



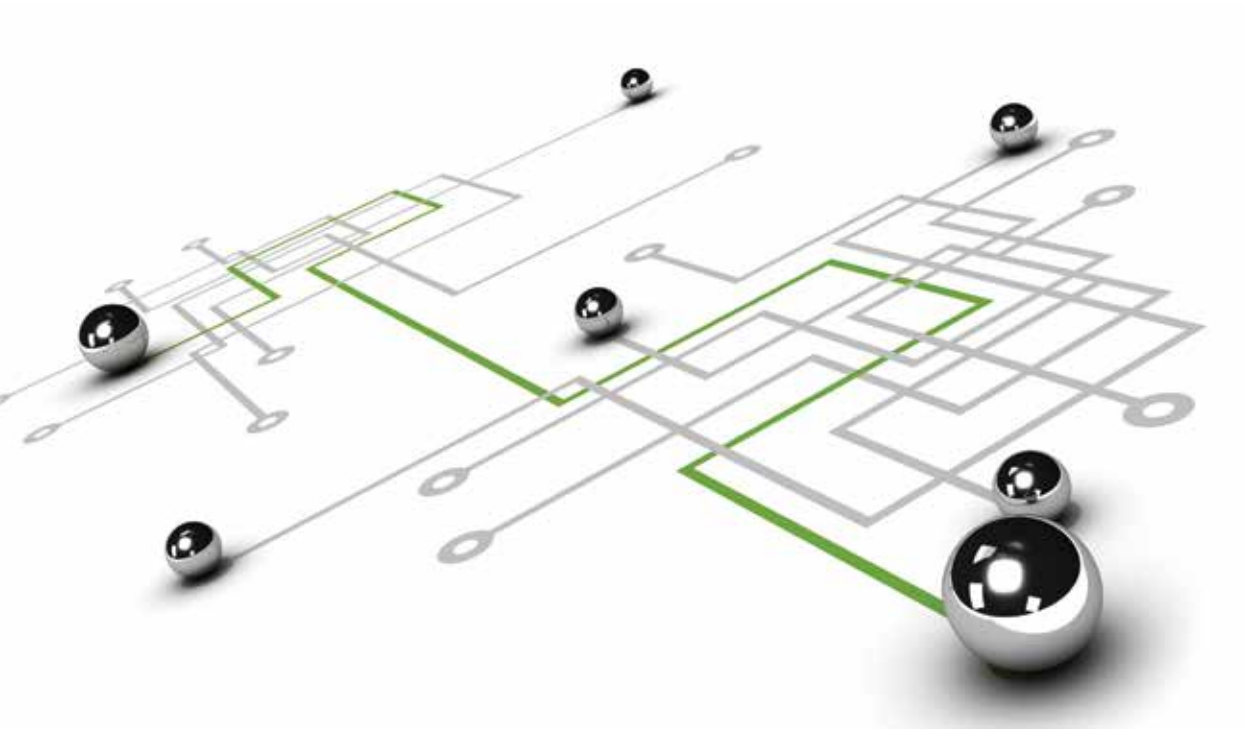
Tracking the trends 2013

The top 10 issues mining companies may face in the coming year

As commodity prices decline and global economic uncertainty persists, it's harder for mining companies to predict future demand patterns. Companies are deferring their expansion projects in the face of waning Chinese demand, yet world demand promises to increase dramatically in the coming years. With cost pressure mounting and talent shortages ongoing, companies must assess the viability of a more complex series of options. Investments will be necessary to enable companies to weather more severe volatility.

Philip Hopwood, Global Mining Leader, Australia





Where to from here?

Followers of action adventure are familiar with the scene where the hero jumps into a taxi and shouts, "Follow that car!" On some level, the mining industry has been re-enacting that very scene in their pursuit of production, richer deposits and higher yields. The push to produce safely at all costs has become a reality, against a backdrop of spiralling costs for raw materials, labour, capital projects and compliance.

At the same time, macro-economic issues continue to take their toll. While the U.S. has been recovering slowly, Europe's sovereign debt crisis persists. Despite ongoing commodity price volatility, governments around the world are taking larger shares of mining profits. Local communities, too, are demanding greater concessions.

While long-term demand from industrializing nations is anticipated to rise over time, short-term dynamics are interfering with current operations. Amid rumours of growing stockpiles, China's buying activity has been waning. Additionally, share prices have decoupled from underlying commodity values for many miners, restricting access to capital on favourable terms. This is particularly challenging in an environment of declining grades – a trend that's pushing companies to more remote, and more costly, regions.

All these factors speak to the need for more sophisticated portfolio allocation decisions. Mining companies can no longer commit to production solely on the basis of their initial business cases. Before companies decide where to locate and which projects to pursue, they should take a wider range of factors into account – including shifting legislative and political realities, community expectations, infrastructure needs, risks associated with corruption and fraud, talent requirements, and the availability of key resources like energy and water. This mandates a level of analytical capability that many companies currently lack.

In this fifth year of publication, our 2013 edition of *Tracking the trends* is our most ambitious yet. Beyond highlighting key industry indicators, this year Deloitte's global mining professionals share a range of responses companies can adopt to prepare for shifting industry realities. We've also bolstered our input with some quantitative analysis to help frame key issues and impart greater context. We think this provides an excellent foundation to spark debate.

Despite near-term tapering demand, the world remains at risk of long-term supply constraints. This danger will grow as companies halt production in the face of capital cost increases and growing shareholder demands for more immediate returns. Although companies are hesitant to invest aggressively, one thing is clear: failure to replace depleting assets will result in higher future commodity prices. Significant rewards will be available to the companies that invest today.

Glenn Ives, Americas Mining Leader, Canada

1 Counting the costs

Paying the price of bullish behaviour

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.

While much of the world has focused on the global financial crisis in recent years, mining companies have been sheltered somewhat due to the prolonged commodity price super-cycle. Now that commodity prices have come off their highs, margins are getting much tighter and cost rationalization is once again becoming a critical issue.

Chris Thomas, Partner, Energy & Resources, UK



Our professionals share solutions

As operating and capital costs rise, mining companies must drive good financial discipline into their organizations more aggressively. Here are some strategies to consider:

Pinpoint your cost drivers

Today's business intelligence systems and data analytics tools provide companies with precise data points regarding the true costs of their operations. By using technology to isolate potentially hidden cost drivers, organizations gain the ability to reduce costs at both an enterprise-wide and a functional level.

