

Tracking the trends 2015

The top 10 issues mining companies will face this year

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"There is no doubt that mining companies operate in complex geographies where they face increasing challenges in responding to regulatory and compliance requirements. At the same time, they have an imperative to adapt to changing market conditions while adopting new innovations as they seek to produce more for less cost. These conditions remain regardless of whether we are in a downturn or a recovering market."

Philip Hopwood, Deloitte Touche Tohmatsu Limited, Global Mining Leader



Keep calm and carry on

Keeping the faith is only easy when things are going well, and miners haven't seen a lot of positive indicators in recent years. In many ways, in fact, it still feels like the sky is falling.

Mining companies continue to contend with price volatility, geopolitical turmoil, rising costs, declining grades and a general lack of access to financing. While cautiously optimistic, growth prospects for countries like China and India remain uncertain, Japan is struggling with a mountain of sovereign debt and a rapidly aging population, and instability in the Russian border areas and the Middle East is raising concerns. Stakeholders around the globe are becoming increasingly vocal in their demands from the industry. Prospects for many commodities also remain weak, particularly iron ore and coal.

On the other hand

Like with any data, however, it's possible to see the glass as either half full or half empty. That means evidence of recovery exists alongside evidence of decline. The US economy is rebounding, areas of Europe continue to stage a slow, fitful recovery and both China and India have a long way to go on their paths towards urbanization, industrialization and electrification.

The outlook for several commodities is also improving, including nickel, aluminum, zinc and lead. At the same time, the sector appears to be coming back into favour with investors, with sector valuations, mining capitalizations and total returns showing signs of recovery.

Accelerating the cycle

These indicators do not negate the challenges still faced by large parts of the sector, including coal producers, junior miners, explorers and mining service providers. They do, however, emphasize that the mining industry has always been subject to cyclicity. In a world where volatility has become the norm, the key for future success lies in determining not how to ride the sector's typical waves, but how to accelerate resurgence from a down cycle.

For the most part, mining companies are rising to this challenge, strengthening their cost reduction and capital allocation practices. While these are good first steps, more remains to be done. To position for long-term growth, companies need the agility to move in unanticipated directions. This requires more sensitive scenario planning, more sophisticated data analysis and more intelligent risk management.

Now in its seventh year, this 2015 edition of *Tracking the trends* takes a close look at the issues that miners will face in the coming year and outlines a wealth of potential responses proposed from Deloitte member firms' global mining professionals. Our aim is to spur frank discussion about the industry's strengths and weaknesses without either painting worst-case scenarios or donning rose-tinted glasses. We once again welcome your comments and input, and hope this analysis will help inform your strategic decision-making.

If mining companies hope to emerge from the downward cycle in a stronger position from which they entered it, they need to increase mining intensity and focus on reducing capital, people and energy intensity. This will require them to adopt innovative technologies used in other industries in a measured and risk-intelligent way and increase the use of information technology.

1 Back to basics

The pursuit of operational excellence

If one theme epitomizes the focus of mining executives over the past year, it would be a return to productivity. And no wonder. Throughout 2013, mining industry productivity (defined as the GDP value contribution an average worker creates in an hour of work) dropped to new lows.

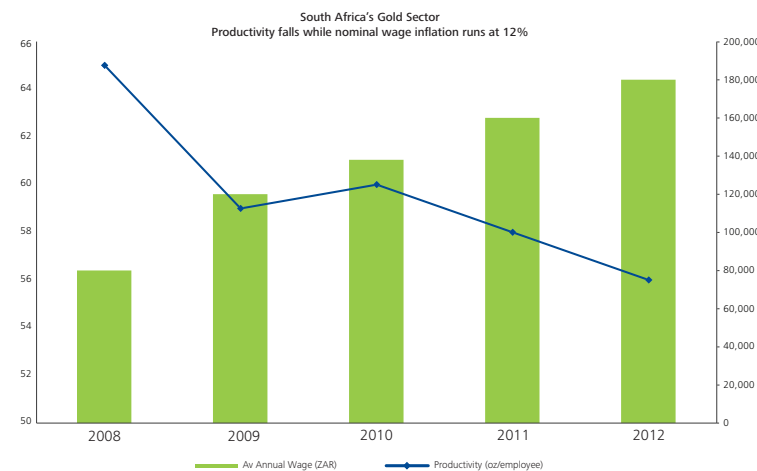
In mining regions around the world, productivity fell due to structural labour market forces, elevated input costs, critical shortages in energy and water, declining ore quality and a legacy of inefficient capital allocation. According to Newport Consulting's 2014 Mining Business Outlook, a shocking 93% of mining leaders were not optimistic about their growth prospects for the next 12 months.¹

A return to productivity

Unable to rely on a commodity price rally, mining executives have sharpened their focus on achieving sustainable productivity improvements. Over the last year, mining companies have undertaken substantive cost reductions and are now moving forward with more streamlined cost structures. Capital discipline has also supplanted capital projects, with mining companies simplifying their portfolios, divesting non-core assets, renegotiating debt and shutting down marginal operations. Now, they are turning their attention to wringing more productivity from their organizations by heightening their focus on operational excellence.

In many ways, the efforts are paying off. Mining companies in Australia are producing record export volumes, with outputs equivalent to 10% of the country's GDP.² Some diversified miners have significantly improved their returns on capital employed. And investors are rewarding this behavior by nudging up mining share prices.

Chart 1: South Africa is experiencing a productivity issue

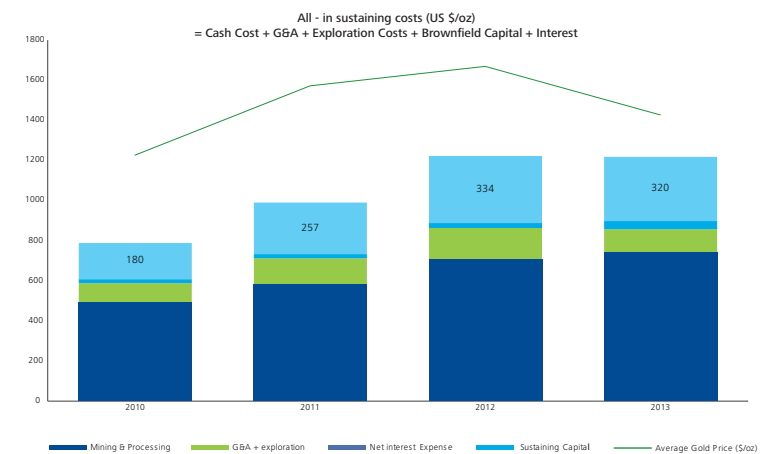


Source: Queensland Treasury, Morgan Stanley, CIMB

Despite this push, the industry's productivity journey is far from over. That's especially true for bulk commodity producers, who may be facing a fundamental shift in global demand, but it is certainly not confined to one segment of the industry. Across the board, sustainable productivity—and profitability—hinge on miners' ability to realize measurable returns on all their assets. To achieve this goal, some

companies are focusing on specific areas, such as supply chain or asset management. Others have launched programs that focus on multiple areas in an effort to embed a relentless focus on cost management across the enterprise. Either way, achieving sustainable operational excellence requires both a long-term commitment and a willingness to embrace new cultural norms.

Chart 2: Gold industry margins (all-in sustaining costs US\$/oz)



Source: Societe Generale, Sep. 11, 2013

Although miners are working to control expenses, declining grades will put continual pressure on costs. To regain momentum, and lay a strong foundation for the next mining cycle, companies need to accelerate their efficiency programs and invest more significantly in innovation.

Julian Dolby, Consulting Mining Leader, Deloitte Australia

Insourcing vs. outsourcing

During the go-go days of the mining boom, one of many input costs that ran wild were the fees paid to global contractors and EPCM (engineering, procurement and construction management) suppliers. Budget overruns were rife and mining companies struggled to gain clear visibility into the ballooning expenses.

Given this trend, it's not surprising that many mining companies have rationalized their supplier base and demanded steeper discounts in an effort to take out costs. Others have taken it a step further, bringing control over construction and other typically outsourced functions back in-house, under the auspices of owner/operator teams. In fact, according to a recent survey, 80% of Australian miners indicated that they have already—or imminently plan to—take maintenance in-house.³

Reasonable or rash?

On the one hand, these responses make sense. By retaining management control over a wider range of services, including construction, companies are more likely to keep a handle on costs, improve efficiencies and ensure alignment between operational targets and objectives.

On the flip side, pressuring suppliers may have long-term deleterious effects. Some contractors may compromise their service quality levels in an effort to provide services at increasingly lower costs. Others may be forced out of business. Although this type of consolidation would likely remove underperforming contractors from the market, it could also create a vacuum that mining companies will scramble to fill once the market picks up, and could potentially put companies at the mercy of the few larger contractors that will remain after the shake-out.

Making informed decisions

To avoid these unintended consequences, mining companies should aim to base their decisions around insourcing and outsourcing on solid data. The key is to measure the upside of insourcing, including cost reductions and improved control, against the potential downside, which may include service fluctuations or longer-term implications, to determine the optimal model for their operations.

Similar care should go into decisions around the extent to which supplier costs should be squeezed. In an effort to foster relationships with world-class suppliers, mining companies should consider defining KPIs beyond safety and cost measures. They should also create metrics around their contractors' processes, internal controls, recruitment practices and values. By developing these kinds of win/win relationships, miners may be better able to embed a cost saving culture into the entire outsourcing process to prevent the inevitable cost run-ups of the next mining boom.

