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Greater China Mining M&A and Greenfield FDI investment spotlight

2013 edition

M&A Services

Contents

Introduction

As commodity prices decline and global economic uncertainty persists, it has become increasingly difficult for mining companies to predict future demand patterns. Companies are deferring their expansion projects in the face of waning Chinese demand in the short to medium term, yet overall world demand is still expected to increase dramatically in the long term.

While long-term trends for China appear robust, things are slowing down in the near term. Chinese central banks are trying to curb inflation, which will make it difficult for the country to support the levels of growth of recent years. Economic volatility in Europe is still an issue, and fears remain that the global economy is not yet out of the woods. That said, urbanization in China and other industrializing nations will continue to underpin the demand for commodities, creating a (hopefully) bullish story over the long-run.

I hope that you enjoy reading the 2013 edition of the Greater China Mining M&A and greenfield FDI investment spotlight as much as we have enjoyed writing it. I welcome any input and advice as to anything we may have missed, new items that could be included in the next report, and overall comments on the industry. Please do not hesitate to reach out to me directly if you have any questions or comments.

I would like to thank our contributors for providing their insight and expertise, and I hope that you will find this report informative and insightful.

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Methodology

- Data was derived from Bloomberg and FDImarkets for the period January 1 2005 to December 31 2012,
- Any M&A transaction that was recorded by Bloomberg but not ascribed a bidder or target country was excluded from the analysis
- The following definitions should be adopted when examining investment types:
    - **FDI**: Includes all formally-announced greenfield, brownfield or joint-venture investments (the latter only included when they lead to a new physical presence in the target geography). Merger & Acquisition deals, privatizations and equity investments are excluded.
    - **M&A**: Mergers & Acquisitions (M&A) deals are included where there is a transfer in ownership of an economic interest in an ongoing business concern. M&A transactions are dated from their announcement and might not result in a successful transaction being undertaken.
- In an M&A context, the following definitions should be adopted when examining deal types:
    - **Acquisition**: The part or whole procurement of one company by another.
    - **Divestment**: The agreed sale of an asset or assets from one company to another, distinguished from other transactions by the fact that it is the vendor which actually initiates the transaction.
    - **Joint Venture:** A transaction that involves the pooling of assets between firms in a new company or existing subsidiary, whereby the ownership of the new company is shared between the parent companies involved.

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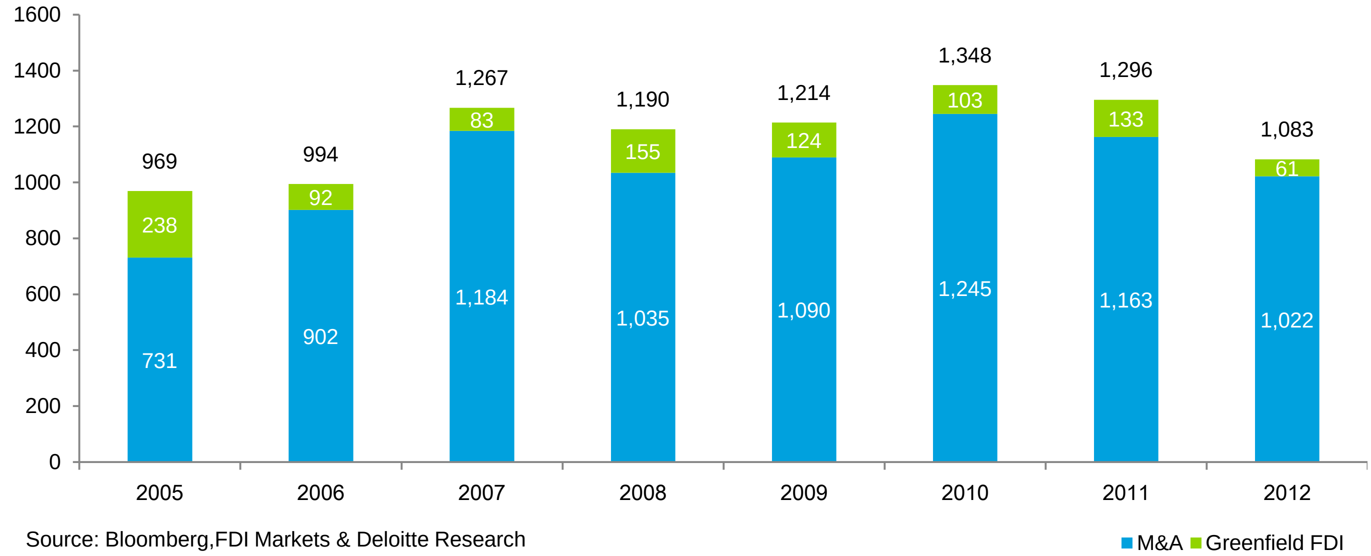
Global Mining greenfield investments and M&A activity

Global Mining M&A and greenfield FDI Investments by volume (2005-2012)

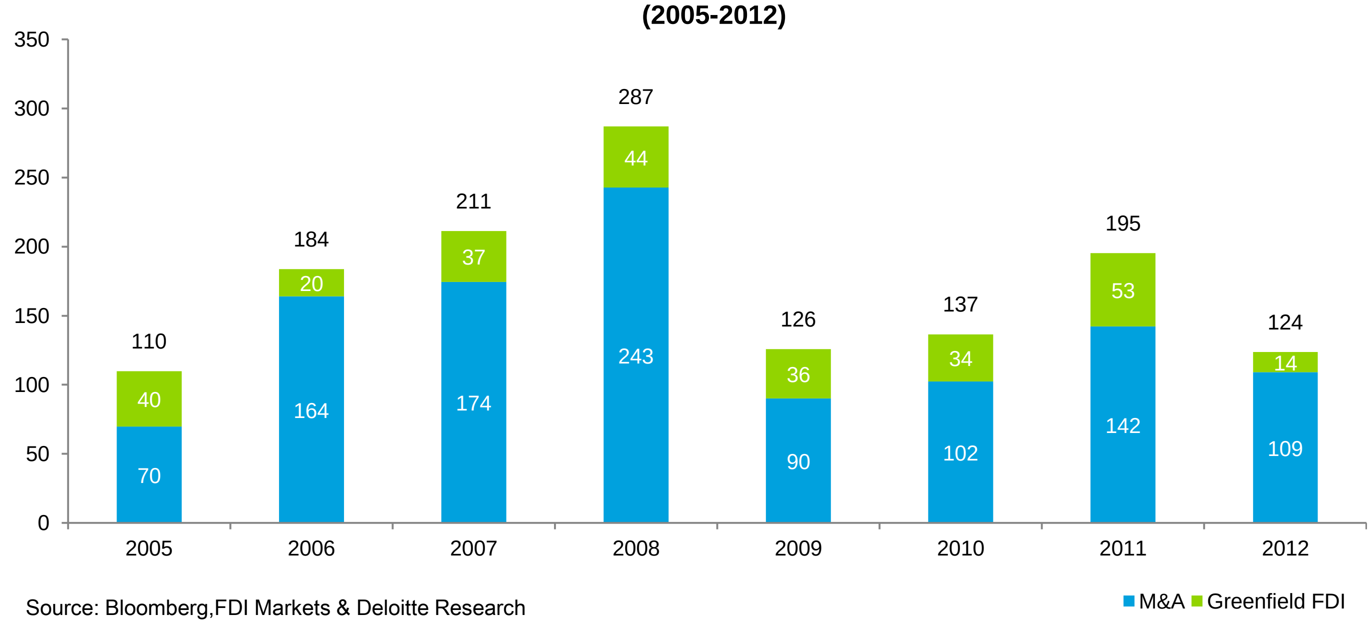


Source: Bloomberg,FDI Markets & Deloitte Research

Across the globe, more than 1,000 new Mining sector investments and deals came to market last year, the vast majority of them taking place in the M&A space. However, while activity managed to stay above the thousand mark, historical analysis shows that deal-making in the Mining industry softened over 2012, dropping by around 16% when compared to 2011 statistics. Interestingly, the bulk of this fall occurred in the greenfield FDI space, with the number of new investments being announced falling by more than half over the two years in question.

The same could be said for investment and M&A transaction activity from a value perspective over 2012. Just US$124bn worth of deals and investments were made over the year, the lowest amount since 2005. Similarly, the vast majority of this was focused in the M&A space, with just US$14bn being spent on new projects.