Automate

Now over 20 years in development, automation in the mining industry is reaching usable scale. Automated haul trucks, for instance, are helping some miners improve productivity and reduce labour costs. Other companies are achieving these goals with different methods, such as open pits with no trucks.

Improve your operating model

To keep functional costs under control, mining companies must streamline their operating models to take advantage of synergies in core functional process areas, such as human resources, finance and information technology. Super-majors can do this by adopting structured system and process standards, while mid-market miners can uncover this opportunity in a post-acquisition scenario. With the appropriate investment and change management effort, companies can realize a 10% to 30% cost improvement.

Use analytics to improve asset efficiency

When major components, such as engines, fail, repairs can cost five times as much as a planned overhaul. To avoid these costs, miners should adopt reliability-centred maintenance programs. By using their vast store of asset reliability data, companies can better plan and execute maintenance, improving safety and productivity in the process.

Streamline the supply chain

Many mining organizations are built around functional silos and have difficulty efficiently managing inventories, working capital and finished goods. To realize cost efficiencies, organizations must develop a supply chain perspective from pit to port to customer. Taking the supply chain to an entirely lean level has enabled leading organizations to save millions of dollars.

Share the costs

By collaborating with industry peers to find cost synergies in upstream, downstream and core processes, mining companies can cut costs through shared infrastructure and aspects of the supply chain. Examples like the Oil Sands Leadership Initiative (OSLI) exist in the oil and gas sector, and could translate to the mining industry.

Projects all over the world are feeling the heat associated with rising operational and capital costs at a time when the economics of mine projects are starting to look less attractive as commodity prices head south. This is forcing miners to put a much greater focus on project returns rather than production volumes. Projects need to earn their keep and only the highest quality projects will get the green light.

Carl Hughes, Global Head – Energy & Resources



2 Managing demand uncertainty

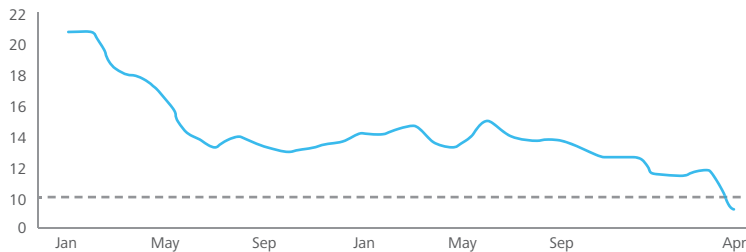
Conflicting market indicators magnify volatility

In today's interconnected 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 2016.¹

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.²

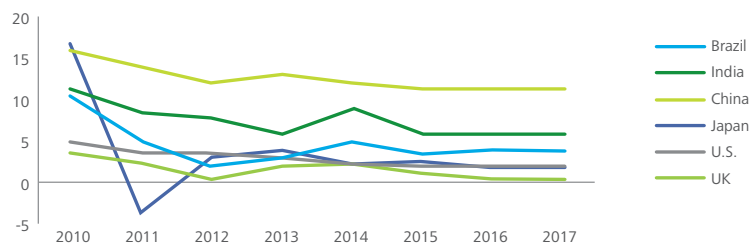
The same uncertainties are causing ripple effects in regions around the globe. Between 2010 and 2012, India's IP growth is expected to fall to 7.7% from 11.1%, and Brazil's is forecast to drop to 2.2% from 10.5%.³ While the U.S. economy is slowly recovering, the Eurozone debt crisis persists.

China: Industrial production (% change, year on year)



Source: National Bureau of Statistics; Haver.

Global industrial production growth forecasts (%)



Source: Economist Intelligence Unit



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.⁴ In the first four months of 2012, these initiatives translated into spending of 700 billion yuan on selected infrastructure projects.⁵ 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 a new commodity super-cycle that could push prices to unsustainable levels.



Indecision may constrain supply

Mining companies face external factors that are prompting them to postpone a large number of capital projects at both the feasibility and pre-feasibility stages. In Australia, over \$246 billion in planned mining investments were frozen in light of rising costs and slipping revenues.⁶ Concerns about lower Chinese demand, outbreaks of violence at platinum mines in South Africa and insurmountable regulatory hurdles in Brazil are also spurring project delays, predominantly of projects that were already considered marginal.

Given the length of time it takes to bring a mine into production, the current slowdown could translate into supply constraints in the near term. Although global demand indicators are waning now, long-term demand forecasts remain bullish. According to UN estimates, the global population will exceed nine billion by 2050, with much of the growth occurring in large emerging economies.⁷ As per capita income rises in these countries, demand for housing, cars, electronics and other resource-intensive consumer goods will climb.

While mining companies may plan to ramp up production from existing operations in the event of a short-term spike in demand, production capacity constraints – stemming from a range of factors – remain. In the first quarter of 2012, for instance, Australian gold production declined by 4% compared to the first quarter of 2011 due to wet weather.⁸ In the second quarter of the year, Peru's mining chamber estimated a 4% drop in overall mining production as reserves are depleted, demand slows, environmental rules tighten and social conflicts continue.⁹ By the third quarter of the year, numerous gold and diamond companies had lowered their production guidance – suffering analyst downgrades as a result.

Obtaining permits, negotiating with local communities, attracting qualified labour, partnering with EPCM suppliers, procuring sufficient equipment and materials, transitioning from exploration to development – these activities all require years of advance planning. Against this backdrop, companies eager to grow require proven access to funds, a strong track record of delivery and solid local and regional relationships. Those that fail to pursue capital project expansion today, or that make only marginal investments in these areas, may face more than commodity market price penalties. They may also threaten the industry's ability to meet future demand in a cost-effective manner.



Our professionals share solutions

How can mining companies make prudent capital project investments in today's volatile global economy? There are no easy answers, but there are strategies:

Make it a game

Over the last decade, several Fortune 100 companies have used game theory to develop corporate strategy. Game theory is a branch of mathematics that can predict outcomes when there are multiple players, each with different options for action and different interests, and each with the ability to influence the actions of the other players. By applying game theory to the mining industry, companies may be able to develop scenarios to guide their capital project decisions that are both more accurate and more sensitive.

Optimize your portfolio

To make intelligent capital allocation decisions, companies need to evaluate both hard financial metrics and intangible "soft" benefits. One method is multi-attribute decision analysis (MADA), which integrates multiple competing decision criteria to help quantify and appraise project benefits.

Get analytical

With sufficient data analysis, mining companies can predict future market movements. Deloitte MarketBuilder, for instance, has aggregated thousands of data points over two decades to help global metals and mining companies build, modify and visualize integrated energy supply chains for both commodities and regions – supporting more informed decision making.