For their part, contractors should take steps to better understand their own businesses so they can make informed decisions around the extent to which they are capable of cutting costs or meeting a wider range of performance metrics. In some cases, consolidation among suppliers may deliver improved economies of scale. In others, contractors may be able to justify higher fees based on proven performance and a history of on-time, on-budget delivery. Either way, the winners of this game will likely be those suppliers not only with strong balance sheets but with diversified revenue streams.

1

Strategies that buck the trend

In an environment of zero tolerance for underperformance, companies must rethink not only their traditional approaches to mining operations, technology deployment, and trading and marketing, but also their underlying cultural approach to costs. Here are some ideas for achieving operational excellence:

Get serious about data analytics

In recent years, companies have begun using analytics to reduce the costs associated with operations, maintenance, safety and supply chain management. As data analysis becomes increasingly sophisticated, opportunities for even greater efficiency arise. From a talent management perspective, companies can now leverage vast sets of employee data to make more informed workforce planning decisions. They can use real-time information on the state of equipment to improve maintenance schedules and asset performance. They can consolidate data from disparate sources to streamline supply chains and enhance mine planning. They can continuously monitor mineral asset portfolios to pinpoint commodity and cost movements that can affect profitability. Using predictive project analytics, they can vastly reduce cost overruns to improve capital project outcomes. By harnessing big data in real time, some companies are even optimizing global mineral processing from a single location. In time, operational excellence will likely hinge on an organization's ability to effectively interpret the massive stores of data it collects.

Embrace innovation

True productivity can only be achieved by finding ways to cut the industry's largest expenses, not by simply reducing costs around the edges. For most operators, that means tackling energy costs. New technologies, greater reliance on renewable energy sources and electrification all play a role in helping make this shift.

Be transparent

To drive greater operational control, mining companies should aim to create transparent information flows between head office and their disparate mine sites by using enterprise-wide operational management systems. With real-time reports, intuitive dashboards and robust business intelligence systems, companies can strengthen enterprise-wide accountability, make more informed strategic decisions and ensure each mine is operating as efficiently and effectively as possible.

Revisit your culture Go modular

Operational excellence requires an enterprise-wide view of operations. Rather than undertaking isolated initiatives at individual mines, companies need a common language and approach to drive operational excellence across the organization. This takes more than a doctrine; it also requires a cultural transformation.

2 Innovation is the new key to survival It's about more than just cost control

Boost balance sheets In an effort to shore up capital, mining companies are going back to basics—streamlining inventory, optimizing working capital, divesting non-core assets and strengthening their focus on portfolio management. Others are taking a cue from the manufacturing sector by pursuing lean operations, eliminating excess expenses accumulated during the super-cycle and outsourcing non-critical functions.

Streamline management and governance structures To avoid operational missteps, many organizations are streamlining their lines of accountability to gain greater visibility into the performance of particular commodity portfolios, existing mine plans and previous capital commitment plans in light of changing requirements. The aim is to move beyond basic cost cutting exercises by reducing internal red tape around a broad range of systems and processes—from mining methods and planning to quality, health and safety, and environmental performance.

Prepare for anything In a world where black swans appear more regularly than ever, mining companies need robust scenario planning capabilities that position them to adapt to a wide range of potential future outcomes. More sophisticated scenario planning approaches now allow companies to calibrate their response plans by using techniques such as econometric analysis (the application of statistical techniques to analyze economic data), risk-adjusted forecasting and sensitivity graphs capable of monitoring external elements (such as commodity and currency price movements) that may influence a project's viability.

As with years past, mining companies continue to face a host of untenable pressures. Ore grades continue to decline, costs continue to rise, labor is becoming more militant, labor are more demanding. In light of these realities, incremental improvement is no longer enough. That explains why many leading organizations are rallying behind the innovation imperative.

At its most basic, innovation presents an optimal strategy for controlling costs. Companies that have invested in such technologies as remote mining, autonomous equipment and driverless trucks and trains have reduced expenses by orders of magnitude, while simultaneously driving up productivity.

Yet, gazing towards the horizon, it is rapidly becoming clear that innovation can do much more than reduce capital intensity. Approached strategically, it also has the power to reduce people and energy intensity, while increasing mining intensity.

Capturing the learnings

The key is to think of innovation as much more than research and development (R&D) around particular processes or technologies. Companies can, in fact, innovate in multiple ways, such as leveraging supplier knowledge around specific operational challenges, redefining their participation in the energy value chain or finding new ways to engage and partner with major stakeholders and constituencies.

To reap these rewards, however, mining companies must overcome their traditionally conservative tendencies. In many cases, miners struggle to adopt technologies proven to work at other mining companies, let alone those from other industries. As a result, innovation becomes less of a technology problem and more of an adoption problem.

By breaking this mindset, mining companies can free themselves to adapt practical applications that already exist in other industries and apply them to fit their current needs. For instance, the tunnel boring machines used by civil engineers to excavate the Chunnel can vastly reduce miners' reliance on explosives. Until recently, those machines were too large to apply in a mining setting. Some innovators, however, are now incorporating the underlying technology to build smaller machines—effectively adapting mature solutions from other industries to realize more rapid results.

Getting bold

Re-imagining the future

At the same time, innovation mandates companies to think in entirely new ways. Traditionally, for instance, miners have focused on extracting higher grades and achieving faster throughput by optimizing the pit, schedule, product mix and logistics. A truly innovative mindset, however, will see them adopt an entirely new design paradigm that leverages new information, mining and energy technologies to maximize value (see graph on opposite page).

Approached in this way, innovation can drive more than cost reduction. It can help mining companies mitigate and manage risks, strengthen business models and foster more effective community and government relations. It can help mining services companies enhance their value to the industry by developing new products and services. Longer-term, it can even position organizations to move the needle on such endemic issues as corporate social responsibility, environmental performance and sustainability.

Traditionally, companies approach strategy-setting by determining which trade-offs they must make to achieve their goals. True innovators think way beyond the trade-offs. Innovation is about creating breakout performance by changing the rules of the game. It's not about implementing best practices; it's about devising new practices.

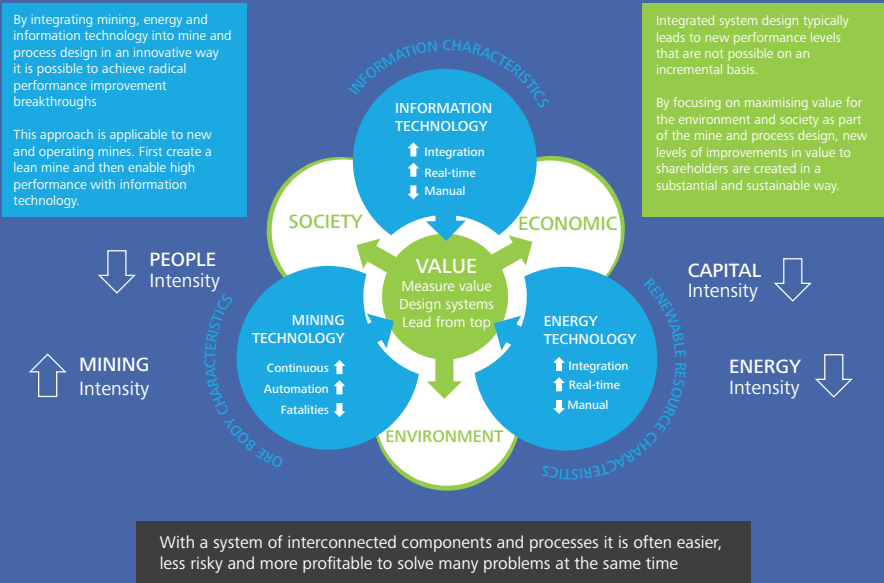
Karla Velasquez, Mining Leader, Deloitte LATCO (Peru)

For decades, mining companies have understood the imperative to adopt technologies to accelerate automation and reduce fatalities. That explains why leading companies continue to look at new technologies—such as nanomaterials, 3D printing, modular design, robotics, bioengineering and alternative haulage—in an effort to further improve operational performance.

In today's world, however, value is measured on more than these metrics. To improve long-range planning and forecasting, companies must explore emerging information technologies, such as cloud computing, embedded logic, sensors, GPS systems, cyber security, big data, simulation modeling and 3D visualizations. To reduce emissions and accelerate electrification, they must also look towards energy technologies such as advanced materials, energy storage, smart grids, renewable energy conversion, superconductivity, non-detonating solutions and high-energy lasers.

Taken together, these technologies can help companies reduce people, capital and energy intensity, while increasing mining intensity.

By integrating mining, energy and information technology into mine and process design in an entirely innovative way, miners can achieve radical performance breakthroughs. They can improve safety standards, save money, optimize their energy mix and vastly enhance operational performance. To achieve these big breakthroughs, however, miners must articulate a bold vision of the future, one that hinges on achieving radical leaps rather than incremental shifts.



2

Strategies that buck the trend

As mining companies begin to apply innovation to their full operational ecosystem, they stand to realize significant gains. Here are some ways to accelerate this process:

Embed innovation into corporate DNA

If companies believe innovation is the key to their future, innovation programs should feature as a cornerstone of their strategy. Innovation can start small, but it needs commitment from senior leadership, focus and dedicated resources, a systematic approach and a clear vision on how it will complement or align with existing operational excellence programs.