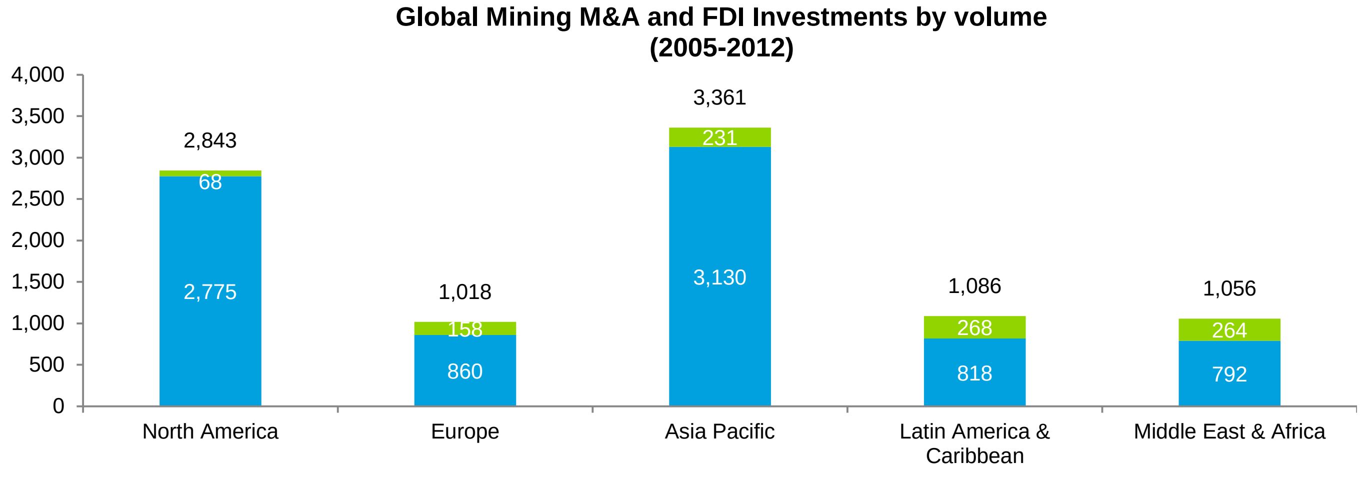
Global Mining M&A and FDI Investments by value US$bn (2005-2012)



Source: Bloomberg,FDI Markets & Deloitte Research

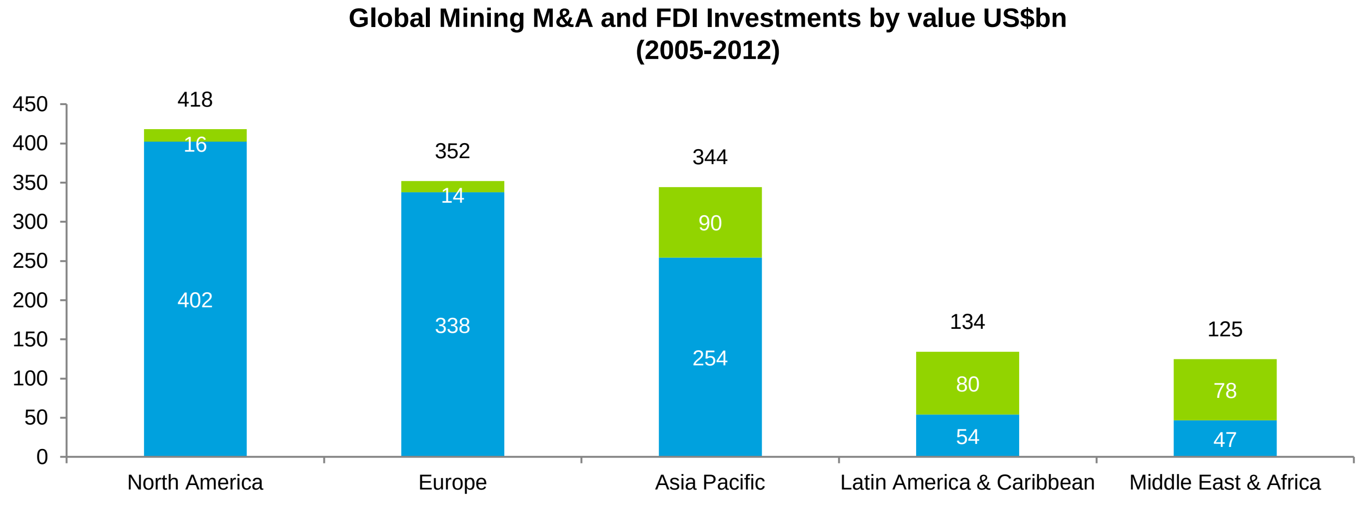
Where are these investments going?

Over the 2005-2012 period, mining acquisitions and greenfield investments into the Asia Pacific region made up the largest share of global activity, accounting for over 35% of total transactions by volume, followed closely by activity in North America, with the continent comprising just over 30% of global transactions. Europe, Latin American & the Caribbean and the Middle East & Africa rounded out the group, with approximately 11% of global activity each.



Source: Bloomberg,FDI Markets & Deloitte Research

While the geographical breakdown of mining related investments is unsurprising, what is interesting is the proportion of announced acquisitions to FDI investments for each region. For example, in North America, FDI investments made up less than 1% of all acquisitions and investments for the continent, while in the Asia Pacific region, FDI investments comprised just over 6% of all acquisitions and investments. For Europe, the proportion of FDI investments was approximately 15%, for Latin America & the Caribbean, approximately 24%, and for the Middle East & Africa, 25%.



Source: Bloomberg,FDI Markets & Deloitte Research

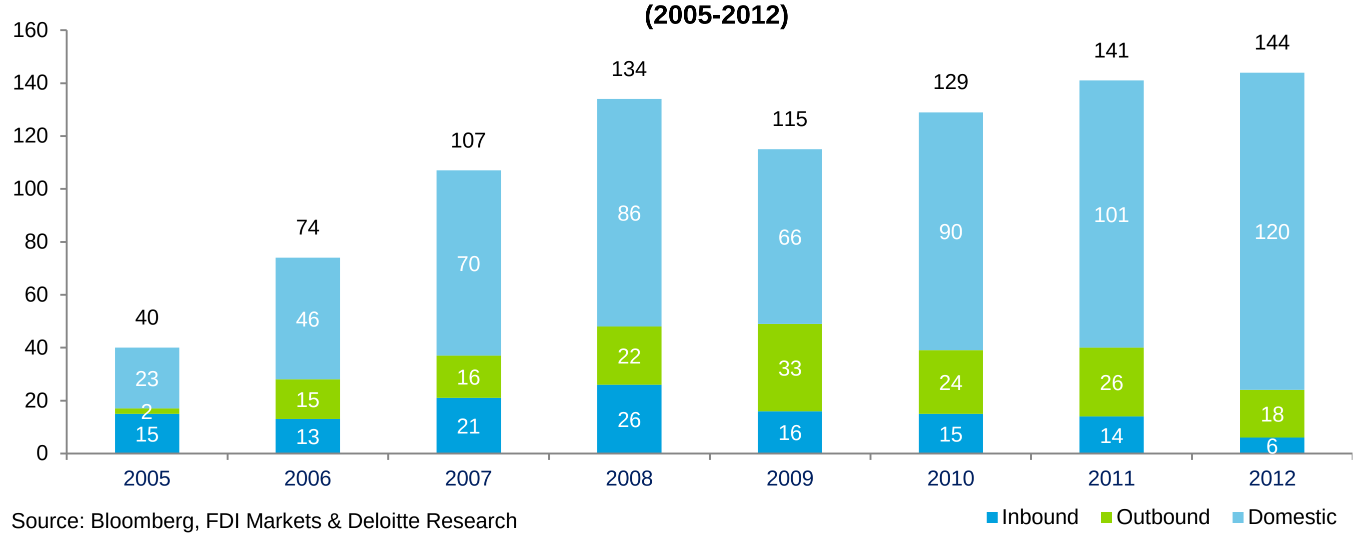
While the Asia Pacific region and North American comprised the largest and second largest proportion of acquisition and FDI activity by volume, it was North America that made up largest portion of activity by value, comprising just over 30% of all global transactions. The region was closely followed by Europe and Asia Pacific, with the two areas making up 26% and 25% of all activity by value respectively. Unsurprisingly, Latin America & Caribbean and the Middle East & Africa rounded out the remaining investments and deals.

Similarly to the ratio of FDI investments to M&A acquisitions by volume, the same can be seen for transactions by value. The value of greenfield FDI into Asia Pacific made up a robust 26% of all transactions by value, and an even larger 59% and 62% for Latin America & Caribbean and the Middle East & Africa respectively. Conversely, the mature markets of North American and European markets witnessed the majority of its investments occur through M&A acquisitions, with greenfield FDI comprising a miniscule 3% and 4% by value respectively.

The Greater China angle

Mining investments and M&A trends

China Mining M&A and greenfield FDI investments by volume (2005-2012)