While long-term trends appear robust, things are slowing down in the near term. The Chinese central banks are trying to curb inflation, so the country cannot continue to support the levels of growth of recent years. Economic volatility in Europe also remains a concern and there's a sense that the world economy is not out of the woods. That said, urbanization in China and other industrializing nations will continue to underpin the demand for commodities, creating a bullish story for long-term growth.

Kevin Ng, Tax Managing Partner & Deputy Managing Partner, Northern China

3 Capital project deceleration

Quality trumps quantity in the project pipeline

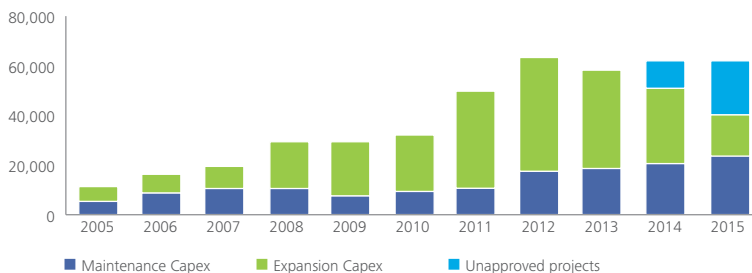
Given shifting market realities, mining companies need the ability to develop accurate business cases, but the frequency of recent capital project overruns calls this competency into question. In countries around the world, mining companies are exceeding budgets, alienating lenders and shareholders in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

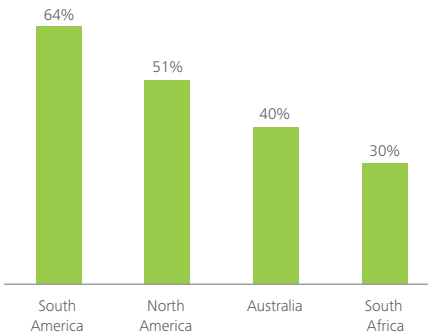
Mining capital expenditures (US\$ million)



Source: Credit Suisse First Boston, DataStream, company reports

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.

Estimated average % project cost overrun (by region)



Source: Compiled by Deloitte from company annual reports and press releases, as well as data from Metals Economics Group.

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 2013.¹⁰ 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 2012.¹¹ A 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 2011.¹²

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.

There's been an appreciable shift in the past several months as mining companies become more cautious in their demand outlook and reduce their free cash flow forecasts. Across the board, companies are reassessing their project pipelines and capital allocation decisions, and re-prioritizing their capital programs to focus on core high-margin projects.

Christopher Lyon, Mining Leader, Chile



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Although mining executives and boards are hesitant to authorize new capital expenditures, shutting down expansion projects will affect future profitability. The correct response may be less about freezing projects or waiting until commodity prices and government intentions settle, and more about factoring available information to make more disciplined investment decisions. Options include:

Capital efficiency

In a Deloitte survey,¹³ 55% of executives reported lack of confidence in their organizations' ability to optimize return on invested capital in their capital planning process. Top reasons included insufficient comparison of projects or benefit measurement (25%), failure to link projects with strategy (25%), an inefficient decision process (12%) and the tendency to "game" the system (11%). With effective capital efficiency processes, however, companies can prioritize their portfolios to increase return on invested capital, gain an holistic portfolio view, identify the optimal projects in which to invest – and at what level – and improve the strategic and organizational alignment of their projects.

Capital allocation

In deciding which projects to pursue and which to defer, companies must identify those capable of delivering the highest returns. This analysis should help companies develop a capital allocation program that prioritizes their project pipeline and identifies the optimal investment sequence based on each project's growth prospects, profitability and ability to yield shareholder returns.

Project rationalization

Miners must continue to minimize both project costs and risks. This could include engaging in smaller expansion projects, renegotiating power contracts, revisiting supplier costs and/or participating in joint venture agreements to diversify risk.



Customer use research

The companies most likely to reap superior returns in the future are those that match production to customer demands. For some, this analysis will dictate the type of resources to mine. For others, it will guide decisions regarding the best countries in which to operate.

Data analytics

Deloitte's predictive project analytics tool empowers mining companies to determine whether their projects will remain on track. It works by empirically analyzing a project and comparing it to a database that contains details on thousands of completed projects.

Project delivery quality assurance

Many mining projects experience cost overruns due to inefficient management of external suppliers, EPCM contracts and labour productivity. Quality assurance programs help mining companies manage EPCM contracts, confirm targets are met, control spending and monitor construction – from planning through commissioning.

Good governance

While companies cannot control external price pressures, they can prevent costs from escalating due to internal operational inefficiency. Effective governance processes help companies inject rigour into their capital project reviews, improve the assumptions used to calculate project costs and returns, enhance cooperation between Operations and Finance, strengthen project management and capture lessons from past projects to inform future investment decisions.

As shareholders pressure mining companies to improve returns through dividend yields, cash flow becomes more critical. Volume growth is no longer a measure for success. Instead, mining companies need to pursue quality over quantity, focusing on profitable production while striking an optimal balance between generating cash and growing revenues.

Abrie Olivier, Mining Industry Leader (Advisory), South Africa

4 Preparing for the M&A storm

Market indicators point to rising deal volumes

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%.¹⁴

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 into 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.

In the past year, capital markets have deteriorated. Now, equity and debt investors are largely opposed to financing development assets. For the vast majority of mining companies, this means their best recourse for financing is to look to Chinese, Korean, Japanese and other Asian sources of development capital. With the majors unlikely buyers, this lack of capital will also drive M&A activity in the developer space – already a trend being played out in the gold sector in 2012.

