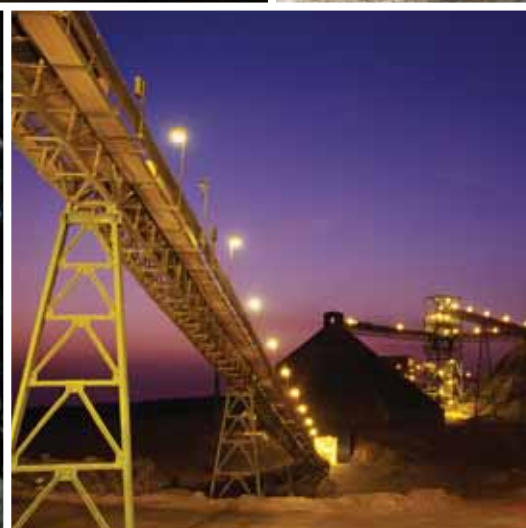




Cost control and margin
protection in the South
African mining and metals
industry

EY

Building a better
working world



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Cost control and margin protection for the South African mining and metals industry is based on research and interviews conducted by EY between May 2013 and August 2013 with senior executives from a number of mining and metals companies operating in South Africa. Executives were interviewed and asked to prioritize their top cost control and margin protection priorities.



Top cost control and margin protection priorities for South African mining and metals companies

- 1 Cost of labor and labor productivity
- 2 Escalating electricity and fuel prices
- 3 Managing transportation and logistical costs
- 4 Effective management of capital
- 5 Supply chain and procurement practices
- 6 Commodity price and currency volatility
- 7 Corporate, administrative and overhead costs
- 8 Safety, health and environmental costs
- 9 Cost of being a socially responsible corporate citizen
- 10 Exploring, discovering and replacing reserves and resources

An aerial photograph of a massive open-pit mine. The mine is characterized by numerous concentric, terraced levels of earth and rock, creating a series of dark, curved ridges and valleys. In the lower right quadrant, a large, circular pond filled with bright green water is visible. The surrounding landscape is flat and arid, with some distant hills and a clear blue sky. A yellow vertical line is positioned on the right side of the image, separating the text area from the rest of the photograph.

Impact of softer commodity prices on the South African mining and metals industry



The favorable commodity prices experienced during the past decade incentivized the mining industry to focus on increasing production, often to the detriment of cost competitiveness and productivity.

Nearly all cost categories in the South African mining and metals industry increased at rates substantially higher than consumer and producer inflation indexes. Many of the input costs are driven by “administered prices” such as electricity and water or by international pricing of steel, oil and rubber.

According to the Chamber of Mines of South Africa (CoMSA),¹ costs have increased between 2007 and 2012 as follows:

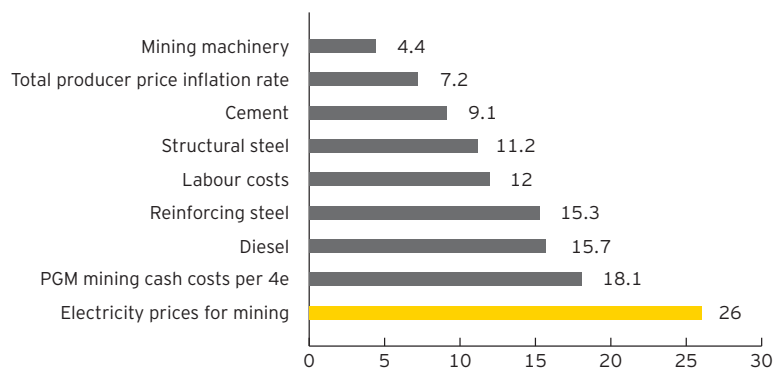
26% per annum average increase in electricity prices to mining sector, from ZAR0.18 per kWh in 2007 to ZAR0.61 per kWh

15.7% per annum average rise in diesel cost, due to higher international oil price

15.3% per annum increase in reinforcing steel price

12% per annum rise in average remuneration paid per worker

Cost inflation affecting the South African mining industry, average annual increase in costs, 2007 to 2012



Source: Statistics SA, Chamber of Mines of South Africa EAU

The South African National Treasury’s budget for 2013 predicted that inflation would average 5.6% in 2013, 5.5% in 2014 and 5.4% in 2015.² Although mining inflation in South Africa is showing signs of slowing down, mining inflation (mining PPI) was 7% at 30 June 2013.

¹“Crisis in SA gold mining sector? Finding a way forward,” Chamber of Mines of South Africa, July 2013.

²“Nersa grants Eskom 8% annual increases over next five years,” *Business Day*, 28 February 2013.



There are many reasons for the rampant cost increases, which include a series of complex issues. Nevertheless, since the commodity prices have cooled off there is significant pressure on margins and the sustainability of higher cost mining operations. Beyond cost inflation in real terms, unit cost inflation has been exacerbated by a lack of associated labor and capital productivity increases, as well as “geological inflation” - the effect of declining grades and recoveries for increased tonnages to be mined. These issues are not unique to the South African mining industry, but they do reflect the maturity of the industry.