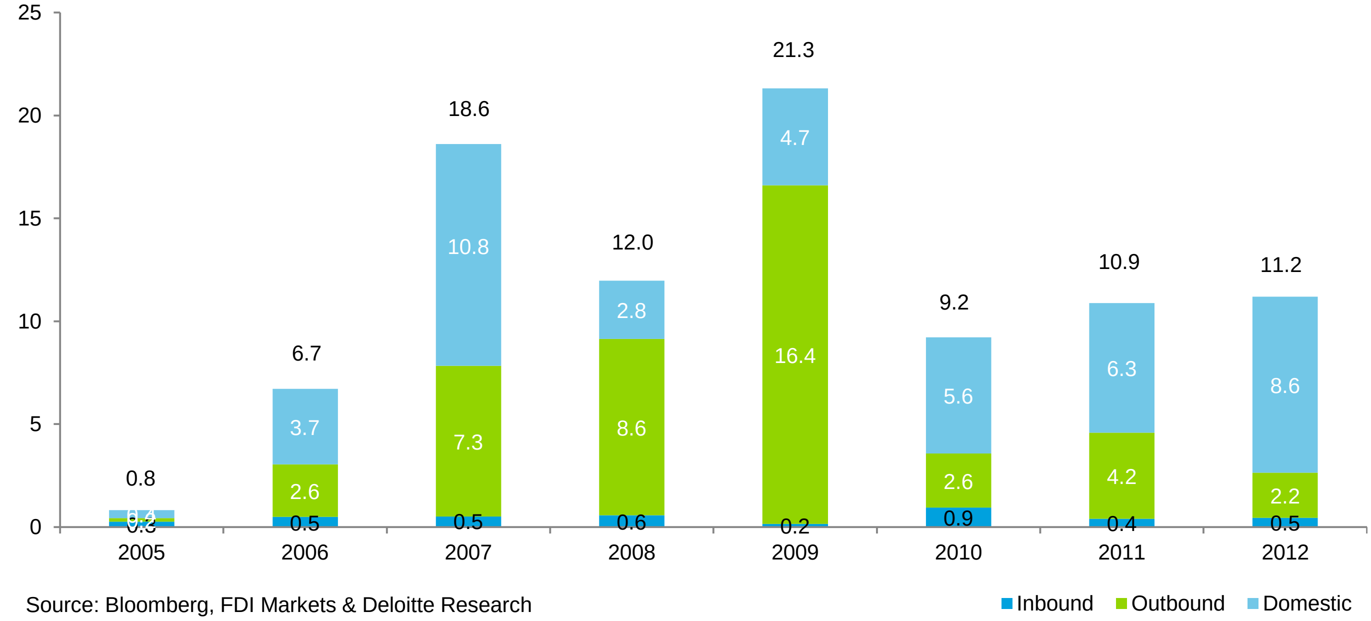


Source: Bloomberg, FDI Markets & Deloitte Research

Over the 2005-2012 period, investment activity in the Greater China area continued to increase each year, from a mere 40 transactions announced in 2005 to a high of 144 deals announced by 2012. However, the total amount spent on these deals experienced continuing decline from 2009 onwards, from a high of US$21.3bn in 2009 to nearly half that amount by 2012 at US$11.2bn.

Of more interest is that acquisitions and FDI investments across China seemed to trend towards industry consolidation, with domestic mining transactions steadily increasing from 23 deals in 2005 to nearly six times that number, with 120 announced deals by 2012. As domestic players mature, we are seeing them becoming more active in buying out smaller, local competitors. On the other side of the spectrum, we see inbound activity falling off from a high of 26 deals in 2008 to a low of just 6 deals by 2012, no doubt a result of European and North American companies looking to keep tight control of their purchases in the wake of the Eurozone crisis and the 2008 recession.

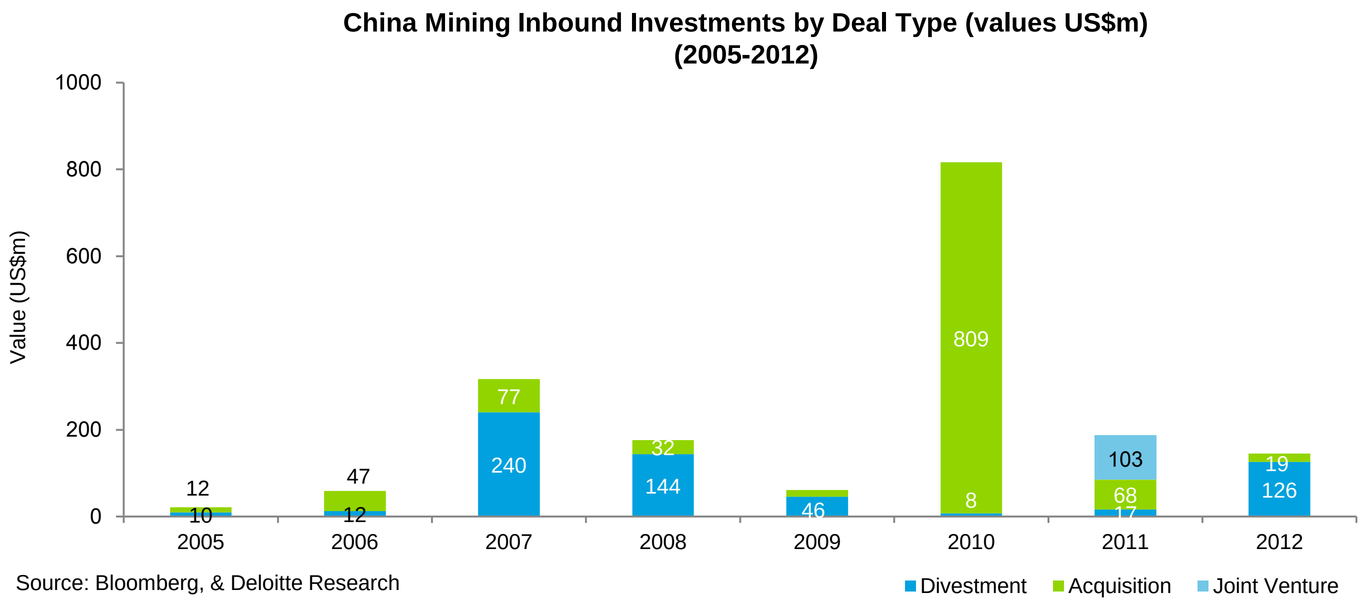
China Mining M&A and greenfield FDI investments by value (US$bn) (2005-2012)



Source: Bloomberg, FDI Markets & Deloitte Research

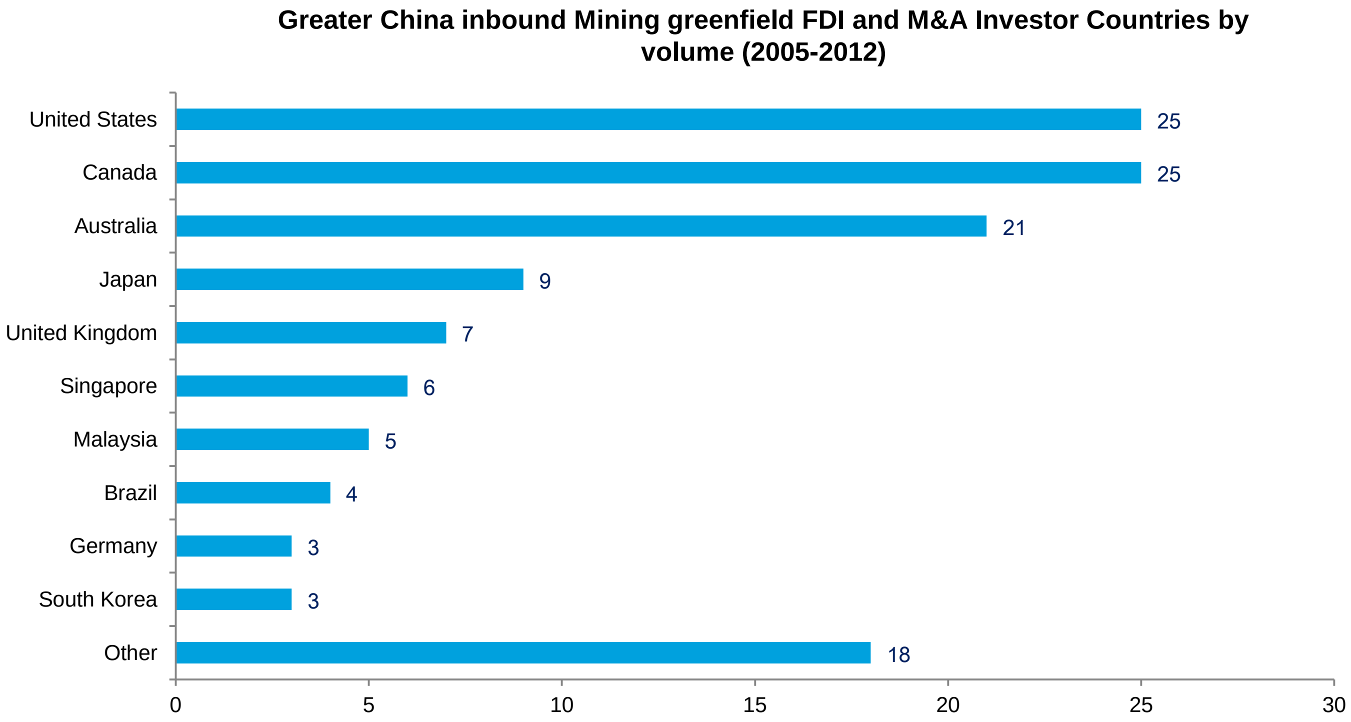
Foreign investments into China's Mining sector

Over 2005 to 2012, M&A transactions comprised the majority of announced deals by volume. More specifically, the bulk of acquisitions came from the buy side, with joint venture deals bursting into play post 2007. For example, the number of JV deals in 2007 made up 30% of all M&A inbound deals in China, with the proportion hovering around 25-30% for the next 5 years, saves for 2008.



Source: Bloomberg, & Deloitte Research

Value wise, the period in question experienced a huge surge in divestments, with such transactions consistently making up the majority of all transactions by value each year. The exception was in 2010, with acquisitions worth US$809m coming into play, compared to a mere US$8m for divestments. This disparity was no doubt helped by China Gold International Resources Corp Ltd's US$742.3m acquisition of Skyland Mining Ltd, owner of the Jiama copper property in Tibet Autonomous Region. Conversely, the market experienced a quiet period on the sell side, as there was much buy side interest into Chinese mining, with more interest in selling out to foreign acquirers.

