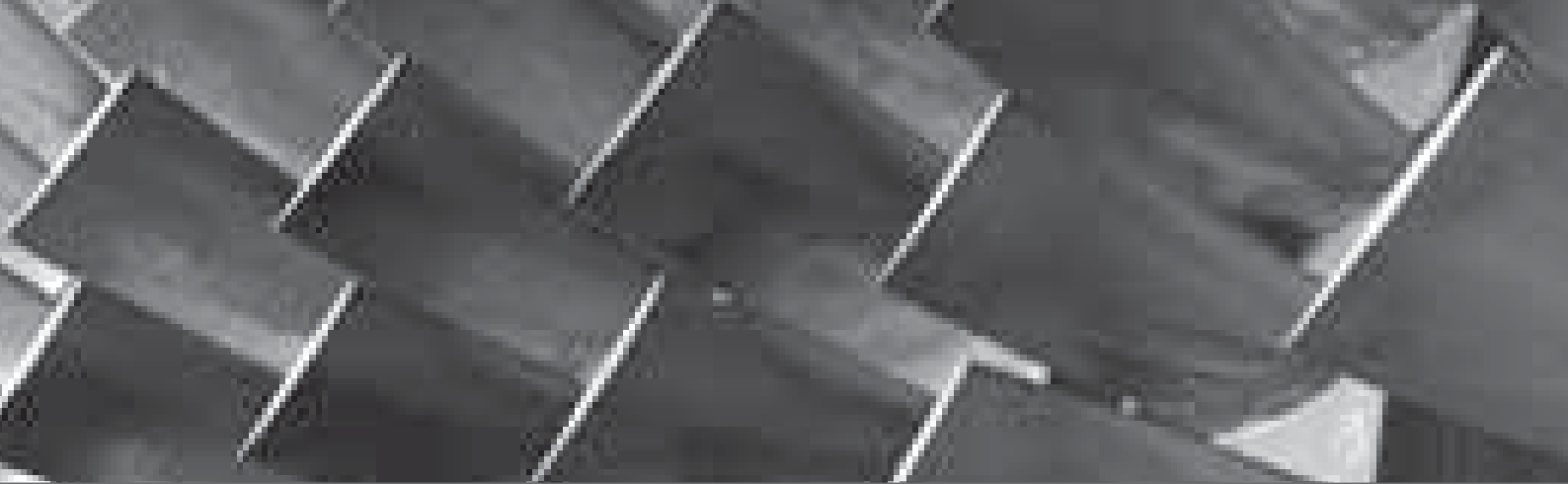



Business risks facing mining and metals 2011-2012





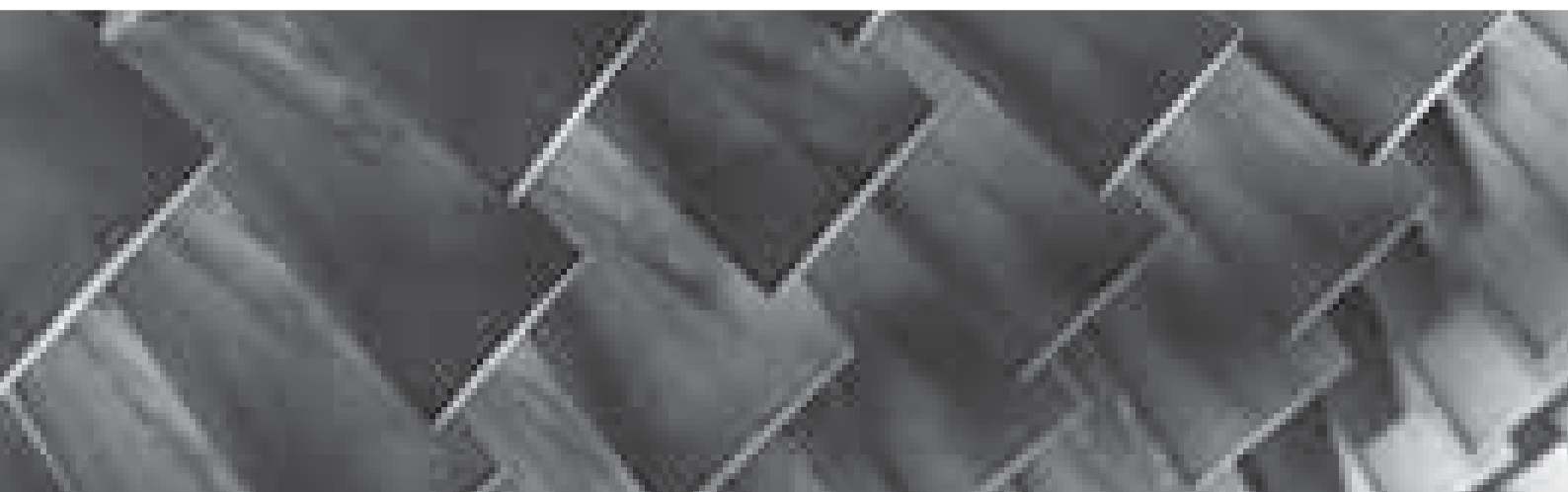
“Organizations that succeed do so because they are best able to **optimize the risk** and **reward equation** for both strategic and operational issues.”





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Introduction

The importance of identifying and managing potential risk



Mike Elliott
Global Mining & Metals Leader
Ernst & Young

Ernst & Young is heavily engaged around the world in advising leading organizations in the area of risk management. We've seen for ourselves that the process of accepting and actively managing risk can add significant value to a business, even if the feared events never happen.

Mining and metals companies are exposed to a higher than average level of risk and their risk appetites reflect this. While underlying business risks do not vary significantly from year to year, their level of acuteness and priority can change depending on the economic environment. The changes are subtle but significant enough to sometimes change the drivers of these risks as they develop along with the market.

In working through various risk scenarios and performing impact analysis, we've found opportunities for mining and metals companies to adequately prepare themselves for existing and potential risks. In doing so they've not only been able to tighten processes and controls, but also made themselves more agile and able to seize strategic opportunities, as well as operate more effectively, no matter what the market conditions.

How well are the risks and risk appetite defined, communicated and understood at your organization? If you're not sure about the answer to that question then chances are your company needs to examine its risk profile with some urgency.

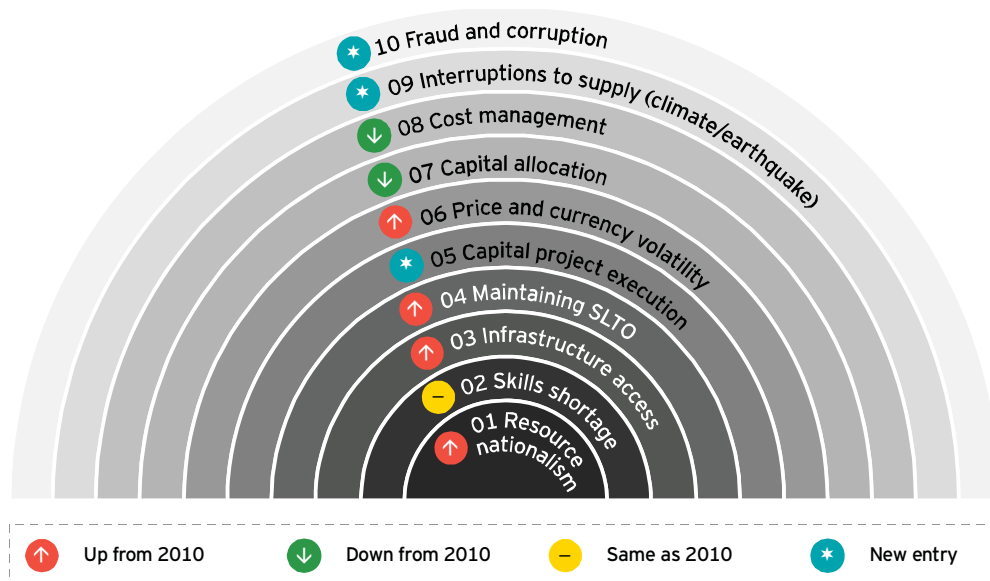
Through our discussions with mining and metals leaders, and from our analysis of organizations around the world, we've been able to identify the top 10 global business risks in the mining and metals sector at this time. While this is not an exhaustive list of risks, it provides a snapshot of the most significant challenges currently facing the sector.



The Ernst & Young business risk radar

The Ernst & Young business risk radar allows us to present the top 10 global business risks at a glance.

The risks that are closest to the center of the radar are those that we believe will pose the greatest challenges to the mining and metals sector in 2011 and into 2012.



Comparing the 2010 top 10 with 2011-2012

It's interesting to compare the business risks we've identified in this report with those we highlighted in our 2010 report. It confirms that much can change in the sector in the space of just a year.

Such rapid change in so short a space of time is confirmation in itself as to why organizations need to identify any gaps in their risk coverage and have a robust and regularly updated risk management plan in place.

How the top 10 global business risks rated in 2010

- | | |
|--|--------------------------------------|
| 1. Capital allocation | 6. Infrastructure access |
| 2. Skills shortage | 7. Access to secure energy (now 11) |
| 3. Cost management | 8. Access to capital (now 12) |
| 4. Resource nationalism | 9. Price and currency volatility |
| 5. Maintaining a social licence to operate | 10. Climate change concerns (now 13) |

Executive summary

The top 10 business risks for mining and metals



- 01 Resource nationalism
- 02 Skills shortage
- 03 Infrastructure access
- 04 Maintaining a social licence to operate
- 05 Capital project execution
- 06 Price and currency volatility
- 07 Capital allocation
- 08 Cost Management
- 09 Interruptions to supply
- 10 Fraud and corruption

The trends of 2010 and implications for 2011 and beyond

In our 2010 report we revealed that **Capital allocation** was the number one business risk facing mining and metals companies. The more uncertain economic environment at the time, combined with a number of other factors, like volatility of prices, limited cash flow and availability of debt capital, all made the decisions on how to allocate capital in 2010 more complex than ever.

One year on and our analysis shows that while Capital allocation still remains a significant business risk, it is more for the reason of returns matching risk appetites. As a result, its position as number one in our top business risks list has been overtaken by the increasing threat posed by Resource nationalism. In 2011 **Resource nationalism** has become the number one risk for mining and metals companies as governments globally continue to make demands in order to increase their slice of the profit pie.

Interestingly, **Climate change**, which was deemed number 10 on the list last year, is now no longer on the radar possibly due to increased confidence that any action that will impose real costs on mining and metals is still a long way off. By contrast, **Maintaining a Social licence to operate** does not appear to have been impacted much by change in either economic terms or priorities from clients. In our 2010 report it was ranked number five, and in 2011 and beyond it remains a significant risk, sitting at number four on the radar.

Fraud and corruption, which was just 'off the radar' last year (ranked number 14), has now moved up to number 10 on our list given recent regulatory developments, while **Interruptions to supply** is new to the top 10 this year.

Identifying the top 10 business risks of 2011-2012

01 Resource nationalism

Resource nationalism is the biggest risk in 2011 and 2012. Because the mining and metals sector rebounded quickly from the global financial crisis, it became an early target to help restore treasury conditions. In a number of producer nations, concerns over 'Dutch disease' or two speed economies have led to plans to tax mining more heavily, and provide tax relief to other sectors.

From the outset of 2011 we have seen numerous countries changing their fiscal environment (taxes, royalties), and some have invoked 'use it or lose it' clauses. Governments worldwide have also been looking to increase local participation in projects and we think that this trend will only increase. South Africa's new royalty regime came into effect on 1 March 2011, Ghana plans to double royalties on mining to increase government revenues, and the Australian Government's proposed Minerals Resource Rent Tax is still on track with its draft legislation.

02 Skills shortage

Skills shortage, which was number two in our list for 2010, remains the second biggest business risk for mining and metals this year and next. Indeed, we believe it may become a bigger risk in both developed and developing countries as we move into 2012.

At the moment the mining and metals sector is utilizing staff from other sectors where upturn is yet to happen, but this is a short-term approach only. There's the demographic challenge to consider as large numbers of near-retirement age workers in developed countries have left the sector while others have been made redundant due to the global financial crisis.

According to the report 'Skills Australia', the Australian minerals industry alone will need an additional 86,000 workers over the next 10 years just to maintain its current international market share¹. This phenomenon is not limited to Australia, with skills shortages apparent in South Africa, Canada and South America. Projects are being cancelled or deferred due to the inability to staff up construction and operations. The tight labor markets also provide an environment for greater industrial disputes as organized labor seek to increase wages.

03 Infrastructure access

Infrastructure access has become more of an issue of risk in the last year, mainly because the lack of available infrastructure means that production cannot get to the markets where the demand is. In fact Sinosteel has terminated its West Australian iron ore project due to delays in infrastructure. A lack of sufficient rail networks appears to be the largest global bottleneck. Some current and well-known rail bottlenecks include Australia's Queensland coal rail development, China's third coal rail development and Russia's aging rail network. Recent innovation in financing infrastructure, such as greater use of take-or-pay contracts, has enabled additional investment in critical infrastructure by current infrastructure owners. However, if the sector is to meet the expected supply challenges for the expected growth in demand from the rapidly developing economies, greater innovation is required to bring together producers, customers, infrastructure, operators, financiers and governments.