Jeremy South, Global M&A Mining Leader, China



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Successful mergers and acquisitions require comprehensive planning – both before the deal initiates and after closing. To improve the odds of success:

Know your partners

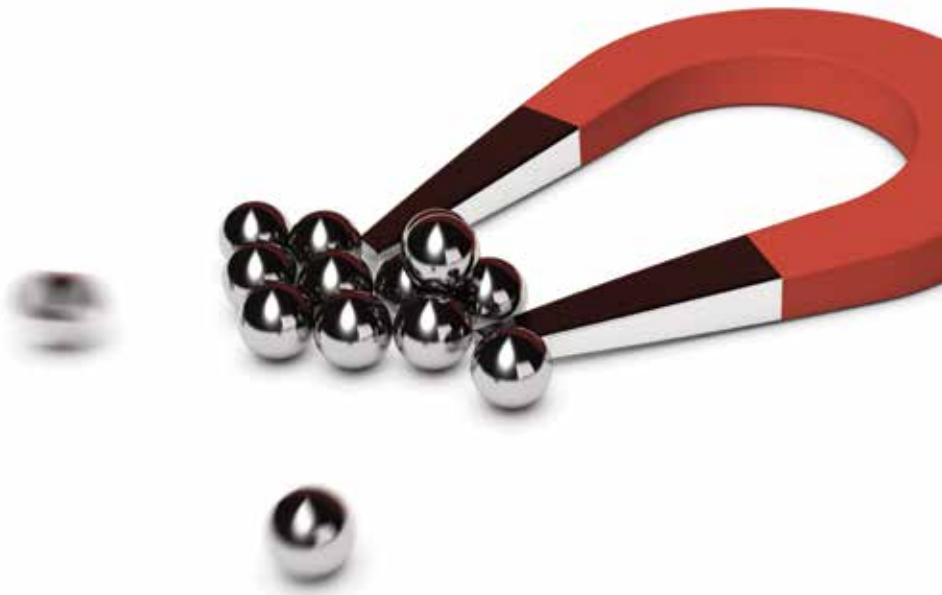
Sellers looking to attract capital from Asian state-owned enterprises, sovereign wealth funds or foreign investors must engage in extensive advance planning. Negotiations with many of these acquirers frequently move much more slowly than anticipated and require significant patience as well as an intricate understanding of local customs, cultures, languages and relationships.

Go beyond traditional due diligence

All transactions require in-depth legal, technology, human resources, environmental, tax and accounting due diligence. Additionally, acquirers should analyze a wider range of risks, with a focus on technical factors, such as the quality and predictability of the target ore body, market outlook indicators and factors that may influence regional stability.

Plan the integration

Transactions that fail to deliver their intended value frequently suffer from ineffective post-merger integration. Despite this, some acquirers in the mining space are not laying the proper groundwork. Before the deal closes, formal plans should be in place to govern the integration and rationalization of operations, people, processes, internal controls and technologies.



5 Governments eye the mining prize

Resource nationalism remains

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 licences 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.





Our professionals share solutions

Mining companies have no choice but to operate in the countries where minerals are found – many of which do not boast the most stable political regimes. To counter this political instability:

Continue to build relationships

Co-managing through a downturn is a strong way to show your commitment to priority investments. By focusing on items required for efficient ramp-up when the cycle returns, companies can strengthen their relationships with national and local governments.

Be prepared to diversify

Some of the world's most successful mining companies work to mitigate geopolitical risk by diversifying both their commodity mix and geographic areas of focus. This may require some companies to dilute their ownership stakes in some projects before deploying funds elsewhere.

Negotiate

Mining companies in different regions must band together to lobby local governments and meet with key officials to negotiate mutually-beneficial regulation. In Peru, for instance, the central government worked with the local mining association to determine an acceptable royalty regime. Before this can work, mining companies must establish a strong in-country presence bolstered by senior executive involvement, and include NGOs, unions and other key country stakeholders in the negotiation process.

Whether it's through resource nationalism, special mining taxes or the gradual creep in taxation, governments are looking for a larger share of mining company profits. Combined with mounting community demands, the difficulty in obtaining local licences, social and environmental mandates and labour union pressures, it is getting increasingly difficult to justify a large number of mining projects to investors and financiers.

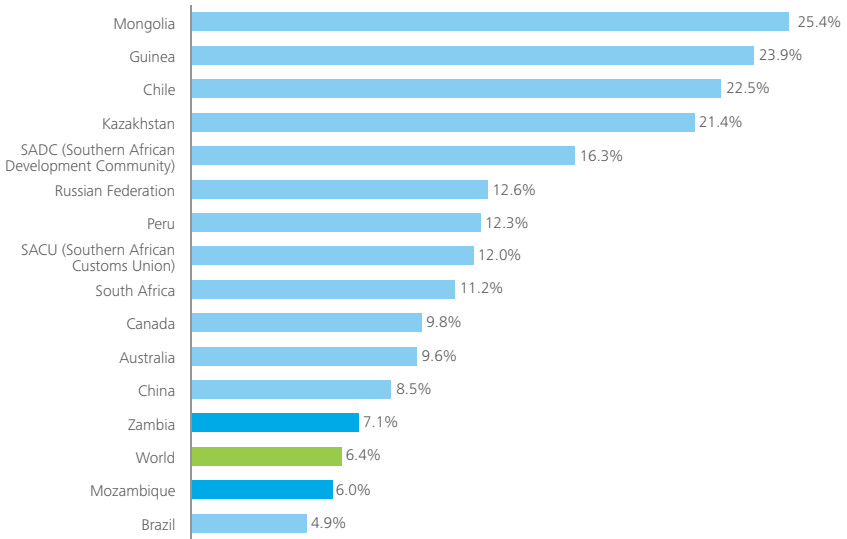
Reuben Saayman, Queensland Mining Leader, Australia

Establish your value

While governments are less likely to face public backlash if they tax profitable corporations before citizens, they often fail to realize that higher corporate taxes lead to lower local investment, resulting in rising unemployment. It is time for mining companies to get this message across. Beyond tax revenues, mining

investment creates jobs, enhances local infrastructure, reduces poverty, disseminates advanced technology, boosts inter-regional trade and spurs economic growth. The indirect impact of abandoning key regions becomes clear when the extent to which the mining industry currently contributes to GDP in nations around the world is considered:

Mining industry contributions to national GDP, 2010



SACU includes Botswana, Lesotho, Namibia, South Africa and Swaziland.

SADC includes Angola, Botswana, Congo, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Swaziland, Tanzania, Zambia, Zimbabwe, South Africa and Seychelles.