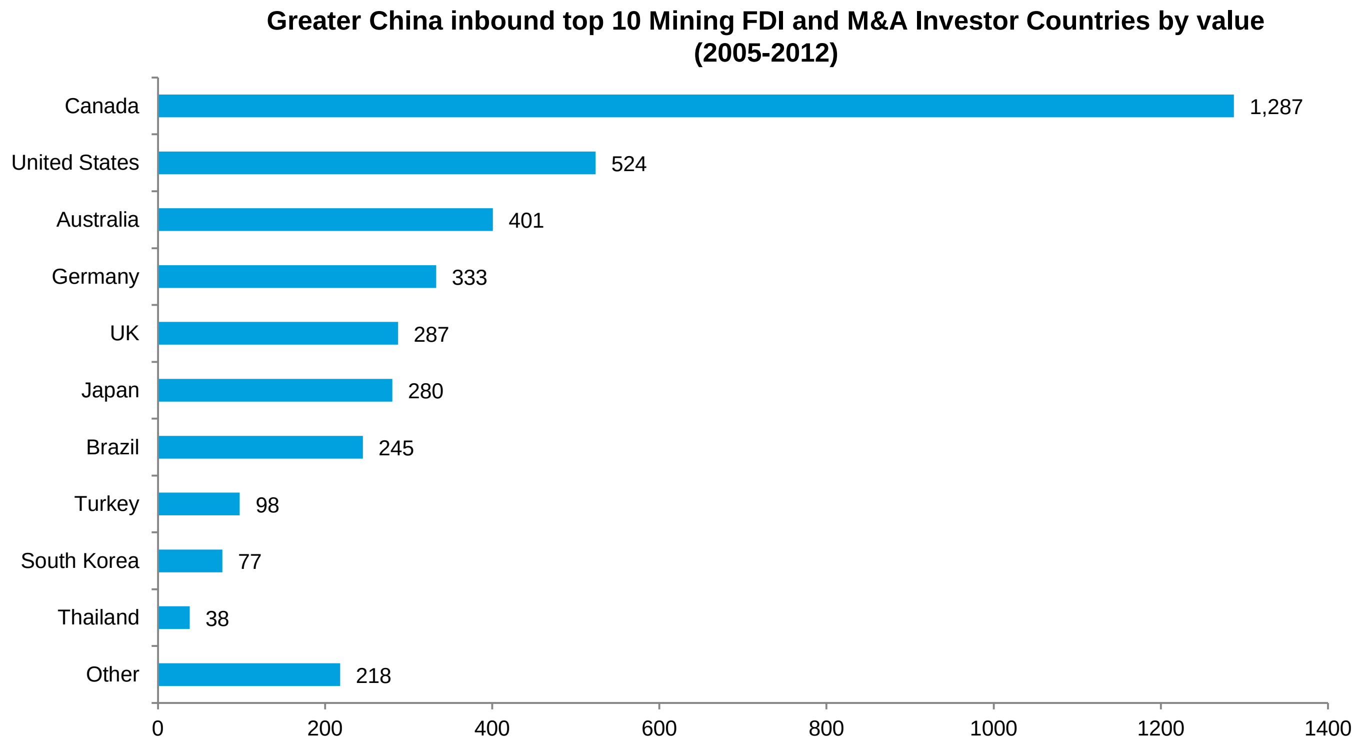


Source: Bloomberg, FDI Markets & Deloitte Research

It is unsurprising that the majority of inbound mining deals originated from either the US or Canada, with both countries announcing 25 deals each over 2005-2012. As previously mentioned, the largest mining related M&A transaction to be announced over the period in question was TSX-listed China Gold International Resources Corp Ltd's acquisition of Skyland Mining Ltd in 2010. The second largest deal to take place during the period was Canada's Silvercorp Metals Inc.'s purchase of China's Yangtze Mining Ltd for US$61m. The largest inbound mining related deal originating from the US saw Cabot Microelectronics Corp's US$66m acquisition of Epoch Material Co Ltd, a copper slurry producer in Taiwan.

The largest inbound deal announced in 2012 was Britain's Griffin Mining's US$110m purchase of Hebei Hua Ao Mining Industry Co Ltd to increase its interest in the Caijiaying Mine and surrounding areas from 60% to 88.8%.

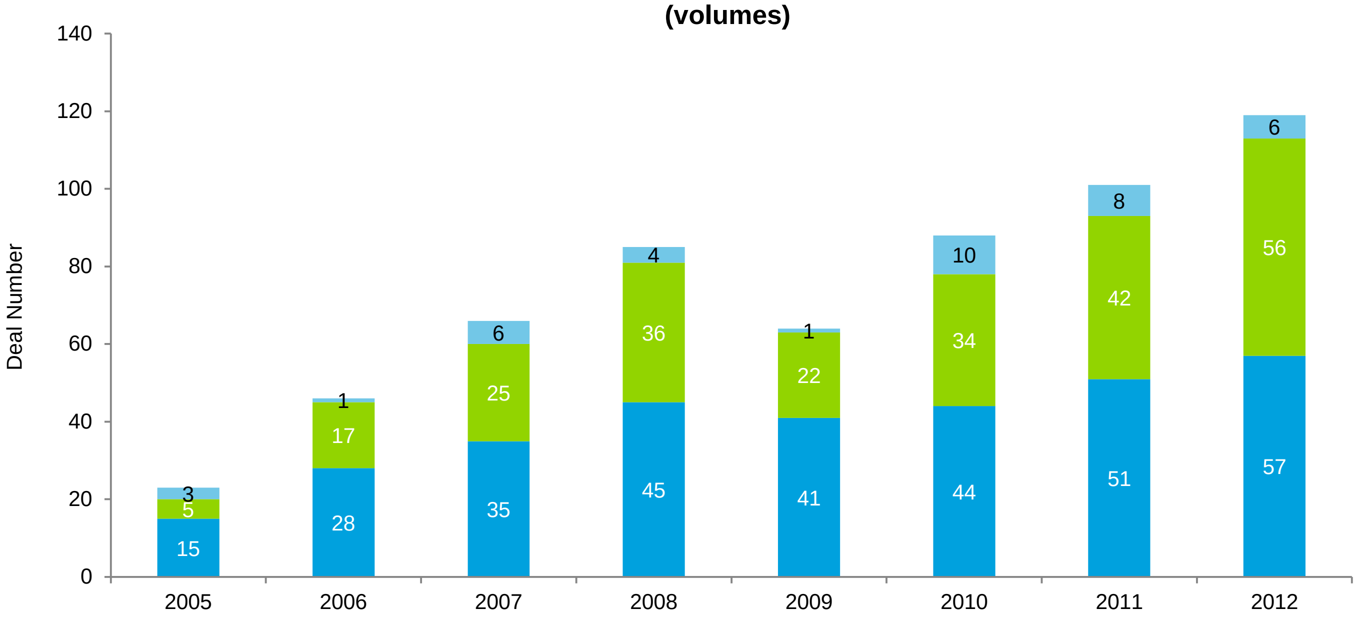
Another interesting M&A deal that took place in 2012 was Celcius Coal Ltd's acquisition of an 80% interest in Hong Kong-incorporated Kokkia Coal Ltd, which holds a 100% interest in three prospective coal tenements located in the Uzgen Coal basin in Kyrgyzstan, for a sum of US$10.8m.



Source: Bloomberg, FDI Markets & Deloitte Research

Domestic investment activity in China's Mining sector

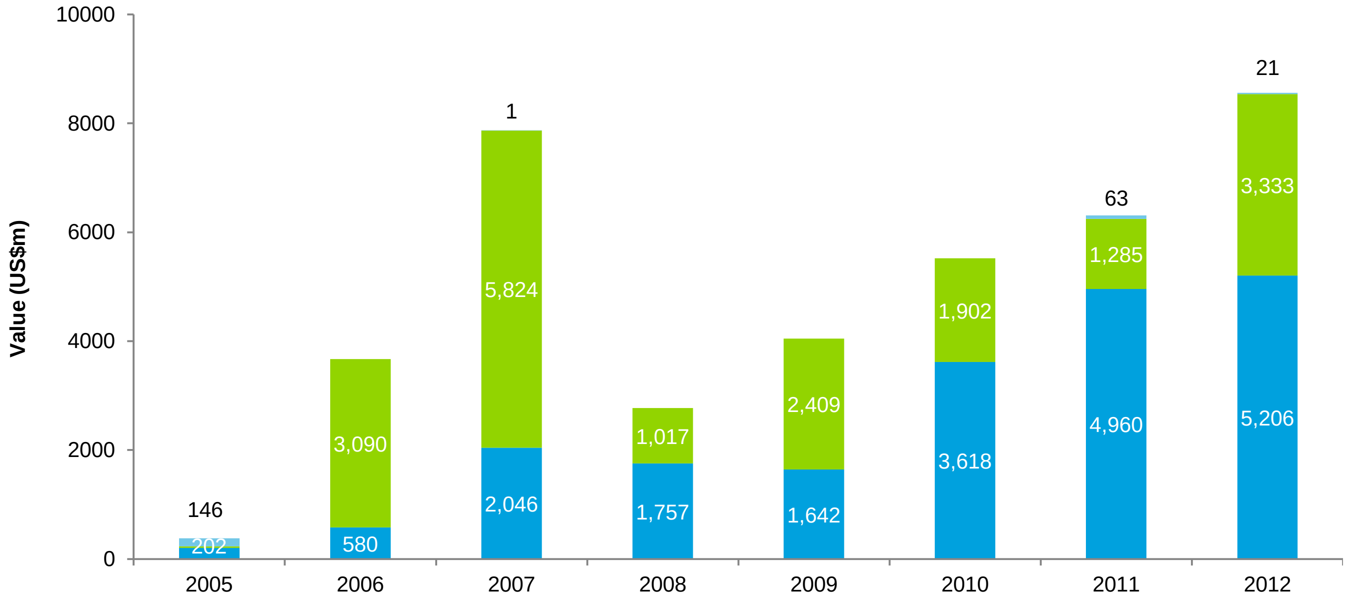
China Mining Domestic Investments by deal type (volumes)



Source: Bloomberg, & Deloitte Research

Over 2005-2012, buy side interest on domestic deals increased from 5 transactions in 2005 to a high of 56 in 2012. Perhaps more telling, acquisitions made up only 22% of all investments in 2005, compared to the 65% of divestments made up in the same year. However, by 2012, acquisitions and divestments comprised of 47% and 48% of all domestic investments respectively. Similarly, the number of joint venture deals increased, with industry leaders looking to enter into cooperative agreements with their domestic counterparts.