Think big, test small, scale fast

Because mining companies typically prefer to test new systems at scale, they frequently take a narrow focus to system upgrades to keep costs constrained. Innovators turn this formula on its head by looking at the components of an entire system to uncover the biggest opportunities for structural improvement and then running small tests to establish proof of concept. This allows companies to cost-effectively eliminate operational risk before rapidly scaling to realize big gains. With modular technologies, the advantages conferred by economies of scale disappear, allowing companies to think big, test small and scale fast.

Leverage emerging technologies

New technologies hold the promise of vastly altering mining sector fundamentals. 3D visualization tools can help companies track their people, equipment and changing environment at each mine site, in real time. New mineral processing technologies are emerging to reduce the safety hazards associated with gold extraction and to unlock previously uneconomic mineral deposits. Social media is helping companies to facilitate electronic booking at mine sites and enhance employee access to information, no matter where they're located. Some companies have even launched SMS messaging platforms as a way to foster two-way communication with employees, solicit feedback and improve workforce engagement. New production and logistics technologies also promise to reduce both the use of natural resources and emissions. For instance, when up and running, Vale's S11D project's mine and plant in Carajás, Brazil will consume 93% less water, use 77% less fuel and produce 50% less greenhouse gas emissions than a comparable operation using conventional methods.⁴

Become part of an innovation ecosystem

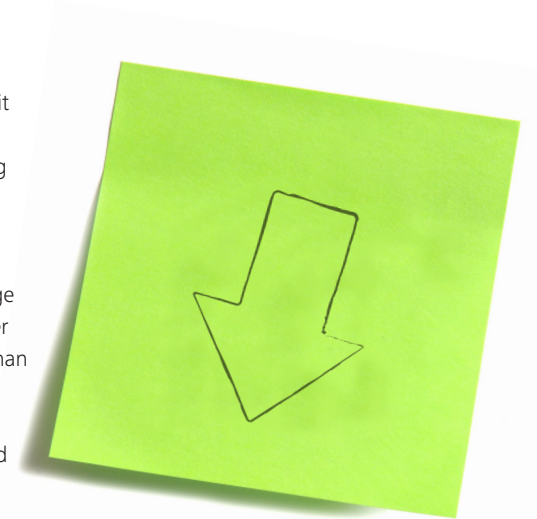
Organizations cannot develop an innovation strategy in isolation. To drive true industry change, miners should consider entering alliances or joint ventures with technology providers and other companies already taking steps to harness organizational intelligence. By pooling talent, ideas and insights, collaborative organizations heighten the odds of identifying innovation breakthroughs capable of benefiting all industry players.

Prepare for new operational realities

By fundamentally altering industry realities, innovation often threatens the status quo. This mandates mining companies to think through its implications in advance. As companies rely increasingly on automation, for instance, they will likely require fewer mine workers. While this will heighten safety, it can also raise community concerns in countries where mining is seen as a creator of employment. As such, the mine of the future must consider other ways to create jobs by using its purchasing power to spread mineral wealth and provide social benefits across a broader community ecosystem.

3 The new energy paradigm Reducing project power costs

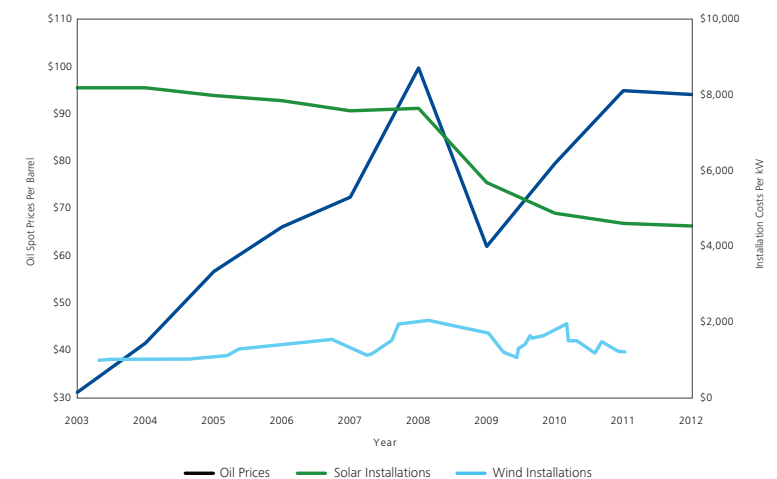
Infrastructure constraints are not a new theme in the mining sector but, when it comes to energy supply, shortages are becoming more pronounced. Chile's mining industry, for instance, increased its energy consumption by 59% between 2001 and 2011.⁵ In comparison to other countries, Chilean mining projects consume an average of 25 megawatt hours (MWh) of energy per tonne of material processed, 10% higher than the world average.⁶



Other countries, however, seem determined to catch up. Across South America, high-altitude mines are seeing ballooning capital expenditures as their energy costs to pump water to greater heights mount. In the last decade, Australia's mines incurred a 60% rise in energy use.⁷ Zimbabwe's annual electricity demand of 2,200 MW vastly exceeds its current 1,200 MW production.⁸ Zambia also runs at a serious power deficit, while energy costs continue to escalate. In fact, global diesel prices have been climbing by 10% to 15% each year to the point that 30% of mining operating costs now go to energy.⁹

At the same time, the dangers associated with reliance on traditional sources of energy are growing. As mine sites become more remote, the environmental hazards of shipping diesel over long distances and rough terrain increase. The World Health Organization also recently found diesel particulate emissions to be carcinogenic, spurring companies to find safer alternatives.

Chart 3: Cost of solar and wind installations vs. oil prices, 2003 to 2012



Source: Adapted from Boliger & Wiser (2011); Barbose, Darghouthy, Weaver & Wiser (2013); U.S. energy Information Administration (2013)

Strategies that buck the trend

As mining companies consider a new approach to energy as a way to reduce costs and improve environmental performance, they should consider a range of issues.

The case for renewables grows

To be sure, this is not the first time mining companies have considered switching to renewable sources of energy. Until recently, however, renewables were seen as overly-expensive, unreliable and unproven. Now, all that is changing.

On the cost front, the capital costs for renewables have dropped considerably in recent years, pushing many alternatives below the price of diesel. This is especially true for solar installations, whose costs have fallen by close to 50% over the past decade (see chart 4).

More significantly, the all-in costs for renewable energy installations are hard to beat. Although renewable installations have higher up-front capital costs than diesel or gas plants, lower operating costs combined with the ability to lock in fixed energy prices significantly push down total project costs, resulting in fuel savings of anywhere from 10% to 40%.¹⁰

New technologies are also addressing concerns around power intermittency. Innovations in battery technology enable power storage, data analytic solutions help companies synchronize workflow to meet the availability of renewable energy, and hybrid systems, like diesel linked to a renewable energy source, are already being used successfully to achieve predictable power reliability.

Finally, while the technologies associated with renewables will certainly continue to evolve, renewable power will increasingly become a normal component of the energy mix, particularly for remote projects, enabling companies to follow a proven integration process. Best practice examples already abound. For instance, Barrick Gold was the first mining company to build a wind farm in Chile, Rio Tinto built a wind farm in Canada's Northwest Territories and Codelco set up a solar plant in Chile.

The next frontier

TAs this trend makes clear, the business case for renewables is getting stronger—and it goes well beyond cost. Beyond the financial benefits, transitioning to renewables allows mining companies to enhance their environmental stewardship, leave a lasting legacy for local communities, improve safety standards and create sustainable and differentiated employment opportunities through economic diversification.

Challenges, of course, remain, including concerns around financing, technological performance and integration. Yet, as the benefits of renewable energy come to outweigh its risks, the groundswell of adoption is only set to rise.

With each passing year, energy costs in the mining sector become more prohibitive. These include rising costs for diesel fuel due to falling grades and longer haulage distances, building long-distance transmission lines to connect to local grids, transporting fuel to high-altitude sites and installing appropriate ventilation systems. Renewable energy alternatives can help resolve these issues and wrestle runaway costs back under control.

Manage your energy as a portfolio

While many organizations track energy use at a mine level, they lack the micro-level detail needed to fully understand what drives demand. Without this more detailed view, they will find it difficult to identify opportunities to use different technologies, fuels or systems. To make intelligent changes on either the supply side or the demand side, companies will need to roll up their disparate sources of data and manage it as a portfolio within the organization.

Consider a broad range of renewable alternatives

Although wind and solar installations may be most familiar to mining companies, other renewable alternatives exist, including hydroelectricity, biomass and geothermal energy. Companies looking for alternatives to traditional fossil fuels should consider their full range of options—along with the viability of hybrid systems—to determine which solution makes best sense. Some factors to consider include the availability of specific renewables, the amount of energy required, the availability of existing local systems and times of operation.

Don't forget unconventional fossil fuels

The shale oil boom in the U.S. has spurred the use of biofuels and liquid natural gas (LNG) as more economic alternatives to diesel. Using LNG to fuel trucks, power shovels, haul fleets and other energy-intensive equipment can help reduce diesel consumption and result in a lower emissions profile.