Source: United Nations Conference on Trade and Development (UNCTAD)

6 Combatting corruption

Miners are being held to higher standards

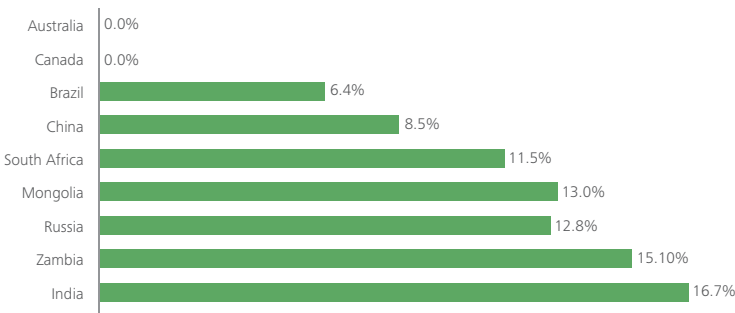
In their pursuit of higher quality mineral assets, mining companies operate in some of the world's toughest geopolitical and operational environments. While countries like the DRC, Guinea, Russia, Mongolia, Indonesia, China and Brazil boast rich resource environments, they also score quite low on governance 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 (see map on page 22), mining companies would have considerable difficulty walking away from many of these regions. However, they also cannot run afoul

Percentage of respondents to the World Economic Forum Global Competitiveness Survey who feel corruption is one of their top five business challenges

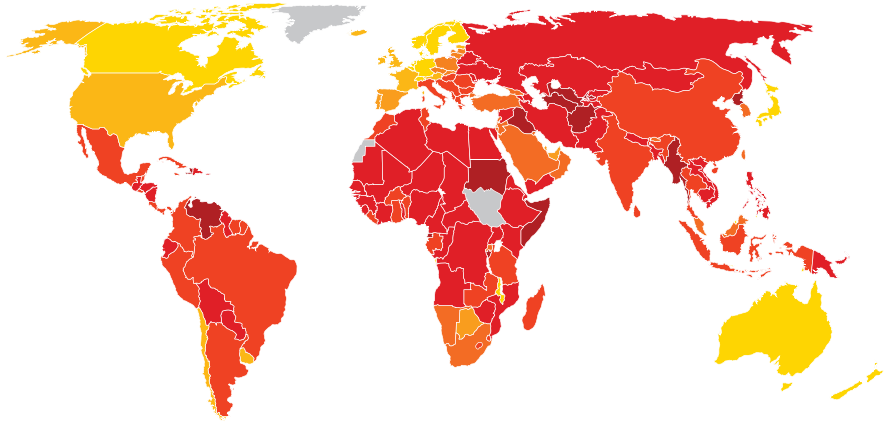
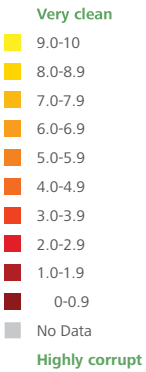


Source: World Economic Forum, Global Competitiveness Survey, 2012

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 licence to operate – an outcome that would damage both bottom line profits and corporate reputation.

Transparency international: 2011 corruption perceptions index





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Combatting corruption requires the adoption of strong corporate practices and procedures, including:

Third-party relationship management

Enhanced due diligence and research methodologies allow companies to uncover connections they could not have found in the past. Yet few miners have adopted the practices necessary to perform this level of integrity due diligence. Regulators' patience is at an end. Given the capability of access to information and intelligence beyond publicly-sourced information, mining companies should investigate both third-party relationships and beneficial ownership structures. They must also ensure that third-party contracts reflect company values, processes and expectations by including anti-bribery and corruption clauses, a declaration of ultimate beneficial ownership and clear reporting procedures.

Internal compliance programs

An effective internal compliance program begins with the tone at the top. The board should set clear practices for acceptable business practices and ensure they are enforced by management. Program elements should

include an internal control framework, employee and supplier training, the establishment and monitoring of a whistleblower line, adoption of appropriate standards and codes of conduct, and ongoing transactional oversight. As part of this program, mining companies should also consider adopting programs developed by organizations such as the EITI or Transparency International as a way both to heighten industry standards and share best practices.

Investigation readiness

When regulators come in search of information, they expect timely access to data. Failure to provide appropriate information can attract hefty fines. At the fraction of the cost of an investigation, mining companies can prepare their systems to respond to regulatory inquiries in an effective manner. "Fire drills" can also help companies uncover weaknesses in their data and document management procedures, enabling them to strengthen their document retention strategies.

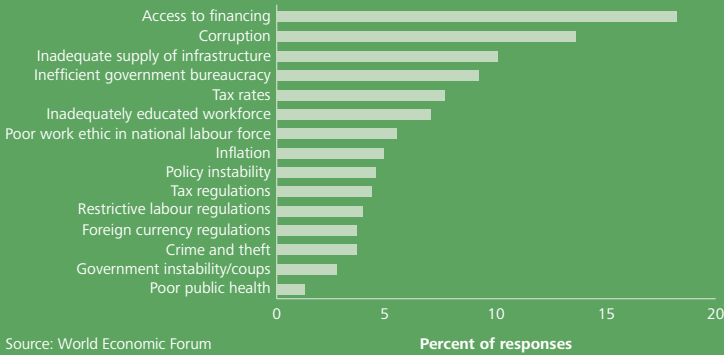
Management and the board must work together to set up and implement a framework of adequate controls and make sure that its operational effectiveness is evaluated on a regular basis. Are staff members being trained? Is anyone providing transactional oversight? Is attention being paid to email and outgoing payments? Is there a whistleblower line? Is it being monitored and its use encouraged? Are your vendors and suppliers educated about your ethical standards and policies? Is your third-party due diligence process properly documented? Do you have anti-bribery terms in your contracts?

Peter Dent, National Leader, Deloitte Forensic, Canada

The investment dilemma

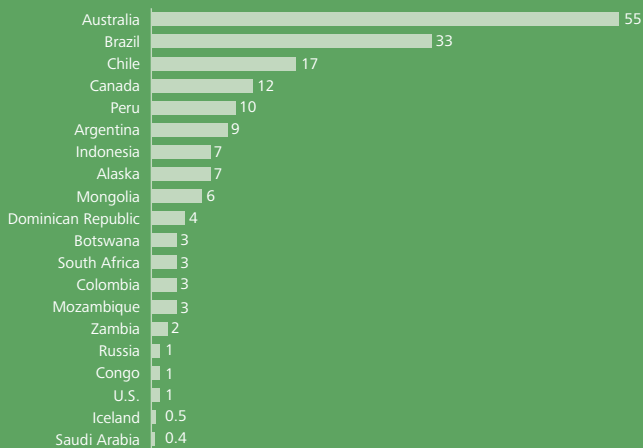
Historically, the regions that offered the highest grade, easiest-to-access mineral yields were the ones that miners targeted. Today, it is the countries in Southeast Asia¹⁵ and Africa¹⁶ that possess enormous resources potential; yet those countries are characterized by political unrest, lack of regulatory clarity, inefficient legal systems, corruption, security risks, resource nationalism and shifting tax rules.

