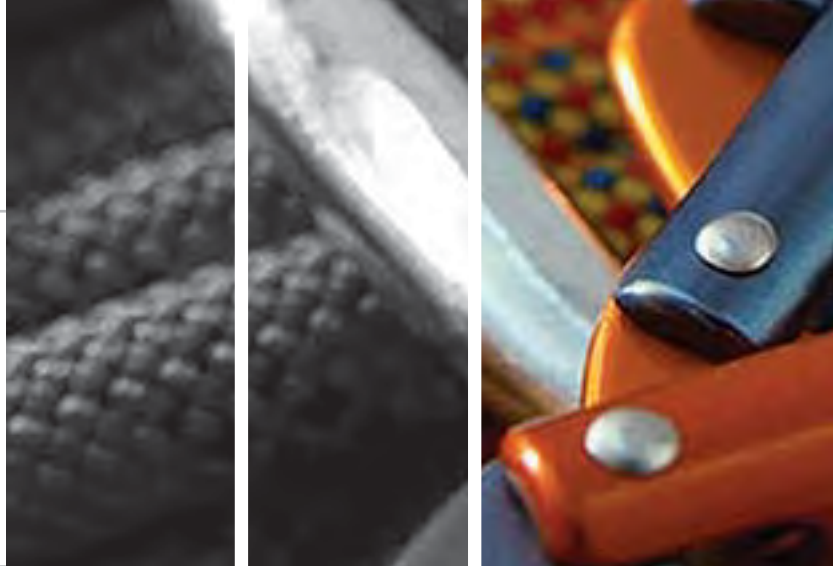
Figure 5. Competing for growth framework



# Outlook

Global steelmaking capacity will continue to exceed demand growth in 2013 with excess capacity of 479 million tonnes forecast. As a result, capacity utilization is expected to remain below 80% in 2013 to limit the amount of excess supply in the market. Margins will continue to be tight into 2013 as steel prices will remain flat and costs are unlikely to decrease significantly in 2013. From 2014, the demand outlook will improve modestly resulting in modest increases in capacity utilization and steel prices.

## Is there value in vertical integration?



In recent years, many steelmakers have integrated raw material mines into their supply chains. However, new analysis by Ernst & Young suggests that despite the benefits in controlling raw material cost volatility, it may not always have a positive benefit on enterprise value.



**Carlos Assis**  
South America and  
Brazil Mining & Metals  
Leader, Ernst & Young

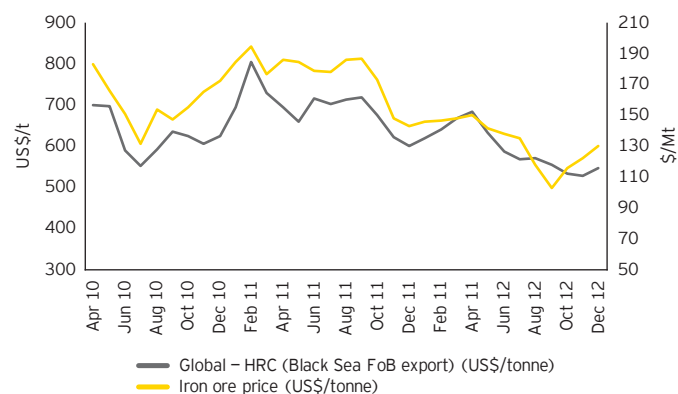
"Raw material costs and price volatility continue to pose major challenges for the steel sector. In response to these challenges, many steelmakers have vertically integrated raw material mines into their supply chains; however, there needs to be a balance between cost reduction activity and conserving/demonstrating enterprise value."

Steelmakers should critically assess the value of vertical integration to their business and consider alternatives to managing raw material costs and supply, such as hedging long-term contracts with suppliers and relocating production sites closer to upstream suppliers.

The combination of a weak global economy and slower growth in China led to a decrease in both iron ore and coking coal prices during much of 2012. Iron ore prices declined by around 35% from highs of almost US\$180 per tonne to lows of US\$90 per tonne – only to exceed US\$150 in early 2013.

In the past few years, soaring raw material costs and price volatility have been major challenges for the steel industry. Steel prices responded more slowly than production costs to these challenges, leading to reduced margins or losses.

**Figure 6. Price volatility**



Source: CRISIL Research, Ernst & Young analysis

Common wisdom was that by owning a larger proportion of the production of raw material inputs, overall margins will not suffer.





Many steelmakers have continued to integrate raw material mines into their supply chains. This allows steelmakers to control supply, cost and quality of raw materials. In the first nine

months of 2012, two of the top deals were steelmakers vertically integrating into iron ore mines.

Figure 7. Steel transactions in the first nine months of 2012

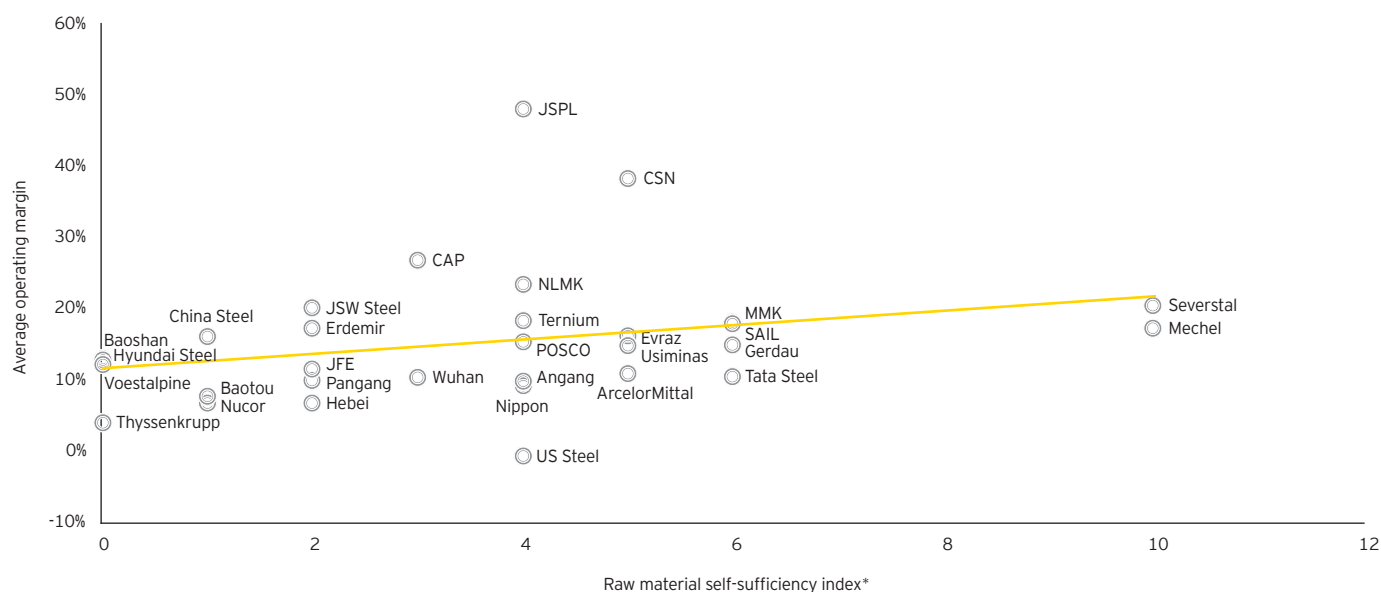
Rank Type	Value (\$m)	Type	Target name	Target country	Target commodity	Acquirer name	Acquirer country	Stake (%)
1	3,309	Cross-border	Roy Hill Holdings	Australia	Iron ore	Posco, Marubeni, STX Corp	South Korea, Japan	25
2	2,714	Cross-border	Usiminas	Brazil	Steel	The Techint Group	Argentina	13.8
3	1,732	Domestic	Anshan Iron & Steel Grp Corp-Ast	China	Steel	Pangang Group Steel Vanadium & Titanium	China	100
4	1,500	Cross-border	Tonkolili Iron Ore Ltd	Sierra Leone	Iron ore	Shandong Iron & Steel Group	China	25
5	1,201	Domestic	Laiwu Steel Corp	China	Steel	Jinan Iron & Steel Co Ltd	China	100

Source: Thomson One

Ernst & Young research on the top 30 steelmakers by market capitalization over the last three years shows that there is a

positive correlation between the integration of raw materials and increased profitability.

Figure 8. EBITDA margins versus raw material self-sufficiency, 2009-11



Source: Ernst & Young analysis, S&P Capital IQ and VTB Capital

\* The raw material self sufficiency index was calculated by assigning a figure on a scale of 1-5 based on the extent of a steelmaker's ownership for each iron ore and metallurgical coal thus giving a figure out of 10.

0 = no vertical integration

10 = fully self-sufficient in iron ore and metallurgical coal

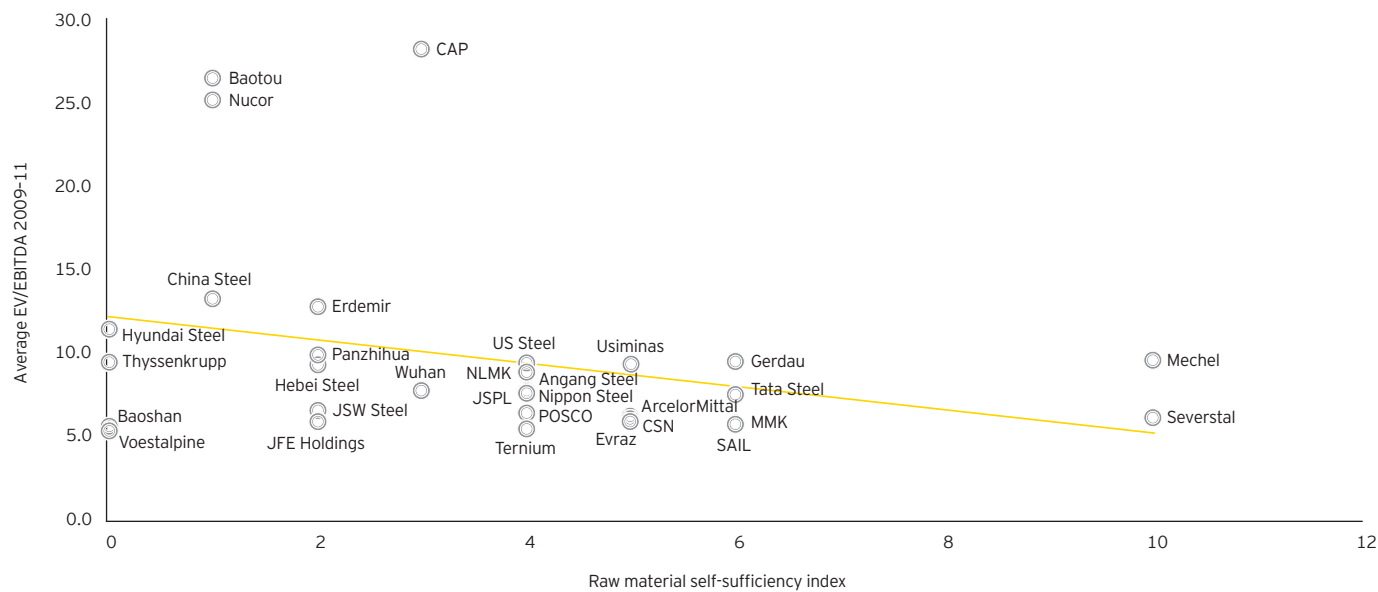
However, to gain the most benefit from vertical integration, steel companies must have extensive knowledge and experience in each step of the iron ore and metallurgical coal exploration, production and distribution processes. Steelmakers need to consider the following challenges:

- ▶ Substantial capital investment is required to set up a mine.
- ▶ New iron ore and coal mine sites are increasingly in riskier locations that also require significant infrastructure investment, such as Liberia, Guinea, Mongolia and Mozambique.
- ▶ Steelmakers need to compete with miners for skilled labor.
- ▶ Operational efficiencies in the areas of IT and management KPI dashboards are needed to correctly measure the performance of the mining division versus the performance of the steel division.