04 Maintaining a social licence to operate

In our 2010 report, the issue of maintaining a social licence to operate rated number 5 and it has become a more significant risk in the 2011-2012 top 10 list. There are a number of issues that can affect a company's social licence to operate and here are just a few examples:

- ▶ **Environmental performance** – Difficulties can arise in relation to the environmental impacts of new and existing mining and metals operations. Issues such as the impact on bio-diversity, water extraction, water pollution, air emissions, soil contamination and waste management are often a point of concern for local communities and regulators.
- ▶ **Risk to reputation caused by safety incidents** – Failure to ensure that safety incidents do not occur can have a negative impact on company reputation. For instance, Massey Energy is currently facing accusations by mine worker unions that it traded safety for profit. This was in light of the accident at its coal mine in April 2010 which resulted in the death of 29 workers.
- ▶ **Land disputes** – Obtaining a social licence to operate can sometimes be difficult when land disputes arise between mining and metals companies and local communities. Such disputes can delay or even prevent projects from proceeding.

¹Mining to need 86,000 extra workers', *Business Day*, 27 July 2008

05 Capital project execution

Capital project execution, which was not deemed a major risk a year ago, now sits in the middle of our list of top ten risks in 2011 and beyond. As the global economy has continued to recover, a large number of new mining projects, expansions and restarts have been virtually simultaneously announced. The projects are often calling on the same resources to be developed. Upstream metals and mining projects comprise a significant percentage of company spend and require particular focus on budgets, schedules and execution. These issues alone, if managed poorly, can be the cause of dramatic losses in project value.

As a consequence, tight management and execution of major capital project plans in today's mining and metals landscape of a scarcity of inputs has become more imperative than ever. Addressing risks surrounding the construction of mining projects is also critical and many miners have seen cost escalations that have forced them to defer, cancel or suffer the costs of project delays &/or overruns. Some examples of this are the Ambatovy nickel project in Madagascar where costs were estimated to have risen from US\$3.3b to US\$4.5b, and the Karara iron ore project where costs increased by 20% due to cost escalations and scope.

06 Price and currency volatility

Price and currency volatility was rated number 9 in our top 10 in 2010, but in 2011 and beyond we see that this risk has grown in importance to many mining and metals companies. Companies' operating costs are often not in their functional currency, and therefore volatility in foreign exchange prices can put extreme pressure on them. Exchange-traded funds (ETFs) in the market add a new dimension to commodity price volatility beyond pure supply/demand factors as evidenced by disconnect of price to inventory. For example, in periods of risk aversion and dollar strength, gold prices can still rally in response to inflows into physically backed gold ETFs. When commodity prices fall, investors may offload ETFs which could then flood the market and cause prices to plummet even further. How companies conduct their business in such a volatile environment will be a great differentiator of success.

07 Capital allocation

Despite the industry being in a strengthened position in 2011, the capital allocation challenge remains a big issue for many companies. External risks need to replace depleting reserves, and narrowing growth opportunities make the decision of how and when to allocate capital extremely complex.

Indeed, our 2010 "Governing not grinding" report (audit committee survey) highlighted the importance of ongoing assessment of risks, accepted rates of return and impact on capital allocation decisions. It revealed that numerous major projects were delayed or divested where the level of risk and rate of return appeared misaligned, and that hedging strategies were being re-considered by many. It also confirmed that capital was being diverted into vertical integration to mitigate price risk; into value-add product ranges to minimize margin impact; and into geographical diversification to mitigate political risk. Some shareholders, who don't perceive there has been an adequate return on investment for the risks being undertaken, are demanding surplus cash be returned to them.

08 Cost management

Cost management is still a great area of concern. This is largely due to the fact that operating costs are on the rise partly due to a scarcity of key inputs, labor, capital equipment and energy. Mining consumables are tied to the price of oil and steel, both of which are expected to increase as world economy improves. Similarly, transportation costs are increasing while sector specific costs are increasing at a greater rate than normal inflation.

09 Interruptions to supply

The risk of interruptions to supply joins our top 10 this year, largely due to the spate of natural and environmental disasters that have taken place globally over the last 12 months. All of these disasters have highlighted the risk of a major catastrophe to global supply, as well as the potential knock-on effects. Understanding and preparing for the occurrence of catastrophic risk is both challenging and essential. The consequences extend beyond individual projects, right along the supply chain, with wider-reaching implications for prices, future supply and investment decisions. For instance, the 2011 floods in Queensland have resulted in US\$2.3b of lost sales and a 25-50% reduction in production. Key infrastructure was also seriously impacted, with ports not receiving coal supplies for shipment, which in turn led to critical depletion of stockpiles. Planning for the risk of interruptions to supply, and the ongoing evaluation of management's ability to respond to and recover from this risk, has never been more vital.

10 Fraud and corruption

Fraud and corruption is new to the radar in 2011 and beyond. It makes this list because of the increased political risk we've observed in a number of key mining and metals companies' investment destinations and a change in the regulatory environment. For those companies that have chosen to grow, we've seen there was a propensity for them to take on greater political risk. In 2010 and into 2011 we saw more companies venturing back into riskier regions, such as West Africa, South America, and Asia – specifically Papua New Guinea and Mongolia. This expansion into emerging and frontier markets also created a greater focus on sovereign risk, notably security of tenure and changes in mining, tax and royalty regimes. This, alongside new fraud and corruption regulations, heightens the need for increased focus in this space, particularly as the consequences can be severe.

In coming pages our subject matter experts from all around the globe provide their point of view on the top 10 business risks facing mining and metals, as well as advice on the steps that can be taken to manage each of the individual risks.

The top 10 business risks

01 Resource nationalism

(up from ranking 4 in 2010)

As many governments struggle with deficits or hold concerns over the effects of a two speed economy, the continuing boom in commodity prices has seen the mining and metals sector targeted as an area in which they can raise revenue. Governments are continually assessing the fiscal terms of the economic rent for mining and metals projects in their countries in order to obtain their share of higher mineral prices via taxes or royalties.

However, governments need to be careful to balance their need for increased revenue against their long-term competitiveness in attracting investment. In managing this balance, they also need to consider that the sector needs comfort that fiscal terms will not change once massive up-front capital investments have been made. This is especially so given the volatility of commodity prices and the cyclical nature of the mining sector.

During 2010/11 we identified at least 25 countries that increased, or announced intentions to increase, their government take via taxes or royalties. On average at recent commodity prices these increases have raised the average effective tax rate by approximately 5%.

Resource nationalism places a large cost burden on mining and metals companies and can influence the decision of where to invest in a particular country.

There are many forms of recent resource nationalism, which include the following:

Imposition of a resource rent

- ▶ For instance, the Australian Government's plan to implement the Minerals Resource Rent Tax on iron ore and coal mining in 2012 is on track with draft legislation being published.
- ▶ In Peru, the incoming President has outlined plans to implement a windfall tax on the mining sector.
- ▶ Tanzania is considering a tax on windfall profits on revenues earned from minerals as one of the ways of funding its five-year development plan to 2016. The proposed super profit tax in Tanzania will not be imposed on existing mining companies. The government will however negotiate with companies to include this tax in their existing agreements. Tanzania's energy and minerals minister William Ngeleja said, however, the tax, if implemented, would be automatically applied to all new entrants into the country's mining sector.

Amendments to royalty or other tax rates

- ▶ If measures outlined in President Obama's budget are enacted, a 5% royalty charge may be imposed on hard rock miners in the United States.
- ▶ China has increased taxes for mined medium and heavy rare earth minerals, and these have been set at RMB30 per tonne and at RMB60 per tonne for light rare earth minerals. This is up from RMB0.4 and RMB3 per tonne respectively². This continues the Chinese policy to manage supply and exports with quota and pricing mechanisms³.
- ▶ The Chinese Government is extending the resource tax being piloted in Xinjiang Province across the country over the next five years. This tax covers the production of oil, gas, coal and other resources. The benchmark rate will be set at 5% but varied across commodities.

Imposition of greater controls on foreign participation

- ▶ Venezuela has revoked multiple mining licenses. In February 2011, Crystallex's mine operating contract for the Las Cristinas mine was terminated by the Venezuelan Government.
- ▶ In late 2010, South Africa imposed a seven month moratorium on awarding new mine prospecting rights while it conducted a comprehensive review of the sector to ensure investment in the sector is free from corruption and adheres to environmental regulations.

Encouraging in-country beneficiation

- ▶ Indonesia's Ministries of finance, trade and energy and mineral resources are considering a proposed ministerial decree which would require all miners to process raw commodities, including gold, copper, tin, iron ore, and coal, before being shipped overseas. There is also an intention on the part of the Indonesian Government to issue a decree to ban the export of low grade thermal coal from 2014 onwards. The rule will make it mandatory to upgrade low-quality coal to medium-quality before it is exported. However, this may prove to be a major challenge for miners as no technology currently exists for profitably upgrading coal on such a large-scale. Another motivation for this ban may be to ensure sufficient coal supply for domestic needs, as Indonesia has proposed rules to set aside a proportion of coal for local consumption.
- ▶ In June 2011, the South African Cabinet approved a beneficiation strategy for the mining industry. The aim of the strategy is to create upstream and downstream industries, and in turn add value to minerals mined in the country.

²China to impose tenfold resource tax increase on rare earth minerals from April', *Global Insight*, 24 March 2011

³China 2010 rare earth exports slip, value rockets', *Reuters*, 19 January 2011



“Resource nationalism has become a contagion impacting the mining & metals industry across the globe. The industry needs to become more engaged in the analysis and management of this risk which can place a heavy burden on existing operations and influence future decisions on where to invest.”

Andy Miller, Global Tax Leader – Mining & Metals, Ernst & Young

Institution of new mining codes

- ▶ Guinea plans to implement a new mining code which purports to address corruption in the sector and increase state equity participation in projects from 15% to 33%.
- ▶ In February 2011, Panama passed a new law allowing foreign state-owned companies to participate in Panama's mining sector by acquiring mining concessions, or through joint ventures with companies already operating in the field. Less than a month later the law was repealed as President Ricardo Martilleni overturned the law in response to pressure from indigenous groups.

Use it or lose it

- ▶ The global financial crisis also triggered a number of “use it or lose it” demands from governments when lower commodity prices led to slower capital expenditure. For example, United States mining company, Renco Group, entered arbitration proceedings against the Peruvian Government over the revocation of a license to operate a smelter in La Oroya from Renco's subsidiary Doe Run. The revocation of the licence was on the basis that the company failed to meet a deadline to restart operations.

Mandatory government/local participation

- ▶ Over the past three years, the Government of Zimbabwe, through the Ministry of Mines and the Ministry of Youth Development, Indigenisation and Empowerment, has been implementing the Indigenisation Law. Under this law mining companies have to hand over as much as a 51% stake to indigenous Zimbabweans.
- ▶ There is a political dialogue in South Africa about whether the 26% Black Economic Empowerment requirements have gone far enough in the mining sector.

Preference for state exploitation of own minerals

- ▶ The South African Government has launched a state-owned miner, African Exploration Mining and Finance Co (AEMFC) in which it plans to vest all mineral rights currently owned by the Government. AEMFC's current portfolio includes coal, uranium and limestone. The state-owned firm will focus on strategic minerals such as coal and uranium to ensure sufficient supplies to its power plants. The state-owned firm's first project is the Vlakfontein coal mine in the northeast province of Mpumalanga. The South African Government has denied any plans to nationalize the mining industry. The Namibian Government has also outlined plans for greater involvement in the mining sector by taking ‘exclusive exploration and mining’ rights over all the country's strategic minerals, including uranium, copper, gold, zinc and coal. These rights will be assigned to the recently formed

state-owned mining company, Epangelo Mining Company. The Government has assured miners that current rights will not be affected.

How we see it

As larger mining and metals countries, such as Australia, Brazil and South Africa increase resource nationalism activity, it has provided cover for other countries to follow suit. If this were to continue, the impact on investment will depend on the type of mineral produced:

- ▶ **Precious metal producers** – since there is little relationship between the cost of product and metal prices, an increase in taxes will primarily reduce margins. However, this can help put a higher long-term floor under future precious metal prices.
- ▶ **Bulks and base metal producers** – if a majority of global production is impacted by higher taxes, new projects are not likely to be developed unless prices rise by a similar amount to provide the required rate of return to attract investment. The threat of a decrease in future supply will provide this price stimulus. While this future risk may seem to be borne by downstream consumers, it is the relativity of the fiscal changes between countries that can provide the challenge.

We believe that governments should aim to maximize the value gained from their natural resources by using fiscal regimes that are attractive to investment, stable and prospective in application. Short-term fiscal approaches may be detrimental to long-term economic growth and employment in the mining sector, and its associated industries.

Global mining operations make long-term investments in many different countries, and will avoid or reduce investments in countries that have high fiscal risk from unpredictable and retroactive policy changes. While existing mines are immobile, the amount of extraction, re-investment and expansions can be changed, and new activity is mobile between a multi-national corporation's operations in other countries. With current high commodity prices, mining activity is expanding in most areas, but when commodity prices decline, taxes and sovereign risks will be key factors in companies' decisions about where to maintain and grow their operations. Government should not base fiscal policy around world-class deposits only, and should also consider the more marginal deposits that would not otherwise be developed.

In the current commodity super-cycle there is an inevitability that there will be increases in government take, but the sector can use it as a financial reform opportunity. Some of the better practices observed are:

- ▶ Profit based mining taxes are more efficient than those that are revenue based and extend life of mine.



- ▶ Profit based mining taxes provide more flexibility to gain popular/ political support. The percentage is higher, while restraining the overall increase in government take
- ▶ Industry associations and sector participants need to be active in educating the fiscal bureaucrats and legislators as to the benefits of an alternative tax system
- ▶ Minerals taxation reform can include incentives/ concessions to undertake exploration and therefore have the state 'invest' in the sustainability of its tax base
- ▶ Build in incentives via offsets for miners to construct water, energy or social infrastructure that will provide benefits to the community beyond immediate mine use – this may provide relief from existing costs of doing business.