Challenges to doing business in Sub-Saharan Africa



In search of alternatives, mining companies continue to invest in traditionally more stable, though increasingly expensive, regions, including Australia, Canada, the U.S. and South America.

Projected mining investment by country, between 2012 and 2031 (\$USD billion)



Sources: Compiled by Deloitte from company annual reports, press releases and Factiva

Yet not even those jurisdictions are immune to prevalent industry bottlenecks. Infrastructure, or the lack of it, is a prime example. Whether infrastructure is non-existent, aging or simply inadequate, mining companies need to engage in significant up-front capital investment before they can build their mines and ship their products. This is as true in Russia and India as it is in Africa, Asia, Australia and the Americas.

Power supply is another universal challenge. Epitomized by India's blackout in August, which affected roughly 600 million people, countries around the world are struggling to meet mounting demand for electricity. Chile provides a case in point. Local communities are blocking the construction of new hydroelectric power stations in the south because they threaten to flood valleys and damage the rain forest. However, viable alternatives are lacking. Solar and wind power are characterized by high costs and intermittent supply. Coal and diesel come with environmental costs. Nuclear power is not a popular option in the country's highly-seismic landscape. This has prompted many mining companies to invest in their own (costly) power generation capacity – not only in Chile, but internationally.

Competition for water also threatens the future viability of mining projects. Although not as intensive as the oil and gas industry, the mining sector needs water for operational purposes to produce many of the base metals. As shareholders and other interested parties continue to scrutinize mining companies on their water use, this issue will rise in importance.

Where do companies go from here? How can they mitigate the systemic risks prevalent in key mining regions to position themselves to thrive in the years to come? These challenges demand multi-party, multi-stakeholder and multi-sector collaboration. Individual companies cannot continue to build their own roads, generate their own power and pipe their own water. Instead, they can improve collaboration by working with governments, communities, NGOs and corporations within multiple industries to change the economic dynamics and the risk-sharing models that govern these massive infrastructure projects. They can enhance resiliency by revisiting the way in which they consume resources across their operations and supply chain. Adopting innovative technologies may also help to improve energy and water use and conversion.

As the comfortable countries are mined out, mining companies need to find new reserves in less hospitable places. This will require a much higher level of risk assessment, planning and forecasting, taking into account such issues as obtaining community permissions to access local watersheds, exploring public-private partnerships to build out infrastructure and being prepared to walk away from projects – or from regions – where the risks patently outweigh the rewards.

Tony Zoghby, Mining Leader (Assurance), South Africa

7

Climbing the social ladder

A new level of responsible behaviour

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 labour. 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 labour 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 behaviour by incorporating sustainability into their internal metrics, their capital project methodologies and their negotiations with local communities, governments, NGOs and regulators.





Our professionals share solutions

As mining projects continue to impact both regional development and national GDP, companies must adopt more stringent corporate social responsibility practices.

Embedding sustainability into internal processes

Corporate social responsibility (CSR) is now what safety was five years ago – an area that is demanding greater focus from mining companies around the world. As with safety practices, it is time for mining companies to embed CSR strategies into the fabric of their operations. This includes adopting appropriate KPIs to manage and monitor their sustainability practices, selecting a sufficiently robust sustainability index against which to benchmark, and embedding sustainability considerations across the mining life cycle. Engaging the exploration and capital project development teams from the start will help companies anticipate implications during the mining operational and closure phases.

Micro-economic analysis

Mining investment decisions can affect the economic value chain in many regions and the local movement of wealth. To prevent social conflict, companies need to monitor these economic variables to ensure the effective sharing of both resources (water, energy, land) and knowledge (skills training, educational programs).

Community engagement

Earning project buy-in from myriad stakeholders requires more than a public relations campaign. Given the outsized impact of local governments, communities and NGOs, mining companies must cultivate mature relationships with key stakeholders and nourish them over time. This means making corporate social responsibility a strategic priority – one that attracts senior management involvement and oversight.

When negotiating with local stakeholders, companies need to understand that yes doesn't always mean yes – and you won't know the meaning of your agreements unless you have a meaningful exchange. This requires companies to understand local cultures and cultivate local relationships on an ongoing basis. These are not programs that can go on cruise control; you need a pilot constantly at the helm.

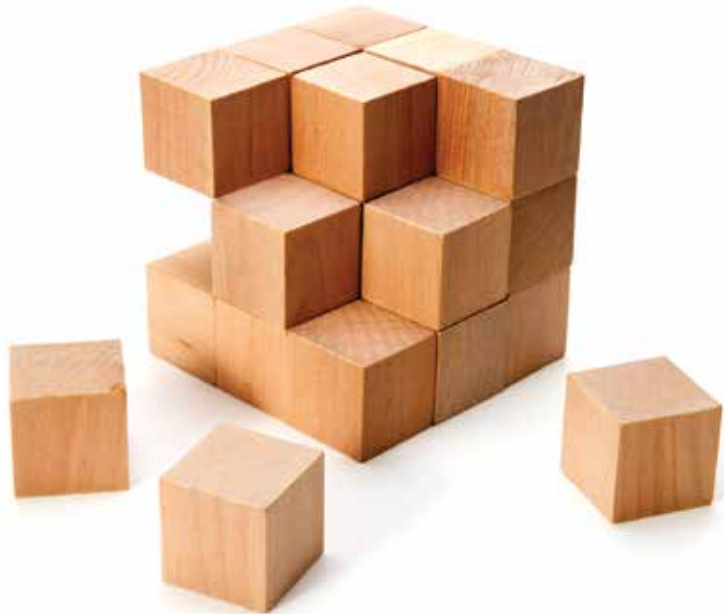
Hector Gutierrez, Energy & Resources Leader, Peru

Social media strategy

Social media makes it possible for protesters, community stakeholders, shareholders and even disgruntled employees to disseminate negative information at the click of a button. In North America alone, while over 40 million people use Google to research mining practices, the majority of content is delivered by opponents to mining.¹⁷ Rather than perceiving it as a necessary evil, however, mining companies should build on the success they have enjoyed in the recruiting arena to leverage social media tools to improve stakeholder interactions. By developing a social media strategy, companies can get their stories out in the wake of potential incidents, explain their positions on key issues, communicate with employees and communities on a more intimate level and take other steps to put a more human face on the organization.