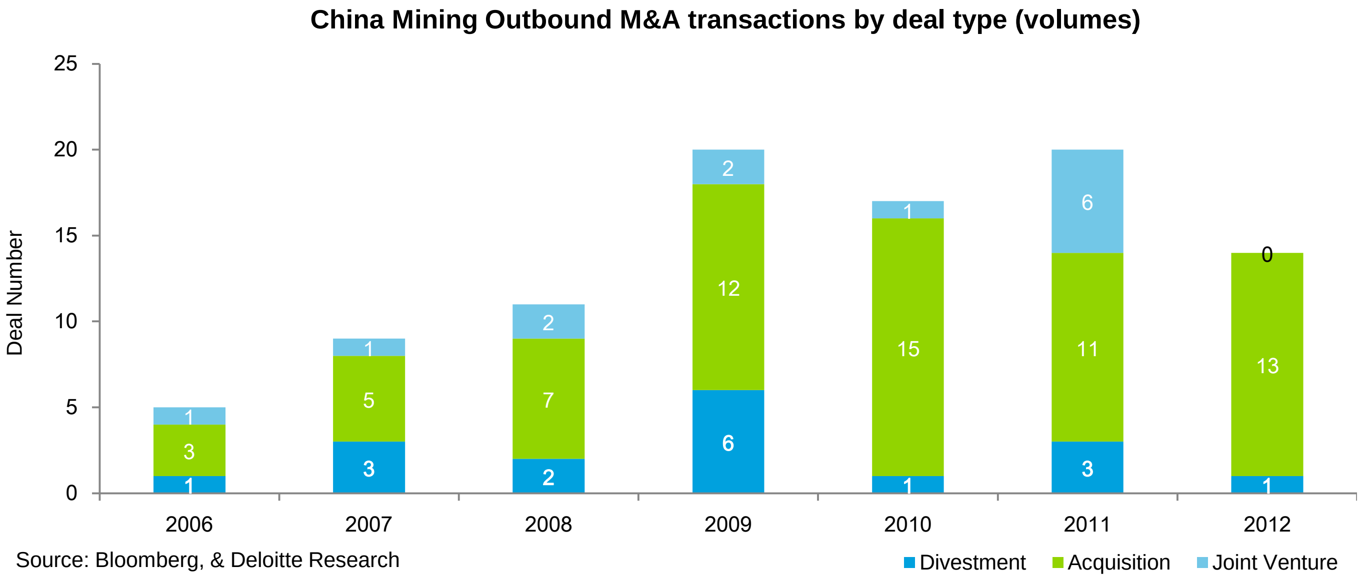
China Mining Domestic Investments by deal type (values US$m)



Source: Bloomberg, & Deloitte Research

On the value side, the opposite trend rang true. While acquisitions made up the bulk of transactions by value in 2006, amounting to US$3bn compared to US$580m for divestments, by 2012, acquisitions reached a total value of US$3.3bn, with divestments reaching a high of US$5.2bn in value. This trend was aided in part by twelve divestment deal announcements valued at over US$100m each, with the largest deal being Hunan Jiangnan Red Arrow's US$629m acquisition of Zhongnan Diamond.

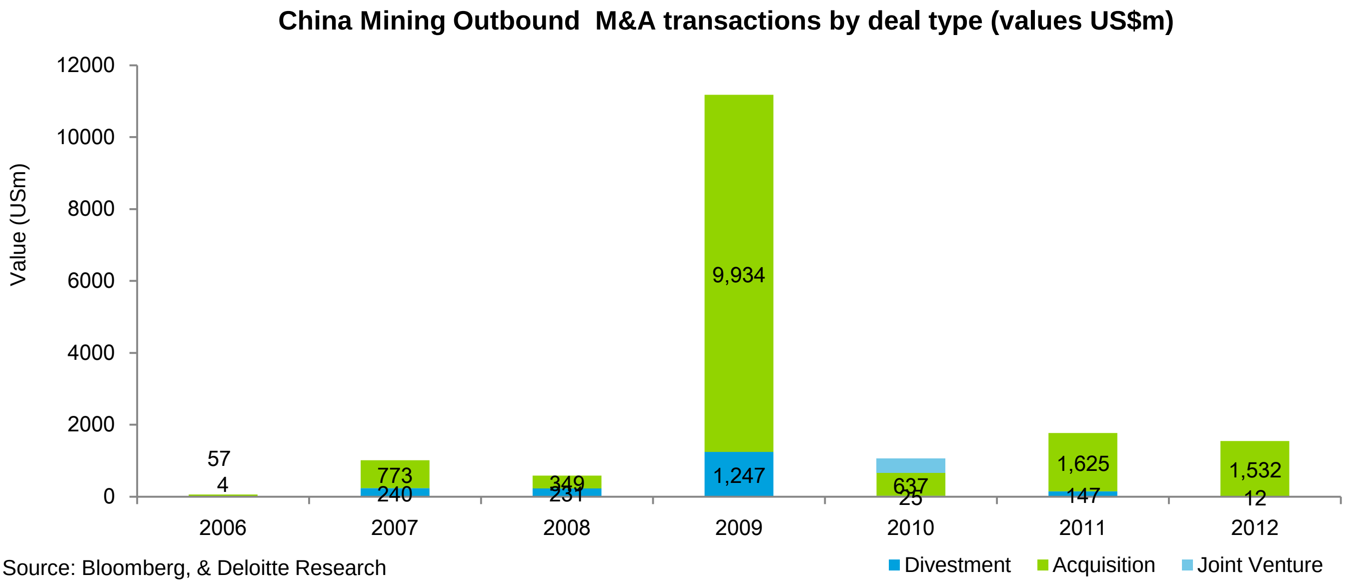
Greater China's Mining investments overseas



Source: Bloomberg, & Deloitte Research

Similar to inbound and domestic activity, acquisitions comprised the majority of the market for the period 2006-2012. There were 3 acquisitions in 2006, making up 60% of all M&A transactions. However, by 2012 there were 13 acquisitions, comprising 92% of all M&A transactions. Acquisitions also continued to make up the bulk of all deal types by value, with joint ventures hardly making a dent in the total deal values. Of note was the US$9.9bn in acquisition deals by value in 2009, aided in no small part by three acquisition deals that topped US$2bn each, the largest being Aluminum Corp of China's US$4.1bn purchase of a 12% interest in Australia's Rio Tinto.

Most interesting is the sudden fall in joint ventures from a high of 6 deals in 2011 and no deals in 2012, perhaps an indication that foreign targets are becoming increasingly more confident in their business to forge ahead without the need for foreign partnership/ leadership.



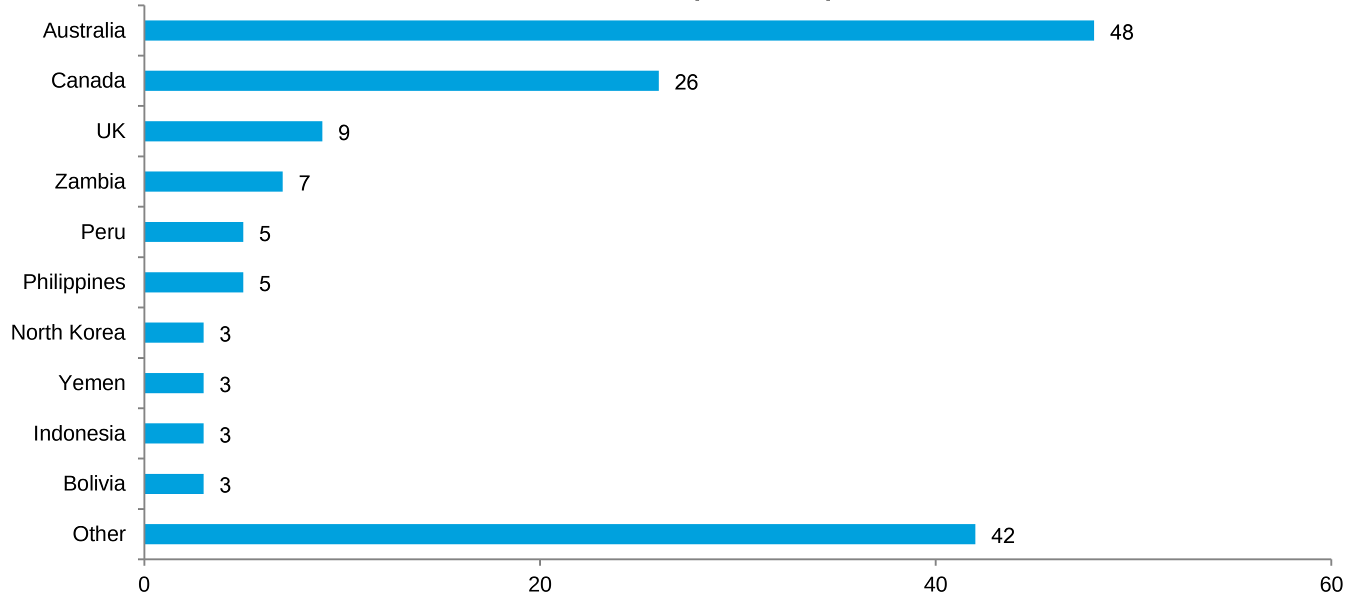
Source: Bloomberg, & Deloitte Research

Of the 14 deals to take place in 2012, the largest deal involved the US$659m acquisition of Australia's Talison Lithium Ltd by China's Chengdu Tianqi Industry Group Co Ltd. No stranger to Chinese investments, Australia led all target countries in both volume and value of Chinese outbound deals with 48 deals and US$14.1bn in value over 2005-2012.