Tax contagion (2010-2011)



Steps mining and metals companies can take to respond to this risk:

- ▶ Investing in transparent relationships with host governments to foster a greater understanding of the value of the project to the host
- ▶ Aligning with the host government's long-term economic and political incentives and thereby become an invaluable part of the infrastructure in the host country
- ▶ Focusing on generating direct and sustainable benefits for the host community through pro-active and well organized social and community development programs
- ▶ Aligning with multi-lateral agencies, such as the World Bank, to achieve a 'prominent victim' status in the face of mounting resources nationalism
- ▶ Partner with state owned enterprises that have strong Government-to-Government relationships
- ▶ Encouraging direct government participation (at market price) in the project to better align outcomes



"The skills shortage is continuing to be a major threat to mining and metals businesses. The long term impact could mean increased costs, a reduction in productivity and difficulty in meeting contractual obligations."

Louise Rolland, Executive Director, Advisory, Ernst & Young

02

Skills shortage

(ranked 2 in 2010)

Strong commodity prices and confidence in the long-term sector fundamentals have reinvigorated investment in mining and metals to quickly develop new projects or to ramp up production from existing ones. This increased investment is in turn driving demand for skilled workers around the world. The risk is that a skills shortage could slow growth and increase costs.

This was led by Canada and Australia as investment has returned to these countries first. As they attracted workers from a global talent pool it has muted the real shortages. However, as other regions have accelerated, the demands on the global talent pool has become even more acute. A study commissioned by the Minerals Council of Australia has estimated that an additional 86,000 workers would be needed by 2020, a 68% increase on labor productivity at the time⁴. However, with Australian miners planning to invest A\$129b in 2011, up 16% on 2010⁵, this now seems conservative. We are seeing large projects making unprecedented demands on labor supply. According to the Chamber of Minerals and Energy, Western Australia will need an additional 33,000 workers in the mining sector by the end of 2012⁶ and Queensland will need 62,000 by 2015⁷. In the Bowen Basin alone, 38 new projects are scheduled to come online in the next 6 years, requiring 10,000 new mining positions to be filled⁸.

In Canada, a similar picture is emerging with the Mining Industry Human Resources Council citing a labor shortfall of 60,000 to 90,000 by 2017.

Severe tightness in skills availability is now occurring in South America. In Chile, US\$50b is earmarked for mining investments in the next five years. The projects to be developed will require around 70,000 new workers by 2014⁹. In Peru the National Mining, Oil and Energy Society (SMMPE) estimates the mining sector will need an additional 40,000 employees this decade – 30,000 new positions, 10,000 of which to replace retirees¹⁰. There are fears that a shortage of workers could see delays to mining projects and investment plans in the next two years.

There are significant risks associated with not prioritizing the skills shortage as a strategic risk¹¹:

1. Project delays

- ▶ Shortages in both skilled and unskilled labor will contribute to project delays
- ▶ Difficulty in meeting contractual obligations

2. Safety

- ▶ Fatigue due to increased overtime requirements
- ▶ Risk of shortcuts to alleviate time pressures caused by increased workloads
- ▶ Gaps in employee skills proficiency
- ▶ Increased turnover leading to less mine specific experience

3. Higher operational costs

- ▶ Remuneration costs and wage pressures (diminishing attraction and retention returns)
- ▶ Greater use of contract labor to meet gaps in labor force (however this may not effectively transfer risk)
- ▶ Increasing turnover leading to more training and on-bounding
- ▶ Increasing impact due to industrial disputation

4. Reducing productivity

- ▶ Impact of increased overtime and absenteeism
- ▶ Lead time to full productivity of new recruits
- ▶ Capacity and capability gaps caused by longer time to fill rates
- ▶ Increasing impact due to industrial disputation

Forward thinking companies are using a number of strategies to deal with the immediate shortfall and to plan for future needs:

Gaining Government support – There are some initiatives where governments are well-placed to execute, and as such companies with strategic vision are actively lobbying government to make timely policy decisions.

⁴National Institute of Labour Studies', Minerals Council of Australia

⁵Miners plan investment boom', *Australian Financial Review*, 25 February 2011

⁶33,000 Workers needed in WA by next year', *Australian Mining*, 14 April 2011

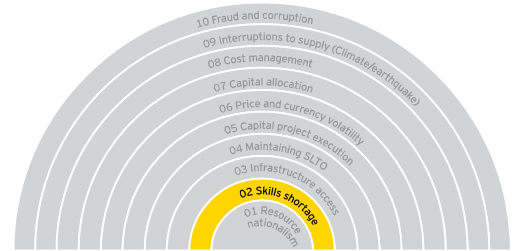
⁷Mines at a loss for workers', *Sunday Mail*, 13 February 2011

⁸Bowen Basin to see new mining projects', *Australian Mining*, 9 May 2011

⁹Lack of human capital increasing labor costs – Chile', *Business News Americas*, 24 January 2011

¹⁰Labor deficit will become critical by 2013 – Peru', *Business News Americas*, 4 January 2011

¹¹Sustaining the mining sector workforce', Ernst & Young, October 2010



In some countries governments are relaxing rules to allow greater access to foreign workers giving mining companies faster access to visas for overseas workers. For example, in Australia the Federal Government has made changes to the national permanent skilled migration program to allow mining companies to speed up hiring foreign skilled workers with a new visa for 'mega' projects in the resources sector. A new enterprise migration agreement for large mining projects in return for a financial contribution to train Australians will be implemented, with the aim of allowing 16,000 skilled immigrants to enter the country to work in key regions where there is a labor shortage¹².

Investing in training – Where miners once relied on higher salaries to attract and retain staff, mining and metals majors are now taking a more sustainable approach looking to graduates, universities and more structured training. For example in the US, Arcelor Mittal is teaming up with Ohio Valley colleges to train the next generation of steelworkers for its West Virginia operations¹³.

In South Africa, where only 15% of mining engineering graduates join the sector¹⁴, Gold Fields is investing R26 million into two universities with the aim of forging alliances to increase both the number of graduates and the number retained in-country¹⁵.

The slowing growth in the supply of younger workers challenges traditional training models that focus on skilling at the early career stage. To be effective, a multi pronged skills strategy is necessary to ensure the training allows workers to move across roles and sectors. Investment in innovative skills models will require outlay in the short term, but will deliver greater certainty in supply over time.

Tapping broader talent pools – Companies are looking beyond traditional channels, groups or age brackets to fill roles. For example, in Mexico many companies are making mining more viable for women by constructing 'bedroom communities' where workers stay for 14 days, followed by seven days off. More companies are introducing job-share roles to attract working mothers. Others are creating opportunities for local and indigenous people by offering pre-employment training programs and guaranteed employment for graduates.

Fast tracking careers – In boom times past, some mine operators promoted employees into senior management positions before they were ready. This time around, more companies are using mentoring, coaching and executive development programs to accelerate management skills and careers.

Developing competitive employee propositions – To retain skilled labor many companies have resorted to increased wages. However one recent study we undertook of a major company in the sector found that career progression was as important as a 10% pay increase¹⁶.

Developing new models and technologies – As well as the traditional fly-in, fly-out options and temporary skilled migration to help meet the demands, companies are accelerating efforts to automate operations in areas including driver-less locomotives, trucks and ship loading. In the longer term these initiatives are likely to drive costs down as machinery and automation replace costly labor.

Steps companies can take to respond to this risk:

- ▶ Using alternative skills sourcing from aligned skills and a broader demographic
- ▶ Accounting for demographic factors when making investment decisions
- ▶ Initiating programs that encourage semi-skilled and retired workers to re-enter the work-force
- ▶ Targeting initiatives to retain critical skills held by older workers close to retirement
- ▶ Creating employment packages focused on training and development opportunities
- ▶ Implementing early labor scheduling within mine planning
- ▶ Developing sustainable skills programs to fill these gaps
- ▶ Developing strategic alliances with institutions and communities
- ▶ Targeting initiatives to optimize productivity
- ▶ Redefining the employee value proposition to attract, retain and develop talent
- ▶ Substituting capital for labor

¹²'Queensland and WA collaborate to solve mining skills shortage', *Australian Mining*, 17 May 2011. Department of Education, Employment and Workplace Relations' Ministers' media centre 15 March 2011.

¹³'Arcelor Mittal launches 'Steelworker for the Future' program to prepare for W. Va. Retirements', *Associated Press Newswires*, 15 March 2011

¹⁴'Skills shortage to be more acute by 2020', *Miningweekly.com*, 3 March 2010

¹⁵'Gold Fields invests in South Africa's future mining engineers', *International Mining*, 21 April 2010

¹⁶'Sustaining the mining sector workforce', Ernst & Young, October 2010



“Given that demand for mining and metals is expected to increase in rapidly developing economies, some mining companies are responding to this by investing in infrastructure in an attempt to reduce potential bottlenecks, and meet that demand for supply.”

Neal Johnston, Partner, Infrastructure Advisory, Ernst & Young

03 Infrastructure access

(up from ranking 6 in 2010)

The ability of mining and metals companies to achieve growth in production, or get new product to customers is often limited by the capacity of the available infrastructure, i.e., power, water, shipping, ports and rail. Expansion of infrastructure in many countries has not always kept pace with the sustained growth in demand and has in turn created infrastructure capacity constraints. Export customers won't wait, and where infrastructure constraints exist, this creates a significant risk of loss in potential market-share as competitors step in to fill the gap.

Controlling the infrastructure development process is a critical risk for mining and metals companies to manage. The temptation for companies to own infrastructure is therefore strong. A lack of supply chain infrastructure capacity is a restraint in the growth of enterprise value and hence the resources sector cannot ignore the need to invest in infrastructure. However, there is a finite amount of infrastructure that a company can take on since the excessive blending of low risk/ low return business (infrastructure) with high risk/ high return business (mining and metals production) can lower overall returns on a capital relative to peers. This can in turn lower multiples and actually destroy enterprise value.

While direct investment in infrastructure does typically yield lower returns compared with mining, there are circumstances where the value in the control of well-structured infrastructure will justify the opportunity cost, as well as enhance competitive advantage.

Infrastructure owners have attracted more investment with the aid of recent innovations in financing. These innovations improve the risk profile of critical infrastructure investments and include the greater use of take-or-pay contracts, common user funding, and equity for capacity investments.

For the sector to meet the supply challenges of expected growth in demand from rapidly developing economies, greater innovation is required to bring producers, customers, infrastructure operators, financiers and government together to efficiently assist project development.

Some examples of innovation in this space include:

- ▶ The Nigerian Government is setting up a Sustainable Development Fund in conjunction with commercial banks to provide financing for the development of the mining sector¹⁷.
- ▶ The Queensland State Government released its CoalPlan 2030 which charts the course of its coal mining infrastructure over the next two decades. It also offers a framework to guide sustainable coal-related infrastructure planning to cope with the steady rise in global demand for Queensland's coal¹⁸.
- ▶ At Western Australia's Karara Iron ore project, Anstell has invested A\$700 m in equity and secured the life of the mine's output.

The importance of increased collaboration is heightened for prospective, small and mid-size miners and metals producers who may not be able to self-fund the required infrastructure and who need to consider innovative funding structures to secure the delivery of vital supply chain infrastructure.

So if companies could or should not over-invest in infrastructure, and governments are unable or unwilling to do so, where will the investment come from? Increasingly, customers are taking up this opportunity. For customers who have an appetite for infrastructure, such investment can provide a means of acquiring a long-term equity position in mineral production, if it facilitates an off-take arrangement. Miners are most concerned about loss of control of infrastructure resulting in monopoly pricing or failure to increase capacity when market conditions change. However, if customers receive off-take to provide port or rail access, there is less likelihood of pricing abuse and both parties share the same need to quickly increase infrastructure capacity when metal prices are rising.

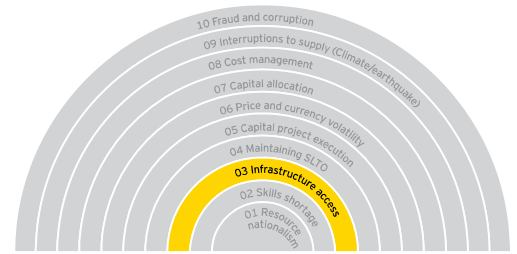
Until customer arrangements can be completed, mining and metals companies have responded to the infrastructure challenge by making significant investments in infrastructure. For example, Australian resource and energy companies are estimating infrastructure and mining capital investment in excess of A\$80b for 2011–12²⁰.

Infrastructure projects are also increasing in complexity and scale. Many global iron ore operations are situated in remote locations and companies have had to invest in, and develop, logistical infrastructure such as rail infrastructure and port facilities.

¹⁷Nigeria: Mining – FG woos investors at Indaba, Vanguard', 13 February 2011

¹⁸Queensland unveils 20-year coal infrastructure plan', *Mining Weekly*, 24 November 2011

²⁰Private and New Capital Expenditure and Expected Expenditure', Australian Bureau of Statistics, March Quarter 2011



Some examples of this include:

- ▶ ArcelorMittal's investment in Liberia promises to create a 250 km railway line to the port city of Buchanan and port infrastructure.
- ▶ Rio Tinto's Simandou iron ore operation in Guinea requires construction of a 650km dedicated industrial railway line to transport the mine's yearly production. The overall project cost, including infrastructure development, is expected to reach US\$10b²¹.