Engage early

As with any major infrastructure project, developing a renewable energy facility requires buy-in from various levels of government and local communities. On the plus side, the lighter environmental footprint of these installations, combined with their ability to leave a lasting legacy for local communities, tends to make them more palatable to key industry stakeholders. That said, companies should avoid underestimating the time commitment required to obtain local permits and approvals and negotiate with key stakeholders. Starting early and communicating often remain as critical here as they do elsewhere.

Explore all available financing options

To help defray the up-front costs associated with building renewable energy facilities, mining companies should explore all available financing options. Some governments and regulatory authorities provide financial subsidies, accelerated depreciation and tax credits for renewable infrastructure projects. There is also a range of renewable energy developers and suppliers prepared to partner with miners to deliver on their renewable energy needs—freeing mining companies from the responsibility of building or operating renewable energy assets. For their part, pension funds and private equity firms that finance long-term infrastructure projects may also be interested in investing in this space.

4 Dwindling project pipelines Walking the supply/demand tightrope

It's long been a given in the mining sector that companies can't control demand; they can only control supply. That explains why production hit unsustainable highs while commodity prices were flying. It also explains why miners have tried to ramp down supply in today's more subdued pricing environment.

In an effort to boost shareholder value, control runaway costs and return to productivity, companies across the sector are shutting down marginal projects, rationalizing portfolios and divesting poorly-performing assets. As of April 2014, for instance, 21 projects had been removed from Australia's Bureau of Resources and Energy Economics' (BREE) Major Projects list after extended periods of inactivity or announcements that they were on hold. Feasibility stage projects were also almost AUS\$40 billion lower than just six months previous.¹¹

Several of the major companies have decided to narrow their focus to only a small handful of commodities, leaving the development of other commodities to more specialized producers. Given the high incidence of global project cost overruns, environmental and local community challenges to new mine developments, and a slumping commodity price environment, most operators have also pulled out of greenfield development, choosing to buy development-stage or near-operation projects rather than build from the ground up. As a result, project pipelines have begun to dwindle.

I suspect some areas of the mining industry may be heading towards a cliff. Several organizations have shut down their development teams and cut back on development projects, putting a strain on the project pipeline, particularly in sustained lower commodity price regimes. Over time, this could see us deplete current reserves, resulting in a reversal of the current supply/demand imbalance.

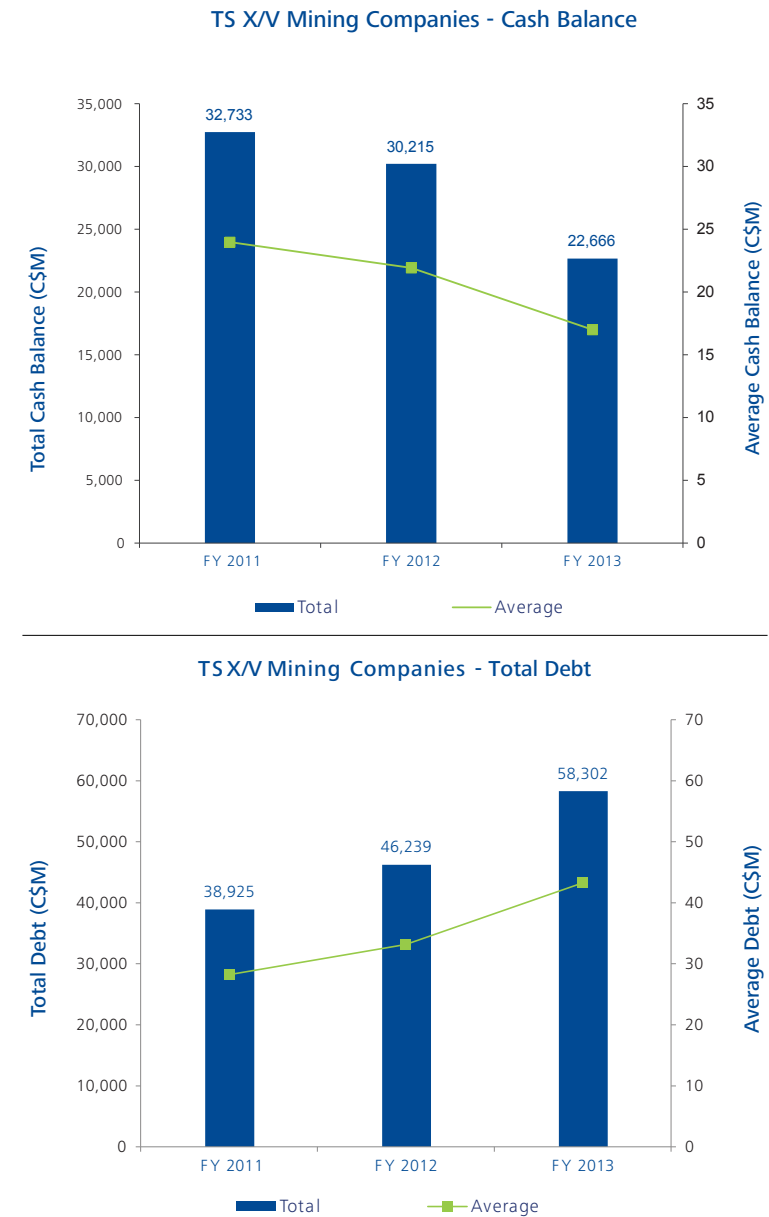
Is future supply at risk?

To be sure, these decisions all make sense from a business perspective. Yet, combined with the critical lack of financing available to many industry players, they may herald a pipeline obstruction that has the potential to place future supply at risk.

With many juniors struggling to simply keep the lights on, exploration activities are declining. Globally, the juniors' total exploration budget for nonferrous metals (which excludes iron ore, aluminum, coal, and oil and gas) fell 29% between 2013 and October 2014, on top of the 39% decline it experienced in the year previous. The majors, too, saw nonferrous exploration budgets drop by 25% in 2014, from US\$15.2 billion in 2013 to US\$11.7 billion.¹² Notably, this is taking place at a time when world-class greenfield project options are in short supply.

Given the amount of time it takes to move from exploration and development to production, this exploration slowdown could create a supply imbalance in the next decade or two. This will only be exacerbated as current reserves are depleted, and could ultimately tip the industry back into another unsustainable production cycle.

Chart 4 Distressed situations – strained balance sheets



Source: Capital IQ, Deloitte, Canada
Note: All TSX/TSX-V metals and mining companies.

4

Strategies that buck the trend

To help smooth out the mining industry's traditional boom and bust cycles, companies should think through the long-term implications of today's capital project prudence. Some strategies to consider are to:

Balance short-term expectations with long-term needs As history shows, mining companies need to find a better balance between meeting short-term investor and analyst expectations and maintaining project pipelines capable of replacing depleting reserves and meeting long-term demand. For instance, by using predictive project analytics, companies can make more informed decisions regarding which projects to pursue and which to abandon. Using emerging performance metrics, like 'cost per percent recovery' and 'fuel to commodity price ratio', companies can also gain clarity around the perennial question: to dig or not to dig?

Partner There are opportunities for companies to create strategic partnerships with other mining firms to share risk and capital while leveraging each other's skills and infrastructure. Many of these partnerships will make sense at regional levels, stop short of mergers and result in firms managing a portfolio of joint ventures to ensure a future pipeline of development projects.

Think local As mining companies look for ways to produce more economically, they may choose to shift from global towards more local production. Rather than spreading themselves too thin across numerous locations, companies may prefer to gain scale at local mines, which can enable them to rationalize supply chains, mine operations and labor forces.

Keep a finger in greenfield exploration Given their process flexibility and entrepreneurial approach, junior mining companies are typically ideal explorers. With juniors struggling to survive, however, it may make sense for major companies to consider investing a small portion of their portfolios in greenfield exploration. By leveraging techniques like simulation, technical modeling and seismic technologies borrowed from the oil and gas industry, rather than engaging in traditional drilling, miners can identify mineral-rich deposits more cost effectively while simultaneously helping the industry to maintain a sustainable discovery pipeline. Mid-tier players also have a role to play in this regard by potentially making targeted investments in some of the key commodities that larger companies may be neglecting. If the market is nearing the bottom of its cycle, timing of these investments may be particularly ripe for companies willing to bet against current trends.

5

Financing's great disappearing act

The implications reverberate across the market

It's often said that we've reached the top of a market when taxi drivers start sharing stock advice. Is it possible, then, that the bottom of a market could be linked to the number of companies backing in to small cap mining shells as a way to become publicly-listed?

As of August 2014, at least six such backdoor listings on the Australian Stock Exchange involved minerals companies acquiring technology companies, with a further six similar transactions pending.¹³ Roughly a dozen Canadian junior miners have also taken this route, shifting not into technology but into medical marijuana.¹⁴

From bad to worse

The trend is emblematic of the mounting struggles mining companies face to raise capital. With global mining stocks down 43% since 2010,¹⁵ equity investors remain leery of the sector. As a result, 2013 marked one of the worst years in history for new mining listings (see chart 5). Chinese investors, once the industry's prime financiers, have become extremely selective in their capital investments. And traditional lenders cooled off on the industry years ago, and have yet to return in any great number with anything approaching favorable terms. The only bright spot from a financing perspective seems to shine on base metal projects that have strong deposit characteristics, are located in regions with stable political and socio-economic dynamics, and are run by experienced management teams.