Perhaps the most interesting take away from the above two charts is the presence of Peru as a target country for Chinese mining FDI. While there were only five FDI investments into Peru over 2005-2012, the deals were valued at a combined US$4.9bn, second highest among all Chinese target countries after Australia, with the bulk coming to market over the 2007-2009 period.

It is unsurprising that China has already invested US$4.9bn into Peru over the last 7 years, as the majority of deals have involved buying the mining rights to then untapped mine fields, or in the development of the infrastructure needed to lay the foundation for mining projects. Indeed, this trend is expected to continue with Chinese investments into Peru expanding. Las Bambas is one of Peru's largest mining investment projects and will require an investment of US$5.2 billion in order to get it running to full capacity. It will produce 400,000 tons of copper concentrates, as well as gold, silver and molybdenum byproducts. Commissioning at Las Bambas is expected in the fourth quarter of 2014.

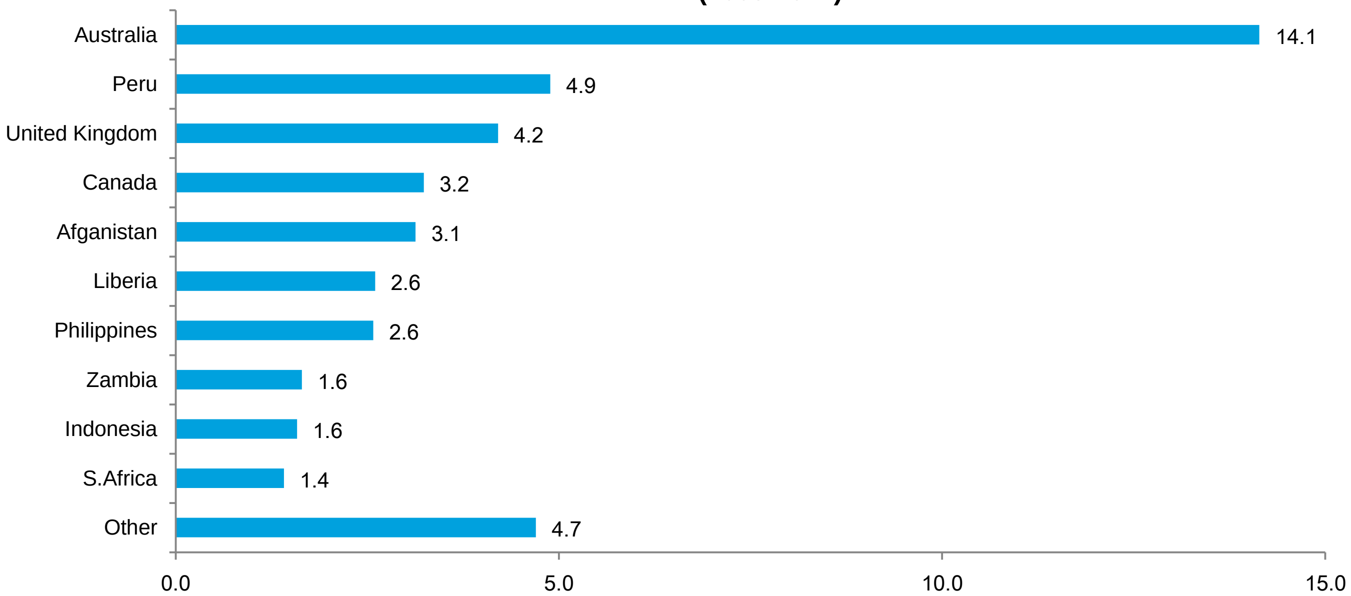
Greater China outbound Mining FDI and M&A target countries by volume (2005-2012)



Source: Bloomberg, FDI Markets & Deloitte Research

Chinese investors are particularly interested in Peru's rich copper deposits. Indeed, China Minmetals, the country's largest state-owned metal and mineral producer and trader, began mining at the Galeno copper mine in Peru in 2010. The Galeno copper mine is expected to have a mine life of 20 years and to produce 144,000 tons of concentrate a year. Just months earlier, Chinalco Mining Peru, a subsidiary of Chinalco, invested US$24m in the construction of the Kingsmill water treatment plant in order to support its nearby copper project. The plant handles contaminated water draining from existing mine sites, as well as the waste water from their nearby new copper mine – the Toromocho copper mine, which has estimated reserves of around 15m tons of copper equivalent.

Greater China oubtound Mining FDI and M&A target countries by value (US$bn) (2005-2012)



Source: Bloomberg, FDI Markets & Deloitte Research

Looking forward – Potential deal and investment opportunities

Domestic consolidation

A look at recent China-related Mining industry M&A transactions and rumors of potential deals helps identify a number of different themes that are impacting the market at the moment. First of all, as the data above aptly demonstrates, Domestic consolidation plays are all the rage at the moment. Zhongsheng Resources, the Shandong-based iron ore mine company, is no stranger to this, having recently signed two MoUs for the acquisition of a company owning an ilmenite mine located in Shandong province, according to a stock exchange announcement.

Baiyin Nonferrous Metals, a Gansu-based, state-controlled nonferrous metal products company, is also looking to develop its local mining portfolio via a US$730m IPO on the A-Share Market, the Shanghai Securities News reported in early June this year. The reported cited information from the Ministry of Environmental Protection, noting that the company is currently receiving the pre-IPO environment-related examinations and it plans to sell 800m to 1.1bn shares. The proceeds will be used to fund production projects and buy stakes in five companies, including a 93.02% stake in Baiyin Honglu Mining Investment and four subsidiaries of it.

Not one to wait around, Zhejiang WHWH Industry, a Chinese property and mining company recently noted that it wanted to speed up its acquisitions of iron ore mining companies in northern China's Hebei province. The company already undertook one M&A transaction in 2012, when it acquired a 70% stake in Hebei-based Iron Ore Manchu Autonomous County Hua Feng Mining in October for RMB73m. Zhejiang WHWH is looking for more acquisitions of similar-size iron ore miners, as the real-estate market has been hit by a number of cooling measures from the government and is not likely to report strong growth in the future.

Inbound & domestic horizontal integration plays

Chinese Mining assets are seemingly also an investment theme for a number of Asian-based businesses. One such example saw Singapore-based Cacola Group sign two MOUs, worth a total of US$200m, to acquire the rights to two gold mines in Guizhou and Shanxi provinces respectively. At the same time, another manufacturer of consumable materials for the pharmaceutical industry, The Newtree Group, recently announced that it is looking to acquire a gold mine in Gansu Province for US$225m.

Others are interested in entering the local fertilizer manufacturing market. North Mining Shares, an iron mining company, recently signed a framework agreement to acquire China Potassium Shares Company according to a stock exchange announcement. China Potassium Shares Company holds a valid mining exploitation license for a potassium mine in Shaanxi Province and also owns three invention patents which are mainly used in the production of agricultural potassium sulfate products and agricultural potassium nitrate products. North Mining Shares is understood to have paid a deposit of US$16m for the proposed transaction.

However, not all such deals come to fruition. Theme International, an apparel retailer, announced that it will terminate the proposed acquisition of Best Asia Company, an investment holding company that owns two gold mines in Shangdong. According to the press release, Theme International's board decided to terminate the transaction due to "changes to the recent global business environment", going on to note that "it would be prudent to terminate" the bid.

The quest for overseas resources

Last but not least come the larger Chinese miners, many of whom are looking to acquire the rights to mine overseas. Entities such as MMG, which is backed by Minmetals, China's largest commodities trader, are still looking to acquire overseas although they are not planning to pursue "transactions for the sake of growth." Instead, going forward, acquisitions will be done on the basis of a solid return on investment. It is understood that the company is looking at African assets despite sovereign risk issues, due to their lower operating costs.

Yunnan Wenshan Dounan Manganese, a state-owned manganese ore miner and iron manganese alloy producer, is following in the footsteps of MMG, noting that it is actively looking to buy one or two manganese deposits in South Africa. It hopes to get a deal done this year with more buys to follow in Algeria and Australia. Dounan, which has an M&A war chest of around US$200m, is looking overseas due to the limited high grade manganese ore reserves in China.

Macroeconomic themes

The following is derived from Deloitte's ***Tracking the trends – the top 10 issues facing Mining companies over 2013*** report, which can be downloaded in its entirety from the Deloitte website.

1) Counting the costs

For the second year running, the high cost of doing business tops our mining industry trends. Unlike last year, however, commodity prices are not supporting the weight. While commodity prices are still well above their 2008 lows, they have dropped over the past year.