Where miners are required to undertake infrastructure, they can access a broader range of financing from third parties by taking on some or all of the construction risks and providing take-or-pay contracts to underwrite capacity. This would thereby allow these minimum revenue streams to be securitized by the financiers that are most interested in long-term stable returns on investment (e.g., pension funds).

Lack of sufficient rail networks appears to be the largest global bottleneck. One of the key issues driving this is that most railways are controlled by government or state-owned enterprises with capital constraints. Another key issue is the multiple demands on restricted capital and sovereign intervention that are slowing development (tax increases, permitting delays, mineral rights uncertainties). Current key rail bottlenecks include Australia's Queensland coal rail development, China's third coal rail line development, South Africa's coal rail and an aging Russian network²².

The strategic risk for traditional minerals and metals suppliers is that if they don't push to prioritize infrastructure development, and with it accelerate speed to market, they may not be able to capitalize on the positive market conditions and growing demand. This could allow new competitors, who have better access, to enter the fray and take market share during the upswing.

Steps mining and metals companies can take to respond to this risk:

- ▶ Considering the extent to which infrastructure deficits may impact on enterprise value
- ▶ Understanding the return on all capital expenditure, including infrastructure, and considering appropriate financing
- ▶ Looking for other stakeholders to co-develop a solution with shared benefits
- ▶ Investigating partnerships with other potential stakeholders in expanded infrastructure to innovate financial arrangements including off-take
- ▶ Improving mine planning to assist in assurance over optimal levels of take-or-pay commitments

²¹Iron-ore: a review of the global market, March 2011', *Creamer Media*, March 2011

²²Global Metals & Mining sector: Infrastructure is the key', *Deutsche Bank*, 19 October 2010



“Compliance with occupational health and safety regulations not only means less mortalities, but from a commercial point of view it also means reduced downtime, a motivated workforce and a full complement of staff.”

Mathew Nelson, Partner, CCASS, Ernst & Young

04

Maintaining a social license to operate

(up from ranking 5 in 2010)

Sustainable development has been a big issue for mining and metals companies since the 1980s and it entails three fundamental components: environmental protection, economic growth and social equity. As part of this move to more sustainable development, companies are increasingly being asked to gain a ‘social licence to operate’, agreeing to operate as part of the local society such that mining and metals investment is welcomed by the host community.

In order to gain social permission to exploit natural resources, the mining and metals sector must excel on the social dividends it provides for employee health and safety, the environment and the host community. The reputation of a company is impacted not only by its most recent performances but also by the sector as a whole. In addition, community expectations on what constitutes acceptable risk are rapidly changing and the biggest challenge mining and metal companies now face is how quickly they can respond to changing community attitudes.

Risk to reputation caused by safety incidents

A Geneva-based trade unions federation estimates that worldwide mining disasters account for around 12,000 deaths every year. Despite recent high profile accidents such as the Pike River coal mine disaster in New Zealand, it appears mining and metals companies are taking active steps towards reducing the number of fatalities at their operations.

In 2010, South Africa mine fatalities decreased 24% to 128 deaths, Chinese coal mine deaths fell by 8% to 2,433, while Australia mining fatalities decreased 63% to 6 in 2009-2010²³. Despite this, it is still considered one of the top five dangerous industries to work. By contrast, mine deaths in the US increased by 115% in 2010 to 77 mine related deaths after only 33 in 2009, the safest year in US mine history (29 of these occurred at Massey's Upper Big Branch mine). Mining, quarrying and oil well deaths in Canada decreased 21% to 69 in 2009, from 87 in 2008, while mineral exploration related deaths in Canada decreased by 100% in 2009 to 4 from 8 in 2008²⁴.

Failure to ensure that such accidents do not occur can have a negative impact on company reputation. For instance, Massey Energy is currently facing accusations by mine worker unions that

it traded safety for profit in light of the accident at its coal mine in April 2010, which caused the death of 29 workers and has been acquired by Alpha Natural Resources.

Community expectations of the level of mine safety have increased since the dramatic rescue of all 33 Chilean miners after 10 weeks trapped underground. The miraculous Chilean rescue, which was televised across the globe, has set a precedent for the sector. This unprecedented global media coverage of this rescue has radically altered community expectations. As such, any mining company that cannot successfully release trapped mine-workers will now be considered under performing. How quickly have mining and metals companies risk management systems responded to this change in expectations? Following the Chile rescue, there has been a strong correlation between unsuccessful rescues and corporate failures like Pike River, Upper Big Branch and several Chinese mines.

The elimination of workplace injuries and deaths is now a whole-of-community objective, requiring both government regulation and full community participation. The US Government has passed legislation, Dodd-Frank Wall Street Reform and Consumer Protection Act, which in part, demands more mining safety disclosure that impacts US Securities Exchange Commission filers who are subject to the US Federal Mine Safety and Health Act. The Act requires more fatality and health or safety standards violation disclosures.

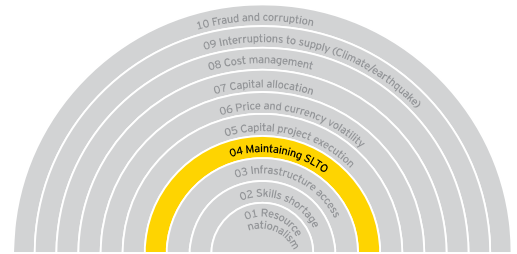
Environmental performance

Protecting the surrounding environment both during the development and operation of mines, and after closures, is becoming increasingly challenging with increased attention in recent years. While not in this sector, there are important lessons to be learned from the Gulf of Mexico oil disaster, including planning, response, risk identification and the inability to contract out of risk.

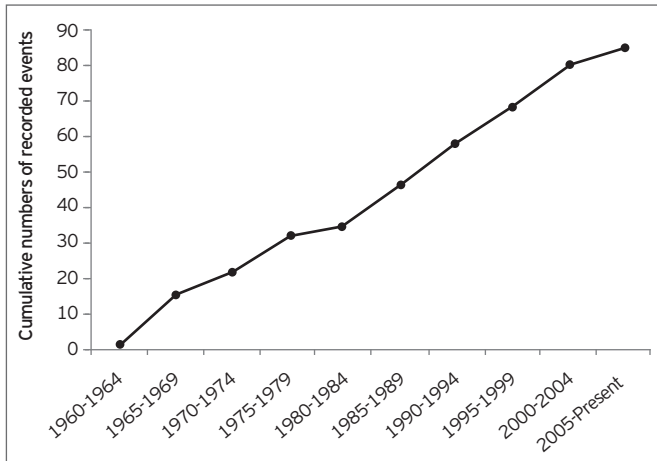
For the mining and metals sector, the greatest analogies challenge to this is the failure of tailings dams. Seventy-five percent of the major environmental incidents at mines since 1975 have related to tailings dam failures. Between 1970 and 1999, there have been approximately two to five ‘major’ tailings dam failure incidents per year and this rate has not changed. The impact of such an accident can have severe and ongoing ramifications. For instance, in October 2010, Hungary declared a state of emergency after the collapse of a dam at a toxic waste reservoir which flooded several towns with toxic alumina sludge. Nine people were killed in the disaster along with countless wildlife, and the disaster spread further afield poisoning the drinking water in Hungary, Serbia, Bulgaria and Romania.

²³Safe Work Australia, Notified fatalities statistical report', 2009-10.

²⁴PDAC and AME BC, Canadian mineral exploration health and safety, 2009. Association of Workers Compensation Boards of Canada. Number of fatalities by industry and jurisdiction; 2007-2009.



Cumulative tailings dam failures



Source: Wise Uranium Project

Community Conflict

Obtaining and maintaining a social license to operate can be difficult when land or water disputes arise between mining and metals companies and local communities. Such disputes can delay or even prevent projects from proceeding or cause existing operations to be halted. One trend we are now seeing (called the ‘Tia Maria’ effect) is non governmental organizations (NGOs) linking in with communities to create political pressure to overturn approvals. The term was coined after the Peruvian Mines and Energy Ministry rejected US-based Southern Copper’s Environmental Impact Statement (EIS) because of on-going and increasingly violent protests in the local community. The dispute initially arose due to conflict over access to water. As it was not sufficiently addressed quickly, it ballooned out of control with many other issues rising to the fore, real or perceived. The Tia Maria

effect is now having negative impacts on Anglo American’s Quellaveco copper project, and Gold Fields’ 51% controlled Chucapaca joint venture gold project, both in Peru.

A social licence can be as impacted by perceptions including the historic performance of other mining and metals companies. For example, Lynas Corporation is facing community opposition to its rare earth processing plant in Malaysia because of environmental damage caused many years ago by a former plant of another operator in another part of Malaysia.

In obtaining a social licence to operate, there has been an increased focus on companies’ investments in creating tangible and sustainable benefits for the host community beyond the life of the mine. For example, Rio Tinto is helping tackle the high re-offending rates of indigenous prisoners in the Pilbara in Western Australia by providing them with meaningful employment. Similarly, community investment funds and foundations have increased in prominence at many mine sites in developing countries. These are often funded with a percentage of profits in good years providing a solid investment base and a source of income in years when there are lower prices.

The responsibility of mining and metals companies to host communities was very evident in the aftermath of the Chilean earthquake. In addition to cash donations, mining companies voluntarily agreed to raise royalty rates for the next few years to assist with post-earthquake reconstruction. More recently, mining companies have donated generously to recovery efforts after the 2011 floods and cyclones in Australia.

Although an eye should be kept on corporate costs, we believe that the increasing amount being devoted to the environment, health, safety and community side of mining and metals production is money well spent. It helps maintain the social licence for existing operations, as well as creating a licence for new projects.

Steps mining and metals companies can take to respond to this risk:

- ▶ Incorporating risks to the social license to operate into the enterprise risk management framework with clear mitigation strategies
- ▶ Embedding these mitigation strategies in all critical business processes to ensure that an integral approach is adopted
- ▶ Encouraging and engaging in community/ employee debate over sustainability priorities
- ▶ Integrating sustainability key performance indicators (KPIs) with productivity outcomes, e.g., increase in mine safety, reduction in water consumption and waste etc
- ▶ Linking sustainability outcomes to attraction and retention of the workforce
- ▶ Encouraging trusting and supportive relationships with all stakeholders to reduce security risks in troubled locations
- ▶ Integrating sustainability objectives into all long-term planning



“With expenditure on current projects surpassing the annual gross domestic product (GDP) of some countries, small schedule delays or cost increases, coupled with fluctuating commodity prices, are now materially impacting the financial performance of organizations involved in their execution.”

Loretta Hudson, Executive Director, Advisory, Ernst & Young

05

Capital project execution

(new to the radar)

Managing the complexity of major capital projects in today's mining and metals landscape has never been more challenging or critical. Global demand for commodities continues to drive substantial capital investment within the sector. The near simultaneous commitment to new capital projects immediately after the global financial crisis meant that these decisions were not factoring in the current handicaps on project execution. In 2011, a handful of companies alone are spending US\$100b on expansion and green-field developments, with some individual projects exceeding 'mega' values of US\$10b.

The Reserve Bank of Australia in its 7 June 2011 policy meeting noted that “capacity constraints would result in delays or cancellation of some of the projects in the earlier stages of planning”. The ratings agency, Fitch, expects funding to become more difficult as projects continue to face cost increases and timetable over-runs.

Successful project delivery is impacting some corporations' market value more than ever. Capital expenditure and associated project delivery is a key topic in many of today's financial and resource publications, yet many owners and contractors alike continue to be challenged by the tactical and/or strategic issues of project execution.

Key drivers of project execution complexity

Delivery of predictable project results bestows competitive advantage and market confidence to those corporations who successfully instil this discipline. Globally, Ernst & Young works with mining and metal clients to strategically advise them on issues related to capital expenditure and project delivery and we're seeing the following consistent global themes impacting our clients:

- ▶ **Human capital constraints** – The current human capital deficit (between supply and demand) to deliver projects is between 10% and 15% and is sufficient enough to impact project delivery schedules. With an estimated 86,000 additional workers needed by 2020 in the Australian mining industry alone²⁵, owners and contractors alike are considering innovative ways to attract and retain project staff. Despite this, many are continuing to be challenged by the ability to identify 'project resources' that have

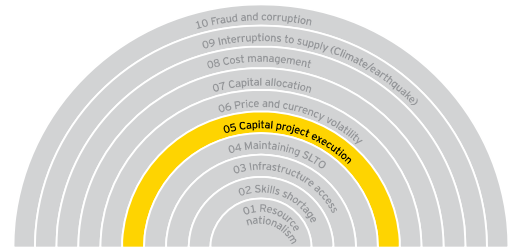
the depth of experience to deliver on these 'mega' projects. Consequently, many owners are placing increasing pressure and responsibilities on already constrained contractors, which in turn is creating increased execution challenges.