- ▶ The decision needs to be made to be an exclusive internal supplier or to sell to the external markets. Transfer pricing issues for internal-focused suppliers and sales teams for dual providers are pivotal issues.

But there is still a question as to whether vertical integration creates enterprise value. For example, the differences between mining and steelmaking may create concerns regarding the allocation of risk. Mining is a high risk, high return business, where metals production is moderate risk and moderate return. This is evident when looking at the lack of increase in value when steelmakers integrate higher-risk mining businesses into their value chains. In addition to the risks associated with mining, vertically integrated steelmakers may not feel as pressured to implement radical cost management to protect margins if they are accessing raw material cash flows from their mines.

Figure 9. Average EV/EBITDA versus raw material self-sufficiency, 2009-11



Source: Ernst & Young analysis, S&P Capital IQ and VTB Capital

With these considerations in mind, an analysis of the enterprise value of the top 30 steelmakers over the last three years shows that vertical integration has either no effect or a slightly negative effect on the valuations of steelmaking companies. (See Figure 8 above.)

But this discount in value may also be due to how information is disclosed to the market. If the information on mining is disclosed as a standalone business, then there may be less discount in value. In 2011, ArcelorMittal created a separate mining business. This strategy created a strong business able to undertake premium mining acquisitions. Output from mines that could be sold outside the group are now transferred internally at market prices. Production from “captive mines” (limited by logistics or quality) continues to be transferred at cost-plus to the steel facilities.<sup>8</sup>

Vertical integration by steel into mining also brings in the risks of the mining business. In fact, much of the value creation potential may remain unrealized due to:

- ▶ Alignment of mining output to the needs of steel business, thereby not realizing the full potential of market opportunities in pure mining business
- ▶ Deployment of sub-optimal technology, competency and skills in the mining activity due to split focus vis-à-vis a leading practice competitive miner – thus having a negative impact on the cost curve and sustainability factors

It's important to remember that steelmakers have viable alternatives to legally owning the mining business for vertically integrating raw materials into their supply chains. These include:

- ▶ Adopting commodity price hedging to address raw material price volatility
- ▶ Relocation of production sites closer to the upstream suppliers
- ▶ Long-term contracts with suppliers (e.g., iron ore, coking coke) for security of supply

In addition, steelmakers may still decide to vertically integrate but reduce their risk by capping their level of shareholding in mining operations. For example, US steelmaker AK Steel is limiting its investment in coal mining to 50% of its current annual needs. The company's goal is to keep ramping up its coal production, but AK Steel will make the decision based on the coal price in 2013 and 2014. If prices continue to decline, however, the company has the flexibility to stop expanding in coal.<sup>9</sup>

Steelmakers also can implement other cost reduction initiatives or seek cost synergies through mergers and acquisitions (M&A). For example, the new merged entity of Nippon Steel and Sumitomo Metal Co. has streamlined production facilities in an effort to save US\$1.9b annually three years after integration.<sup>10</sup>

8 “Building a world class mining business,” ArcelorMittal, 23 September 2011.

9 Based on an Ernst & Young interview with Roger Newport, Vice President Finance and Chief Financial Officer, AK Steel.

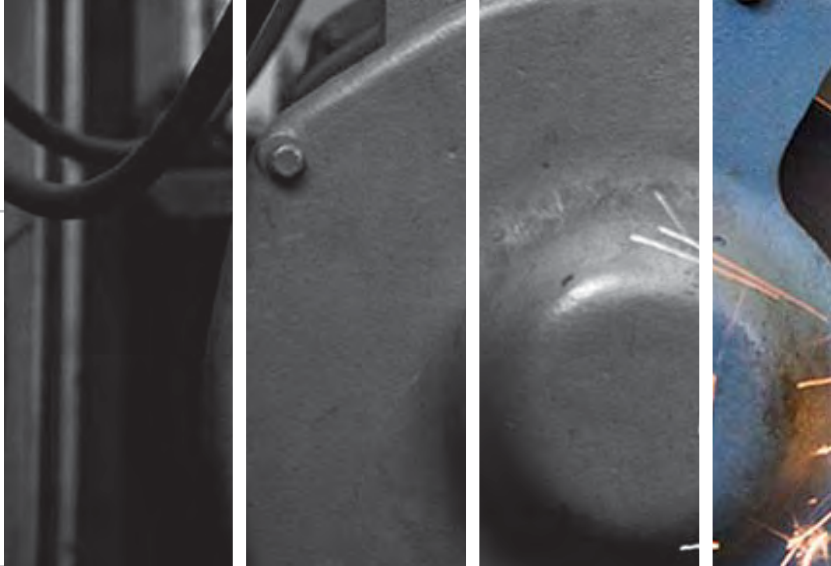
10 “Nippon Steel & Sumitomo to push cost cuts amid competition,” Bloomberg, 1 October 2012.

# Implication

While this analysis does cast some doubt on the perceived value creation of the vertically integrated model it does not invalidate it. What is the more important output from this hypothesis is that vertically integrated steelmakers should be critically assessing their business models to ascertain whether current structures provide optimum value. Ernst & Young has a valuation team that can assist steelmakers in this strategic assessment.



## Striving for **strategic cost reduction**



Weak market conditions mean that cost reduction activities are necessary to help position steelmakers for survival and position for future growth. However, steel companies need to ensure that cost-cutting activities do not deviate from the organization's overall strategy and will not cause further value erosion.



**Angie Beifus**  
Global Coordinating  
Analyst – Mining &  
Metals, Ernst & Young

“Companies need to be aware of the risk and implications of restructuring labor decisions. Labor in the steel sector consists largely of multi-skilled workers, technicians, engineers and managers, and the demand for a highly skilled workforce is only expected to increase.”

The approaches currently being used to reduce cash operating costs include:

- ▶ Reducing production volumes from loss making plants to stabilize steel prices and address oversupply in the market
- ▶ Restructuring labor
- ▶ Canceling or reducing supply contracts

### Reducing production volumes

Steelmakers with overcapacity need to restructure by eliminating outdated capacity. In 2012, an estimated surplus of 56 million tonnes of steel existed, despite recent mothballing of capacity.<sup>11</sup> Producers have retained loss-making excess capacity in the hope of either a large increase in demand or more likely the provision of economic assistance from host governments. Fiscal austerity has restricted government's ability to ponder to this rent-seeking behavior but has not altered the political will to defend job losses and protect icons of domestic manufacturing. The recent actions by French politicians regarding the proposed closure of part of the Florange steel plant. The politicization of otherwise rational commercial decisions can only negatively impact the recovery of the entire global steel sector by delaying the removal of ineffective loss making excess capacity. Thus far, some 50 million tonnes of crude steel capacity has been removed from the global market (excluding China) – 30 million tonnes in Europe alone. Steelmakers have also largely kept steel capacity utilization between 75% and 85% since October 2009, thereby keeping steel prices weak.

In addition to careful capacity management, steel companies are focusing on asset management, asset utilization, process efficiency, yield and rework (quality of product) and other cost

<sup>11</sup> *Resources and Energy Quarterly*, BREE, September 2012.



drivers. The key advantage of concentrating on these areas is that it is an effectively costless process. Some examples of this renewed focus include:

- ▶ **Asset management.** As production volumes decrease, astute operators are adapting their maintenance strategies to reflect the reduced utilization of both fixed plant and mobile equipment. Reducing the frequency of planned maintenance activities can significantly lower the cost of planned maintenance. The more flexible an operation to scheduling maintenance the more option value that is created from being able to perform maintenance at times of falling prices and defer it at times of rising prices.
- ▶ **Asset utilization and optimization.** Some operators are reducing operating costs by optimizing the equipment that is being used. For example, a processing plant that can mothball higher-cost areas. While this may reduce the plant's overall recovery rate, it increases the cash operating margin. For example, ArcelorMittal is focusing on its core assets to achieve the lowest cost footprint possible, along with significant savings. As part of this program, ArcelorMittal is closing the liquid phase of its Liège plant in Belgium.<sup>12</sup>
- ▶ **Process efficiency.** Operators are focusing on the efficiency of process inputs so that only minimal costs are incurred in producing their outputs.
- ▶ **Yield and quality.** While process efficiency is focused on improving how process inputs are used, yield and quality initiatives focus on improving the outputs of the process. They renew the focus on yield from production processes, effectively getting more finished product for the same unit cost. Improving the quality of the outputs also lowers costs by reducing rework and scrap material.

In an environment of low capacity utilization, steel producers are revisiting their optimization models. Strategies include focusing on value-added products despite challenges of higher setup times and smaller production campaigns, as the opportunity cost of lost time is negligible due to low capacity utilization.

## Restructuring labor

Labor can be a huge cost advantage and productivity factor. Capital substitution for labor can make steel production more economical. Producers in developed countries often have higher labor costs, so controlling those expenses can reduce a huge cost disadvantage.<sup>13</sup>

The US steel sector has undergone massive restructuring for survival. Labor productivity in the US has seen a fivefold increase since the 1980s, going from an average of 10.1 workhours per finished ton to an average of 2 hours per finished ton by 2010. Many US steel plants are producing a ton of finished steel in less than one workhour.<sup>14</sup>

Developing countries, such as China has often developed their cost advantage on the back of low labor costs. As those economies develop, employment costs will naturally increase and greater capital substitution will be necessary to remain cost competitive.

A reduction in staffing significantly lowers operating costs – less one-off payments for redundancy or layoff packages where applicable. In South Korea, for example, steelmakers have implemented retrenchment policies throughout 2012 as a way to minimize costs. They are expected to continue to do so in 2013.<sup>15</sup> And the immediate drop in salary costs may flow into additional savings in IT support, floor space and travel.

<sup>12</sup> ArcelorMittal presentation to the Dahlman Rose & Co. Third Annual Global Metals, Mining & Materials Conference, 14 November 2012.

<sup>13</sup> EU Paper on the cost effectiveness of the EU steel sector (2008, p. 49).

<sup>14</sup> American Iron and Steel Industry.