Today, the mining sector is significantly more globalized in terms of sources of capital, cost competitiveness and markets for products. Global capital is more mobile than ever and is unsympathetic to operations or countries that are perceived to be performing poorly on cost performance, productivity or risk management. As such, relative global cost competitiveness has more of an impact today than ever before.

South Africa's mining industry continues to be highly dependent on foreign capital to fund existing operations as well as developing new projects. Greenfield mining developments that wish to access the global capital pool must respond to the rapidly changing cost structures, mine planning and productivity expectations of globally orientated investors. As with many rapidly developing nations, the South African mining industry is experiencing significant increases in the cost of labor that is eroding its historical low labor cost advantage. Accordingly, this transition to a higher labor cost environment will require changes to mine plans and a combination of improvements to productivity through offsets and increased use of technology and automation. Those mining companies that are best able to make this transition will become the future leaders in South African mining.

Over the past decade, there has also been a significant shift in the basket of commodities produced both locally and across the globe. The significance of precious metals in the global economy has been overshadowed by the demand for commodities such as bulk commodities and base metals.

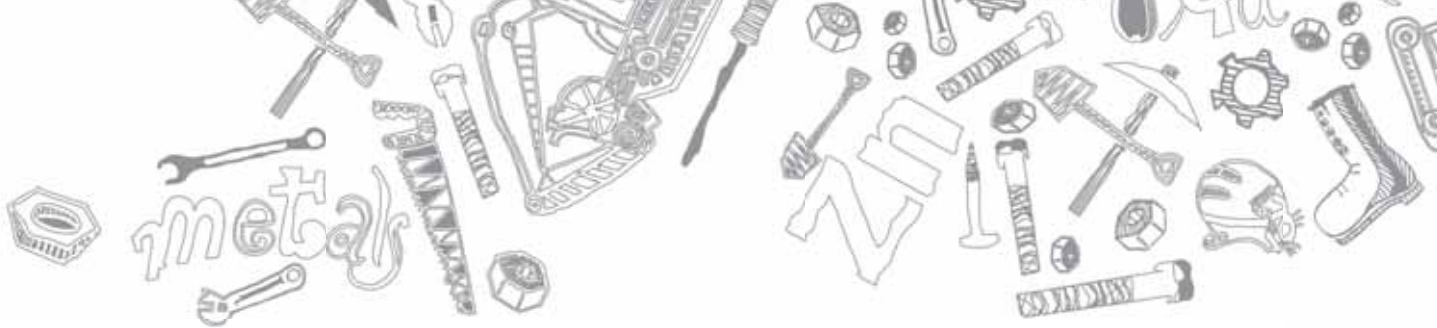
In South Africa, nearly 40% of current mined product sales relate to gold and platinum group metals. Due to their relatively higher costs, and limited influence over globally determined prices, the gold and platinum mines are highly sensitive to commodity prices and currency fluctuations, evidenced by their recent performance at these lower commodity prices. Furthermore, the gold and platinum mines also employ nearly two-thirds of South Africa's 514,000 mine workers. These factors create significant pressure on the precious metals companies to support the economic, sociopolitical and socioeconomic objectives of South Africa. Accordingly, efforts to diversify South Africa's “basket of produced commodities” could alleviate some of the pressures they are facing and assist with the overall growth and sustainability of South Africa's mining industry.

The recent softening of precious metals prices was somewhat later than the softening of other commodity prices. As such, precious metals producers have entered the margin protection challenge somewhat later than their peers in other commodities. Accordingly, precious metals producers should take advantage of the many valuable lessons that can be learned around the mining world on reducing costs, and importantly, embedding better margin performance through the raising of productivity of labor and capital.

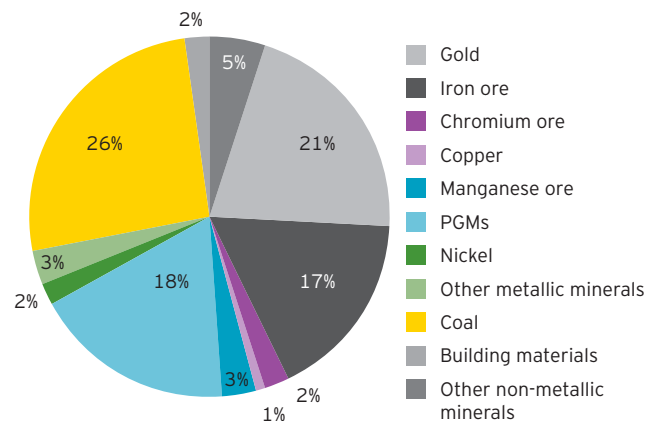
Precious metal producers are also at the forefront of the complex and important social challenges of South Africa. The responsible dealing with these challenges could potentially impose short-term additional costs on the sector that may not be borne in other parts of the world; however, these costs may be necessary to set up and support the sustainability of the sector over the longer term.

Mining and metals conversion and downstream beneficiation are very energy intensive businesses. South Africa is currently experiencing competing demands on its stretched energy supplies. This represents a real constraint for the sector and lower energy operations will be necessary to succeed in an environment of higher energy cost and potentially unreliable supply.