The lack of capital available to juniors may force a dramatic industry consolidation. Some projects will need to be shelved. Most development-stage projects will be put on hold. And many distressed companies should consider ways to strike a merger of equals. The industry should also prepare for a shakeout. Too many companies are already running on borrowed time.

Nikolay Demidov, CIS Mining Leader, Deloitte CIS (Russia)

Strategies that buck the trend

In a desperate attempt to stay afloat, junior mining companies may need to consider less traditional—and less palatable—financing alternatives. Here are some options:

Woo foreign investors

Given the dire state of the industry's access to funding, it may be time for mining companies to more actively seek out foreign investors. The days of waiting to be noticed by a Chinese SOE are long over (if they ever existed). The time is now ripe for miners to proactively woo investors who may have the wherewithal to help finance the industry's growth by striking diplomatic missions and building relationships in less traditional locales across the Middle East and non-Chinese Asia. The key is to understand how these financiers operate and how they do business, as this varies by region and country.

Pool resources

As junior miners are pushed to the wall, many should consider ways to rationalize operations. Strategies can include pooling talent resources to reduce salaries, sharing infrastructure, partnering to develop adjacent properties or similar projects, and consolidating.

Explore alternative financing options

Given lack of access to traditional sources of funding, many distressed companies are already exploring less traditional alternatives. These include offtake deals, royalty and metal streaming arrangements, equipment financing and high-yield debt. Convertible debt structures are also emerging, but juniors should beware: failure to lift share prices fairly rapidly could see them handing over corporate ownership.

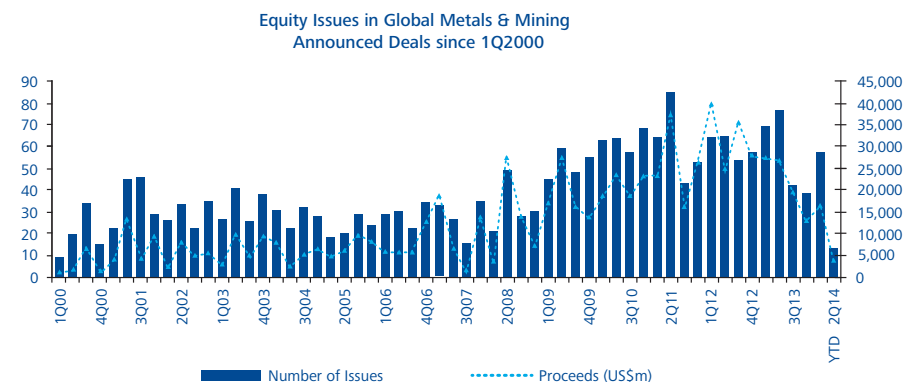
Position for private equity

Although private equity players continue to eye the mining sector, few investors are committing funds. If the market is, in fact, bottoming out, however, this situation is likely to change. With so many distressed assets in the junior and mining services space, private equity interest in mining is bound to pick up, at least in the short-term.

While this situation is difficult for large and mid-tier producers, it is proving fatal for a huge swath of junior miners and mining services companies. Between June 2013 and September 2014, nearly 200 Australian mining companies filed for bankruptcy.¹⁶ Of the 1,731 juniors covered by one Canadian mining analyst, 881 had less than CAD\$200,000 of working capital as of May 2014, and more than 700 had negative working capital.¹⁷ Juniors in other countries, from Brazil and Chile to the UK, South Africa and Russia, are experiencing similar difficulties.

Although some would argue this trend may help to rationalize the market, this mindset fails to take into account the critical link juniors play in the larger mining ecosystem. The loss of explorers, in particular, could vastly alter industry production forecasts—and even global economic performance—especially as most major miners no longer engage in their own exploration. The upshot? Insurmountable financing hurdles may end up taking a more severe toll than many miners currently imagine.

Chart 5: Equity issues in global metals and mining: announced deals since 1Q2000



Source: Thomson Reuters

6 Survival of the juniors Navigating troubled waters

The environment for junior miners remains tough. With mining's total return to shareholders still underperforming other sectors (see chart 6), companies are under mounting pressure to boost short-term profits. In some ways, this is impelling miners to ignore current investments that may deliver longer-term upside in favor of dodging investor ire by remaining cash positive.

Over the past 18 months, this environment has pushed many junior companies into survival mode. To remain afloat, some juniors have decided to cut deep into their organizations, waive current expenditures and launch new dividends, all while trying to maintain the integrity of their investor reporting systems. They are also desperately casting around for new sources of capital.

Finding the upside

Attempts to boost cash by selling, however, will likely fail to garner full valuations given the funding constraints faced by today's potential buyers. Most transactional activity in the recent term has been confined to the acquisition of exploration assets by the majors, or strategic bolt-on deals. Once the lifeblood of the industry, growth through acquisition has seemingly dried up. Whereas US\$103 billion worth of mining deals were concluded in 2007, only US\$12 billion of deals took place in 2013.¹⁸

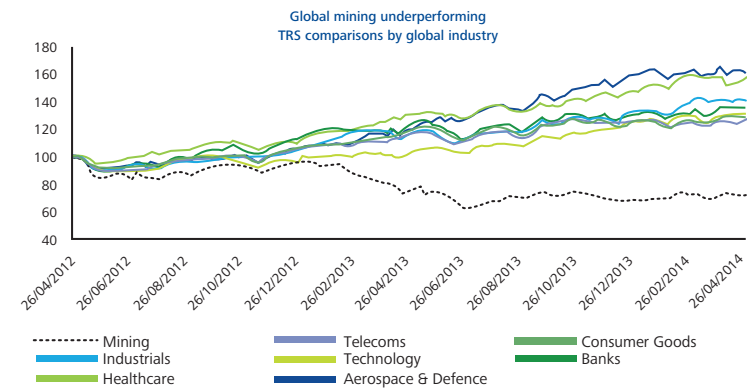
This may change, of course, as the situation of junior companies becomes more dire. At some point, juniors may be forced to sell at any price. In fact, global mining deals picked up in the first half of 2014, during which time 117 transactions were announced totalling US\$13.2 billion. That's up 56% from the same period in 2013. That said, average price per transaction dropped roughly 26% for the year and deal values sank almost 50%¹⁹ — underscoring sellers' gathering willingness to accept lower prices.

If this downside has an upside, it likely rests with the small handful of funded mid-tier players, and with private equity investors, who now have access to both the majors' spinoffs and the juniors' distressed assets. This could have the potential to shift industry ownership structures in the coming years.

Juniors are still mired in cost containment and productivity improvement initiatives. Given how close some companies are to the wall, they're actively seeking strategies to lower their cost profile. Companies are still struggling to raise money and we're sure to see more retrenchments in this area before these issues are resolved.

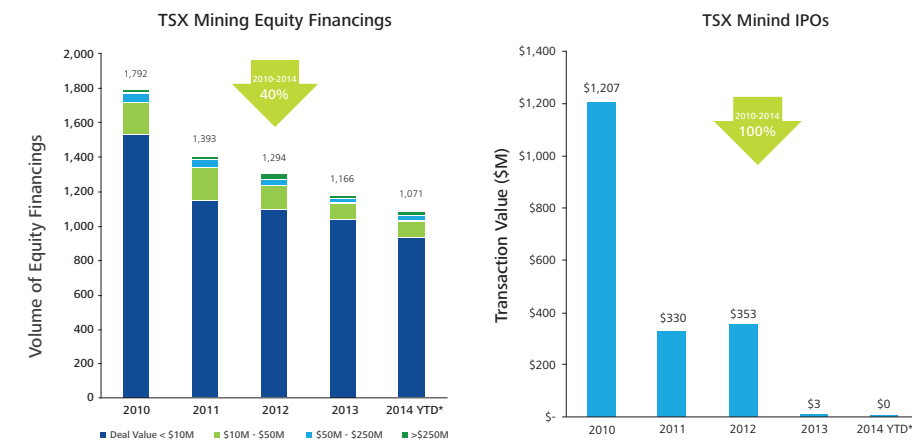
Christopher Lyon, Mining Leader, Deloitte Chile

Chart 6: Total return to shareholder comparisons by global industry



Source: Datastream

Chart 7: Continued financing challenges affecting M&A



*All announced and closed TSX/TSXV metals and mining deals as of Nov 3, 2014. Source: Capital IQ, Gamah International 2013, Deloitte Canada

6

Strategies that buck the trend

With mining sector deals poised on the edge of potential recovery, juniors should take steps to mitigate associated risks and leverage emerging opportunities. Here's how:

Get your assets in order

Many companies are currently looking through their portfolios to determine which assets are likely to be most productive and which would deliver better value through a sale. The challenge is that most potential buyers lack access to the funds needed to pay full value for these assets, creating a transactional stalemate. Many majors are still pinning their hopes on the ability of mid-tier miners to finance these acquisitions. Given the plethora of assets poised to flood the market, however, serious buyers can afford to be choosy—a factor that should impel would-be sellers to put their best foot forward before entering the transactional fray. Preparatory steps may include commissioning an independent asset valuation to determine fair market value; preparing disclosures around mineral rights, environmental issues and available reserves; and identifying the most favorable times to approach the market.