<sup>15</sup> "2013 steel & non-ferrous outlook," Tongyang Securities, 29 November 2012.

However, companies need to be aware of the risk implications of these decisions. Labor in the steel industry consists of a large proportion of multi-skilled workers, technicians, engineers and managers. And the skills and knowledge requirements in the sector are only expected to increase, as will the demand for a highly skilled workforce. Overall, the steel industry faces a similar skills shortage as other industries, such as mining.<sup>16</sup> In some countries, particularly in Europe, the average age in the sector is quite high, and as workers retire the skills shortage may grow worse.

Companies are also at risk of losing organizational knowledge and skills, and potentially intellectual property, with departing staff. Additionally, by retrenching staff, companies run the risk of diminishing their staff loyalty and goodwill and could find it harder to recruit and retain staff for the next growth cycle. Unless processes are made more efficient or total workload is reduced, it is likely that more expensive contractors or temporary labor will be needed in the longer term to back-fill vacated positions. To counter these issues, some companies are implementing other staff cost reduction exercises, including:

- ▶ Placing employees on paid leave
- ▶ Reducing shifts
- ▶ “Freezing” or reducing salaries
- ▶ Transferring flexible skill sets across sites

## Canceling or renegotiating supply contracts

Service contracts are probably one of the easiest cost components for companies to renegotiate, cancel or reduce in line with production decreases. Such action will lead to rapid and significant reduction in operating costs, except where contracts have a “take-or-pay” component or penalty for early termination.

Companies need to correctly manage downsizing with their contractors to make sure they have future access to equipment and supplies from these companies and to avoid negative legal ramifications. Companies should also strive to maintain a good relationship with their service contractors to avoid a future reduction in service and support. Doing so is critical as contract equipment often provides useful surge capacity for operations, but much of the sector is looking to its supplies to share some of the pain of restructure.

Other initiatives that steel companies may choose to minimize supply costs are:

- ▶ Centralizing procurement and control
- ▶ Renegotiating or consolidating contracts
- ▶ Building strategic sourcing arrangements

Strategic sourcing is a supplier relationship management process that leverages enterprise expenditure with a select number of qualified suppliers. If done properly, it can reduce operational expenditures and lead to lower product costs.

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<sup>16</sup> EU Paper on the cost effectiveness of the EU steel sector (2008, p. vi).





# Key implications

- Prepare well in advance for the political discussions to close loss-making plants/capacity
- Don't rely on the continuation of government assistance to prop up unviable operations
- Focus on the productivity of both labor and capital in future labor cost environments
- Preserve key skills
- While broader economic activity is subdued, act to have contractors and suppliers take part of the pain

## Optimizing capital – maximizing returns for shareholders



Today's economic climate is forcing steelmakers to candidly assess the appropriateness of their capital structure. More than a mere review of operations, companies must objectively assess the alignment of their funding and asset portfolios to their business strategies. The goal: the optimal allocation of capital to maximize shareholder returns and achieve the most efficient capital structure.



**Bob Stall**  
Partner,  
Mining & Metals,  
Ernst & Young US

"Many mining and metals companies have undertaken strategic investment/divestment plans and are continuing to seek the right balance to optimize their capital structure and maximize their return to investors."

Consequently, a growing number of corporate boards are focusing greater attention on the key drivers of efficient capital allocation. For example, companies are under pressure to inject greater discipline into their organizations in terms of operational efficiency. This includes a focus on identifying opportunities for releasing excess cash and optimizing working capital.

This focus is particularly relevant for steelmakers because falling demand and oversupply in regional markets have led to short-term liquidity challenges and may threaten credit ratings and debt covenants. The challenge for steel companies is to remain true to their long-term strategy while making capital allocation decisions and build in the flexibility to respond to short-term opportunities and risks.

### Building in options

The companies that deliver the best returns are those with a proactive and active capital reallocation strategy – those with the flexibility to reallocate capital across business units according to relative market or strategic opportunities.<sup>17</sup> This could be the reallocation of investment from a high-cost/low-return business to one that can realize better returns now or in the future, or the phasing and prioritization of capital expenditure to reduce capital intensity and free up future growth options.

Steel production is a capital-intensive business. Investments such as vertically integrating mines, building new plants, maintaining old plants and pursuing potential acquisitions need to be funded. In 2010, capital expenditure of the top 30 steelmakers by market capitalization increased by 15% as compared to 2009. In 2011, however, there was very little increase in capital expenditure (only 2%) as compared to 2010.<sup>18</sup> This is to be expected given

<sup>17</sup> "How to put your money where your strategy is," *McKinsey Quarterly*, March 2012.

<sup>18</sup> Ernst & Young research on Standard & Poor's Capital IQ data.





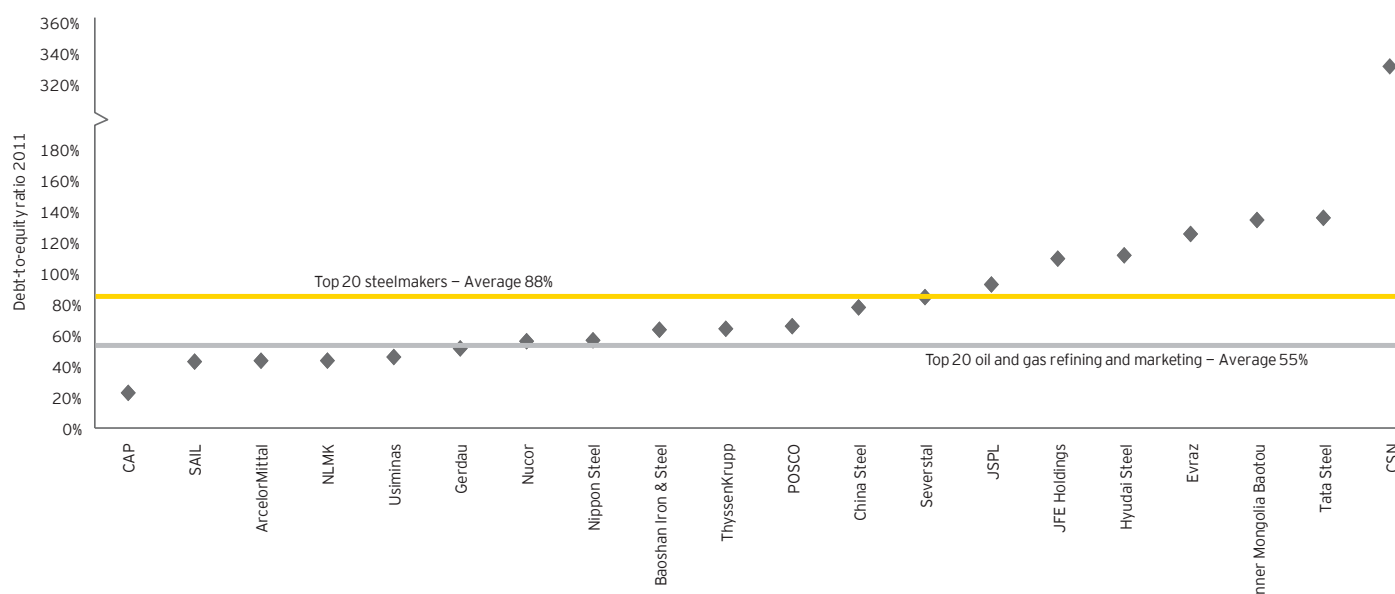
the weak economic conditions and excess capacity in the market. A number of steelmakers have announced a reduction in capital expenditure in 2012-13. For example, Usiminas noted its intention to decrease its capital expenditure in steel in 2013. In July the company announced plans to reduce its capex plan from R\$2.5b to R\$2b reals in 2012.<sup>19</sup>

The need to increase productivity may require new capex for long term survival and value protection

## Capital raising

The debt/equity structures of many sector participants represent a capital structure for the way the world used to be not how it will be. In an environment of increased risk, entrenched excess capacity, thin margins, greater volatility and changing business models, it appears imprudent for the sector to be carrying the debt load that it is. In 2011 the top 20 steelmakers had an average debt to equity ratio of 88%.

Figure 11. Top 20 steelmakers total debt-equity ratio 2011



Source: Ernst & Young analysis; S&P Capital IQ

The real problem of high gearing has been masked by the record low real interest rates being incurred on debt at the moment. However, highly geared steelmakers are not well positioned to handle the ultimate increase in interest rates and may well continue the pattern of credit downgrades. The January 2013 announcement by ArcelorMittal that it would repay \$3.5bn in debt through the issue of shares and convertible notes is part of a general move we expect to see repeated across the sector.

The refining businesses in the oil and gas sector have gone through a similar restructuring of their balance sheets over the last decade and the top 20 refining businesses by market capitalization had an average debt to equity ratio of 55% in 2011. Ernst & Young's hypothesis is that those producers with debt to equity ratios above 55% are likely to be over geared subject to unique circumstances.

Similarly, companies need to build options and flexibility into their approaches to capital raising. Some have done so on a huge scale in the bond markets, but the capital-raising environment

19 "Vale follows steelmakers cuts on supply glut," *Bloomberg*, 5 October 2012.



can be volatile. In 2012, global annual mining and metals capital-raising activity is set to decline for the first year since 2009, with a fall in proceeds in all asset classes except bonds in the first nine months of 2012. The 37% fall in year-over-year (y-o-y) proceeds to US\$174b reflects a combination of challenging equity markets and a significant withdrawal globally from the commercial loans market.

Companies need to be prepared for rapidly changing scenarios with a range of options and flexibility on the balance sheet. In addition, companies need to maintain their credit rating quality. If a company's credit ratings are downgraded, it can have a significant impact on the cost of borrowing and the ability to access capital on the best terms. ArcelorMittal, for example, indicated that it would be further reducing its debt in 2012 as a ratings downgrade would cost the company about US\$100m a year in interest payments.<sup>20</sup>

During 2012, steelmakers raised significantly less capital as compared to 2011. Steelmakers raised US\$45.7b in 147 issues in 2012 as compared to US\$98.4b in 269 issues in 2011. During 2012 debt finance accounted for 93% of capital raised in the steel sector, with 61 loans worth US\$19.7b and an additional 62 bond issues worth US\$22.9b

The largest single deal in 2012 was ArcelorMittal's bond issue of nearly US\$3b issued to reduce indebtedness.

**Figure 12. Proceeds of issues by steelmakers by asset class in 2012 compared to the same period of 2011**

Rank	2011 US\$	2012 US\$	Change %
IPOs	383	172	-123%
Follow-ons (equity)	13,561	2,856	-375%
Convertibles	459	163	-181%
Bonds	30,418	22,877	-33%
Loans	53,571	19,662	-172%
Total	98,392	45,730	-115%

Source: Ernst & Young, Thomson One

## Divesting non-core assets

Capital management today requires companies to look beyond the pure financials. They need to fully assess the operational, reputational, environmental and political risks when considering where to allocate resources. Projects or business units must earn their right to stay in the portfolio.

An essential element of capital reallocation is the process of divesting assets that may be underperforming, inefficient, high cost or simply no longer in line with the company's strategy. It is also a means of reducing debt and maintaining credit ratings.