Sufficient, reliable and cost effective infrastructure is vital to ensure a cost effective and globally competitive South African mining industry. Beyond the industry's need for competitively priced and sustainable electricity supply, South Africa's port, rail, road and water infrastructure also requires additional investment to support the development of new projects and to enable cost competitiveness of mine logistics.



Contribution of commodities to total sales revenue 2012



Source: Statistics SA

Investors have also expressed their frustrations with the lack of capital returns as share prices have fallen and are applying increased pressure for greater cash flow returns. Competing for the same cash flow is the need for continued capital expenditure (stay-in-business, expansion and exploration capital) to secure new reserves and resources, which are critical for growth and future investment opportunities. For these reasons, the management of costs has been a key priority for executives of mining companies globally. As they try to embed a lower cost environment the productivity agenda has risen in prominence. The focus of senior management has shifted from production at any cost to being at the "bottom of costs per mined tonne and at the upper ranges of productivity."³

Companies that successfully refocus on productivity, cost control and margin protection will position themselves well to take advantage of opportunities when, true to the industry's cyclical nature, new capital investment returns. The need to harness costs is necessary and urgent; however, there is a fine balance between cost reduction activities and maintaining enterprise value.

The period of weaker commodity prices also offers South Africa's mining and metals industry an opportunity to invest in those areas required to support growth, reposition its business case as a priority investment destination, and capitalise on the next commodity cycle.

The sections that follow share our key findings from our desktop research and interviews with executives from some of South Africa's largest mining and metals companies on their key priorities and approaches to controlling costs and protecting or improving margins.



Wickus Botha
Africa Mining and Metals Leader

³"Drilling down and polishing up," *The Australian Financial Review*, 28 February 2013 via Factiva © 2013, Fairmax Media Management Pty Limited.



Cost of labor and
labor productivity

1

During the past year, mining companies were faced with difficult operating environments and significant declines in their enterprise values. At large, this was caused by lower commodity prices, rampant cost increases, limited available capital for investing, increased risk and complex production challenges.

Labor costs are a significant component of the overall cost of mining, ranging from 20%-25% of total production costs for modern, mechanized and open cast mines to 50%-60% for the mature deep-level underground mines. Despite the abovementioned challenges, the South African mining industry continues to be one of the largest employers in South Africa. With a work force of 514,000,⁴ the South African mining industry employs, and creates opportunities for its people across the entire spectrum of skills and experience. The gold and platinum mines employ more than two-thirds of the workers in the mining industry.

Worker demands for increased salaries and wages have continued to plague the industry. Despite the lower commodity prices and eroding margins, industrial actions and labor strikes have been increasing in both frequency and duration. It is estimated that South Africa's mining industry lost more than ZAR15 billion in production during the strikes in the 2012-13 financial year.

The CoMSA⁵ has calculated that the cost of one day of industrial action in the South African gold mining industry results in:

ZAR350 million	Loss of revenue per day
ZAR10 million	Loss of taxes per day
ZAR100 million	Loss of wages and salaries per day
ZAR45 million	Loss of sales by suppliers to the mining industry per day

According to the CoMSA, the average remuneration per worker has increased by more than 12% per year since 2007, resulting in an average annual increase substantially exceeding consumer and producer inflation indicators.⁶ In this regard, it is crucial for companies to ensure that they communicate the challenges, opportunities and the Organization's financial health directly, candidly and transparently with its employees.

While workers may aspire to higher real wages, during weak commodity price cycles the dialogue should be focused on achieving productivity improvements to justify such increases. Unfortunately, the mining industry did not benefit from labor productivity increases for the past number of years. In contrast, a notable and sustained decrease in labor productivity was experienced. By example, research by CoMSA indicates that since 2007 labor productivity in the gold mining industry, expressed as kilograms produced by worker, declined by 35%.

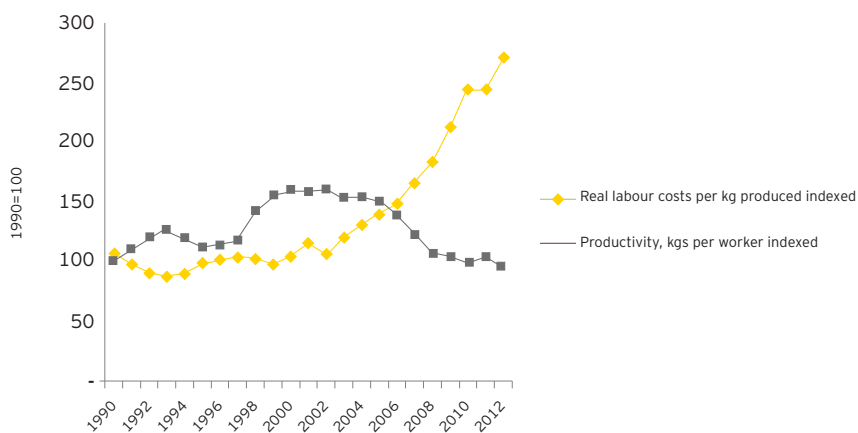
⁴"Quarterly employment statistics, March 2013," Statistics South Africa, 18 June 2013.