Risk sensing

By using data analytics, social media and advanced risk profiling, companies can scour through massive amounts of information to identify triggers that provide early warning of emerging risks. In the context of corporate social responsibility, this may include monitoring changes in geopolitics, regulatory discussions, industry-related issues (i.e. conflict minerals, labour practices, water availability), community attitudes relative to a project and/or the entire industry, and even information about the mood of the workforce. Advanced risk analysis positions companies to anticipate trouble spots and plan mitigation responses before they escalate.



8 Plugging the talent gap

Skills shortages still loom

With mining companies postponing projects or slowing down production, the immediate pressure on the labour 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 2020.¹⁸ The Mining Association of Canada predicts a shortfall of 60,000 to 90,000 skilled workers by 2017.¹⁹ Chile may need as many as 70,000 new workers by 2014, especially as mining investment reaches an anticipated US\$100 billion by 2020.²⁰ 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 labour 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.

Before construction starts, mining companies should create operating models to govern labour and productivity. It doesn't need to be perfect, but you have to know if you're looking for three geologists or 23, four engineers or 24. From there, you can apply a framework to determine where to source that labour, how many you have to grow internally, what can be outsourced and how to hire to meet these emerging needs.

John Woods, Mining Consulting Lead, UK



Our professionals share solutions

Mining companies have taken decisive steps to resolve the industry's skills shortage – from reshaping recruiting profile requirements and sponsoring university programs to recruiting from non-traditional labour pools. The key comes down to effective workforce planning, which can help companies properly define their workforce assumptions and safely get the right people to the right place at the right time. Other solutions include:

Strengthening the owner's team

As companies reduce their dependence on EPCM support, they should take the opportunity to define their accountability as owners. With qualified project direction, you can strengthen potentially incomplete skill sets, ultimately building an owner's team that possesses a clear vision of the business model governing your mines, plants, infrastructure and sustainability.

Cross-training

Some companies have tackled the skills shortage by re-training existing workers to fulfill different functions. By assessing how many people are needed in specific roles, companies can identify which to outsource, which to hire externally and which are ripe for cross-training.

Training – and retaining – local talent

To avoid local layoffs and ensure business continuity, many companies retain corporate labour forces following an acquisition. Training local populations in key job functions can also help fill labour gaps and contribute to the development of emerging economy skills – addressing community needs while building a more resilient workforce. By engaging in reskilling, one gold company staffed 70% of its mine with people who had never worked in the industry before.

Confirming your approach to work/life balance

To entice workers into less hospitable regions, some companies have changed their fly-in/fly-out policies to create greater work/life balance, with shifts that feature eight days on and six days off. Others have turned mining towns into mini-resorts featuring pools, gyms, theatres, driving ranges, parks and a range of healthy food choices. By reviewing your approach over the coming year, you can begin to renegotiate with suppliers to improve the cost of delivery of this critical factor.

Exploring labour-driven acquisitions

Some mining companies are engaging in mergers specifically designed to close talent gaps. In this regard, the benefits of a specially-trained workforce cannot be overlooked. For example, companies that plan to shift from surface mining to underground mining can improve their position by acquiring an underground miner.

9 Playing it safe

Using analytics to generate insights and improve safety outcomes

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 behavioural-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.²¹ Safety records in China's coal mines continue to deteriorate as well, with nearly 2,000 workers killed in accidents in 2011 alone.²²

For mining companies, mounting safety incidents do more than affect corporate reputation. They impact a company's licence 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.

Everyone is focused on building a safety culture, but accidents continue to happen – and safety incidents are likely to rise as mining companies move to more remote areas. Notably, advances in analytic systems give companies clearer insight into the causes of accidents and demonstrate that these causes often do not come from quarters that companies expect. By pinpointing these factors and their relationship, companies can strengthen their existing safety programs and target their interventions at levels that were not possible in the past.

Valerie Chort, Sustainability & Climate Change Leader, Canada



Our professionals share solutions

A safety culture that begins with the tone at the top is a prerequisite to reducing safety incidents, but it is not sufficient on its own. Other strategies include:

Rethinking your processes

Advances in technology help cut down on safety incidents, but only if they are integrated into existing processes. To address this issue, one company revisited its ore shipping process by looking holistically at non-traditional metrics to determine how to improve safety, enhance efficiency and reduce employee exposure to hazardous outputs. It was then able to develop an integrated operating system that addressed not only operational procedures and controls but also environmental, health and safety, quality and community relations – linking processes such as data management, incident reporting, auditing and performance measurement.

Preventative maintenance

An ounce of prevention is still worth a pound of cure. Too often, however, weak maintenance processes increase the frequency of breakdowns and cause unsafe conditions, contributing to unanticipated costs, lost production time and a higher number of incidents. With robust preventative maintenance processes and systems in place, mining companies can extend equipment run times and minimize workplace accidents related to equipment failure.

Getting smart about safety

While safety-oriented organizations analyze historical incident data to identify potential trends, this largely relies on lagging indicators and is limited to a review of data directly related to the incident itself. It describes what happened, but not why. To get to the root of the problem, companies must identify the causal factors of safety incidents to predict their likelihood before they occur. With advanced analytics and predictive modeling, companies can take an exceptionally wide range of contributing factors into account – including equipment operation and process data, vehicle telemetry, weather, geospatial conditions, socio-demographic factors, training completed, aspects of the job site, maintenance schedules, production measures and more. This resulting information and insight positions companies to identify at-risk segments and activities more accurately and structure safety programs to minimize incidents at their most likely points of occurrence.



10 At the IT edge

Getting the most out of emerging – and existing – technologies

To reduce labour 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.²³

While most mining companies use ERP systems to capture financial data, few analyze their non-financial data through business intelligence systems. However, this type of analysis can help companies lower costs by becoming more predictive. It works by answering key questions like, “What is the load factor for each haul and why are there differences between drivers, shifts and equipment brands?”

Jürgen Beier, Mining Leader, Canada



Our professionals share solutions

Although the mining industry requires advanced technologies to improve operations while reducing costs, technology alone will not resolve endemic issues such as talent shortages. However, the following technologies can help to mitigate some of these challenges:

Programmable logic controllers (PLCs)

already help mining companies automate a range of industrial processes, from blasting and drilling to excavation and transportation. Their ability to withstand harsh environments, high temperature variations and both noise and vibration make them suitable to most mining operations, where they can deliver enhanced remote monitoring and control abilities. By extending the use of PLCs, companies can improve mining safety outcomes and accelerate production by remotely controlling drill environments, handling explosives, managing conveyor systems and aiding with positioning and navigation.