Consider all your options

With so many junior companies staring into the abyss, flexibility is becoming the name of the game. That explains why management is becoming sanguine about their full range of options, from partnership, joint ventures and mergers to sale, partial sale (such as royalty streaming arrangements) and consolidation.

Prepare for the upside

While many companies are currently taking the view that it's time to "batten down the hatches," it's important that they begin preparing for a potential market turn over the next 12 to 18 months. As this turn takes place, companies will once again find themselves competing for capital and talent. Those that succeed over the long-term will be those that are ready to exit the starting blocks first. That's why management should already be taking a longer view of the market, preparing their systems and positioning for the upside.

7

Seeking new skillsets

Shifting industry realities call for a new generation of talent

For years, the mining industry has waged a war for talent due to the lack of resources available to fill existing and forecast demand. Despite shifting market conditions, demand remains for a range of specialized skills which are still in short supply.

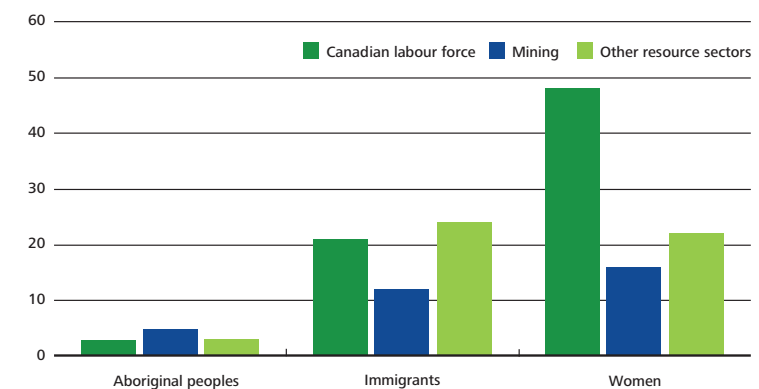
For instance, at the board level, in the wake of recent capital allocation mishaps and massive industry impairments, companies of all sizes are putting more emphasis on strengthening their governance and board structures. Directors are now expected to accept greater responsibility, make broader strategic contributions and hone a growing array of more specialized competencies. This is putting mounting pressure on directors, who suddenly find themselves improperly trained to cope with business strategy rather than the compliance matters that have been their traditional domain.

Beyond the boardroom

Similar expectations are inundating the suites of senior leadership and executives. Following last year's widespread changing of the guard, mining companies are putting greater emphasis on their management systems and controls, and looking for strategies to enhance their decision-making processes. For many, this is translating into an emphasis on developing more inclusive teams that demonstrate greater geographic, ethnic and gender diversity.

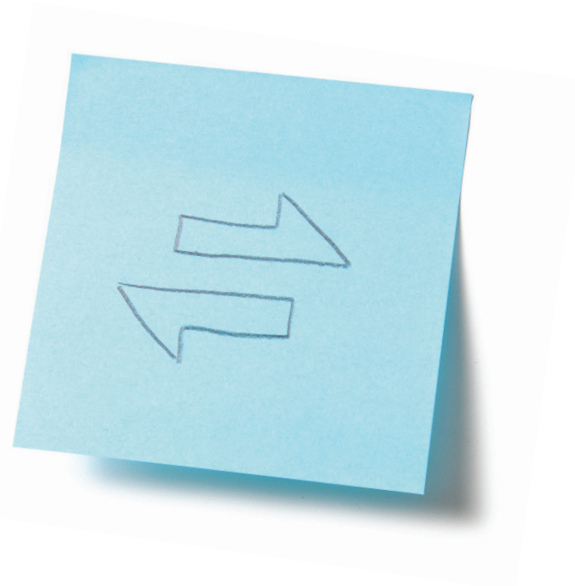
At the operational level too, new types of skills shortages are emerging. Beyond the ongoing demand for mining engineers and geo-metallurgists, companies embracing the innovation imperative are now competing for scarce technological talent against sectors that traditionally have more allure than mining. This is making it difficult for mining companies to attract people to the industry at a time when they are more inclined to seek positions in other sectors. The generational divide in the industry doesn't help either. Senior resources are competing with juniors for entry-level jobs, pushing the younger generation away from the industry. To draw these people into the fold, mining companies must consider ways to make the sector more attractive.

Chart 8: Diversity in mining



Source: Mining Industry Human Resources Council, 2013; Statistics Canada, 2012

Last, but by no means least, the educational sector may also be contributing to the industry's skills gap. Numerous developing nations, for instance, require miners to hire a certain percentage of indigenous workers, many of whom are sourced from local universities. While most of these employees have the talent to fill available jobs, they lack the level of training provided by the world's leading educational institutions. And even those institutions may be falling short, at least in their ability to-date to attract a diverse range of applicants, including women and people of different races.



Many mining companies are struggling to attract specialized skills, not only at the operational and management levels, but also in the boardroom. Failure to bolster these missing skillsets could lead to excessive reliance on a dwindling pool of qualified talent—weakening operational performance, compromising effective board constitution and complicating corporate efforts to achieve greater diversity.

Nicki Ivory, Mining Leader, Deloitte Australia

7

Strategies that buck the trend

Attracting new skills to the sector will take more than long-term thinking. It may also require companies to adopt a different way of thinking about how to attract, retain, manage and develop talent. Here are some ideas to consider.

Commit to diversity

Although research shows organizations with diverse teams tend to outperform those without, the case for diversity goes beyond financial metrics to encompass a company's values, aspirations and culture. That's why organizations committed to getting serious about a diversity agenda require strong leadership sponsors, a willingness to uncover unconscious biases and a plan for long-term change. By conducting a third-party assessment into their diversity and inclusion programs, mining companies can gain a more holistic understanding of the ways in which they can improve the recruitment, coaching and development of both traditional and non-traditional candidates.

Explore new systems

As mining companies work to both develop and attract people with greater diversity and wider skillsets, particularly in the technology arena, they may find themselves managing an increasingly global talent pool. This may require an investment in cloud-based talent management systems and more sophisticated workforce planning tools. Unlike traditional HR systems that record administrative details such as an employee's personnel file, salary and vacation pay, talent management systems can help companies identify looming talent gaps, manage knowledge sharing and succession planning, and both structure and track competitive total

Get competitive

Talent acquisition and access has changed in fundamental ways due to shifts in global talent markets, skills shortages, new ways of working and the growing importance of social media. To compete for talent in high demand, companies should treat recruiting like marketing, extend recruiting targets to new and more global talent pools, and use big data tools to locate and assess high-quality candidates.

Invest in training

Many mining companies already contribute to community education as part of their local stakeholder commitments. It may be time, however, to make more targeted training investments in an effort to attract a more diverse group of people to the sector, bolster the skillsets in highest demand and foster greater parity among educational institutions in both developed and developing nations.

8 Riding the waves of geopolitical uncertainty From best guess planning to embracing uncertainty

As one of the world's most global industries, the mining sector has long kept an eye on geopolitical movements. Yet, as the pace of change accelerates, it's getting harder to predict the impact of these trends.

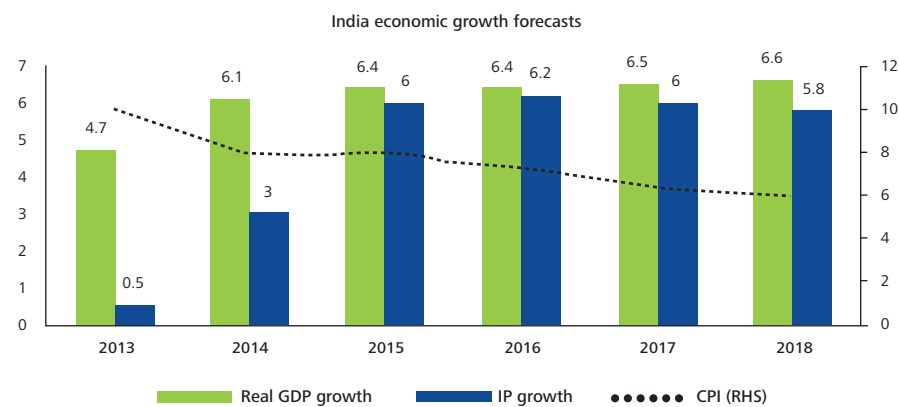
Chinese investment, for instance, which has long fueled the resource sector, appears to be dwindling. Failure of roughly 80% of China's overseas mining deals has seen the country pull back on resource investments in countries throughout Africa, South America and the Middle East.²⁰

In an effort to combat rampant pollution, beginning January 1, 2015, China will also be implementing a ban on "dirty" coal, which could push the nation's coal imports down by as much as 15%.²¹ This is expected to affect more than half of Australia's thermal coal exports to China.²²

At the same time, slowdowns in industrial production, fixed asset investment and retail sales are already threatening China's 7.5% GDP growth target, contributing to ongoing commodity price weakness.

On the flip side, China continues to invest in assets it believes can contribute positive returns. In April 2014, a Chinese consortium purchased a Peruvian copper mine from Glencore Xstrata for \$5.85 billion.²³ China is also expanding its footprint in Africa, recently becoming the continent's largest trading partner.²⁴ Despite its slowing growth profile, China is expected to become the world's largest economy by 2025.²⁵ Although it can't sustain accelerated growth indefinitely, rumours of its imminent demise are likely exaggerated.