⁵"Centralised collective bargaining in the South African gold industry," Chamber of Mines of South Africa website, [http://www.bullion.org.za/documents/wages 2013/6909_13%20FS%20BARGAINING%2036BB.pdf](http://www.bullion.org.za/documents/wages%2013/6909_13%20FS%20BARGAINING%2036BB.pdf), accessed 16 July 2013.

⁶"Crisis in SA gold mining sector? Finding a way forward," Chamber of Mines of South Africa, July 2013.



RSA gold mining, labor productivity (kgs produced per employee) and real labor costs per kg of gold produced, with base indexed to 1990



Source: Statistics SA

Productivity is influenced by a combination of factors related to human capital, regulatory, geological, production and infrastructure. All these factors contribute to the overall productivity. Unfortunately, due to the complexity and interdependence of these influencing factors, meaningful productivity improvements are difficult to achieve in the short-term and in most cases require longer-term strategies and operational discipline.

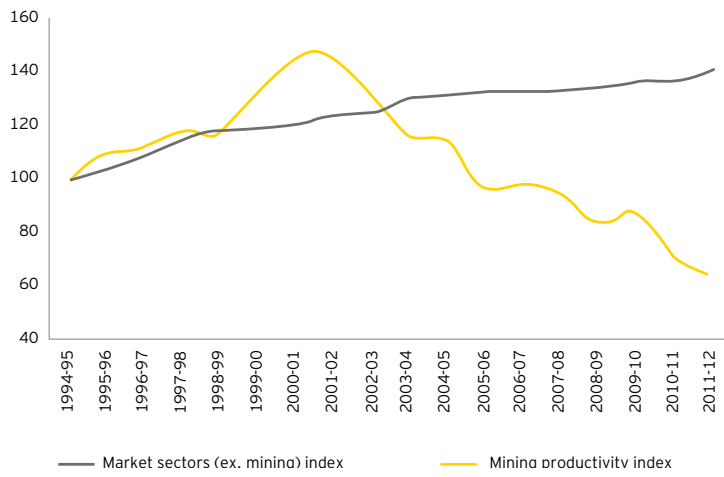
In the South African context, an effective, efficient and productive work force is the cornerstone of overall productivity and performance. Practical examples of some of the challenges and contributing factors include the traveling time it takes workers to reach the face from surface in the deep-level gold and platinum mines, production disruptions due to section 54 safety stoppages by mine health and safety inspectors, and the increasing levels of absenteeism and extended holidays faced by the mining industry. As an example, currently the gold and platinum industries average only 220 productive shifts a year out of a possible 300 available shifts. Furthermore, these low levels of labor utilization directly influenced the productivity of equipment and capital investments, thereby creating a multiplying effect on overall cost inflation.⁷

Declining productivity levels is not uniquely South African, and other prominent countries with sizable mining industries face similar challenges. In a study performed by the Australian Bureau of Statistics (ABS), Australia's unadjusted multifactor productivity (MFP) in the mining industry declined by 50% since 2001. Equally, the United States and Canada also experienced declining productivity levels. However, in response to declining labor productivity several countries have implemented alternative strategies to improve overall utilization of resources such as flexible work force practices, increased number of shifts and pooling of capital equipment.

⁷"Are conflicting wage negotiations the norm?" *Financial Mail*, 11 July 2013.



Mining productivity in Australia declined by roughly 50% since 2001



Source: Australian Bureau of Statistics



Average annual growth in productivity (%) during 2000-07

	Labor	Capital	MFP
Australia	-4.02	-1.41	-1.99
US	0.66	-2.25	-1.68
Canada	-2.21	-0.28	-1.07

Source: Bradley and Sharpe, 2009; BREE, 2013

According to Statistics South Africa, the mining industry shed 1,000 jobs in the first quarter of 2013, bringing the job losses in the sector to 20,000 since July 2012.⁸ Furthermore, mining value-added output was 3.1% lower in 2012 than in 2011. The most notable production losses recorded were attributed to copper production declining by 21.8%, gold production declining by 14.5% and platinum-group metals output declining by 12%.⁹

The difficulties experienced as a result of the severe and protracted industrial strike actions in the mining industry caught the attention of all the major stakeholders involved to come together to ensure settlements are reached, not only in terms of wage negotiations but also in restoring law and order in community relations. A positive development has been the signing of the framework agreement for sustainable mining, facilitated by the Government of South Africa, aimed at providing safeguards for the upcoming wage negotiations. With inputs made by the Association of Mineworkers and Construction Union (AMCU), the National Union of Mineworkers (NUM), Solidarity, the United Association of South Africa (UASA), the Chamber of Mines of South Africa, the South African Mining Development Association (SAMDA) and Government, the framework also provides a road map for the identification of key issues that are to be addressed in the near, medium and long-term.¹⁰