Margins are once more under pressure and threaten to remain so as costs escalate across the board. Currency volatility relative to the U.S. dollar has pushed up local prices for specialized equipment, raw materials and labour in key mining regions around the world, including Australia, South Africa, Canada and Latin America. Worker demands for higher salaries and bonuses, and the exceptional cost of fly-in/fly-out arrangements, are also driving labour costs to unprecedented highs.

Energy and water shortages in many of the world's mining provinces are raising input costs and compelling mining companies to increase infrastructure investment. These costs will rise as mining companies move to increasingly remote regions in search of higher-grade deposits. Similarly, as more governments introduce taxes, royalties and environmental mandates aimed squarely at the mining industry, the cost of compliance continues to soar.

As a result, costs are reaching unsustainable highs. For certain operations, production costs for key commodities such as copper, aluminium and nickel have already reached, or exceeded, London Metal Exchange (LME) prices. Unless mining companies improve operational efficiency, proactively control maintenance costs and invest in cost reducing technologies, this trend is likely to continue.

Capital project costs are also spiraling. Rising labor and materials prices are pushing up construction costs. Yet this is only part of the story. According to Metals Economics Group (MEG) research of the copper industry, the post-definitive estimate (DE) costs of 20 major projects rose by 20% to 140% without a corresponding lift in reserves. These escalations were largely due to changes in foreign exchange rates, engineering assumptions or labor and materials costs.

Coupled with lower grades, these costs are affecting decisions around continued production, expansions and new projects. They also explain why corporate equity valuations are delinking from commodity prices.

2) Managing market uncertainty

In today's inter-connected global economy, events in China frequently have a disproportionate effect on the rest of the world. This is particularly true for mining companies whose fortunes have hinged on China's voracious appetite for commodities. With indicators that China's rate of economic growth is slowing, both commodity prices and corporate investment decisions are being affected. According to the Economist Intelligence Unit, real annual GDP growth in China is forecast to fall to an average of 8.1% between 2013 and 2016. Morgan Stanley forecasts China's annual industrial production (IP) growth to drop to 12% in 2012 from 15.7% in 2010 due largely to global economic uncertainties.

The same uncertainties are causing ripple effects in regions around the globe. Between 2010 and 2012, India's IP growth is expected to fall to 7.7% from 11.1%, and Brazil's is forecast to drop to 2.2% from 10.5%. While the U.S. economy is slowly recovering, the Eurozone debt crisis persists.

These macro-economic factors present an uncertain picture of global demand made more complex by the widening gap between China's official data and observable reality. This makes it difficult for mining companies to predict – or plan for – future demand.

Yet the news isn't all bad. China's ongoing commitment to its current five-year plan has seen the country vow to spend an estimated 10 trillion Yuan by 2015 in seven strategic industries. In the first four months of 2012, these initiatives translated into spending of 700 billion Yuan on selected infrastructure projects. Ongoing urbanization and industrialization around the globe also promise to spur heightened demand for commodities in the years to come.

These conflicting global indicators leave mining companies in a quandary. On the one hand, making investment decisions without a clear understanding of future demand patterns can result in an ineffective allocation of capital resources – squeezing margins, threatening profitability and sparking shareholder ire. On the other hand, taking a wait-and-see approach will prevent mining companies from meeting future demand, potentially spurring anew commodity super-cycle that could push prices to unsustainable levels.

3) Capital project deceleration

Given shifting market realities, mining companies need the ability to develop accurate business cases, but the frequency of recent capital project overruns calls this competency into question. In countries around the world, mining companies are exceeding budgets, alienating lenders and shareholders in the process.

Valid reasons for these overruns exist: lower ore grades mandate the construction of more technically challenging mines; both skilled labour and specialized mine equipment are in short supply; compliance costs are rising; local governments are demanding a bigger piece of the pie; companies need to negotiate with more diverse stakeholders; competition for land and water use is becoming more prevalent; infrastructure bottlenecks are interfering with project delivery.

Yet the external cost environment is not entirely to blame for cost overruns and schedule slippage. Other factors also contributing to poor project performance include insufficient governance systems, poorly developed risk and control mechanisms, and inadequate project scoping processes.

These external and internal pressure points are forcing mining companies to question whether key capital projects can be delivered. More critically, companies must determine whether these projects should be delivered, particularly if they cannot provide an appropriate ROI. Although companies traditionally try to maximize production volumes, using profits to build mines that will yield lower grade deposits ultimately destroys corporate value. Increasingly, shareholders and lenders are taking note of this trend and are no longer willing to finance speculative long-term projects. This squeeze on margins, combined with ongoing pressure to pay shareholder dividends, has reduced available cash and underscores the need for mining companies to adopt appropriate gearing and maintenance in an effort to strengthen their credit ratings.

At the same time, the trend is also impelling mining companies to re-sequence and defer their investment projects, reassess their project pipelines and put marginal mines into care and maintenance. Capital spending in the sector is expected to rise by only 13% in 2012 and will likely fall in 2013. According to Deloitte Access Economics, the value of resources projects as a share of all projects in Australia's planning pipeline fell from more than 56% in June 2011 to under 40% in June 2012. Another report by Newport Consulting found that just 25% of Australian mining companies plan to make major capital project expenditures in 2012, compared to 52% in 2011.

The issue is as simple as it is stark. Mining companies can no longer lay claim to a deep portfolio of expansion projects when only a percentage of them is viable. Instead, companies must narrow the focus to those projects capable of delivering a demonstrable return on capital.

4) Preparing for the M&A storm

Despite its long-term intrinsic value, the mining sector is fighting an increasingly intense battle for funds. Debt financing remains tight in many countries and largely unavailable for development projects. Equity investors have also been turning away from the sector, preferring to allocate their capital to other assets or exchange traded funds (ETFs) backed by physical commodities. Even major institutional investors are reducing their mining stock holdings, amid declining multiples, pushing down the industry's market capitalization. As of May 2012, the 27 top-listed mining stocks by USD market capitalization had fallen 27% from the previous year, with nine of those companies marking individual drops in excess of 30%.

As the era of large corporate mergers comes to an end, some of the most active deal activity revolves around the buying and selling of capital projects. To attract capital, some companies have begun to rely on non-traditional forms of financing, from joint ventures with Asian buyers and off-take arrangements to selling commodity streams and royalty interests. Many recognize that joint ventures, mergers and consolidations may represent the best capital-raising alternatives. This has prompted a move toward proactive and "rescue M&A," with companies trying to enter deals pre-emptively with the partners of their choice. This may seem counterintuitive in a year where both deal values and volumes have fallen significantly. However, while majors have not been active buyers in recent years, the combination of depressed valuations and some commodity price slippage may prove at some point irresistible to larger mining players with considerable cash flows. As a consequence, we see a new wave of M&A emerging.

Transaction volumes are likely to rise in 2013, with Asian investors remaining frequent providers of development capital. The Chinese government is still actively encouraging Chinese companies to acquire resources abroad, although transactions will need to be carried out in a more diligent manner and with more perceived success. Although the closing rate of Asian buyers is improving as measured by completed deal numbers, the challenge for post-acquisition integration has just begun.

5) Governments eye the mining prize

Governments continue in their attempts to increase control over their national resources. In 2012, Guatemala proposed legislation that will see it take up to a 40% equity stake in companies exploiting the country's natural resources; Mongolia attempted to limit – and Indonesia succeeded in limiting – foreign ownership of domestic mining companies to 49%; Guinea assumed 15% ownership of all mining projects, with an option to buy another 20%; Namibia transferred all new exploration to a state-owned company; and Zimbabwe took a controlling interest in all mining projects that had not sold majority equity stakes to local investors by April.

While not all countries are moving toward privatization and expropriation, many are exercising their own forms of resource nationalism. Windfall taxes on the mining industry were introduced in South Africa, Ghana, the Ivory Coast and Zambia; China imposed a resource tax in late 2011; Argentina introduced export controls; Brazil has been making it harder to obtain licenses and permits; and even traditionally mining-friendly countries like Chile and Peru have raised taxes and royalties.

These moves are not confined to developing nations. In Australia, the combined effect of the mineral resources rent tax (MRRT) and the carbon tax has the potential to push down corporate profits and interfere with project feasibility assessments. Poland's new mining tax is doing the same. This makes it harder for mining companies to accurately forecast production schedules, understand long-term risk profiles or develop models to guide decision making over time. Although it is impossible to predict how far governments will go to increase their share of mining profits, one thing is certain: mining companies must take immediate, coordinated action to mitigate these sovereign risks.

6) Combatting corruption

In their pursuit of higher quality mineral assets, mining companies operate in some of the world's toughest geopolitical and operational environments. While countries like the DRC, Guinea, Russia, Mongolia, Indonesia, China and Brazil boast rich resource environments, they also score quite low on governance and transparency indices such as Transparency International's Corruption Perception Index (CPI), and may lack robust control mechanisms and an established rule of law. As a result, when negotiating and operating ongoing investments, mining companies often find themselves walking a fine line between legitimate and illegitimate transactions.

Most executives acknowledge that corruption poses a significant risk – one that is especially salient for mining companies that operate in regions of the world where corruption is more prevalent. Added to the already increasing risk profile is the Extractive Industry Transparency Initiative (EITI), wherein countries agree to require companies to adopt a global standard for reporting their local revenue in an attempt to promote transparency for citizens who live in resource-rich countries. For example, in the US the legislative requirement for extractive industries to disclose all payments to foreign governments is the Dodd-Frank Act (Title XV, Section 1504). All SEC registrants will be required to make such disclosures. In Canada, "Publish What You Pay" requirements for Canadian extractive industry players are being explored through a self-regulatory framework.