- ▶ **Cost and schedule control** – At a time when transparent and timely project reporting to boards and shareholders is receiving increased scrutiny, the ability of corporations to accurately forecast cost and schedule completion is quickly becoming a competitive differentiator. As a result of a resource deficiency in the area of Engineering and Project Controls, many projects have suffered from ill-defined project scopes and execution plans, driving poor cost and schedule estimates. This has a knock-on effect of cost escalations that have forced some miners to defer, cancel or suffer the costs of project delays and/or overruns. Examples include the Ambatovy nickel project in Madagascar²⁶ where costs were estimated to have risen from US\$3.3 billion to US\$5.5 billion, and the Karara iron ore project where costs increased by 20% due to cost escalations and scope²⁷.
- ▶ **Contractor delivery reliance and performance** – Human capital constraints, compounded by the sheer scale and complexity of emerging projects, is placing increased reliance on contractors (Engineering, Procurement and Construction Management and subcontractors) to deliver. However, the competencies, processes and systems of many contractors often fall short of those required to successfully deliver 'mega' projects.
- ▶ **Global program delivery consistency** – Increased project complexity and/or pressure on supply chains is forcing many organizations to review their project management methodologies. In doing so, many are identifying a significant lack of standardized processes, controls and systems required to decrease contractor reliance and achieve global synergies. Instead, organizations are continuing to rely on a few 'key personnel', many of whom are approaching retirement.
- ▶ **Scope growth and claims management** – Many scope changes and indeed claims, arise from poorly designed 'work break down structures' causing engineering and construction interface issues. This is often compounded by contracts with insufficient compensation and legal contingency funding to manage claims.
- ▶ **Production ramp-up** – Many projects do not deliver the expected production rates, caused by failure to consider all aspects required to deliver the product to market. Critical production ramp-up considerations should be included in the early design phases of any major capital project.

²⁵National Institute of Labour Studies', Minerals Council of Australia

²⁶Costs jump again at delayed Ambatovy', Mining Journal , 17 June 2011

²⁷Gindalbie Metals' Karara costs blow out 20pc', The Australian, 6 May 2010

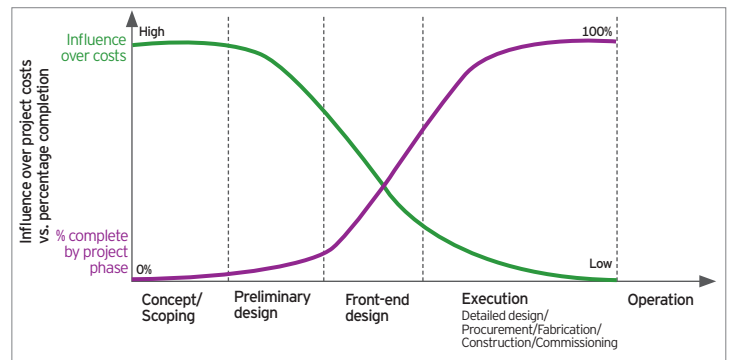


- ▶ **Project economic forecasting** – Failure to achieve economic forecasts plagues many projects, often requiring issuance of revised market updates. Issues such as infrastructure access and existing facility bottlenecks are under-estimated, leading to over optimistic project economic forecasts.
- ▶ **Legal and regulatory compliance** – Unclear delineation of contractual responsibilities between owner and contractor with respect to obtaining licenses and consents is often a cause of schedule delays. Additional legal and contractual focus is required to ensure full compliance with regulatory requirements and legislation relating to bribery and corruption.

Effective management of complex capital projects

One of the most proven and effective ways to manage the complexity of the capital projects in the mining and metals industry is to take a holistic approach of a stage-gate model for evaluating progress and enabling informed decisions as the project moves through its lifecycle from concept to operations. Implementing a comprehensive lifecycle framework allows for the decision-makers to understand the appropriate investment to underpin the next phase of the project, and in doing so ensure less rework and improved scheduling throughout the project.

The right opportunity to make a positive impact on the lifecycle of a major capital project is during early planning, even before the capital outlays occur. This is particularly true with mining and metals companies that are moving into frontier areas or undertaking projects that are more technically complex. The combination of new technology, new geographies, multibillion dollar capital expenditures and multi-party governance means that these projects require high levels of assurance for cost, schedule and risk management.



Source: Ernst & Young analysis

There are focus areas that when executed well can prove to be game changers on large capital projects. These include:

1. Effective project management
2. Cost management and cost reduction
3. Supplier performance management
4. Healthy stage gates
5. Risk assessment and reduction
6. Safety
7. Handover management
8. Governance, controls, policies and procedures
9. Contracting strategy

Ernst & Young has found that the most effective deterrents to project failure are based on a company's ability to structure a capital program that not only encourages, but depends on collaboration across the functions, business units and stage-gates. We are seeing healthy stage-gate approaches that are embedded and supported internally, while driving transparency and collaboration externally with joint venture partners, local governments and contractors. Finding the right balance between the interests of the stakeholders and the interests of the project is the most effective strategy for transforming project effectiveness.

Steps mining and metals companies can take to respond to this risk:

- ▶ **Implementing an effective risk management process** where there is a clear line of sight between project, portfolio and strategic risk management such that objectives are supported by appropriate tactics that address all potential project threats.
- ▶ **Rigorous portfolio management** and greater scrutiny around project selection, prioritization and management is vital.
- ▶ **Operationalizing knowledge management** through incorporating learnings, technological advancements and benchmarks into all procedures and databases.
- ▶ **Ensuring project and supply chain performance is monitored and managed** by aligning owner and contractor teams alike through pragmatic contracting strategies and incentive programs.
- ▶ **Implementing advanced assurance frameworks** that provide independent review and oversight over project performance. This helps to proactively identify and manage challenges before they become issues.



“We expect the global natural disasters over the last 18 months will not only have a flow on effect on commodity prices, but will also cause supply shortages which will in turn push up prices.”

Jay Patel, Transactions Partner, Canadian Mining and metals, Ernst & Young

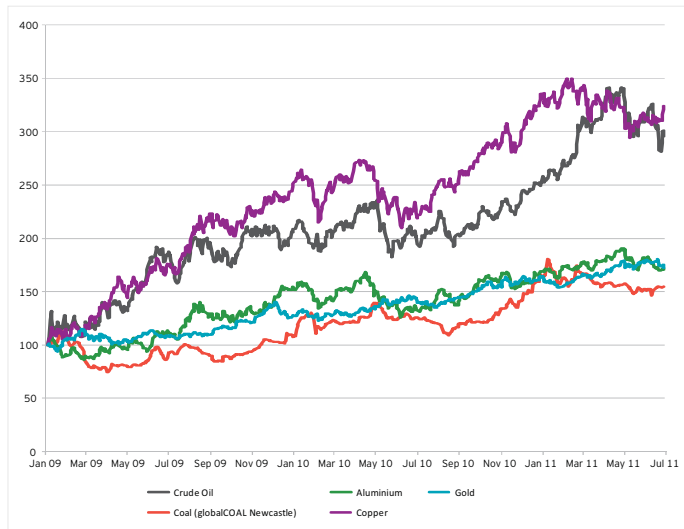
06

Price and currency volatility

(up from ranking 9 in 2010)

Commodity price and currency volatility over the last few years has increased risk associated with mine optimization, feasibility studies, transactions and contracting.

Commodity prices – Daily spot prices index (1 January 2009 = 100)



Source: Thomson Datastream, Ernst & Young analysis

Commodity price volatility is influenced by a number of factors, including economic landscape, geopolitical events and their effect on underlying supply and demand, as well as investment in commodity funds. Mining producer currencies can soften the impacts as their currencies have a strong correlation to movements in metal prices. However, as many global mining and metals companies have the US dollar as their functional currency, the volatility is even more pronounced.

Companies with input costs in stronger currencies, e.g., Australian dollar, South African rand or Chilean peso, but with revenues in the weakening US dollar, will face potential margin pressure. Australia's Fortescue Metals Group, for example, is moving funds earmarked for its Pilbara expansion project from US dollar accounts to Australian dollar accounts to prevent a project cost blow-out due to currency differences.

²⁸Global executive summary', *Global Insight*, April 2011

²⁹ETFs one way to gain from sector's potential rise', *National Post*, 2 April 2011

³⁰Commodity fund interest grows', *Metal Bulletin News Alert Service*, 6 April 2011

While metal prices are always moving, the speed and size of changes have alarmed many in the sector. The precipitous fall in prices in October 2008 moved in a short space of time to levels significantly below the levels of most business models. For some metals, these price falls were below the cash cost of production. Such declines were unexpected and as a result most were caught unprepared and unsure of how to react.

Similarly, the rapid rise in prices from about May 2009 have challenged the new paradigms that mining and metals companies were working with. Since then a supply shortage has only exacerbated the price and currency volatility.

Changes in government policy may challenge global economic growth. These include the implementation of policies of fiscal austerity to deal with budget deficits in some countries, like the United States and within Europe, and the shift in China away from growth, towards development²⁸.

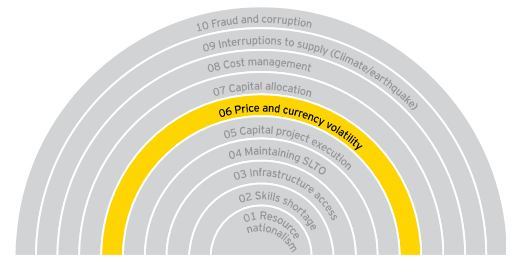
Geopolitical events such as the earthquake, tsunami and resultant nuclear crisis in Japan will have a follow-on effect on commodity prices. Uranium prices are likely to be depressed, although prices for other forms of energy – oil, natural gas and renewable energy forms – are likely to increase²⁹. Weather disruptions, such as the Queensland floods, also caused supply shortages and therefore helped push up prices.

Demand for Commodity Exchange Traded Funds (ETFs) has spiked

Commodity Exchange Traded Funds have gained in popularity, and by March 2011 assets held in commodity ETFs and exchange-traded notes totalled US\$112.39b, up 56% year-on-year³⁰.

ETFs in the market add a new dimension to commodity price volatility beyond pure supply and demand factors. ETFs provide investors with more liquidity and avenues for direct investment into the metals. This is seen as an attractive way to gain exposure to the commodity markets, with the ability to provide exposure to the underlying commodity price which might not be possible via the usual equity route. ETFs are attractive investments due to their low cost, tax efficiency and stock-like features.

Some analysts believe that ETFs are fundamentally altering the relationship between commodity prices and the US dollar. For example, in periods of extreme risk aversion and US dollar strength, gold prices can still rally in response to inflows into physically backed gold ETFs.



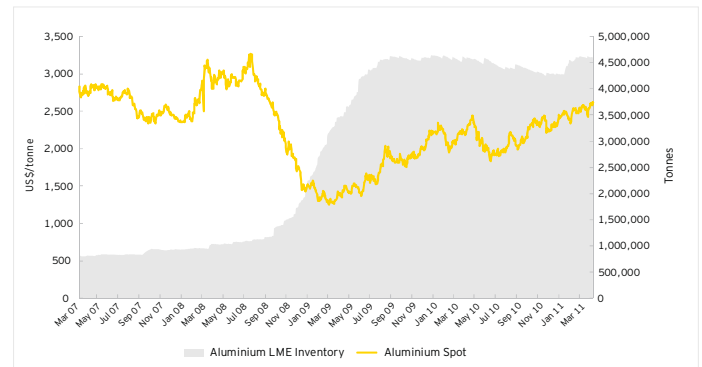
Similarly, given the recent launch of ETF products linked to platinum and palladium, the investor flows may play an increasingly important role in driving Platinum Group Metals (PGM) prices.

The increase in holdings of physically-backed commodity ETFs could further distort the demand and supply imbalance and hence the knock-on effect on commodity prices. For instance, when commodity prices fall, investors may choose to offload the ETFs which would flood supply to the market and hence cause the commodity price to drop even further. Aluminium is becoming increasingly vulnerable to a price correction for this very reason.

Since mid-2007, financial speculators have caused an unusual trend in the aluminium markets where despite high LME and Shanghai Inventory, the aluminium price kept rising and there was a persistent contango – a phenomenon in which forward prices are higher than spot prices. This is largely because historically low interest rates (e.g., LIBOR) have lowered the cost of finance, and the lack of economic activity has reduced warehousing rates. Therefore, speculators are able to engage in an arbitrage play known as ‘cash and carry’ – a situation in which speculators buy physical product today and sell forward. The low holding costs (interest and storage) are less than the available contango.

The move into backwardation in aluminium means it is no longer profitable for investors and it is quite likely that existing positions will unwind, and decreasing new positions will ensue. As inventory is very high and supply will continue to exceed demand it is likely that the aluminium price will remain soft over the next year despite a more positive medium term outlook³¹.

Aluminium spot vs Inventory March 2007–March 2011



Source: Bloomberg LP

Steps mining and metals companies can take to respond to this risk:

- ▶ Expanding scenario testing to wider parameters of price and foreign exchange rates
- ▶ Considering adequacy of liquidity arrangements to respond to these scenarios especially for short-term shocks
- ▶ Investigating expanded use of natural hedges
- ▶ Reassessing hedging strategies to provide ‘catastrophe’ cover
- ▶ Focussing more closely on customer credit terms and collection of taxation refunds
- ▶ Protecting profitability by continuing to reduce operating costs by pursuing and maintaining cost containment strategies adopted during the financial crisis
- ▶ Exercising prudence in capital allocation and performing stress testing with extreme price assumptions
- ▶ Diversifying metal portfolio and jurisdictions to mitigate the impact of a fall in prices of various metals and currency effects on local costs
- ▶ Pursuing hedging strategies to reduce currency volatility to maintain predictable cash flow

³¹‘The Lodestone’, JP Morgan, 4 February 2011



“As we headed into 2010, Capital allocation was the number one risk facing global mining and metals companies. A year on and a dynamic shift in the industry has occurred, largely thanks to the recovery of prices and record cash flow and earnings. However capital allocation still remains high up the risk agenda.”

Lee Downham, Global Mining and Metals TAS leader, Ernst & Young

07

Capital allocation

(down from ranking 1 in 2010)

What a difference a year makes in capital allocation. In 2010 Capital Allocation was the number one risk for mining and metals companies as they experienced wild swings in prices, exchange rates, capital availability (debt & equity), minerals taxation regimes and risk appetites. This volatility made decision-making around how to allocate capital extremely difficult. If capital was available, it was most likely equity and biased allocation decisions in favor of organic growth.