Another key long-term challenge for the industry is the availability of skilled and appropriately experienced talent. Although the pressure has been relieved to some extent in the short-term through the slowdown in new investments and developments, the ability to attract and retain the appropriate skills is likely to become more difficult in the future. However, in the long-term, mining companies

will have to change labor practices as well as embrace technology because new-generation employees are more technologically savvy and are looking for jobs where technology is central to job expectations. Furthermore, in order to reduce the consumption of natural resources; minimise health, safety and environmental risks; be more energy and fuel efficient; improve labor and capital productivity; and create more mining flexibility, modern mining operations will have no choice but to embrace technology and become more mechanized and sophisticated. In turn, this will require more skilled labor. Although technology and mechanization will influence future work force requirements, countries such as Australia and Canada that have experienced substantial shortages of specific skills also experienced rapid and significant remuneration increases due to supply constraints.

There is a strong correlation between skills, productivity, efficiency and cost competitiveness. Efficiency and cost competitiveness directly influence economic competitiveness, which is critical in supporting the South African mining industry to regain its position as one of the premier mining destinations. To a large extent, the favorable commodity prices of the past decade concealed the true impact of the prolonged above-inflation remuneration increases, declining productivity levels on overall production costs as well as production unit costs. In an effort to maintain operating margins and improve cost competitiveness, companies are required to implement decisive measures to improve the value it derives from its work force.

⁸“SA platinum industry could shed 145 500 jobs by 2015,” *Mining Weekly*, 18 June 2013.

⁹“Strikes cost SA R15.3bn in mining output in 2012,” *Mining Weekly*, 27 February 2013.

¹⁰“Mining’s who’s-who leave AMCU out to dry as accord is signed,” *Mining Weekly*, 3 July 2013.





Responding to the challenge

- ▶ Initiate long-term work force planning that identifies current and future resource requirements as well as where these resources can be found
- ▶ Embrace new technology and mechanization
- ▶ Train existing staff to perform a number of functions
- ▶ Introduce initiatives to optimize productivity, utilization and shared value
- ▶ Create new and exciting opportunities for current staff members to retain their skills in the business for a longer period of time
- ▶ Rationalise work force in areas where resources are saturated
- ▶ Increase the mobility of workers by offering flexible working lifestyles
- ▶ Initiate training programs for retired/skilled workers to train new, entry-level workers
- ▶ Create employment offers with a better balance between remuneration, career opportunity and shared value
- ▶ Introduce and communicate "review measures" to allow the company to hold individuals responsible for their performance
- ▶ Source talent from aligned sectors and a broader demographic
- ▶ Enter into strategic alliances with institutions and other communities
- ▶ Reclaim the importance of communicating directly with employees

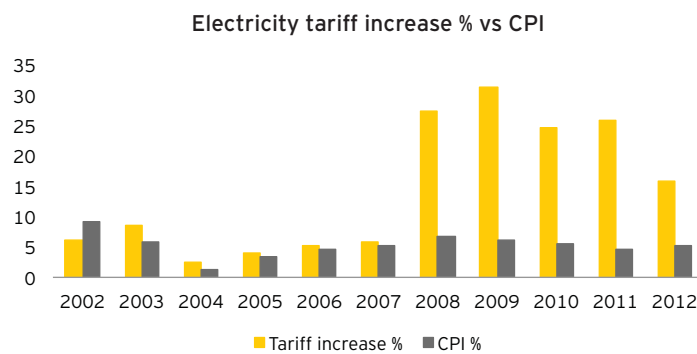
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Escalating electricity and fuel prices



Historically, one of South Africa's key competitive advantages was the availability of sufficient low-cost electricity. In the wake of underinvestment by utilities, rising residential demand and the significant and sudden electricity price increases, companies have been struggling to adapt their consumption patterns and mining methods, resulting in substantially higher electricity bills and notable margin erosion. Fuel and electricity prices have both a direct and an indirect impact on the mining industry, because the mining industry's suppliers are also affected by the increases.

In 2013, the National Energy Regulator of South Africa (Nersa) granted Eskom an 8% average increase per annum over the next five years. Despite these tariff increases being more modest than in the previous few years, these increases continue to be 2%-3% higher than consumer and production inflation outlooks for South Africa.¹¹



Source: Eskom¹²

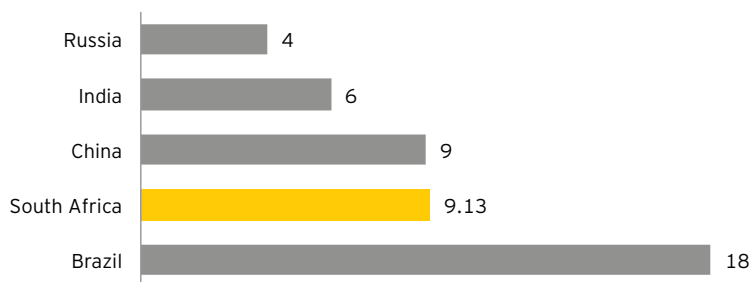
South Africa's current electricity prices are considered comparable to the other BRICS (Brazil, Russia, India, China and South Africa) countries; however, at the current rate of tariff increases, South Africa's electricity may become among the more expensive of mining-oriented economies. The effect that these continued increases have had on the mining industry is that the cost structures and operating models that mining companies have developed during periods of sufficiently available low-cost electricity are now less efficient and competitive.