For example, ArcelorMittal company plans to reduce its capital expenditure in 2013 (down from US\$4.5b to US\$4b). In addition, ArcelorMittal is deleveraging through its asset disposal program, making asset sales of US\$2.7b since September 2011. ThyssenKrupp is also seeking value maximization through a net debt reduction encompassing the sale of Steel Americas and the focus on materials and logistics services and capital goods business.<sup>21</sup>

More companies are adopting an active approach to managing their portfolio of business assets. Greater rigor can help identify instances of inefficient capital deployment and help assess alternatives. Moreover, earlier identification of problem areas leads to both better capital preservation and more optimal allocation.

<sup>20</sup> "ArcelorMittal's debt cut to junk by S&P on steel weakness," *Bloomberg*, 3 August 2012.

<sup>21</sup> ThyssenKrupp press release, 10 December 2012.



## Chinese steel sector



The Chinese steel sector faced strong challenges in 2012 as it grappled with lower steel demand, overcapacity, a fragmented industry and weak profit margins.



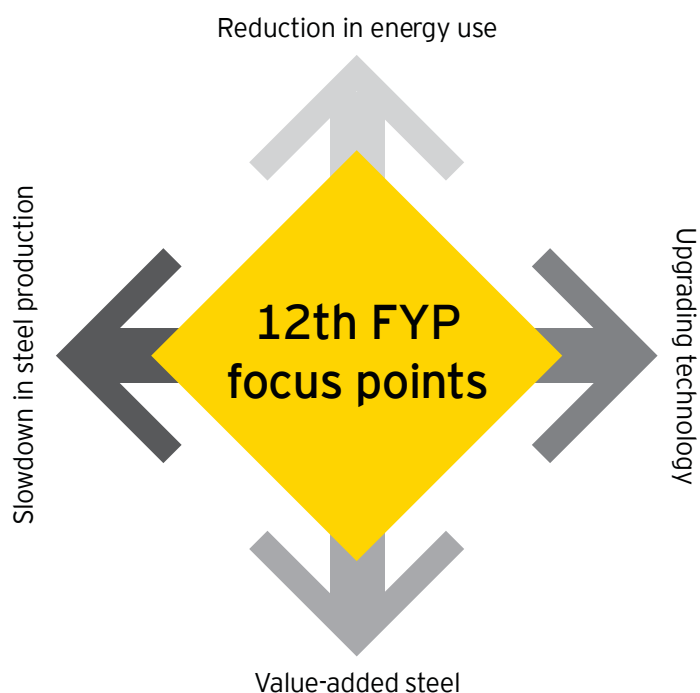
**Peter Markey**  
China Mining & Metals  
Leader, Ernst & Young

"The largest and most influential market in the steel sector is China – it is the market that moves both global steel demand and supply."

The Chinese government aims to address these issues, and others such as increased energy cuts, increased labor costs to stimulate domestic production and decreased raw material availability, through its 12th FYP.

China announced a target plan of 7% GDP growth during the 12th FYP period and is aiming to develop stable economic growth alongside a structural change in the economy.<sup>22</sup> In terms of steel, the plan focuses on promoting the use of modern technology, energy efficiency and improvement in product quality.

Figure 13. Focus points for the 12th FYP



Source: Ernst & Young analysis

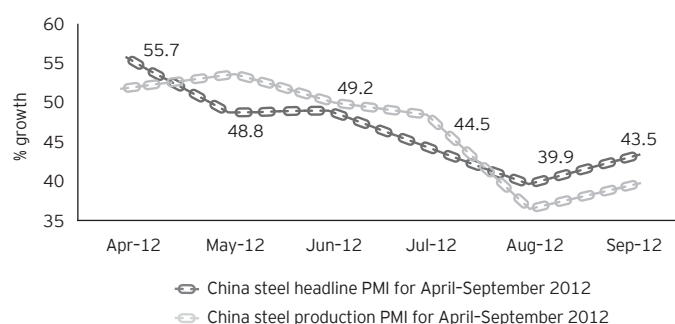
<sup>22</sup> "China's premier says 7.5 pct GDP target not low," Xinhuanet, 14 March 2012.





In 2012, Chinese GDP growth stabilized at around 7.5%.<sup>23</sup> As a result, fixed investment, particularly in construction, has declined. The effect on steel demand is clear from the Purchasing Managers Index (PMI) for April-September 2012, which shows the month-on-month contraction in steel demand during the course of 2012.

Figure 14. China steel headline PMI for April-September 2012



Source: China Steel, Nomura Research, 3 October 2012, via Thomson One

Overcapacity remains a concern with excess steel production over the last decade at 31% of apparent consumption. Steel demand in China is expected to grow only by around 2% y-o-y in 2012.<sup>24</sup> However with a lot of new infrastructure projects<sup>25</sup> approved in the second half of 2012, steel demand in China is expected to moderately increase by 3.1% in 2013.<sup>26</sup>

Figure 15. China demand-supply balance

Year	2006	2007	2008	2009	2010	2011	2012*
Production (million tonnes)	422	488	498	566	637	683	702
Consumption (million tonnes)	388	436	453	559	611	650	663
Oversupply (million tonnes)	34	52	45	7	26	33	39

\* Estimate

Source: China Steel Sector, Deutsche Bank, 18 October 2012, via Thomson One

The 12th FYP is expected to restrict capacity expansion at the bottom of the value chain, with the Chinese government seeking increased M&A among smaller steel companies. The government is aiming to increase the share of top 10 steel manufacturers from 48% in 2010 to 60% in 2015.<sup>25</sup> Its intention is to achieve economies of scale, be more energy-efficient and have better bargaining power with raw material suppliers. A consolidated steel industry will also have a positive effect on global steel markets as greater competitiveness and therefore production discipline will gradually solve the problem of overcapacity.

A more consolidated steel sector will also enable the Chinese government to implement policy initiatives such as those related to production efficiency, energy efficiency or improvement in steel quality. Currently, smaller steel mills are more likely to use outdated technology and are in operation primarily because of the strong demand for construction-grade steel products. In terms of the government's energy usage initiative, smaller steelmakers have been unaffected by the strict energy restrictions levied on larger players.<sup>26</sup>

<sup>23</sup> IHS Global Insight.

<sup>24</sup> Steel insights: China unlikely to provide a near-term catalyst, Morgan Stanley, 20 May 2012, Thomson One.

<sup>25</sup> Steel: Better in 2013, but is that good enough?, CIMB, ISI Emerging, 5 December 2012

<sup>26</sup> worldsteel Short Range Outlook, World Steel Association website, <http://www.worldsteel.org/media-centre/press-releases/2012/worldsteel-short-range-outlook.html>, accessed 1 January 2013

<sup>25</sup> 2012 Steel Industry Outlook, BOCI Research, 1 February 2012, via Thomson One.

<sup>26</sup> "Assessment of China's Energy-Saving and Emission-Reduction Accomplishments and Opportunities During the 11 th Five Year Plan," The Energy Analysis and Environmental Impacts Department, [http://eaei.lbl.gov/sites/all/files/EP\\_11FYP\\_Accomplishments\\_Assessment.April\\_2011\\_1.pdf](http://eaei.lbl.gov/sites/all/files/EP_11FYP_Accomplishments_Assessment.April_2011_1.pdf)



The 12th FYP also focuses on the adoption of new, more efficient steelmaking technologies to help reduce environmental pollution and increase the sector's overall productivity. China currently has around 2,700 mills. Most of these are very small mills,<sup>27</sup> with capacities below 1 million tonnes per annum, producing commodity-grade steel with obsolete technology.

During the 11th FYP, China did not make significant progress in reducing the use of obsolete technology; however, the country's steel sector has increased its adoption of new technologies to improve the efficiency of its new plants. Large Chinese players such as Baosteel and others have entered in collaboration with global steelmakers such as ArcelorMittal and Nippon Steel,<sup>28</sup> among others, to adopt the latest technologies and gain current technical know-how. For example, Chinese steelmakers are looking to adopt new technologies such as Corex, Finex and ITmk3 to reduce the dependency on metallurgical coal for future projects.

**Figure 16. Steelmakers investing in Chinese steel technology**

Foreign steelmaker	Country	Chinese partner	Investment
Nippon Steel	Japan	Baosteel	Galvanized steel
NV Bekaert SA	Belgium	Xinyu Iron and Steel	50% stake; advanced coating
Precision Castparts	US	Yangzhou Chengde Steel Tube	49% stake; large-diameter, interconnect pipe for coal-fired power plants
ArcelorMittal	Luxembourg	Hunan Valin Iron and Steel Group	18.99% stake; steel technology, procurement and marketing

Source: mergermarket; Baosteel company website

In addition, a number of Chinese steelmakers now have the technology to compete with Japanese manufacturers in relation to the production of high-quality steel products.

"Economy of scale and enhanced technology" is the new mantra for any major project starting up in Asia. Two Asian players, Tata Steel<sup>29</sup> and RINL,<sup>30</sup> have recently completed their brownfield expansion by installing one of the largest furnaces in the area – its 3,500m<sup>3</sup> capacity will allow the steelmakers to enjoy an economy of scale. Similarly, China has already approved mega-expansion projects for Baosteel (~10 million tonnes) and Wuhan Iron and Steel (Group) Corporation (WISCO) (~9.2 million tonnes) that are expected to use the latest technologies in the companies' new plants. Approval for these new expansion projects is also conditional on outdated capacity being removed from the market. By the time Baosteel's Zhanjiang project is operational, the local government in Guangdong will have closed 16.4 million tonnes of outdated technology being removed from the market.<sup>31</sup>

Globally, there are concerns that smaller players in the Chinese steel sector will have a negative impact on the global steel market. With their profitability remaining the lowest globally, it is possible that Chinese companies will continue to operate even after posting losses, flooding the steel export markets with low-cost steel.

There has been some positive policy development in China where state banks have been less inclined to continue to lend to loss making businesses. This policy shift has accelerated the consolidation occurring in the sector.

Adding to the lack of profitability is a significant increase in production costs, including: labor costs (which will result in a loss of competitive advantage over time), energy costs, and domestic raw materials.

27 "For China, Too Much Steel Isn't Enough," *Bloomberg Businessweek*, 28 June 2012.

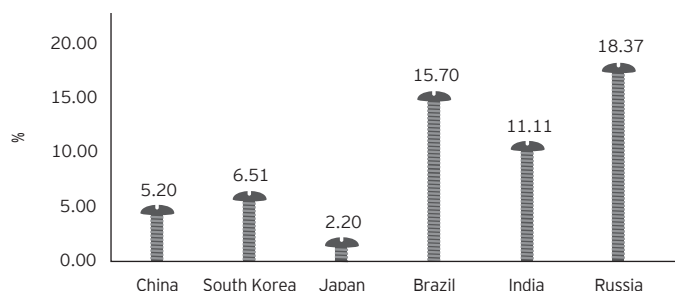
28 Deals, mergermarket, accessed 6 December 2012.