The opening up of bond markets, the return of bank lending to the sector and competition for project execution resources has brought this back into balance.

Moving into 2011, the sector has been experiencing record levels of earnings and leverage is running close to all time lows. With balance sheets strong, banks are also lending once again to the sector at affordable rates. However, despite the increased availability of capital, the subject of allocation still remains front of mind as management struggle to make investment decisions in the face of volatility – and associated risk – caused by macro economic instability.

How mining and metals companies respond to growth options is now less constrained by capital availability and instead more related to attitudes towards risk.

The importance of assessing acceptable risk and return

From our survey of audit committee members of major mining and metals companies in 2010, we produced the report “*Governing not grinding*”³² which highlighted the importance of ongoing assessment of risks and their bearing on accepted rates of return. Responses from the survey participants demonstrated how this process impacted the capital allocation decisions directed by Boards.

They told us that major projects were delayed or divested where the level of risk and rate of return appeared misaligned and hedging strategies were re-considered. Capital was diverted into vertical integration to mitigate price risk; into value-add product ranges to minimize margin impact; and into geographical diversification to mitigate political risk.

However, our survey also revealed that a coherent strategy for re-assessing risks and returns was not consistently used industry-wide, despite its fundamental importance to decision-making.

A thorough understanding of business risks, and how they are changing, can help provide choices about both the timing and nature of capital allocation, and about the most responsible and effective method of capital management.

Capital conundrums

Within a wider risk management framework, capital allocation decisions facing CEOs in 2011 and beyond reflect the changed, optimistic outlook. Their choice now concerns how to allocate capital to achieve growth and deliver best returns for shareholders:

► Grow or give-back

Mining companies have come under increasing public pressure to return cash to shareholders, a pressure compounded by the greater prominence of hedge funds and institutional investors. Shareholders are concerned that mining and metals companies will spend too much on organic growth projects in a hot environment, and thereby lowering rates of return. Also they are concerned that sector companies will overpay to achieve growth via mergers and acquisitions.

Indeed, some sizeable share buyback programs have been undertaken, including BHP Billiton’s US\$10b and Rio Tinto’s US\$5b buyback programmes. However, a survey of mining executives in March 2011³³ revealed that many feel the current volatility means a decision about returning cash to shareholders is too difficult to make. Only 20% of participants believed that greater levels of cash should be returned now, with even less certainty about using cash for M&A. There remains a great deal of nervousness around the optimal timing of capital allocation decisions, and companies are under greater shareholder scrutiny than ever over returns.

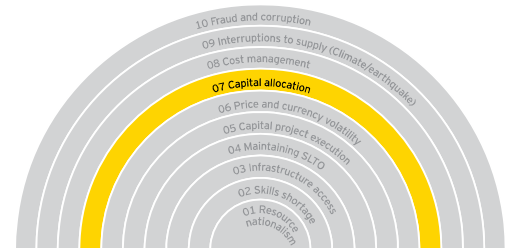
► Build or buy

Last year saw a notable shift of focus to organic growth, with risk aversion and volatility among the factors impacting appetite for large-scale M&A. This has continued throughout 2010 and into 2011, with significant capital investment programmes in existing projects underway by the majors. Organic growth can enable better control over costs through periods of volatility, ramp-up of production in periods of high prices, and greater visibility over returns to shareholders than M&A. However, it is not without its risks.

Input and capital costs are rising across the industry. Macro risks such as economic stagnation or downturn, resource nationalism and commodity oversupply could lead to critical overexposure for those that have not sought diversification routes. The mining services industry may not be able to meet industry-wide demand.

³²“Governing not grinding: global audit committee survey of mining and metals companies”, Ernst & Young, 2010

³³Ungeared for growth webinar survey



Relentless pressure to replace reserves and increase grades will also challenge companies to look beyond their existing assets. The right, synergistic acquisition opportunities come along rarely: can management afford to miss out to the competition?

1H 2011 transactions and capital raising activity suggests that while doing deals has become affordable again (bank lending is available for the right projects, and industry net debt levels are nearing the low point that precipitated mass-scale M&A in 2006), deal activity remains relatively restrained compared with 2007 and 2008.

Cautiousness is continuing to impact large-scale M&A, along with increasing competition for assets and a lack of quality acquisition opportunities. A key deal-stopper is the valuation gap between buyer and seller expectations. Concerns over the uncertainty or complexity of valuations are preventing management from committing significant capital to the pursuit of M&A. Nevertheless, growth to the extent, and at the speed, demanded by shareholders may not be achievable through organic means alone and we expect greater M&A activity over late 2011 and into 2012, barring any major global economic shocks.

► **Consolidate or diversify**

Another capital allocation challenge is whether to grow market share in a particular commodity through consolidation, or to pursue product diversification when significant growth or acquisition opportunities are limited or the acceptable risk threshold has been reached. We have seen examples of both in the last 12 months.

The coal industry in particular has seen a strong round of consolidation as companies sought to drive economies of scale to take advantage of high prices and the strong outlook for the sector. Consolidation of producing assets increases production capacity, growth potential in terms of controlled resources, and pricing power.

By contrast, we suggested a year ago that the industry's leading gold producers would face a challenge of how to allocate capital to maintain and replace such high production levels. Barrick Gold has responded to that challenge in 2011 with a surprise offer for copper producer Equinox Minerals. The company says that while investor exposure to gold will not be reduced, the acquisition will increase its copper leverage per share in a strong price environment, and is in line with its strategy to increase reserves³⁴.

Too much capital?

Increasing availability of capital can itself be a risk. With balance sheets beginning to look 'inefficient' and shareholders calling on special dividends and share buybacks, there is a risk that decisions around M&A are made with less scrutiny. There is little evidence of this to date, but it will be difficult for management to exercise the same discipline in a competitive M&A situation when the alternative is to return cash to shareholders. In theory, of course, the allocation of capital should be judged under the same criteria.

Steps companies can take to respond to this risk:

- Ongoing, regular risk assessment and evaluation of accepted rates of return
- Explicitly express risk appetite
- Scenario planning and testing
- Optimizing portfolio – achieving the right balance in line with strategic growth objectives
- Timely and opportunistic use of capital markets
- Clear capital management strategy and definition of acceptable boundaries (ethical, financial, risk-based)
- Reassessing KPIs – do they monitor key capital allocation threats such as leverage, debt repayment profiles – KPIs should be sensitive to different levels of risk
- Long-term planning through the cycle
- Diversifying funding sources and maturity profiles to provide balance sheet flexibility
- Expanding into new markets (product or geography)
- Spinning out of assets via IPO to unlock value, to provide shareholder exposure to prices or to finance projects

³⁴Paraphrased transcription from Barrick Gold Annual Meeting webcast, 27 April 2011



“Poor cost management can have huge repercussions in the form of long-term growth and shareholder value, and increases the risk of fraud. It remains a significant risk to those mining and metals companies that still don’t have long lasting operational efficiency measures in place.”

Paul Mitchell, Global Mining and Metals Advisory Leader, Ernst & Young

08 Cost management

(down from 3 ranking in 2010)

During the global financial crisis, prudent cost management became the catch-cry for many organizations. Collective corporate memories of this state of affairs are still raw today. Against this background, capital and operating costs have continued to rise through 2010 and into 2011. While operating costs are increasing on the back of higher material prices (e.g., steel, fuel, contractors), supply-side pressures are driving up capital costs.

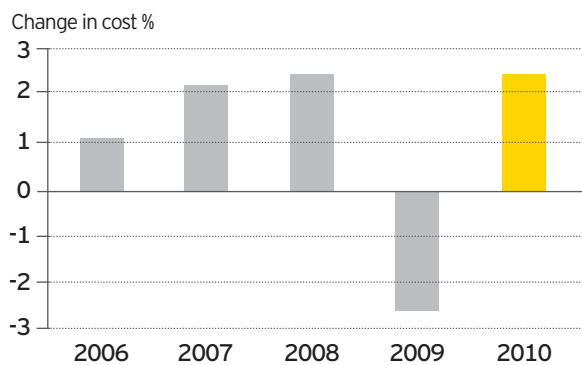
Many cost increases in 2010 were outside the control of miners and metal producers, namely inflation, a weaker US dollar, as well as increased taxes or royalties. Global inflation rose from 1.6% in 2009 to 3% in 2010 and is expected to further increase to 3.6% in 2011 and 3.3% in 2012, however mine based inflation has increased at an even greater rate³⁵.

Cost inputs in the mining and metal sector are highly susceptible to inflationary pressures. In periods of high commodity prices (as witnessed in 2010) input costs in the mining and metals sector increase at a greater rate than macro-level inflation. This is because high commodity prices spur increased production activity, causing the demand for these inputs to exceed supply.

In addition, mining consumables are linked to the price of oil and steel, both of which are increasing as the global economy improves. The price of steel is increasing both in response to improved demand, and the substantial increases in raw materials such as iron ore and coking coal. Transportation costs are also trending upwards as oil prices continue to rise. The oil price (Brent) rose around 24% in 2010 and then surged by 44% y-o-y in the first half of 2011, pushing past the \$100 per barrel mark for the first time since 2008.

Furthermore, high commodity prices are prompting labor unions to demand large wage increases. Indeed, strong union movements, particularly in Australia, South America and South Africa, are giving rise to a wage-price spiral.

Changing costs of diversified miners – weighted average for Anglo American, BHP Billiton and Rio Tinto



Source: Ernst & Young analysis

Currency and tax issues play a part in pushing up costs

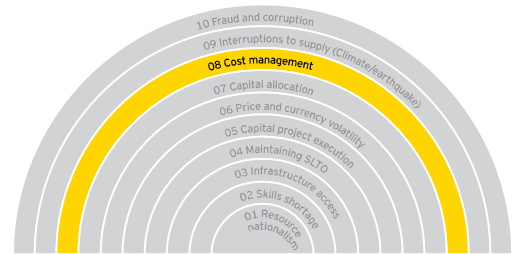
Input costs in major mining regions are also being impacted by strong local currencies such as the Australian and Canadian dollar, South African rand and Chilean peso. Mining and metal companies are also facing new tax burdens as governments look to cash in on high commodity prices. As many governments struggle with deficits, the continuing boom in commodity prices has seen the mining and metals sector remain a target for government revenue raising. Indeed, governments are continuing to assess the economic rent for mining and metals projects in their countries in order to obtain a larger share of higher mineral prices.

As a commodities business, an increase in costs *per-se* does not fully impact an individual project if all other global projects have similar cost increases. This is because prices will rise to provide a sufficient rate of return over the medium term to attract new projects. What is most important is the relative performance of projects and desire of most operatives to be in the lower half of the marginal cost curve. Those producers on the upper half are far more vulnerable to short-term price volatility.

Supply constraints also push up costs

Many metals are already witnessing supply constraints and this is also pushing up capital costs. Ore grades are declining, mines are going deeper underground and traditional supply regions are becoming saturated. As a result, companies are venturing into higher risk and politically unstable territories in a quest to replace

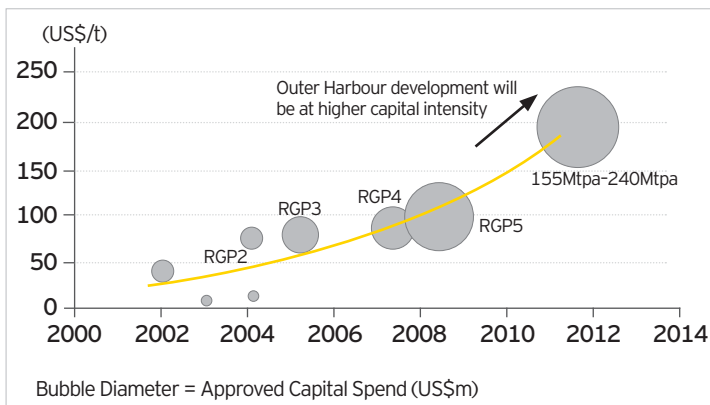
³⁵World in focus: Inflationary challenges', Economic Intelligence Unit, 6 May 2011



the dwindling reserves at their existing mines. By taking on these greater technical and political risks, miners are relying on an increase in confidence in the future rate of return for the metal. The downside is that it also translates into a higher cost of mining.

As a result, the industry is now responding to the rapid demand recovery and consequently stronger prices by putting in place robust capital expenditure plans. However, this is putting renewed pressure on the availability of labor, equipment, contracting services and key raw material. According to company sources, Vale may fall short of completing its US\$24 billion investment plan for 2011, as its projects are being constrained by tight labor markets, equipment supplies and higher inputs prices³⁶.

BHP Billiton capital intensity of Western Australia iron ore expansions



Source: "Australia Metals & Mining," 8 April 2011, Morgan Stanley Research, via Thomson Reuters

The implications of not managing costs effectively may limit long-term growth, erode shareholder value (reduced profit margins and dividend payouts), impair assets and increase the risk of fraud. Therefore, mining and metals companies are targeting controllable costs with renewed vigor. They are striving to drive their cost positions further down the industry curve by implementing some long lasting operational efficiency throughout the value chain, or by improving productivity to spread fixed costs over a larger production base.

What are companies doing to maintain their position on the marginal cost curve without compromising growth?