¹¹"Nersa grants Eskom 8% annual increases over next five years," *Business Day*, 28 February 2013.

¹²"Pricing documents," Eskom website, <http://www.eskom.co.za/c/article/149/pricing-documents/>, accessed 10 July 2013.



South African electricity prices vs other BRICS countries (US cents/kWh)



Source: Brazil,¹³ Russia,¹⁴ Indian,¹⁵ China,¹⁶ South Africa¹⁷

As a result of the challenges regarding availability of electricity, companies have had to supplement their electricity supply with back-up generators. As such, electricity costs relate to both the tariff increases as well as the additional investment that companies had to make to secure supply either through their own generation or through Eskom produced power.

Escalating fuel (petrol, diesel and fuel derivatives) prices is another cost that mining companies are currently expected to absorb. Ongoing fuel price increases, as well as fuel levies and the introduction of carbon taxes in 2015, will add to an already heavy burden placed on road freight operators.¹⁸ The ever-increasing fuel price will have a roll-on effect on all forms of transportation involved in the mining industry.

¹³"Brazil's power groups warn on price cuts," *ft.com*, 26 November 2012.

¹⁴"Finland hopes to sell power to Russia to make cables pay," *Reuters*, 23 October 2012.

¹⁵"Electricity prices in different states of India," Indian Power Market website, <http://www.indianpowermarket.com/2012/09/electricity-prices-in-different-states.html>, accessed 12 August 2013.

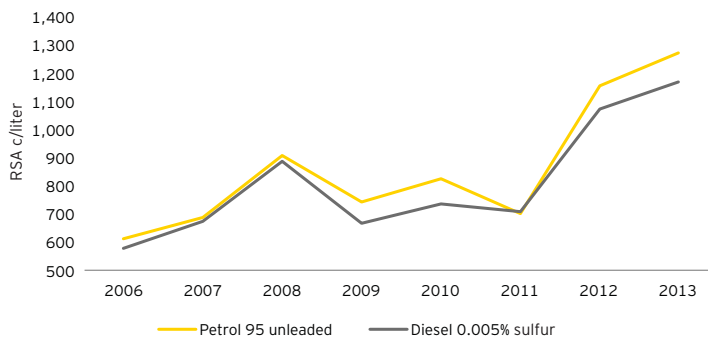
¹⁶"The price of power: China's confusing electricity rates," *Want China Times*, 15 May 2013.

¹⁷"2011 - 2012 International Electricity & Natural Gas Report & Price Survey," NUS Consulting Group, June 2012.

¹⁸"Mining industry can ill afford ongoing fuel increases," *Mining Weekly*, 31 May 2013.



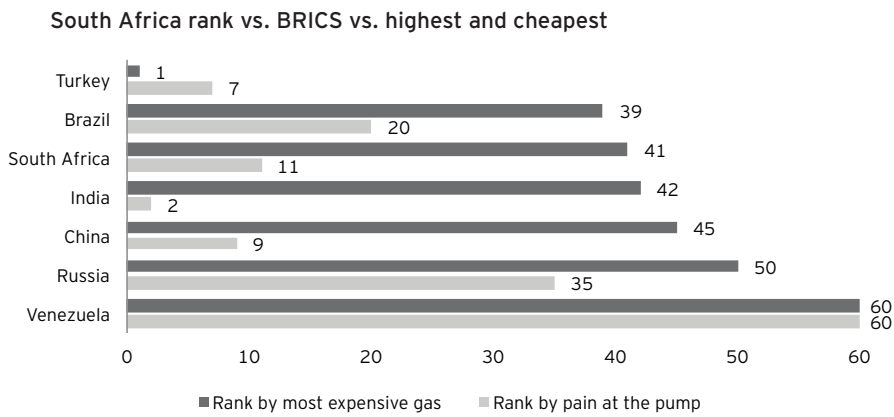
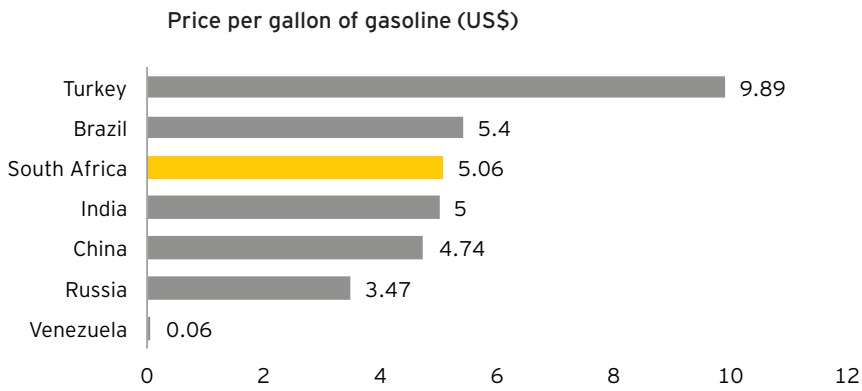
South Africa average petrol and diesel prices, 2006 to 2013



The Bloomberg Gas Price Ranking¹⁹ ranks 60 countries by average retail price and by “pain at the pump,” which measures the percentage of average daily income needed to buy a gallon of fuel. According to Bloomberg Rankings, South African fuel prices are considered to be reasonable and in the second quartile of the global cost curve. However, based on the all-in costs of fuel, South Africa’s volatile currency, its dependence on road transport and fuel prices in relation to average remuneration, South Africa’s fuel is considered to be the 11th most expensive.