Yet combatting corruption remains a challenge. Considering how many mineral-rich countries fall into Transparency International's red and orange zones, mining companies would have considerable difficulty walking away from many of these regions. However, they also cannot run afoul of increasingly stringent regulations. The U.S. Foreign Corrupt Practices Act (FCPA), the UK Bribery Act and the Canadian Corruption of Foreign Public Officials Act operate with mandates that hold companies accountable for their conduct in a foreign country, as do the U.S. Dodd-Frank Act and FATCA (the Foreign Accounts Tax Compliance Act). Regulators have also begun heightening their scrutiny of a wide range of corporate practices, including third-party relationships. Companies are held responsible for not only their own practices but also the practices of their partners, suppliers, service providers, vendors, agents and intermediaries.

Failure to comply with legislation prohibiting corruption and bribery is not an option. Beyond the cost of penalties, legal bills, appointing a monitor, responding to an investigation and defending potential shareholder lawsuits, companies are at risk of losing their license to operate – an outcome that would damage both bottom line profits and corporate reputation.

7) Climbing the social ladder

Mining companies understand the need to meet local government and community requirements when operating mine sites. Those requirements, however, have escalated considerably in recent years. Today, corporate social responsibility extends well beyond meeting the minimum legal requirements associated with conducting an environmental impact assessment. It involves understanding shifting community and government expectations, addressing the demands of NGOs and relevant stakeholder groups, and committing to a higher level of transparency and operational sustainability.

Community stakeholders require more than a contribution to social and physical infrastructure. They expect employment opportunities, fair wages to improve their economic situation, skills training, access to advanced technologies, education for their families and modern healthcare. When these needs aren't met, the result is often vocal opposition, labour strikes and violent protests, which result in significant project development and operational delays.

Governments are also demanding greater concessions. Many nations now require mining companies to staff their sites with a certain percentage of local labor. Some require a higher level of local beneficiation and have begun to impose export duties on raw minerals to dissuade companies from refining in different jurisdictions.

Additionally, mining companies must seek approvals from a significantly higher number of stakeholders. Failure to consult all indigenous populations, relevant NGOs, environmental groups and quasi-governmental organizations (municipal, regional and provincial) results in project delays and even the loss of licenses to operate.

A proliferating number of monitoring and standard setting bodies also track industry performance on a widening range of environmental, social and governance (ESG) metrics – from greenhouse gas emissions, energy consumption, environmental compliance and labor practices to water use, waste produced, stakeholder engagement and supplier supervision – and corporate rankings tend to affect not only brand reputation but also access to capital.

The challenge is exacerbated as mining companies struggle to adopt appropriate KPIs to measure their own sustainability practices. On the one hand, the Global Reporting Initiative (GRI) provides companies with a comprehensive sustainability reporting framework that covers their economic, environmental, social and governance performance. On the other hand, the GRI alone may not address the expectations of a growing number of stakeholder and investor groups. According to Ceres.org, shareholders are filing resolutions on a wide range of sustainability-related issues, including climate change, energy, water scarcity and sustainability reporting.

To meet these escalating community, regulatory and stakeholder expectations, mining companies are struggling to identify which of the various tracking indices they should adopt beyond GRI compliance – from the Dow Jones Sustainability Index (which measures economic, environmental and social performance) to the FTSE 4 Good Index Series (which measures adherence to globally-recognized social responsibility standards). Regardless of the decision, one thing is certain: over time, mining companies will need to commit to a higher level of responsible behavior by incorporating sustainability into their internal metrics, their capital project methodologies and their negotiations with local communities, governments, NGOs and regulators.

8) Plugging the talent gap

With mining companies postponing projects or slowing down production, the immediate pressure on the labor force has eased in some jurisdictions. This won't last. Even if some projects are cancelled in the next few years, the skills shortage in the mining industry remains chronic. The Minerals Council of Australia forecasts the need for an additional 86,000 mining professionals and skilled mine workers by 2020. The Mining Association of Canada predicts a shortfall of 60,000 to 90,000 skilled workers by 2017. Chile may need as many as 70,000 new workers by 2014, especially as mining investment reaches an anticipated US$100 billion by 2020. The same trends hold in Peru and Brazil.

Part of the challenge lies in rising worker disinclination to relocate to the often remote regions where mining companies operate. Many younger workers do not want to raise their families in a mining town or leave their families for weeks on a fly-in/fly-out arrangement. While wage hikes can address this issue, they come at an unsustainable price – both for majors, who cannot continue to raise salaries indefinitely, and for juniors, who cannot afford to attract or retain the talent they need.

As companies pursue mergers and joint ventures internationally, other labor gaps also arise, particularly where companies lack the skillset to set up an effective in situ owner's team or identify people who can deliver deal value through appropriate project governance. Add in the difficulty of finding qualified EPCM suppliers and the industry's skills shortage crosses countries and functions, threatening the long-term viability of future projects.

9) Playing it safe

The dangers associated with mining are on the rise, particularly as companies move to more remote and less hospitable regions. Industry leaders have long focused on enhancing their safety management systems and building a safety culture. Beyond holding managers accountable for safety performance, companies invest in education, training, communication and behavioral-based safety programs. Responses range from compliance-based safety committees to management and control programs aligned with internationally-recognized safety standards.

Despite this level of investment, many organizations have seen their safety performance plateau and some continue to experience serious safety incidents and fatalities. Since South Africa's Department of Mineral Resources first started recording safety incidents in 1904, more than 54,000 mine workers have lost their lives in mining accidents. Safety records in China's coal mines continue to deteriorate as well, with nearly 2,000 workers killed in accidents in 2011 alone.

For mining companies, mounting safety incidents do more than affect corporate reputation. They impact a company's license to operate and the ability to attract and retain talent, particularly when employees must deal with the serious injury or loss of a colleague. In some cases, companies may even be exposed to serious penalties for violations that result in injuries or death, as well as criminal liability to corporations, their representatives and those who direct the work of others, including contractors.

While mining companies may believe they have brought the safety issue under control, it is time for many organizations to revisit their safety programs, particularly as the severity and cost of claims continue to rise. Significant advances in data analytics and increasingly affordable sophisticated software capabilities can help organizations gain insight into causal factors and improve their safety outcomes. Through the application of predictive modeling techniques and the ability to analyze a range of inputs, organizations can begin to identify the driving factors of workplace incidents with the goal of developing targeted prevention strategies.

10) At the IT edge

To reduce labor costs and improve operational efficiency, mining companies have been increasing their technology investments. Despite a demonstrated willingness to innovate, however, many mining companies continue to suffer both financial and process inefficiencies by failing to leverage basic back-end technologies. New data analytic capabilities enable mining companies to take hundreds – or even thousands – of contributing factors into account when allocating their portfolios, assessing their cost drivers, predicting project success rates, identifying third-party relationships, mitigating risk and uncovering the causal factors of safety incidents.

Despite access to this rich data, decision making frequently remains reactive rather than predictive. Many mining companies still have only limited visibility into key performance metrics and struggle to track indicators such as mine contractor activity, costs associated with operations and maintenance and ore movements at different stages of the production cycle. Managing sites remotely also remains a challenge, especially as companies struggle to maintain high safety standards while still controlling costs and preventing environmental damage.

A similar pattern is evident among companies engaging in mergers and acquisitions. Companies that grow by acquisition often fail to integrate their disparate technology systems. Many end up with incompatible systems that operate in numerous different languages and duplicate data on different servers, complicating their efforts to produce consolidated, accurate financial reports on a timely basis. Unsuccessful integration of IT means many companies leave cost savings of up to 15% on the table.

Summary

The mining industry continues to struggle with ongoing volatility and market uncertainty. Higher costs combined with softening demand threaten capital project delivery. Typically "lower cost" jurisdictions are no longer lower cost, but are exacting a price in the form of rising taxes, mounting government interference, escalating community expectations and the risk of corruption. To counter these pressures, some companies are giving ground, postponing or even cancelling projects, halting construction in certain regions, seeking out pre-emptive mergers to secure financing and searching for more effective ways to deliver short-term investor returns.

Despite these pressures, companies that succeed over the long haul understand the imperative to maintain corporate resolve. Mining companies are known for taking a long-term view of the market. Rather than revising corporate strategy, however, it is time for executives and boards to hang tough in the face of shifting industry dynamics.

This longer-term view reveals the need for more concrete industry collaboration. The endemic issues facing the mining sector – from infrastructure gaps and talent shortages to competing demands for energy and water – cannot be resolved by companies working in silos. By sharing water management, electricity generation and infrastructure development, companies gain the ability to share costs and risk, while benefiting local communities in the process.

The key is to determine where to focus during volatile times. For some companies, the answer may lie in improved industry collaboration, a stronger focus on corporate social responsibility, sustainable operations and earning an operating license, and more coordinated negotiation with governments and regulators. For others, it may involve a committed program of cost containment, improved technology management or more intensive analysis when forecasting demand, identifying optimal projects or attracting skilled labor. Regardless of the route, the companies that thrive into the future will be those that set a solid strategic direction and hold the course amid shifting industry realities.

While volatility is likely to continue over the short term, long-term industry fundamentals remain positive. As global demand for resources grows over time, mining companies that lay the groundwork today will be well positioned to seize tomorrow's opportunities. This will do more than spur stronger industry profits. It will also position leading companies to play an increasingly instrumental role in the advancement of local communities, the support of undeveloped economies and the growth of jobs and skilled talent around the world.

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