- ▶ Investing in new technology
- ▶ Substituting capital for labor
- ▶ Shifting from contract mining to owner-operated mines, e.g., Rio Tinto, Gold Ore Resources and Quadra FNX Mining to decrease direct operating costs
- ▶ Installing their own power facilities, e.g., UC Rusal has established its Boguchanskoye energy and metals complex (BEMO) in Russia
- ▶ Investing in logistics and transport infrastructure, e.g., Vale is building a 20-vessel fleet of 400,000 tonne capacity for competitive iron ore exports to Asia
- ▶ Optimize the use of equipment (mapping utilization to demand)
- ▶ Centralize administrative functions away from higher cost mine based activities
- ▶ Merging to capitalize on cost synergies, e.g., the proposed merger of Japan's Nippon Steel and Sumitomo Metal Industries

Steps mining and metals companies can take to respond to this risk:

- ▶ Focusing on sustainable cost reduction programs
- ▶ Divesting non-core assets
- ▶ Reviewing capital tied up in high levels of pre-stripping, advance development and stockpiles
- ▶ Considering the use of contract mining vs sale or leaseback
- ▶ Reviewing supplier contracts
- ▶ Outsourcing
- ▶ Creating strategic joint ventures to optimize economies of scale

³⁶Cost pressures seen hurting Vale in short term', Reuters, 6 May 2011



"In 2010 and 2011 numerous natural and climate disasters have taken place around the world. For many businesses, the consequences of these catastrophes have extended beyond individual projects, right across the supply chain, with far-reaching implications for prices, future supply and investment decisions."

Michael Rundus, Partner, Advisory, Ernst & Young

09

Interruptions to supply

(new)

The recent occurrence of natural and environmental catastrophes, including the Japanese earthquake and tsunami, as well as the Australian, Colombian and Indonesian floods, have brought the risk of large-scale disaster, and its impact on supply, into the top 10 for 2011 and 2012.

Additionally, the recently improved financial performance of mining and metals companies and the skills shortage have caused other stakeholders – workers, unions and local communities – to take action in an attempt to gain a greater share of the upside. This has given rise to more industrial and community action that has interrupted production, or prevented production delivery, in many places around the world.

The risks to continuity of supply can be considered in terms of two levels of probability and supply impact:

- 1. Medium probability/low or short-term impact** risks are those that temporarily impede production from particular projects. The risk event tends to be limited to a single project, meaning the impact on the producer can be potentially significant but is less severe or shorter-term on broader industry supply.
- 2. Low probability, high impact** risks are those that have a widespread impact on production and infrastructure, cause significant immediate supply disruption, and have potentially long-term consequences for both the producer(s) involved and wider industry supply.

Examples of the first level risk include ongoing project risks such as interruptions to power supply, labor strikes/shortages, equipment failure, supply chain failures and mine site criminal activity. Effectiveness of risk planning and financial liquidity determine the company's ability to respond and recover quickly, and to mitigate the disruption to supply.

Low probability, high impact events such as natural disasters, catastrophic asset failure, environmental damage and global economic crisis, have wider reaching and longer-term implications for supply. Asset damage can be widespread, extending to infrastructure and along the supply chain, causing short to medium-term disruption to supply on a potentially large scale. Environmental catastrophes can lead to industry-wide regulatory change, inhibiting future investment in new supply – with inevitable longer-term consequences for the industry.

The full impact of past catastrophes continues

The devastating floods and cyclones in Queensland, Australia in late 2010/early 2011 highlighted the compounding consequences of natural disaster along the supply chain, and the impact of interrupted supply to the global coal industry. ANZ Bank estimated that flood-related outages represented 41% of the world's metallurgical coal exports and 8% of thermal coal exports³⁷.

The Queensland Resources Council (QRC) estimated that the flooding has resulted in A\$2.3b of lost sales and a 25%-50% reduction in production³⁸. The QRC reported in mid January that only 15% of Queensland's coal miners were in full production, 60% were operating with restrictions, and a quarter of the industry had yet to resume operations³⁹.

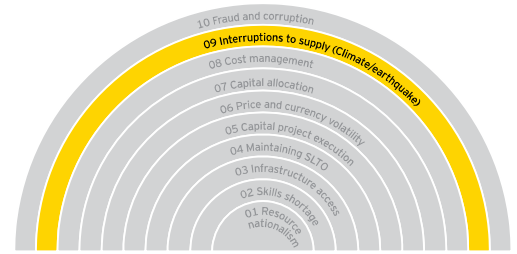
Key infrastructure was also severely impacted by the catastrophes. 'Force majeure' was declared by QR National on rail services to many mines. For instance, the port of Gladstone received no coal supplies for shipment for the first two weeks of January 2011, leading to critical depletion of stockpiles – 'normal' week exports are around 1.3m tonnes. Turnaround at ports was delayed, with reports that 100 bulk carriers were waiting off the coast of Queensland, facing turnaround times of 22 days and mounting demurrage fees.

With such a significant interruption to supply, the impact on prices was inevitable. Australian suppliers and Japanese buyers agreed April-June quarter contracts for hard coking coal at \$330/t FOB. This is up 44% on the January-March quarter headline price of \$225/t and the highest contract price ever.

³⁷Australia: of droughts and flooding rains: the impacts of Australia's inundation', *IHS Global Insight*, 2 February 2011

³⁸Flood coal losses ramp up, Queensland Resources Council', 27 January 2011

³⁹Australia: of droughts and flooding rains: the impacts of Australia's inundation', *IHS Global Insight*, 2 February 2011



The consequence of disaster can include secondary supply implications

Environmental tragedies, such as, the Hungarian ‘red mud’ disaster⁴⁰ have caused immediate supply interruptions through damaged production facilities and infrastructure.

They can also lead to secondary supply implications, such as industry-wide regulatory changes, closure of similar production facilities, or abandonment of proposed investment in new sources of supply. All of this due to fear of a parallel disaster occurring or as a result of heightened risk aversion among investors and shareholders.

The Ajka Hungarian disaster created international concern about the safe storage and remediation of bauxitic toxic waste (the International Aluminium Institute has warned that stockpiles of red mud residue are set to reach four billion cubic metres by 2020⁴¹). It has also leant weight to those in opposition to the Vietnamese Government’s plans for the construction of six new large-scale bauxite mines and alumina production plants.

Understanding and preparing for the occurrence of catastrophic risk is challenging but it is also essential. The consequences extend beyond individual projects, right along the supply chain, with wider-reaching implications for prices, future supply and investment decisions. Planning for such risks, and ongoing evaluation of management’s ability to respond to and recover from such risks, is vital.

Geographic diversification to mitigate risk

Many disruptions to supply can be regional, for example flooding events or national strikes. Having flexibility in a global production base can not only allow continued production and hence cashflow, but also allow the uncommitted production to be sold at the inevitable higher spot prices resulting from supply disruptions. These drivers enhance the value of global producers as this diversification lessens risk and results in higher price-earnings multiples.

Business continuity planning

With the spate of natural and environmental catastrophes over the last 12 months, and the impact of these disasters still ongoing, Business continuity planning (BCP) is increasingly becoming an essential ‘must have’ for all mining and metals organizations.

BCP is how an organization prepares for future incidents including fires, earthquakes or other disasters that could jeopardize an organization’s core mission and its long-term health. A completed BCP cycle results in a formal printed manual available for reference before, during, and after disruptions have occurred. Its main purpose is to reduce adverse stakeholder impacts determined by both the potential disruption’s scope and duration. Anglo-American for instance, is preparing for another heavy wet season starting in December 2011 by doubling its mine’s in-put pumping facility in case there is any flooding to allow it to make sales before its competitors and while spot prices include a scarcity premium. It is this kind of preparation, and having BCP as part of an organizational learning effort, that can help companies prepare for and successfully reduce operational risk.

Steps mining and metals companies can take to respond to this risk:

- ▶ Undertaking worst-case scenario planning – develop a range of operational responses and contingency plans
- ▶ Developing a disaster response and recovery strategy – how confident are you that you have the controls and mechanisms in place to respond quickly?
- ▶ Evaluating the effectiveness of your internal controls and warning systems
- ▶ Analyzing the strengths and capabilities of your supply chain – consider first, second and third order risks
- ▶ Ensuring there is a clear owner within management for all significant risks
- ▶ Preparing a strategy for minimizing damage to reputation – effective PR and investor relations
- ▶ Re-evaluating how contractual relationships with contractors and partners are managed – how exposed are you should the worst case scenario occur?
- ▶ Evaluating liquidity – can you ensure business continuity?
- ▶ Evaluating your exposure if you are at the end of a supply chain

⁴⁰On 4 October 2010, a reservoir at MAL Hungarian Aluminium’s Ajka alumina plant collapsed, causing toxic waste to flood the local village. The disaster led to human casualties and widespread environmental damage.

⁴¹‘Red mud storage issue could reach 4bn cubic metres by 2020’, *Metal Bulletin*, 9 March 2011



“Fraud and corruption is becoming a very real risk, particularly as mining and metals organizations are taking on projects in riskier locations. The effects of fraud and corruption are far reaching and can have a serious impact on a company’s social licence to operate and in turn its bottom line.”

Paul Fontanot, Fraud Investigation & Dispute Services, Oceania Managing Partner, Ernst & Young

10 Fraud and corruption

(up from ‘under the radar’ in 2010)

Mining and metals have received significant bad press over alleged fraud and corruption in the sector. Increased level of activity in frontier countries is sometimes being undertaken with slimmed down control environments as companies look for ways to preserve margins. For those companies seeking growth, the propensity to sometimes take on greater political risk is accompanied by a greater inherent risk of fraud and corruption.

Governments have responded by implementing regulatory changes which increase company responsibility. The UK’s enforcement of anti-bribery laws has been instituted. The UK Bribery Act (the Act) should make enforcement easier by removing the complicated laws it replaces. The Act, (in force on 2 July 2011) affects not just UK-based businesses, but potentially the global operations of foreign companies doing business in the UK (i.e., raising capital), as well as UK citizen’s working in foreign companies. The Act introduces a new corporate offense and director liability which pays close attention to the role of individuals in bribery. Unlike the US Foreign Corrupt Practices Act (“FCPA”), the Act has no exception for facilitation payments – small “grease payments” – paid to government employees and no “books and records” prohibitions, whilst also outlawing commercial (public and private sector) bribery. Prison terms of up to 10 years can apply.

The defence for a director is to demonstrate that the company puts adequate procedures in place to prevent bribery and corruption. This requires greater preventative steps to be in place, depending on the higher the inherent corruption risk. That is, much greater preventative action needs to be taken if investing in Somalia rather than Canada. Since the UK is still the deepest capital market for the mining and metals sector, we expect the implications to be significant. We expect directors to direct capital away from high corruption risk countries. Will this change behaviours of corrupt countries or merely change the source of capital to less scrupulous providers?

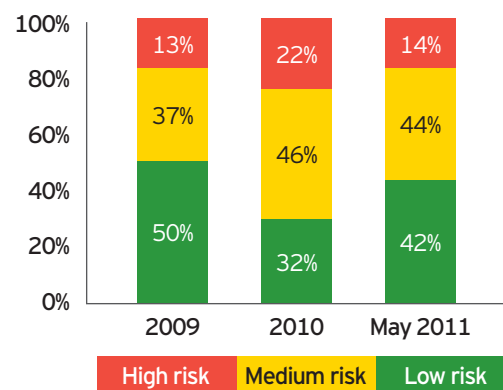
In the US, the introduction of the the Dodd-Frank Act requires the disclosure of payments made to governments and governmental entities by issuers involved in the commercial development of oil,

natural gas or minerals. Securities and Exchange Commission (SEC) listed companies will be required to disclose in their annual reports any payment made to any non-US government or to the US Federal Government for purposes of the commercial development of oil, natural gas or minerals. Some others have begun to voluntarily disclose global payments.

Ernst & Young research shows that in 2010 the share of M&A investment into high risk destinations increased from 13% in 2009 to 22% in 2010. In the first five months of 2011, the statistic was already at 14%.

Target destination by risk level⁴²

(2011 data for first five months only)



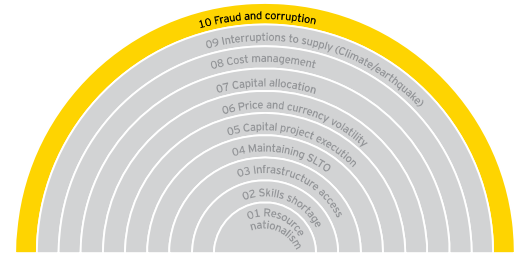
When reviewing this investment activity by mining and metals companies, it is concerning to note that the top three countries for incidence of corruption in 2010 according to Behre Dolbear⁴³ – Indonesia, Kazakhstan and Russia – have already been the target of US\$9.02b, US\$506m and US\$3.09b respectively of M&A activity in the first five months of 2011. The fact that facilitation fees are a common business practice in such locations, requires increased rigor in processes and diligence from companies doing business in these regions.

While corruption is an issue in many countries, Africa as a whole is expected to see an overall rise in cross-sector foreign direct investment from US\$84b in 2010 to US\$150b in 2015. Companies will need to weigh risk and rewards where greater corruption risk lies.

⁴²The risk level is based on IHS Global Insight’s country risk-rating system that contrasts the investment climate in 203 countries around the world. The system separately rates the political, economic, legal, tax, operational, and security environments in each country to provide a comprehensive picture of the quality of conditions and level of stability encountered by investors in each country. The principal quality these ratings measure is stability. It is stability that businesses need most to make secure investments and to plan ahead. In addition to stability, however,

businesses require adequate conditions in the first place; governments must ensure the right policies and safeguards are in place to allow businesses to operate effectively. A country with a high risk rating is where businesses face continual threats to their operations, either from direct physical intervention, or because of the poor underlying conditions and stability.