29 "Expansion Initiatives: India," *Tata Steel company website*, [www.tatasteel.com/investors/annual-report-2010-11/html/expansion-initiatives-india.html](http://www.tatasteel.com/investors/annual-report-2010-11/html/expansion-initiatives-india.html), accessed 6 December 2012.

30 "RINL spending Rs 19k cr on Visakhapatnam steel plant expansion," 4 January 2012.

31 "China approves Baosteel's \$11b steel project in Guangdong," Reuters, 25 May 2012.

Figure 17. EBITDA margin comparison of steel companies 2011



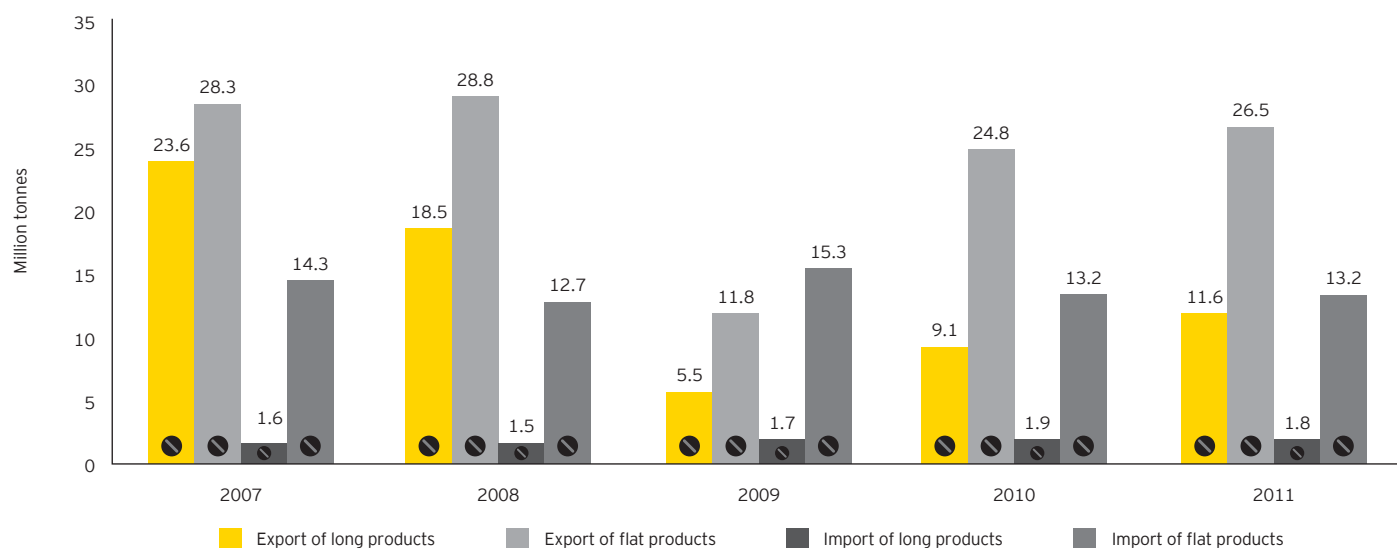
Source: S&P Capital IQ; Ernst & Young research

Exports from China will continue to have an impact on global producers. Although China is the world's largest exporter of steel,<sup>32</sup> its steel exports accounted for only 6.4% of the country's total annual steel production in 2011.<sup>33</sup> Exports of steel from China to other steel-producing countries such as Brazil and the US impose a ceiling on domestic prices.<sup>34</sup> The effect on domestic prices in other steel-producing countries will depend, however, on the types of steel being exported from China.

China has been exporting steel to almost every region in the globe – Asia, Africa, Americas, Europe and Middle East. The country's growth model has been to invest in infrastructure to create demand and jobs. When Chinese domestic demand is low, domestic steel mills exports to other markets. Steelmakers in the importing regions have been at the receiving end of this trend as they are often unable to compete with government-subsidized cheap Chinese steel.

Increased exports from Chinese companies will increase competition for global steelmakers for export markets. Europe and the Middle East are an important steel export market for steelmakers from the Commonwealth of Independent States (CIS) as well as China. Asian countries other than China account for almost two-thirds of all Japanese steel exports. This region is also the largest Chinese export market. Steelmakers from these regions would face much competition from Chinese steelmakers as the latter find domestic demand stagnating and look for export markets. For example, exports accounted for almost 35% of Severstal's revenues in 2011, 23% of which came from Europe and the Middle East.<sup>35</sup> Exports account for 40% of POSCO's total sales, 26% of Hyundai Steel's and 49% of Hyundai Hysco's.<sup>36</sup>

Figure 18. Chinese steel trade



Source: World Steel Association

32 ISSB Ltd.

33 Steel Statistical Yearbook 2012, World Steel Association, October 2012.

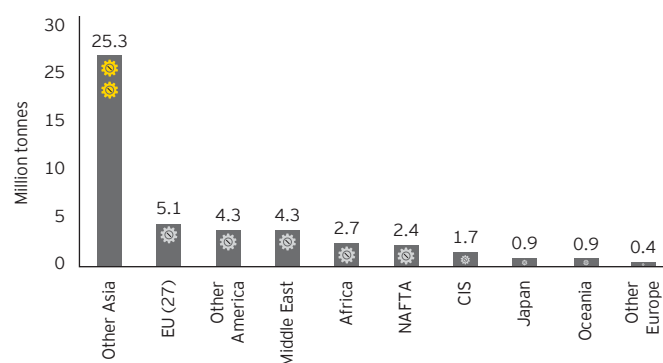
34 LatAm Metals & Mining, Deutsche Bank, 5 September 2012.

35 Annual report 2011, Severstal.

36 "Structural downturn," Mirae Asset Securities via Thomson Research, 22 October 2012.

The level of competition would also depend on the type of steel produced and exported by the respective steelmaker. For example, steelmakers from CIS have a larger share of basic grade steel in their steel production mix and would directly compete with the Chinese steelmakers as compared to the Japanese or European steelmakers, which have a larger share of value added steel in their product mix.<sup>37</sup> For example, Severstal's main contributors to export sales volumes were hot-rolled strip and plate products (48.6% of total steel products).<sup>38</sup>

Figure 19. China's steel exports (2011)



Source: World Steel Association

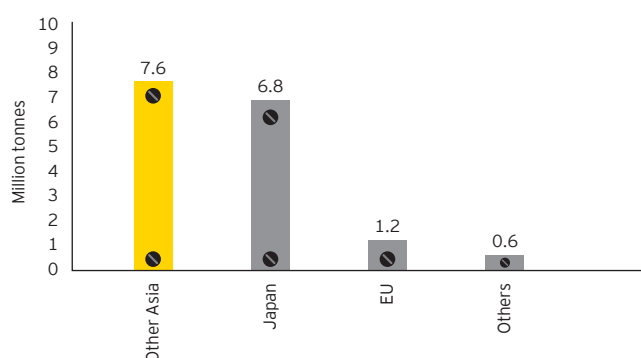
A further decline in China's domestic steel demand will make the export trade more pronounced. China exported about 48 million tonnes of steel in 2011, more than 50% of which was to other Asian countries. Some of the largest steel importers in Asia are South Korea (also a significant exporter), Thailand, Vietnam, Indonesia and India. China has massive steelmaking capacity, so even minor increases in its export patterns have the ability to dramatically alter the steel industry in other countries. According to Sajjan Jindal, Chief Executive, JSW Steel, if China exports just about 10mtpa to India, "the Indian steel industry could be crushed."<sup>39</sup>

Increased concern from importing countries regarding the dumping of excess inventory into their market may lead to increasing trade disputes. Tata Steel in Thailand has asked the government to impose anti-dumping duties on steel wire from China.<sup>40</sup>

There have been some concerns that Chinese steel use intensity may peak in the near- to midterm. However, this is unlikely as the rebalanced objectives of the 12th FYP, combined with a high rate of urbanization, will contribute to steel demand. For example, the FYP includes a number of planned projects that would contribute to increased steel demand, and many of the western and central regions of China are still in the early stages of the steel intensity curve. Planned projects include:

- ▶ 36 million apartments by 2015
- ▶ New urban rail system in 20 cities and expansion of high-speed network
- ▶ 83,000km of new highway, 150,000km of oil and natural gas pipeline, and 8 new airports

Figure 20. China's steel imports (2011)



Source: World Steel Association

Steel intensity in China may peak much more quickly than in the US or the UK. The US reached its steel industry peak in about 75 years, but China is expected to peak in 23 years at current growth rates. Of course, the peak of steel consumption per capita is subjective for every country. Although it is difficult to pinpoint the correct level for China, the US and Japan offer probable benchmarks from the peak of their investment cycle: approximately 600kg and 700kg per capita, respectively. Once steel intensity peaks in China – estimates are that this will happen in approximately 2020 – there will be a gradual decline in Chinese steel production and consumption.

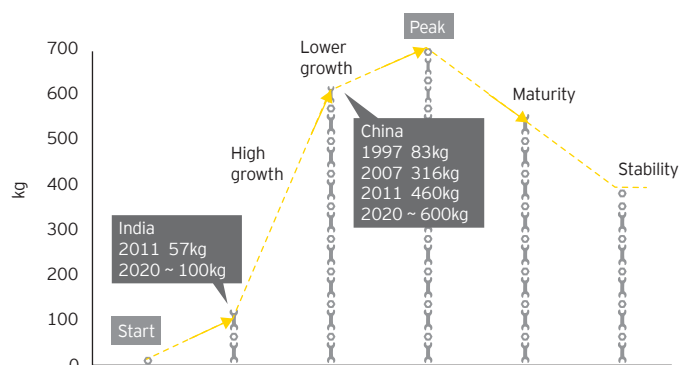
37 "China flooding globe with cheap steel," *The Globe and Mail*, 14 September 2012.

38 Annual report 2011, Severstal.

39 "Steel producers fear rising China exports," *FT.com*, 18 October 2012.

40 "Tata urges anti-dumping penalties on Chinese steel," *The Nation*, 28 September 2012.

Figure 21. Steel consumption per capita



Source: World Steel Association, IMF, CIA World Factbook, Ernst & Young Metals & Mining analysis

A successful implementation of the 12th FYP policy initiatives would not only help contribute to steel demand, both domestically and globally, but it would also promote the production of value-added steel. For example, the machinery, power plant projects (such as stainless steel) and high-speed railway would require specialty steel. And as Chinese steelmakers consolidate and improve their product mix with a focus on higher-value products, they will have the opportunity to become more cost-effective producers. If the sector follows the lead of the US steel industry in terms of labor (1 workhour per tonne), it is likely that China could have a huge cost advantage in higher-value steel products in the global market.



**Pierre Mangers,**  
Executive Director, Mining & Metals,  
Ernst & Young Luxembourg

“China’s steel use is likely to peak in 2020. Other geographic areas cannot offset due to their size, their growth or often both.”