Supervisory control and data acquisition (SCADA) systems

also enhance remote operations by enabling companies to collect information from remote sites and communicate it back to regional plants or a central location. With this type of monitoring and alerting system, companies can improve plant performance, reduce labour costs and capture more pertinent business data and metrics.

Manufacturing execution systems (MES)

enable mining operation automation, making it safer to operate heavy equipment. Detailed data tracking also provides greater visibility into asset performance, positioning companies to optimize a range of manufacturing processes.

Remote operations combine technologies that enable mining companies to operate equipment remotely, removing the need to move people in and out of dangerous and inhospitable job sites while creating operating efficiencies.

Business intelligence systems capture the data collected by PLCs, SCADA systems, MES and other enterprise applications to deliver non-conventional metrics that help companies achieve a range of operational goals – from reducing costs, enhancing productivity and improving safety performance to strengthening regulatory compliance, realizing energy efficiencies and engaging in more effective workplace planning.

Data analytics help companies analyze thousands of data points to predict market movements, safety issues, project outcomes, worker attitudes, political trends and a range of other critical indicators.

Advanced manufacturing systems

are already transforming manufacturing operations around the world, and can likely supply lessons for the mining industry. Advanced machining processes are improving engine and machinery design with use of more complex parts. Advanced materials, such as composites and titanium alloys, produce stronger and lighter structures that can often operate at higher temperatures. A host of emerging techniques also support more rapid prototyping, improved modeling and simulation and the adoption of more sustainable practices within manufacturing processes.

Set an unwavering course

Tactics may change
but strategy should not

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 labour. 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.

We look forward to continuing to help the industry achieve these goals in the years to come.

Over the years, I've come to believe that corporate objectives should not change with the changing winds of the global economy. Tactics may shift, but core objectives, culture and values should remain in place. This is the response I'd recommend for the mining sector: shift your tactics if you must, but avoid engaging in a root and branch review of what you're about.

Russell Banham, Energy & Resources Leader, CIS



Endnotes

1. Economist Intelligence Unit, September 1, 2012. "China at a glance: 2012 – 16." Accessed at country.eiu.com/article.aspx?articleid=1089493693&Country=China&topic=Summary&subtopic=At+a+glance on September 18, 2012
2. Morgan Stanley Australia Limited+, March 27, 2012. "Global Metals Playbook: 2012" by Peter Richardson and Joel Crane.
3. Ibid
4. Reuters, December 6, 2010. "China mulls \$1.5 trillion strategic industry boost: sources," by Benjamin Kang Lim and Simon Rabinovitch. Beijing. Accessed at www.reuters.com/article/2010/12/02/us-china-economy-investment-idUSTRE6B16U920101202 on September 19, 2012.
5. The Australian Financial Review, June 12, 2012. "China gears up for splurge on projects," by Angus Grigg.
6. Reuters, September 13, 2012. "Australia miners slam brakes on huge pipeline of projects," by Sonali Paul. Accessed at www.reuters.com/article/2012/09/12/australia-mining-idUSL3E8JR08T20120912?feedType=RSS&feedName=rbsEnergyNews&utm_source=twitterfeed&utm_medium=twitter&utm_campaign=Feed%3A+reuters%2FUSenergyNews+%28News+%2F+US+%2F+Energy%29 on September 19, 2012.
7. British Geological Society, June 2012. "The Future of the Global Minerals and Metals Sector: Issues and Challenges Out to 2050," by Andrew Bloodworth and Gus Gunn.
8. Interest.co.nz, June 26, 2012. "Lower gold production hits Australia in Q1 2012," by David Chaston. Accessed at www.interest.co.nz/news/59941/lower-gold-production-hits-australia-q1-2012-new-mine-opening-2013-new-zealand on September 19, 2012.
9. Reuters, June 19, 2012. "Peru mining chamber sees lower 2012 output," by Omar Mariluz. Accessed at www.reuters.com/article/2012/06/19/peru-mining-output-idUSL1E8HELEO20120619 on September 19, 2012.
10. Financial Times, May 6, 2012. "Mining industry braced for pullback," by Helen Thomas, London. Accessed at www.ft.com/intl/cms/s/0/05645a82-960e-11e1-a6a0-00144feab49a.html#axzz272LaEALf on September 20, 2012.
11. Deloitte Access Economics, July 30, 2012. "Investment Monitor: Resources sector propping up pipeline." Accessed at www.deloitte.com/view/en_AU/au/90ed7cf95c5d8310VgnVCM2000001b56f00aRCRD.htm on September 20, 2012.
12. Mining Weekly, July 31, 2012. "Australian mining leaders cautious about big investments," by Esmarie Swanepoel. Accessed at www.miningweekly.com/article/australian-mining-leaders-cautious-about-major-investments-2012-07-31 on September 20, 2012.
13. Deloitte Financial Advisory Services LLP, March 26, 2007. "Capital allocation: increasing your odds for placing the right bets." Online poll of 595 executives.
14. DataStream
15. Thailand, Malaysia, Singapore, Indonesia, Philippines, Vietnam, Laos, Cambodia
16. Niger, Guinea, Burkina-Faso, Sierra Leone, Liberia, Ghana, Nigeria, Angola, Namibia, Botswana, Mozambique, DRC, Tanzania, Zambia
17. Mediabadger.com
18. The Wall Street Journal, November 16, 2011. "The \$200,000-a-Year Mine Worker," by John W. Miller. Accessed at <http://online.wsj.com/article/SB10001424052970204621904577016172350869312.html> on September 27, 2012
19. Ibid
20. Mining.com, April 9, 2012. "Mining investments in Chile to reach \$100 billion by 2020," by Cecilia Jamasmie. Accessed at <http://www.mining.com/mining-investments-in-chile-to-reach-100-billion-by-2020/> on September 27, 2012
21. Daily Maverick, July 3, 2012. "Mining safety: The same old story," by Khadija Patel. Accessed at <http://dailymaverick.co.za/article/2012-07-03-mining-safety-the-same-old-story> on September 27, 2012
22. The Epoch Times, September 25, 2012. "Chinese Coal Mine Accident Kills 20," by Alex Johnston. Accessed at <http://www.theepochtimes.com/n2/china-news/296400-296400.html> on September 27, 2012
23. McKinsey & Company, January 2011. "Understanding the strategic value of IT in M&A," by Hugo Sarrazin and Andy West. Accessed at www.mckinseyquarterly.com/Understanding_the_strategic_value_of_IT_in_MA_2709 , on September 27, 2012

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Designed and produced by the Deloitte Design Studio, Canada. 12-3013