Fuel and transportation form a significant component of cost of open-cast and bulk commodity mines, particularly where pits are becoming deeper, beneficiation activities are located far from mines, and the sales and marketing strategies of the mines are dependent on high volumes of exports.

¹⁹“Highest and cheapest gas prices per country,” Bloomberg website, <http://www.bloomberg.com/slideshow/2013-02-13/highest-cheapest-gas-prices-by-country.html#slide1>, accessed 7 August 2013.



Source: Created by Bloomberg Rankings using data compiled by Bloomberg, Associates for International Research Inc. (AIRINC), Europe's Energy Portal, the International Monetary Fund and the U.S. Energy Information Administration. Country descriptions draw from the CIA World Factbook and the Organization for Economic Co-operation and Development. Gas prices are from Jan. 3-18.





Responding to the challenge

- ▶ Create own or partnered energy supply
- ▶ Invest in energy-efficient technology and equipment
- ▶ Form partnerships to share energy creation and energy consumption with respect to energy-intensive equipment
- ▶ Implement smarter scheduling of processes and energy consumption activities to reduce peak usage periods and scale back on idle time
- ▶ Investigate potential partnerships with suppliers of energy and fuel
- ▶ Review current energy and fuel supply contracts for lower prices over longer terms
- ▶ Enhance energy efficiency by monitoring energy usage and building flexibility into the energy mix
- ▶ Enter into negotiations with suppliers for lower-cost sources over the long-term





Managing
transportation and
logistical costs

3



Accessibility and availability of transportation and logistical infrastructure remain a significant challenge for the South African mining sector despite firm commitments from the South African Government to allocate resources to capital investment programs aimed at the transformation of the economy.²⁰

A reliable network of transportation and logistical infrastructure that is effective and cost efficient and has sufficient available capacity is critical to a flourishing mining industry. Exporters are heavily dependent on readily available access to transport, freight handling, and port and shipping facilities to take advantage of commodity price and currency fluctuations. Readily available capacity will afford mining companies the opportunity to optimize their sales and marketing strategies to capitalize on weaker currencies through exports, or to deliver to the local market at more competitive prices.

Suppliers to the mining industry are also feeling the effects of higher fuel costs and, as such, their prices are increasing. The only alternative left to mining companies would be to seek cheaper suppliers, which could come with additional risk or increased future maintenance cost. As a percentage of GDP, logistics costs have increased to nearly 13% in 2012. In turn, transport costs have increased to more than 60% of overall logistics costs in 2012 - the highest it has been during the past decade and considerably higher than the global average. Research has shown South Africa's vulnerability to crude oil price volatility, which was exacerbated by the country's entrenched dependence on road transport and South Africa's volatile currency, as the primary driver of the higher transport costs.²¹ Overall freight charges, which include rail costs, port costs, shipping, handling and duties have also significantly increased due to the increases in the costs of electricity, infrastructure, construction and equipment, along with currency changes and longer hauling distances.

Due to the various components making up the transportation and logistics network, inflation creeps in at various points. With limited large-scale and efficient transportation infrastructure in place, mining companies have to make use of various modes of transport, including bulk road freight, which is often costly and inefficient. All of this adds to the overall cost of mining, getting the product to the customer and making the issue of complete costing challenging.

Although it has been acknowledged for a number of years, the integrated infrastructure required to efficiently and effectively transport the goods are still not in place. A well-managed and integrated system can create more sustainable jobs for skilled labor, thereby making it a safer environment, putting less stress on SA's infrastructure and allowing for better planning by the Government and mining companies to achieve overall growth.

²⁰"Infrastructure a challenge for SA mining," *Business Report*, 18 December 2012.

²¹"9th state of logistics survey for South Africa: connecting neighbours - engaging the world," Council for Scientific and Industrial Research (CSIR), Imperial Logistics and Stellenbosch University, June 2013.

During the past decade, the ratio of infrastructure costs incurred by mining companies versus equipment costs has dramatically shifted and has reached heights of up to 80% of mine development costs. Specifically, transportation costs are one of the biggest outlays for a mining company.²² For bulk commodities such as coal, iron ore and manganese, transportation costs are a very significant component of the overall cost. This is true for both local sales of goods as well as export sales.