## Outlook

Despite a slowdown in the economy, steel production in China has grown moderately during 2012. The production capacity utilization of Chinese steelmakers has steadily declined from 84% in 2009 to around 78% in 2012, with steel inventory rising steadily after a sharp decline in 2009. In the short term, steel oversupply is likely to persist as total steel output growth will outpace total steel consumption growth. Chinese steel prices, which are trading near the lows of 2008, are likely to find support from the fact that these prices are near the cash cost levels of Chinese steelmakers. However, a short-term upside in prices is also unlikely, considering the predictions of sluggish demand in 2013. Although steel production in China will decelerate due to slowdown in end-user demand, it is unlikely to fall from current levels as the steel sector remains one of the country’s largest contributors to GDP and jobs.<sup>41</sup>

<sup>41</sup> “Structural downturn,” Mirae Asset Securities, 22 October 2012, via Thomson One.



# Q&A



## Q&A with Michael Wang, President, WISCO Canada Company Limited, a subsidiary of Wuhan Iron & Steel (Group) Corporation (WISCO)

Ramona Cheng, Ernst & Young Americas Markets Leader, China Business Network, interviewed Michael Wang, President of WISCO Canada Company Limited, on 19 November 2012.

**Q: Putting aside the current economic volatility and uncertainty, what do you see as major challenges in the steel sector? What are you doing to meet these challenges?**

A: The steel industry is facing the following key challenges:

- Global steel overcapacity
- Lower profit margin
- Fragmented steel sector in China, coupled with some structural issues in product mix

To address these major challenges, the steel sector in China needs to:

1. Eliminate outdated and excess production capacity. China's Ministry of Industry and Information Technology set a target in April 2012 to eliminate outdated (obsolete) capacity whereby 10 million tonnes per year of outdated puddling capacity and 7.8 million tonnes per year of outdated steelmaking capacity will be phased out in 2012. Various measures have been taken to achieve this target, such as putting a halt on production, shutting down certain production facilities, and consolidating or converting those with outdated capacity to more energy-efficient, environment-friendly capacity.
2. Reduce transportation/logistics costs by moving some of the production from inland to coastal areas. [Logistics/transportation costs currently account for 11.2% of the total operational costs among all steel companies in China.<sup>42</sup>]
3. Build a stable raw materials supply globally – for example, WISCO has locked in 40 billion tonnes of iron ore [reserves] globally through its joint ventures. WISCO's overseas investments are currently producing about 10 million tonnes of iron ore annually, and WISCO's target is 60 million tonnes per year in the future.

<sup>42</sup> "Steel capacity to be curbed," *Global Times*, 18 June 2012, Factiva.



The quality and consistency of raw materials and the stability of supplies have been highlighted as key strategic objectives for steel companies with integrated operations, where the ability to secure supply notwithstanding pricing volatility and economic uncertainty is of mutual benefit to steel companies as well as their joint venture partners [i.e., suppliers of raw materials].

**Q: Do you think China is entering a new phase of slower economic growth or merely pausing for breath?**

A: China is now in the new phase of urbanization. In the past 30 years, China's rapid economic growth has brought half of its population from rural areas to urban areas. In 2011, China's urbanization rate exceeded 50.5%.<sup>43</sup> Based on research conducted by the Institute for Urban and Environmental Studies Chinese Academy of Social Sciences, once a country's urbanization has passed the 50% turning point, its economy will grow at a relatively steady and stable growth rate. Over the next 20 years, it is projected that China would bring an additional 300 million people into cities, thereby generating potential significant opportunities in areas such as labor, construction and infrastructure, transport, energy, water, etc. Urbanization will continue to drive economic growth. Accordingly, we anticipate that China will grow at a steady pace. The steel sector, after a period of shake-up, is expected to grow at a rate corresponding with the growth of the overall economy in the long run.

**Q: Among the top 12 steel deals year to date in 2012, about half have been Chinese domestic consolidation. What will an increasingly consolidated (and potentially more efficient) Chinese steel sector have on the global steel sector?**

A: The steel industry in China is very fragmented. A highly consolidated steel industry is crucial to China's competitiveness in the global steel sector. We anticipate the M&A activity in China will be increasingly active and intensified in the next few years in order to adjust production capacity to a reasonable level as well as to result in a product mix that will better reflect market

demand.

**Q: Prices of iron ore and coal have decreased during the course of this year. How will this raw material pricing trend impact steel prices, and consequently, what will be the outlook for steel margins?**

A: The recent developments in prices and margins are inevitable – the downward adjustments in raw material prices are required to bring the profit margins [of iron ore and metallurgical coal producers] down to a more reasonable level. The significant profit opportunities in both mining and steelmaking in the past had attracted a broad range of investors who built significant production capacity that could not be fully released – such “imbalance” in turn drove down profits, margins and raw material prices. [WISCO is of the view that the current margins for raw materials are approaching a reasonable level after the demand-supply adjustments that have taken place in iron ore and coking coal.]

**Q: What do you think is the outlook for the steel industry in the next three years (to 2015)?**

A: In the next three years, as the global steel industry further consolidates, the relationship between steel production capacity and market demand will be adjusted to reach a better balance. As a result, costs and product mix are expected to be further improved for the sector.

China is expected to continue moving up the value chain in manufacturing (i.e., upgrading manufacturing capability) with further urbanization. And the steel industry is expected to keep pace with the growing economy, albeit at a slower yet steady and stable pace during the rebalancing period. While the current adjustment period could be painful, the steel sector will remain a “backbone” industry of the economy with its long-term growth commensurate with that of the overall economy.

<sup>43</sup> *Population of urban and rural areas and percentage urban, 2011*. United Nations, Department of Economic and Social Affairs, <http://esa.un.org/unpd/wup/CD-ROM/Urban-Rural-Population.htm>, accessed on 18 December 2012.

## Is India on track to become the next steel powerhouse?



India's steel industry has grown about 10% per year, from 27 million tonnes in 2001 to 72 million tonnes in 2011. According to the Planning Commission of India, the country's steel production is expected to grow by around 60 million tonnes during the 12th FYP (2011-12 to 2016-17).



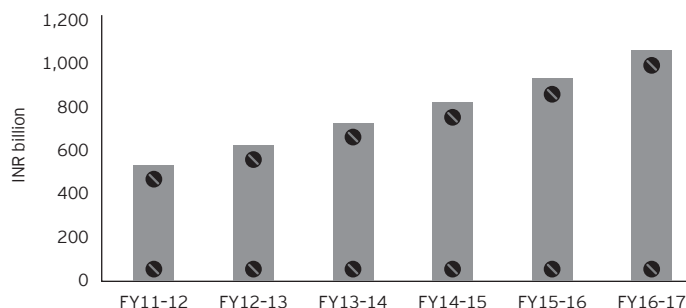
**Anjani Agrawal**  
India Mining & Metals  
Leader, Ernst & Young

"India's domestic steel consumption will continue to grow steadily for several years into future – driven by urbanization, favorable demography, GDP growth, refocus on industrialization and stepped-up investments in infrastructure. The current challenges, while posing constraints on supply side, do offer opportunities for players both local and global."

The 301 memoranda of understanding (MOUs) signed with various states, when implemented, would theoretically boost planned capacity to about 489 million tonnes.<sup>44</sup>

The growth in India's industry is a result of domestic steel consumption, which has been driven primarily by infrastructure-related investments and consumer durables. The 12th FYP projects an investment of US\$1t in infrastructure alone, which will accelerate steel consumption. As an estimate, this increase in infrastructure spends may itself lead to additional demand of approximately 40 million tonnes per annum during 2012-13 to 2016-17.<sup>45</sup>

Figure 22. Projected infrastructure investment during the 12th FYP



Source: Committee on Infrastructure/Planning Commission

<sup>44</sup> Annual report 2011-12, Ministry of Steel.

<sup>45</sup> "Report of the working group on steel industry" for the 12th FYP (2012-17).

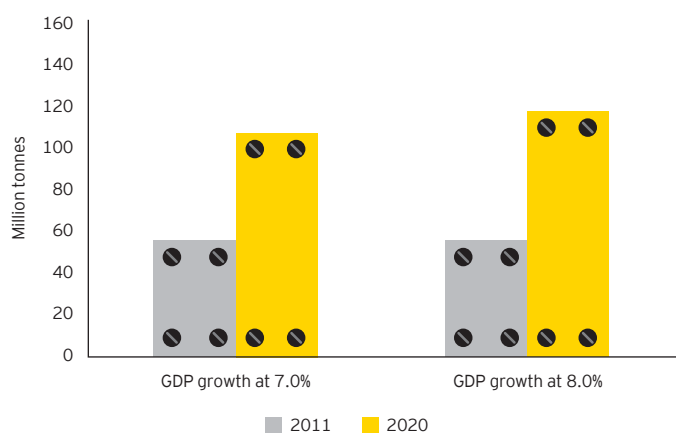




The rising middle-class population, along with increased urbanization, will increase steel intensity in the economy. According to the report of the working group on steel industry for the 12th FYP, the Indian urban population is expected to increase to 600 million by 2030 from the current level of 400 million. The rising middle-class urban population boosts demand for automobiles, white goods and other consumer durables leading to higher per capita steel consumption.

Indian steel consumption growth has an elasticity of about 1.1 to growth in GDP.<sup>46</sup> In other words, if the Indian economy grows at 7% per year, steel demand is likely to grow by 7.7% during the same time, from the current 68 million tonnes to around 132 million tonnes by 2020.

Figure 23. Projected steel demand in 2020



Source: Ernst & Young analysis

Note: assumed steel demand growth to GDP growth elasticity of 1.1

## Opportunities

In line with GDP growth, Indian steel demand has immense opportunities to grow across sectors in the mid- to long term. The rapid rise in production over the last few years has resulted in India becoming the fourth largest producer of crude steel and the largest producer of sponge iron or direct-reduced iron (DRI) in the world. The country has the opportunity of becoming the second largest producer of steel by 2015,<sup>47</sup> and per capita consumption of steel in India, which is only 55kg (2011) – significantly lower than global averages – suggests potential to close the gap in future. Some of the primary levers of demand growth are summarized below:

### Rural demand is picking up

Currently, per capita rural consumption in India stands at around 13kg. This is significantly lower than urban per capita consumption. Projects like Bharat Nirman and Rajiv Gandhi Awaas Yojana have led to increased demand for construction steel like thermo-mechanically treated (TMT) bars and galvanized plain and corrugated (GP/GC) sheets, but there remains a significant opportunity to grow rural steel demand by widening the distribution network and by providing customized solutions catering to the needs of 70% of the population.

### Investment planned in road sector

The 11th FYP (FY07-12) registered a road investment worth US\$66b, which is a rise of more than 100% in comparison to the 10th FYP (FY02-07). Going further, an investment worth US\$132b has been planned for the 12th FYP. The government has launched many road investment programs, namely the National Highways Development Project (NHDP) and Pradhan Mantri Gram Sadak Yojana (PMGSY), to increase the connectivity of roads to ports and plant sites.<sup>48</sup>

<sup>46</sup> Institute for Steel Development and Growth, [www.iim-delhi.com/upload.../02Steel\\_Growth\\_Scenario\\_INSDAG.pdf](http://www.iim-delhi.com/upload.../02Steel_Growth_Scenario_INSDAG.pdf), accessed on 6 December 2012.