Chart 9: India economic growth forecasts



Source: Economist Intelligence Unit

A wider lens

There are also indicators that other countries may take up some of the slack. Following a rocky year, India's economy is finally stabilizing. Growth forecasts are up to 5.5% for 2015 and as much as 6.5% from 2015 through 2018²⁶(see chart 9).

The growth of other Asian countries also cannot be discounted. Thanks to targeted infrastructure investment, rising domestic demand and structural economic reform, both Indonesia and the Philippines are forecast to grow by roughly 6% annually over the next five years. Malaysia and Thailand too have projected GDP growth rates of 5.1% and 4.9% respectively. Countries like Myanmar, Laos and Cambodia are opening their economies to the outside world, heightening their appeal to foreign investors in the process. Growth forecasts for all three countries range from 6.8% to 7.7% over the next five years, trending way above the global average.²⁷

Push and pull

Looking beyond Asia, other geopolitical factors continue to influence the mining industry. Many countries in Africa, for instance, have been working to attract mining investment. In an effort to meet mounting demands for improved roads, railways, ports, electricity and communications, countries across the continent are engaged in over 330 new infrastructure construction projects, valued at approximately US \$223 billion.²⁸

Despite these efforts, many African countries continue to fall short in the areas of good governance and the consistent application of civil and tax laws. The recent Ebola outbreak in West Africa has also injected a rising level of uncertainty into the viability of doing business in the region, at least in the short-term.

Fraud also remains a significant issue, not only across Africa but in South America, Russia and the Philippines as well. Although mining companies have taken major strides in implementing anti-corruption programs, opaque government bureaucracies in key regions continue to hamper their ability to comply with increasingly stringent global regulations.

Given mounting levels of volatility and change, miners need to take a broader view of risk management and scenario analysis. This includes taking a much greater range of variables into account to inform their decision making.

John Woods, Mining Leader,
Deloitte Southern Africa (Zambia)

Taken together, it is becoming eminently clear that mining companies face rising regulatory, geopolitical, economic and technological uncertainty. To succeed in this volatile environment, they will need to step up their forecasting, scenario planning and risk management capabilities if they hope to navigate the volatility augured in years to come. While the energy industry seems to have made these strides, mining lags. With volatility the new norm, however, embracing uncertainty and finding ways to manage it will be key to success.

Strategies that buck the trend

Although mining companies cannot control political movements, they can develop response strategies to navigate them:

Lobby for policy clarity

While mining executives do not set national policy, they can help to influence it. In regions where civil and tax laws regularly shift, companies can work to build closer relationships with representatives at all levels of government in an effort to foster an environment that supports consistent application of the laws. For their part, governments eager to attract mining investment should aim to articulate clear policies and introduce incentives designed to welcome foreign investment.

Work together

By leveraging the resources of national and global mining associations, miners can help to influence government policies that may affect the sector, build more effective working strategies with government representatives and coordinate industry response to key regulatory issues.

Become risk intelligent

To counter unprecedented levels of volatility, enterprise risk management (ERM) should extend beyond the development of a risk management framework and methodology. Miners should also consider further integrating ERM with other management systems (e.g. asset integrity, safety and quality management systems); monitoring a wider range of key risk indicators; applying quantitative techniques to evaluate, measure and monitor risk; and using advanced risk analytics, such as network and pattern recognition techniques, semantic analysis and artificial intelligence to model more accurate failure predictions, risk interdependencies and concentrations of risk exposures.

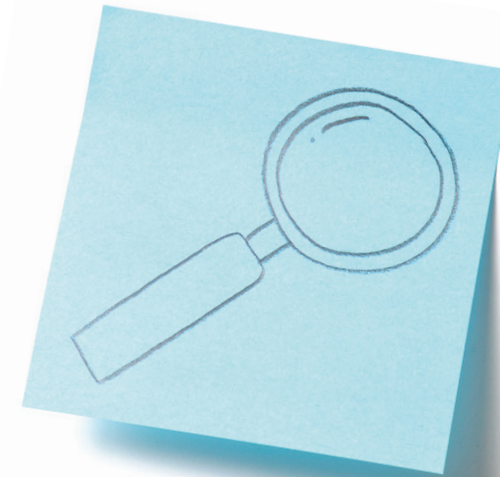
Plan for myriad scenarios

Rapid geopolitical and regulatory shifts are difficult to predict, but they can still be planned for. While most companies employ sensitivity analysis around commodity prices in their forecasting, not many have widely adopted scenario planning as a strategic corporate tool. With sound scenario planning methodologies, mining companies can identify a wide set of divergent but plausible futures and devise strategies to respond to each scenario. This can position them to develop risk-rated responses to mitigate worst-case scenarios, capture emerging opportunities, identify alternative portfolio options and respond to change with greater agility. Using predictive analytics, companies can even improve decision-making around capital allocation, M&A strategy and fraud prevention amid unrelenting market uncertainty.

9 Rising stakes around stakeholder engagement Companies struggle to balance competing interests

Although mining companies have made significant strides in their dealings with local communities and many handle it quite well, many companies still lag at effective stakeholder engagement. This is partly due to the fact that the number of stakeholders keeps growing. Winning a licence to operate today often means negotiating with dozens of different local communities, various levels of government, numerous government departments, non-governmental organizations (NGOs), workers' unions, local labor forces, environmental groups, industry associations and much more vocal shareholders.

It doesn't help that there are frequently fundamental conflicts between various stakeholder interests. Governmental focus on maximizing revenues by raising royalties and taxes, for instance, directly affects bottom line results, causing shareholder backlash. Corporate attempts to cut costs through automation affect local labor forces, often resulting in strikes and social unrest. NGO campaigns to shut down mining operations in an attempt to curb their environmental impacts can leave local communities without access to the mining wealth they have come to rely on. Community demands for access to education, higher levels of employment and even equity stakes in local mines can alter a company's investment priorities, shifting funds away from the development of local infrastructure.



The mining industry does not fully understand the complexities associated with stakeholder engagement. Too often, relationships with stakeholders are adversarial instead of collaborative. Miners need to turn this equation around by building relationships with stakeholders long before requesting any concessions from them.

Andrew Lane, Mining Leader,
Deloitte Southern Africa

Negotiations get more complex

In many countries, aboriginal communities are also considered independent nations, complicating negotiations. In Canada, for instance, new laws will require the extractive industry to disclose payments made to foreign and domestic governments, including aboriginal entities. In addition to heightening the imperative for transparency, this law will put mining companies under greater pressure to ensure controls exist to monitor the amounts, recipients and dispersal of any payments they make to government officials. Similar rigor needs to be applied in regions around the world to avoid contravening the rising host of anti-bribery and anti-corruption legislation sweeping the globe.

Despite these complexities, mining companies must find ways to enhance stakeholder engagement and better manage constituencies. This is no easy task at a time when companies must manage rising bureaucratic complexity and keep costs under control. Despite the difficulty, however, failure to improve engagement can result in more than project delays, cancellations, terminations of licenses and mine closures. It can also spark active anti-mining sentiment. In Peru, for instance, 99 of the country's 211 social conflicts reported as of March 2014 were related to mining activities.²⁹ For its part, South Africa's five-month platinum mine strike contributed to the country's 0.6% reduction in GDP during Q1 2014 and saw mining companies lose revenues of over R23 billion.³⁰

To avert these outcomes, miners must find ways to proactively address disparate stakeholder demands and create win/win platforms.



Strategies that buck the trend

By adopting win/win approaches to stakeholder engagement, mining companies can address a broad range of competing mandates. Consider these suggestions:

Build win/win platforms

Given the varying needs of different stakeholder groups, mining companies must not only identify all affected parties but understand what matters to each. This is especially critical as companies embark on an innovation agenda. By creating a shared vision of what the mine of the future will look like, companies can begin to clarify the value they plan to deliver in the future—not only to shareholders, but also to local governments, communities, citizens and societies. Taking the time to build deep relationships with a wide range of individual stakeholders can also alert companies to emerging issues and prevent the escalation of potential conflicts.

Communicate in new ways

In many regions, local communities continue to communicate predominantly by word of mouth. To prevent the dissemination of misinformation, companies should formalize their communication strategies. For instance, sustainability reports can provide companies with an invaluable method to share specific actions they are taking to meet local stakeholder needs. New mobile methods of communication also give companies the ability to engage with global workers in real time to encourage dialogue, identify brewing issues and ultimately foster higher levels of trust.

Mine the social networks

Social media is increasingly becoming the tool through which communities engage, discuss and organize their activities pertaining to a particular operation. By using data analytics to mine social media feeds, companies can gain a better understanding of community concerns and how they are perceived, and use this information to appropriately redirect their activities.

Leverage available resources

As in the governmental arena, mining companies can benefit by leveraging the resources of national and global mining associations in their negotiations with local communities. Many associations spearhead community outreach initiatives and foster dialogue with local groups as part of ongoing efforts to promote regional social and economic development.

Get strategic about giving

Companies that run foundations or engage in other means of official giving should make sure their corporate giving practices align with their stakeholders' priorities. The cumulative impact of these kinds of donations typically exceeds the payback from randomly-dispersed donations, while delivering targeted social and economic benefits. Companies that operate in emerging markets also often manage social portfolios of hospitals, clinics, schools and other related infrastructure. These assets should be managed as a portfolio in relation to any charitable giving.