⁴³2010 Ranking of countries for mining investment where “not to invest”, Behre Dolbear



Frontier countries rate poorly on Transparency International's Corruption Perception Index 2010 matched with quest for expanded production.

Country	CPI score	Rank	Major commodities
Guinea	2.0	164	Bauxite, diamonds and iron ore
Democratic Republic of Congo	2.0	164	Cobalt, copper, diamond, tantalum, and tin
Papua New Guinea	2.1	154	Copper, gold and nickel
Russia	2.1	154	Coal, copper, aluminium, bauxite, nickel and diamonds
Mongolia	2.7	116	Coal, copper, gold and uranium
Indonesia	2.8	110	Coal, copper, gold, natural gas, nickel and tin

Source: Transparency International (www.transparency.org). The Corruptions Perceptions Index (CPI) measures the perceived levels of public sector corruption in 178 countries and territories. It scores countries on a scale from 10 (very clean) to 0 (highly corrupt).

It is concerning to see in Ernst & Young's 11th Global Fraud Survey, that 42% of companies never or not very frequently conduct fraud and corruption risk post due-diligence.

The most common areas of fraud and corruption risk for mining and metals companies are in relation to:

- ▶ High levels of government regulation
- ▶ Operational risks in remote locations
- ▶ Procurement
- ▶ Expenditure in remote locations
- ▶ Local compensation
- ▶ Contract management

Management of potential fraud and corruption in the mining and metals sector is critical for the following reasons:

- ▶ Supports social licence to operate
- ▶ Provides tangible evidence of a culture of integrity
- ▶ Facilitates early detection
- ▶ Limits unpleasant surprises that can distract management and invites regulators in
- ▶ Addresses concerns of external auditor and board of directors
- ▶ Limits potential for class action lawsuits
- ▶ Safeguards the assets and reputation of the company on behalf of investors

Steps mining and metals companies can take to respond to this risk:

- ▶ Knowing and understand the key laws
- ▶ Becoming familiar with the accepted standards and guidance for designing and effective compliance program
- ▶ Conducting a corruption risk assessment
- ▶ Designing and implementing the anti-corruption compliance program
- ▶ Monitoring your anti-corruption compliance program, through programs such as Anti-Bribery and Corruption Data Analytics
- ▶ Incorporating anti-corruption compliance program into M&A and joint venture due diligence
- ▶ Periodically reassessing risk and modifying the program

Under the radar

- 01 Resource nationalism
- 02 Skills shortage
- 03 Infrastructure access
- 04 Maintaining a social licence to operate
- 05 Capital project execution
- 06 Price and currency volatility
- 07 Capital allocation
- 08 Cost management
- 09 Interruptions to supply
- 10 Fraud and corruption
- 11 Access to secure and cost effective energy
- 12 Access to capital
- 13 Climate change concerns
- 14 Consolidation
- 15 Pipeline shrinkage
- 16 Scarcity of water
- 17 Increased regulation
- 18 New communication vehicles for community activism
- 19 New technologies

Our 'under' the radar are those risks that did not make it into the top 10 for 2011/12, but have been on the top 10 lists in previous years or have the potential to do so in the coming years.

11

Access to secure and cost effective energy (down from 7 in 2010)

Under-investment in energy in developing countries limits the supply available for mine expansion or new projects. Disruption of energy is causing delays in project development and production, and is also causing concern over safety. Increasingly scarce energy is being directed to residential use at the expense of large consumers such as the high value adding mining and metals users. This is not just an issue about continuity of supply and hence production, but also safety where the 'life-support' systems for deep underground workers depend on reliable energy.

Competing interests can also confound the future of secure energy. For example Chile, which has less access to gas, faced strong pressure not to replace the relatively low CO₂ emitting gas-fired power with coal-fired power. Enter the plan for large scale hydro-electric power. However, these plans have also been thwarted by environmental concerns over the new dam and the visual impact of high voltage power lines.

Recent events in Fukushima have had a real impact on the energy intensive metals smelting and steelmaking sectors. Firstly, in Japan with the majority of nuclear power plants not producing metals, producers are operating with/or not operating because of power shortages. The decision in Germany to shut its nuclear power plants by 2022 which generate 23% of power, means more expensive power from either France or renewables. This will have a dramatic impact on German steel and smelting.

12

Access to capital (down from 8 in 2010)

The mining and metals sector is heading for another record year of financing as the industry's growth story continues, raising total proceeds of \$190b in 1H2011. For mid-tier and major companies, access to capital is no longer the major concern that it was just two years ago, with proceeds up in all asset classes except convertibles. For larger companies, debt is now widely accessible via a buoyant corporate bond market driven by yield-seeking investors. Bank debt is also available, primarily for refinancing, but increasingly for acquisitions. Junior companies with quality projects have been able to access the equity markets through primary and secondary offerings of shares.

However, economic uncertainty and market volatility has made pricing and valuations a particular challenge, leading to the postponement of some high profile IPOs. Perception of political and macroeconomic risk has also impacted investor sentiment towards junior companies, which have seen volatile share price performance over the period and remain in most cases unable to raise debt for project finance. In the fight to tame inflation in China, the lending ability of Chinese banks has been curtailed which has restricted the

principle source of capital for State Owned Enterprises (SOEs). We expect the SOEs to make greater use of foreign capital markets.

Timing of access to capital will be critical. Volatility and uncertainty can severely and suddenly impact investor demand, pricing capacity and valuations. A continuation of bullish bond market

conditions will be dependent on a supportive macroeconomic backdrop – companies with sizeable financing requirements may do well to access the markets sooner rather than later in 2011. Juniors need to be opportunistic, issuing equity when demand is there, and investing in relationships with a broader range of potential investors and strategic partners.

13

Climate change concerns (down from 10 in 2010)

Climate change is still a major issue for the sector. Climate change inaction poses a direct challenge to mining and metals companies' reputation and their social licence to operate. Around the world, governments are moving to introduce schemes to price externalities attributable to carbon emissions or require

mandatory disclosure of carbon emissions, such as Australia's draft legislation. These schemes are likely to have a direct impact on the profitability of energy and carbon intensive sectors, such as mining and metals.

14

Consolidation (down from 11 in 2010)

Low gearing, strong earnings and good capital availability are creating an ideal environment for M&A. In 1H 2011 mining & metals companies completed 19 megadeals (>\$1b), twice as many as 1H 2010. The average deal value has more than doubled year-on-year – a result of commodity prices driving higher valuations and a shift towards larger transactions as capital becomes less constrained. While the volume of deals is broadly flat year on year at 511 for 1H 2011, the value has doubled year on year to \$96.3b. Momentum is growing, with \$33.8b of 1H 2011 deals completed in June.

However, macro-economic issues, rising resource nationalism, and an uncertain pricing environment have increased volatility and risk for M&A and are therefore making decisions difficult. This is reflected in the fact that the volume of deals is actually down on

2010. Strategic and 'one chance' deals are being undertaken whilst more speculative deals are being deferred. Greater time is being taken to complete deals due to higher market uncertainty and greater political complexity.

The announced transaction pipeline suggests the upward trend in deal values will accelerate in 2011. We expect Africa to feature prominently as a focus for deal making in 2H 2011 as it remains a key destination where management believe value can be identified. We also expect China's 12th Five Year Plan to continue to drive domestic consolidation. Transformational deals may not return this year, although we expect some to complete in 2012 as management pursue alternatives to organic growth and shareholder cash distributions.

15

Pipeline shrinkage (down from 12 in 2010)

Exploration is the life blood of the mining and metals sector, as known reserves waste with production. Thus far in 2011 commodity prices are robust and financing for juniors and intermediate mining companies is available. As a result, the Metals Economics Group has estimated that total spending on metals exploration in 2011 will increase to a new record of US\$16b⁴⁴.

However, the low prices in the first part of the previous decade are still impacting the pipeline of projects that are development-ready. Also the suspension of exploration and the dismantling of exploration capability during the global financial crisis has meant that 2009 and part of 2010 was spent in re-assessing data and rebuilding exploration priorities. The 2-3 year hiatus in meaningful exploration will also impact the future availability of developments.

⁴⁴CESCO – metals exploration spending seen rising 40% in 2011', Reuters, 4 April 2011

16

Scarcity of water

(down from 13 in 2010)

Population growth, urbanization and climate change are all contributing to increasing stress on water supplies. The mining industry can require up to 8,000 litres of water per ton of ore extracted. Water scarcity will, therefore, directly impact the ability of the sector to produce at the current rate. And if the challenges of water access in the Attacama Desert of Chile were to be replicated in other mining localities, mineral supply could be severely restricted. While competition for land-use has long been a challenge of the mining sector for many years, the scarcity of

water availability has increasingly led to competition for water use. This has been no more evident than with the Tia Maria project in Southern Peru which lost both its social and legal licence to operate over competing water use. Mining companies are being prompted to spend more to increase their water efficiency. Improved technology in the water industry provides a range of methods to improve efficiency, including better ways of treating waste and saline water for reuse, and improved modelling of water systems.

17

Increased regulation

(down from 15 in 2010)

As mining and metals companies have expanded their global footprint, they are exposed to both greater regulation and greater diversity in regulation. Mining and metals companies are experiencing significant fatigue around managing the myriad of often redundant compliance and regulatory reporting activities, the cost of which is massive and burdensome. Increasingly,

companies may seek risk convergence initiatives which allow them to coordinate the various risk and control processes. These may help to drive down costs and, perhaps most importantly, help enable more detailed enterprise-wide risk reporting to senior management and the board.

18

New communication vehicles for community activism

(down from 16 in 2010)

The advent of Web 2.0 has increased the visibility of the industry's investment and development portfolio. Public concern over the role the mining and metals sector plays in national economies and the green debate, for instance, are played out openly on this new media platform. To mitigate the risk, a number of corporations and

governments are putting more resources into direct-to-the-public and non-government organizations communications, with facilities for feedback and debate.

19

New technologies

(down from 17 in 2010)

Evolving technology can be both a risk and a boost for the sector. Advances in technology can provide non-mineral alternatives for existing uses and aid the recovery and recycling of existing minerals stocks, therefore reducing demand for minerals products. On the flip side, the advent of new technologies can also drive the demand for sector products and facilitate the commercial exploitation of otherwise uneconomic mineral discoveries. The development of battery technology for the electric car, for

example, will lead to an increased demand for commodities such as nickel and copper. As projects become technically more complex or both, the cost and availability of specialist skills is harder to procure. Technology often provides a good option. Substituting capital for labor has been an attribute of a maturing sector and the scientific nature of the sector has an obvious bias to technical approaches to industry challenges.

Getting prepared

Is your company adequately prepared for risk?

How well are the risks and risk appetite defined, communicated and understood at your company? If you're not sure about the answer to that question then chances are your company needs to examine its risk profile with some urgency.

This report illustrates the top 10 risks for mining and metals companies now and in the coming year and outlines our view of other major challenges that could pose a threat in the near future. It is important to note that this is only a current snapshot, and that risks are subject to change at any time. These are not predictions, but taking them into consideration may help companies to prepare. Our research in *Governing not Grinding* (2010) shows that leading practice companies are re-assessing risk in this volatile environment regularly, with most re-assessing quarterly.

Approached properly, the process of risk management can be of assistance even if a specific event does not occur. Working through scenarios and impact studies can result in opportunities to tighten processes and controls, leading to dialogue and action plans that deliver value.

Ernst & Young's experience with companies around the world suggests there is a body of risk management practice emerging, but many companies are still doing very little to address this issue. Many global companies are identifying gaps in their risk coverage that tend to be business and operational, rather than financial. There are steps that company leadership can take to address these issues:

- ▶ **Conduct regular risk assessments** that define key risks and weights probability and impact on business drivers. Many companies undertake some form of risk assessment, but our experience suggests that many of them do not do this on a frequent or ongoing basis. Risk assessment needs to go beyond financial and regulatory risk to consider the strategic environment in which your organization operates and the full extent of its operations. This includes placing effective controls on mergers and acquisitions, IT effectiveness, business continuity planning, project development, operations, transaction integration and expanding into new international territories.
- ▶ **Conduct scenario planning for the major risks** that you identify, and develop a number of operational responses. This can be a useful part of the planning cycle and can help to encourage innovative thinking.
- ▶ **Evaluate your company's ability to manage risks** that you identify – in particular, ensure that your risk management processes are linked to the risks that your business actually faces. While a risk function may bring great value in focus and expertise, companies must avoid the danger that a central function assumes all responsibility for risk management.
- ▶ **Effectively monitor and control processes** as they will provide you with earlier warning and improved ability to respond.
- ▶ **Keep an open mind about where risks can come from.** Ours is an increasingly interdependent global economy and risks that can damage your business can arise in any market sector.

Ernst & Young's Global Mining & Metals Center

With a strong outlook in the sector, the global mining and metals industry is focused on future growth through expanded production, without losing sight of operational efficiency and cost optimization. The sector is also faced with the increased challenge of changing expectations in the maintenance of its social license to operate and meeting government revenue expectations.

Ernst & Young's Global Mining & Metals Center brings together a worldwide team of professionals to help you achieve your potential – a team with deep technical experience in providing assurance, tax, transactions and advisory services to the mining and metals sector.

The Center is where people and ideas come together to help mining and metals companies meet the issues of today and anticipate those of tomorrow. Ultimately it enables us to help you meet your goals and compete more effectively. It's how Ernst & Young makes a difference.

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