<sup>47</sup> Annual Report 2011-12, Ministry of Steel, India.

<sup>48</sup> National Highway Authority of India



### **Indian Railways – a key contributor to steel demand in the country**

Indian Railways has an ambitious investment plan to invest US\$328b through 2020 under its 'Vision 2020' program. Vision 2020 plans massive capacity augmentation to meet traffic demand and improve safety and operational efficiency. The organization's plan is to invest around US\$42.6b out of the total allocated budget in laying down new lines. Freight car procurement is also expected to increase to 75,000 per annum from the present level of 15,000 per annum. Many of the investments will have high steel intensity. Indian Railways' ability to meet Vision 2020's target holds the key to steel demand during the current decade.<sup>49</sup>

### **Automobile and power sectors offer opportunity for specialized steel**

The increase in volume by the automobile majors will drive the demand for specialized steel such as ultra fine grain steel and dual phase steel. The demand for cold rolled grain oriented steel (CRGO), which is currently imported, offers a valuable opportunity. As India is currently short of electricity, there are plans to exponentially increase investment in power projects, which will also drive steel demand.

### **Refocus on manufacturing**

The government's plan to re-energize manufacturing will lead to accelerated demand from the capital goods sector and projects. The current share of capital goods in the overall steel consumption is substantially lower than China's, even in ratio terms.

## **Challenges**

India's GDP growth has dropped from more than 9% in early 2010 to below 6% for three successive quarters in 2012. Slowing GDP growth and concerns around economic policy-making have

affected overall investment in infrastructure and steel projects. Indeed, most of the steel MOUs signed in prior years remain as plans, with projects not started due to delays on environmental and forest clearance, land acquisition, mining leases and other regulatory issues.

### **Land acquisition and environment regulations**

Setting up a steel plant requires vast tracts of land. For example, POSCO's proposed steel mill in Odisha would require around 1,600 hectares,<sup>50</sup> and ArcelorMittal's proposed plant in Karnataka would require around 2,800 hectares.<sup>51</sup> Acquiring these vast tracts of land for setting up mega-plants, particularly in a populous country like India, has remained a challenge with steelmakers. Major greenfield steel projects such as those of POSCO, ArcelorMittal and Tata Steel have been delayed for a number of years, primarily due to land acquisition issues. Rules to calculate adequate compensation to the landowners have been unclear.<sup>52</sup> Additionally, the number of approvals like environmental and forest clearances required from the authorities has made land acquisition and setting up projects the top issues in building up large new capacity.

### **Shortage of coking coal**

India is very dependent on imported coking coal. Approximately 60% to 65% of the domestic coking coal requirements are met through imports<sup>53</sup> due to unavailability of appropriate qualities in the country. Coking coal reserves available in the country have high ash content and are not suitable for the steel industry. Planned increases in steel production capacity are likely to be blast furnaces, so the requirements for coking coal will increase. In 2012, India imported around 31 million tonnes<sup>54</sup> coking coal, and that amount is expected to rise above 41 million tonnes by 2015.<sup>55</sup> High dependence on imports further makes the domestic steelmakers' profitability dependent on the international coking coal prices.

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49 *Vision 2020*, Ministry of Railways, December 2009.

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50 "Q+A – India confronts land grabs in industrialisation push," Reuters, 19 August 2010.

51 "ArcelorMittal says 'some progress' in Karnataka steel plant," *The Indian Express*, 28 April 2012.

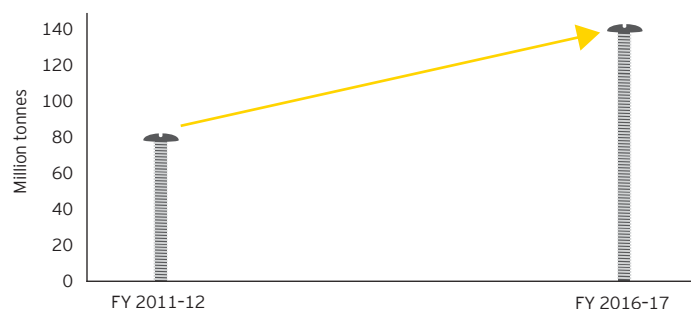
52 "In Bastar, Tata Steel discovers a 'land' mine after troubled acquisition," *Business Standard*, 11 July 2012.

53 "India to acquire coking coal mine in Mongolia," *The Hindu*, 10 May 2012.

54 "Coal imports jump 18 pct y/y in first half of FY13," Reuters, 23 October 2012.

55 "Ready for bounce-back," BNP Paribas via Thomson Research, 14 June 2012.

**Figure 24. Investments required to achieve forecasted increase in capacity**



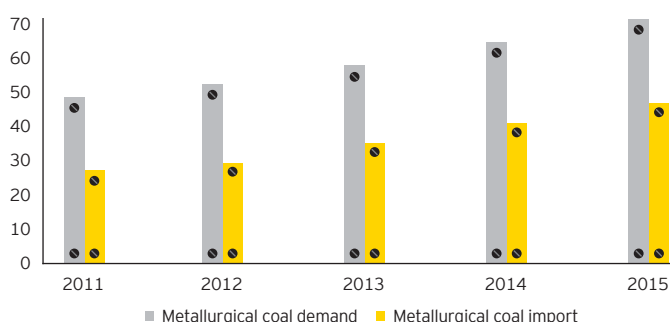
Source: Planning Commission

Note: additional investment needs are based on Planning Commission's forecast of 60 million tonnes of steelmaking capacity additions under the 12th FYP.

### Availability and pricing of domestic iron ore

The availability of inexpensive, good-quality iron ore is one of the positive factors for growth of India's domestic steel industry. However, the sector has more recently come under the scrutiny of authorities due to widespread illegal mining. As a result, the state of Karnataka faced a ban on iron ore mining on 2011. The ban affected domestic steelmakers' annual production, with JSW Steel operating at less than 30% capacity at one point.<sup>56</sup> Shortage of iron ore due to mining bans in key iron ore-producing states such as Karnataka, Goa and Odisha has also led to a rise in domestic iron ore-prices that is in contrast to a falling trend in export iron ore prices; this also is creating disturbances in the supply chain. There is little to no expectation of Indian iron ore exports during 2013.

**Figure 25. Forecasted coking coal demand and import needs**



Source: BNP Paribas

<sup>56</sup> "Improved visibility on iron ore supply," Nomura Research via Thomson Research, 7 December 2011.

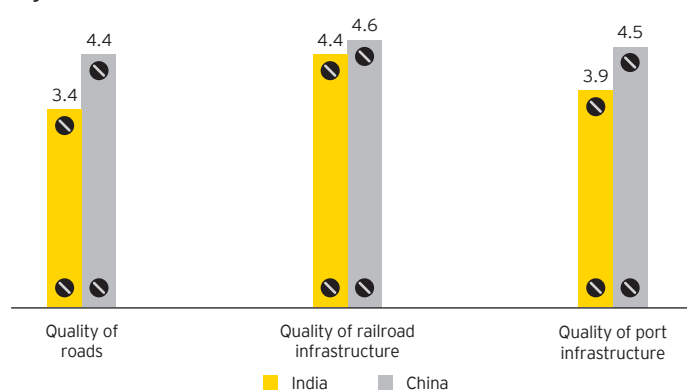
### Downstream value addition

There is a recent but growing trend observed toward resource nationalism. Several iron ore-producing states like Odisha have professed a policy for preference in allotment/renewals of mining leases to actual users – thereby making downstream processing and steelmaking a condition. This has posed severe challenges to merchant miners and disruptions to the current state. However, given this stance of the local governments, global and local steel industry players can hope to get mines allotted for captive use, which has been a major deterrent for most steel multinational corporations so far.

### Insufficient infrastructure and logistics

The steel industry is a major user of infrastructure resources like railways, roads and ports. Every 1 tonne of steel produced involves approximately 4 tonnes of material movement across India. A growth in steel production will increase the burden of the country's already stretched logistics infrastructure. To meet the needs of a growing steel industry, major improvements in various infrastructure facilities are required.

**Figure 26. Infrastructure in China and India**

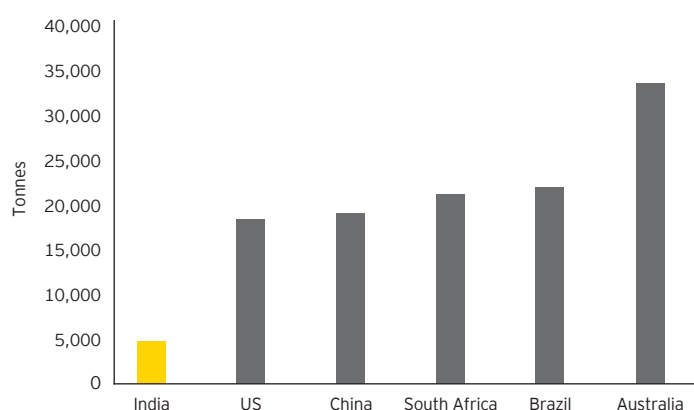


Source: *The Global Competitiveness Report 2011-12*, World Economic Forum

Note: indicators are ranked on a scale of 1 to 7, with 7 being the most desirable outcome.

The Indian railway system suffers from a lack of adequate haulage capacity and has significantly low heavy-haul freight compared to its global peers. For example, Indian Railways' heavy-haul freight at 5,400 tonnes is much lower than that of other countries such as China (20,000 tonnes), South Africa (22,000 tonnes) and Australia (32,000 to 37,000 tonnes). Indian Railways also suffers from inadequate infrastructure at various loading and unloading terminals. The freight car turn-around time is very slow by global standards. The effective freight rates continue to carry an increased burden of subsidy toward passenger traffic.

Figure 27. Heavy-haul freight across geographies



Source: Ministry of Railways, India, October 2010

### Port facilities to catch up

As steel capacity in the country grows, the industry will be increasingly dependent on domestic ports for material movement. Projected traffic handled by major and minor ports for iron ore is expected to rise from 138 million tonnes in 2011-12 to around 245 million tonnes by 2016-17, while traffic for coal (coking and non-coking coal) is projected to increase from 163 million tonnes in 2011-12 to around 544 million tonnes in 2016-17.<sup>57</sup> Port capacity may not increase at the same pace, as there have been delays in implementing current projects, further limiting the ability to propose new projects.<sup>58</sup>

### Adoption of modern technology

Performance parameters on technological levels and productivity of Indian steel plants are much lower when compared to plants in developed countries. This disparity is primarily due to the poor

quality of raw materials used in steelmaking (high impurities such as alumina and silica in iron ore, high ash content and variation of quality in coal) and the use of obsolete technology (hot blast temperature below 1,000 C, lack of high top pressure operation, level of oxygen enrichment of hot blast, limited use of agglomerated feed such as sinter and pellet) by the older plants. This has affected various critical performance parameters for steel plants, including blast furnace productivity, coke rate, energy consumption and blast furnace slag volume. The use of steelmaking technologies such as FINEX and ITmk3 can make good use of abundantly available iron ore fines in the country and non-coking coal for iron-making.