Think long-term

Once a mine has been depleted, local communities are often left without the means to continue supporting growth. To prevent this outcome, mining companies should aim to consult with all affected stakeholders to plan mine closures. By thinking long-term, companies will be better positioned to help communities devise sustainable education, healthcare and infrastructure solutions.

10 Engaging with government Finding new ways to communicate and collaborate

In an effort to contain costs and enhance operational efficiency, miners are becoming even more careful about their capital investments. Decisions to close marginal mines and put some sites into care and maintenance affect local employment levels and raise concerns around the industry's ongoing ability to support escalating community demands. As a result, some governments are backing away from their previous hard line regulatory stances.

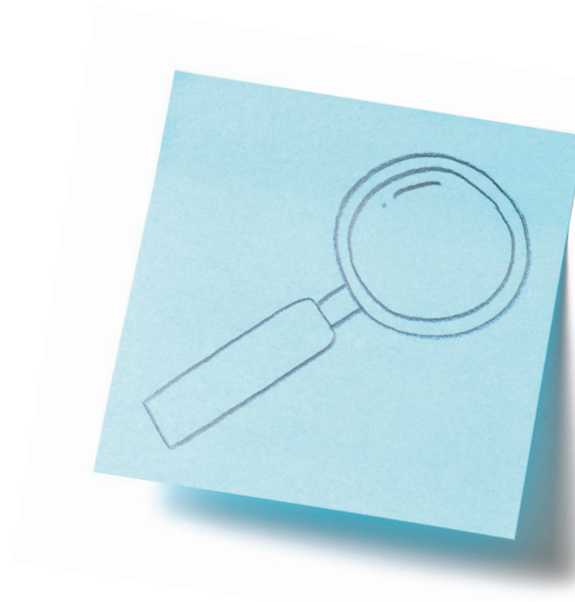
Making concessions

In June 2014, for instance, Ecuador announced plans to abolish its windfall tax and introduce new laws to attract mining investment. Just one month later, Australia's government repealed its carbon tax. Although not directly aimed at the mining industry, the tax did place the country's miners at a disadvantage to overseas competitors.

With many mining companies floundering, some governments also appear to be making greater efforts to accommodate the industry. In some regions, companies and governments are working together to prevent the negative political repercussions and job losses that would accrue from mine closures. In other cases, governments are actively brokering deals between mining companies and labor unions to prevent strikes that might drive miners from their countries. Red tape and administrative hurdles may also be declining in some regions. While these stories are anecdotal, they do seem to point to a slow abatement of the excess hostility that has marked government relations with the industry in recent years.

While some governments are working to accommodate the industry, others are backing miners into a corner. Unfortunately, these governments may be in danger of killing the goose that laid the golden egg if their policies force companies to defer their investments or exit a country entirely.

Tim Biggs, Mining Leader, Deloitte UK



The other side of the story

Like every story, however, this one has two sides. As in years past, some governments continue to make it harder for mining companies to operate profitably in their countries. In South America, Mexico introduced a 7.5% tax on mining revenues and Chile announced a tax reform that will see corporate taxes rise to 25%. Both Bolivia and Argentina nationalized mines and have taken steps to revoke some companies' mining rights.

Elsewhere, Russia introduced several measures that may affect mining companies, including a crackdown on transfer pricing practices. Its mining code also allows states to nationalize mines that are considered to be of strategic importance. For its part, Indonesia banned unprocessed ore exports in an effort to generate processing and smelting jobs within its borders. African governments, too, continue to demand concessions from the sector. Burkina Faso, Ghana, Namibia and the DRC all take automatic stakes in mining companies, while Zimbabwe, Kenya, Tanzania and Mozambique require stipulated percentages of indigenous ownership in mines.

Given the desire of governments to engage with miners in better ways, companies should be thinking about more strategic ways to deal with governments, manage regulatory risk and make strategic investment decisions. Unfortunately, companies continue to struggle with this task. Beyond simply lacking an understanding of different levels of government (local, provincial/state, federal), many miners also lack the ability to engage. In some cases, they do not have the resources or reach to develop relationships with each federal, provincial, state and district government they deal with. In other cases, they lack directed industry leadership or sufficiently vocal support from mining associations and other industry stakeholders.

To be sure, the fault does not lie solely with companies. Governments, too, continue to misunderstand miners and send mixed messages regarding their welcome in their countries. To resolve the stalemate, all parties may need to devise new ways to communicate and collaborate, across all levels of government.

Strategies that buck the trend

At the end of the day, miners need to locate where the best minerals can be found. Although deteriorating grades give miners more leeway about where to invest, companies must still make accommodations with governments at all levels in numerous nations. To balance these needs, they may want to:

Build better government relationships

Miners can strengthen their negotiating power by tangibly demonstrating the extent of their social and economic contributions. They need to view their mining operations in the context of wider economic clusters, understanding the role that mining infrastructure, such as rail lines and ports, can play to drive growth in other economic areas, such as agriculture or manufacturing. Understanding the wider impact requires tools such as data analytics to capture social progress metrics and disclosing them through a range of reporting mechanisms, from formal sustainability reports through informal channels like social media.

Locate in regions where they're wanted

Despite the availability of rich deposits in some less-than-stable regions, mining companies must continuously reassess the risk/reward equation of operating in locations subject to regulatory turmoil, spiralling stakeholder demands and critical infrastructure shortages. Subject to their risk appetites, some miners are choosing to move away from higher political and regulatory risk countries back to more established mining markets in countries such as Canada and Australia. Others are putting greater weight on the advantages of operating in mining-friendly regions. While there are never guarantees that policies won't change, governments that demonstrate their commitment to the industry now may be more willing to negotiate in good faith as market conditions change.

Speak out

Given the weight of public opinion, miners understand the imperative to engage in the public arena if they hope to influence government policy and contribute to a better political/social climate. This imperative goes beyond releasing official reports detailing the contributions they are making to society. It also extends to taking more active roles working with industry associations, better leveraging social media to get their messages out and aligning remuneration policies with their stated goals.

Measure social impact

Companies eager to demonstrate the long-term positive legacy they are creating in communities may soon be able to leverage a framework currently employed in the public sector. The social progress index measures 12 dimensions of social progress in various countries, and could potentially be adapted to help mining companies measure the impact of the contributions they make in the communities where they operate. Similarly, as data analytics becomes more sophisticated, companies will increasingly be able to measure the social benefits they create. These metrics might include the extent to which miners help to maximize government revenue, create jobs, contribute to political stability, provide infrastructure and social services, enhance financial security by sharing mining wealth, improve physical security and develop social networks.

Help set the policy agenda

In cases where local communities and NGOs may be driving government policy, mining companies should share their perspectives with government officials as well. Some of the rehabilitation requirements triggered by mine closures, for instance, are often more onerous than necessary given a site's distance from local habitation, flora, fauna and/or water sources. Miners should lobby for a more reasonable environmental balance, one that ensures that potentially harmful contaminants are removed and that surrounding areas are restored to their original conditions.

Get serious about social media

Like it or not, much of the information that gets disseminated about the mining industry's environmental, social and governance (ESG) performance takes the form of pictures, tweets and infographics. Simply put, public attention spans are diminishing and mining companies that want to tell their side of the story will need to do so a lot more succinctly. That means considering ways to leverage mobile communications and social media in an effort to foster two-way dialogues with investors, industry analysts, community organizations, media and the public at large. It's also worth noting that mining need to go beyond simply observing tweets and other social feeds; they must also get into the world of social media and engage with the wider stakeholder community.



Speed up by slowing down

A shorter down cycle requires longer-term thinking

Given the pace of mining industry change, it's no wonder companies fear falling behind. To keep up with altering geopolitical realities, volatile commodity markets, fickle shareholder support, escalating stakeholder demands and shifting government policies, companies are trying to move faster, respond more dynamically and exert greater control over business outcomes

Paradoxically, this need for speed may be partly culpable for some of the industry's current challenges. Prudent decision-making hinges on an in-depth understanding of an issue's hidden patterns, interdependencies and myriad potential outcomes—and this understanding can't be found without taking a giant step back.

This point is hitting home for some companies. That's why they're coming back to the basics—revisiting their capital allocation processes, rationalizing their backend systems, refocusing on core geographies and commodities, and divesting non-core assets and portfolios. Yet accelerating emergence from the current down cycle may require even longer-term thinking. The time has come for companies to clarify what they stand for, what they believe and what they plan to achieve in the future.

To succeed at this effort, mining companies must get more adept at balancing short-term investor expectations with long-term business imperatives. For some, this may mean maintaining project pipelines capable of meeting anticipated future demand. For some, it may mean pulling out of unstable regions in an effort to counter geopolitical risk, reduce costs and avoid regulatory hurdles. For all, it should translate into taking more time to build personal relationships with individual stakeholder groups and key government contacts with the aim of creating a shared vision of the future. Similarly, it should involve a full analysis of the pros and cons of adopting an innovation agenda.

In the final analysis, better analysis may help miners gain the wisdom they need to make better business decisions, not only for today but for the decades to come.

If mining companies want different outcomes to the issues they've been grappling with for years, they need a different approach to decision-making. This may involve investing in new information systems or new technologies capable of generating greater agility. It will almost certainly involve conducting more in-depth analysis to uncover unexpected trends, while attracting people to the industry who can contribute to diversity of thinking.

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