Many Indian steel companies have adopted newer technology, and with productivity levels of around 2 to 2.8/t/day/m<sup>3</sup>, some of their recently commissioned plants are comparable to global standards.<sup>59</sup> This decision has led to an improvement in consumption of raw materials and energy, as well as compliance with environmental and pollution benchmarks such as carbon emission norms.

Figure 28. Performance of Indian steel plants as compared to global parameters

Item	Unit	Global benchmark	India steel plant
BF productivity	(t/day/m <sup>3</sup> of working volume)	2.5-3.5	1.5-2.5/2.8
Coke rate	(kg/t-HM)	350-400	500-600
PCI	(kg/t-HM)	150-250	50-100
BF slag rate	(kg/t-HM)	200-300	300-400
Energy consumption	(G-cal/TCS)	4.4-5.5	6-6.5
SMS slag rate	(kg/TCS)	Less than 100	180-200
CO <sub>2</sub> emission	(t/TCS)	1.7-1.9	2.8-3.0

Source: IISA as quoted in report of the working group on steel industry for the 12th FYP, November 2011

Note: BF Productivity (t/day/m<sup>3</sup>): tonnes of hot metal produced per day, per cubic meter of blast furnace volume.

Coke rate/PCI (kg/t-HM): Kilograms consumed per tonne of hot metal produced.

Energy consumption (Gcal/TCS): giga calorie per tonne of crude steel produced.

SMS slag rate (kg/TCS): SMS slag consumed per tonne of crude steel.

CO<sub>2</sub> emission (t/TCS): tonnes of CO<sub>2</sub> emitted per tonne of crude steel.

57 Report of the working group on port sector for the twelfth five year plan, Ministry of Shipping, Government of India, November 2011.

58 "Advance ruling under indirect tax," Ernst & Young website, [www.ey.com/IN/en/Newsroom/News-releases/Published-editorial---Regulation-and-hurdles](http://www.ey.com/IN/en/Newsroom/News-releases/Published-editorial---Regulation-and-hurdles), accessed on 20 November 2012.

59 A roadmap for Research & Development and Technology for Indian Iron and Steel Industry, Ministry of Steel, Government of India.

## Strategies for acceleration

Despite the challenges that the Indian steel industry is going through, there is a major opportunity to be seized by the Indian and global steel sector players. For India to be the next steel powerhouse, some comprehensive strategies would need to be adopted. Here is a brief summary of approaches:

- ▶ Innovate and customize products that are relevant to latent rural demand – 70% of India's population still has a per capita steel consumption of only 13kg
- ▶ Optimize product mix to address the shifting composition of steel demand for diverse applications in high-growth or emerging sectors
- ▶ Improve the logistics infrastructure to handle both inbound and outbound traffic of steel industry with growing volumes, and in turn provide impetus to steel demand
- ▶ Sustain and boost stakeholders' confidence and risk appetite of investors and lenders for sourcing the fund requirements for growth
- ▶ Frame a sector-level strategy on raw materials and access rights, to be followed by harmonization of procedures
- ▶ Assess, process and add value to iron ore to leverage availability of grades, conserve resources for future growth and expand the economic benefit
- ▶ Continue to adopt new technologies for moving up the value chain, increasing efficiency and rationalizing usage of natural capital for long-term sustainability
- ▶ Improve governance practices in mining and steel businesses to address challenges to the social license to operate
- ▶ Form special-purpose vehicles for carefully identified zones where mega steel development can be initiated with confidence, with all key approvals in place to fast-track development of the industry

While some of the above are being considered by the planners and other stakeholders, more integrated and coordinated steps are likely to enhance the degree of certainty and stakeholders' confidence to achieve this goal.

## Outlook

During the last few months, steel prices in India, which had been trading at a premium to global steel prices on account of import duties on steel, have corrected sharply. The correction could be linked to slowing end-user demand growth in the country along with oversupply in the global arena. Going forward, the concern over additional capacity outpacing domestic demand growth could become less of a concern as the active monitoring and regulation of "illegal mining activities" in major iron ore-producing states could lead to the shortage of lump ore. One-third of India's steel capacity is sponge iron, which could take a big hit on the sector's margins, even leading to the closure of mills, if activity in the Indian mining industry does not normalize.

The long-term outlook for steel demand in India is quite robust due to increasing demand from several sectors, including automotive, consumer durables, oil and gas, industrial machinery, real estate and infrastructure. Though there could be supply constraints in India in 2013, steel prices are likely to remain under pressure due to a steady stream of imports. There have been sharp increases in capacity in Korea with demand remaining stagnant and a slowdown in steel demand in Japan, leading to increased exports to India, partly due to free trade agreements (FTAs) with these countries. However, domestic oversupply concerns may resurface during 2014-15 when all of the new capacity becomes operational. The new capacity in India will be vertically integrated and have the ability to use fines as raw material.<sup>60</sup>

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60 Indian Steel Sector Credit Suisse, 17 October 2012 via Thomson One.



## Other key producer countries outlook 2013



Global steel consumption trends during 2012 indicate a tepid recovery. During the first nine months of 2012, apparent global steel consumption grew by only 1.8%. NAFTA witnessed the highest growth of 7.5% y-o-y, whereas EU-27 saw apparent steel consumption contract by 9% during the same period.



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"The slump in the Korean shipbuilding industry and construction activities could lead to a decline or slow growth in demand for steel products."

Going forward, in 2013 apparent steel consumption is expected to pick up by 3.1% with significant rise in consumption coming in from the Middle East, Africa and Latin America. China, which is expected to witness a 3.1% rise in apparent steel consumption, will remain the main driving force in the growth of steel sector. EU-27, which has proved to be a laggard for last two years, could witness a minimal rise of 0.9% in its apparent steel consumption during 2013.<sup>61</sup>

### Brazil

Brazil's steel industry is likely to witness some recovery in 2013 following a series of government incentives to boost the sector. The most recent incentive announced in October 2012 is raising the import tariff, which will increase the volume sold in the Brazilian domestic market as well as promote recovery in local steel prices. During the first eight months of 2012, imports accounted for around 15% of Brazil's total apparent consumption; this is likely to drop significantly due to import tariff increases that take effect in October 2013. Other measures, such as a drop in electricity prices, the infrastructural/logistics package announced by the government, and events such as the World Cup and the 2016 Olympics Games, will support the recovery of steel demand in Brazil from 2013.<sup>62</sup>

<sup>61</sup> EUROMETAL outlook on economies and steel markets, November 2012.

<sup>62</sup> "What went wrong? Metals and Mining," Votorantim Corretora, 22 October 2012.



## Europe (EU-27)

Most of the countries in the EU witnessed contraction in steel usage during 2012. It was not only the debt-ridden countries, such as Spain and Italy, that experienced a decline in apparent steel consumption, but also resilient countries such as Germany. The apparent steel use in Spain and Italy in 2012 is expected to fall by 11.9% and 12.6%, respectively, whereas Germany could register a decline of 4.7%. Although the economic environment in Europe deteriorated in 4Q12 due to continued uncertainty, we expect a gradual improvement in 2013. Currently, economic growth is uneven among major European countries, and steel demand continues to be depressed. The stimulus packages in major global economies, along with measures from the European Central Bank to contain the debt crisis, are likely to moderately improve steel demand in the EU during 2013.<sup>63</sup>

According to the *EUROMETAL outlook on economies and steel market*, the apparent steel consumption in EU-27 is expected to rise by 1% during 2013. Sectors such as mechanical engineering, domestic appliance and metal wire and goods are expected to contribute positively to EU steel demand, whereas the main steel-consuming sectors such as construction and automotive, which contribute 38% and 16% respectively to EU steel consumption, could continue to shrink even in 2013.

## Japan

The steel sector is witnessing a slowdown due to weak domestic demand and a sluggish economy. Japan consumes only 60 million tonnes of its 110 to 120 million tonnes produced and

therefore is very much dependent on exports for the growth of its steel industry. A large proportion of its steel exports go to Korea and China. As a result, 2013 could become a difficult year for the country's steel sector as growth in both of these countries takes time to recover. During the year, Japanese steelmakers are likely to witness challenges due to reduction in margins, an oversupply of steel and challenging global economic conditions.<sup>64</sup> It is unlikely that Japanese steelmakers will expand into mining operations, but they are far more likely to look to mergers and acquisitions as well as cost reduction activities to improve their competitive position. In addition, they are likely to look to enhance corporate value by expanding downstream into areas such as cold-rolling, galvanizing processes and coil centers, possibly in conjunction with trading houses.

## Russia

Considerable investment in infrastructure and construction, particularly sports venues, will continue to drive steel demand in Russia in 2013, registering an expected growth of 5% y-o-y. Russia consumes only 60% of its steel production domestically and therefore remains a net exporter of steel. The Russian steel sector is highly consolidated, with the top five companies accounting for roughly 75% of the country's production. This consolidation will help maintain the production discipline needed to maintain steady growth of the steel industry through 2013.<sup>65</sup>

<sup>63</sup> World Steel.

<sup>64</sup> *Industry Forecast – Steel: Falling Margins to Weigh On Investment*, BMI.

<sup>65</sup> *Industry Forecast – Steel: Consumption in Infrastructure to Drive Sector*, BMI.

## South Korea

The steel sector in South Korea is unlikely to show any improvement in 2013. The sharp correction in steel prices is a result of capacity oversupply and excess inventory in the system. Although the steel prices, which are trading near end-2008 levels, seem to have limited downside, the slowdown in major steel-consuming industries does not support an increase in steel prices from the current level. A 13% y-o-y decline in new orders for the Korean shipbuilding industry could lead to a fall in heavy plate consumption in 2013. On the long product side, a persistent property market slump indicates a decline in private investment, leading to a slowdown or decline in long steel products in the country. Moreover, despite poor demand, Korean steelmakers have continued to expand their supply, leading to a 3% y-o-y rise in steel production during 1H12. Although this pace of production expansion is slow, it is still enough to worsen the oversupply situation.<sup>66</sup>

## United States

The economic data from the Purchasing Managers Index (PMI) and recovery in the US residential construction gave an encouraging picture in the beginning of 2012. However, steel consumption did not pick up as expected during the second half of the year, mainly due to low growth in US economy. Going into 2013, a key uncertainty remains regarding how the US will handle tax reforms and spending cuts. Though the best case scenario is a slight improvement in steel demand in the US with a GDP growth of 2.5%, if Congress is unable to reach a compromise on tax reforms, it could lead to market uncertainty and economic disruptions.<sup>67</sup>

New EPA rules are also going to have an effect on the steel sector – particularly those supplying to the automotive industry. Vehicles will have to be lighter, and therefore there is the threat of aluminum or plastic substitution.

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<sup>66</sup> "Structural downturn," Mirae Asset Securities, 22 October 2012, via Thomson One.

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<sup>67</sup> Economic and Steel Market Outlook 2012-2013, EUROFER.

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