As miners look to reduce the capital intensity of these mines, an early target will be infrastructure. To assist this and to promote greater investment in South Africa, the Government must strive to attract new forms of infrastructure financing. This may be done by intelligent risk sharing, structural reform, the provision of Government guarantees to underwrite uncommitted capacity and accelerated planning approvals.



Responding to the challenge

- ▶ Consider the extent that infrastructure deficits may impact enterprise value
- ▶ Understand the return on all capital expenditure, including infrastructure, and consider appropriate financing or syndication of infrastructure projects
- ▶ Identify other stakeholders to co-develop a solution with shared benefits
- ▶ Investigate partnerships with potential stakeholders in expanded infrastructure to innovate financial arrangements including, off-take agreements
- ▶ Improve mine planning to assist in assurance over optimal levels of take-or-pay commitments
- ▶ Work with Government to co-develop infrastructure solutions that address the commercial, financing, delivery and regulatory risks of all parties

²²"Mining infrastructure - from pit to port," *Australian Mining*, 19 September 2012.



4

Effective management
of capital

Across the mining industry there is increased pressure to deliver value to shareholders in both the short and long-term. This means that companies not only have to ensure that they are generating optimal value from their current projects, but also that they invest in future projects that will create sustainable value for their investors. This increases the pressure on executives to ensure that capital is allocated optimally and efficiently. During a period of weaker commodity prices there is a natural inclination to reduce capital expenditure and focus on cash preservation and margin protection. Achieving this requires strong leadership, an awareness of the impact on the sociopolitical environment, demonstrable discipline and an unflinching focus on optimising activities and operations that preserve and grow long-term value.

During the past 12 months there have been several large-scale programs announced by mining companies to cutback on capital expenditure, including both stay-in-business capital as well as expansionary capital. On average, annual stay-in-business capital expenditure equals approximately 20%-30% of annual production costs and is crucial to the performance, longevity, safety, mining flexibility and structural integrity of the operations. As such, capital expenditure rationalization programs should be approached with caution, detailed planning, disciplined execution and significant senior executive involvement and project sponsorship.

Beyond the increases experienced for input costs such as steel, timber and cement, mining companies have also underestimated the overall costs involved in executing mine development or expansionary projects. This was primarily caused by the continued increase in complexity of these projects as well as the challenges in the labor market that have led to overruns and delays in delivering the projects.

Capital productivity has been adversely impacted by multiple factors, such as the long lead times between investment and production, overruns in project development, and the sluggish pace of innovation in mining technology to name but a few.

In a number of instances, capital was also not appropriately right-sized for the mine developments because rising commodity prices aided the justification of continued capital allocation to drive increased production, rather than looking to optimize the capital already applied. Companies are now revisiting their true capital needs and applying fresh thinking to increase both the availability and utilization of the existing assets.²³

Global mining companies are increasingly targeting capital productivity as the largest potential contributor to margin protection. This is also seen as the most achievable as even a return to the productivity levels of 2006 would deliver massive margin benefits. Mining companies must relearn what they have unlearned.

Coupled with capital expenditure and capital productivity are the maintenance requirements of mining infrastructure and capital equipment. Poorly planned capital expenditure cutbacks may result in additional maintenance requirements, and as such should be factored in when re-evaluating capital spend.

²³ *Business risks facing mining and metals 2013-2014*, EY, June 2013.





Responding to the challenge

- ▶ Implement portfolio management and greater scrutiny around project selection, prioritisation and management
- ▶ Develop a clear and agreed-upon understanding of acceptable levels of risk against expected return
- ▶ Regularly assess risks, project economies and assumptions
- ▶ Undertake forward-looking scenario testing
- ▶ Introduce robust post-implementation analysis
- ▶ Consider investments in context of the wider portfolio, not in isolation
- ▶ Increase flexibility to sequence, prioritize and change the destination of capital outlays
- ▶ Pursue alternative and innovative funding options to provide optionality
- ▶ Re-scope and re-cost all capital projects to reassess their relative performance
- ▶ Ensure all capital is equally productive, and where it is not consider possible divestures
- ▶ Regularly review existing projects according to the same criteria as new investments
- ▶ Reoptimize capital for new price environment – e.g., more open cut operations from being “over-trucked” to “under-trucked”
- ▶ Rely on higher cutoff grades requiring less waste handling via lower strip ratios and less tolerance for dilution
- ▶ Rightsize capital fleet for more mature mines
- ▶ Enhance use of operational data and benchmarking to target specific productivity challenges
- ▶ Improve the human and technology interaction, along with training and development
- ▶ Continue to de-bottlenecking
- ▶ Transfer risk to third-party owners of assets
- ▶ Rebalance product chains to better utilise pit, rail and port infrastructure with integrated logistics
- ▶ Increase automation and innovative solutions across the sector
- ▶ Improve maintenance and asset management
- ▶ Renew your focus on continuous process improvement programs, such as a Lean Six Sigma



Supply chain and procurement practices

5





One of the clear impacts of the long-running commodities boom has been that resource deposits long classified as marginal or uneconomical have either become viable or have remained viable for longer. Typically these deposits have been of lower quality or remote from existing supply chains, and this lack of sufficient infrastructure, either logistical or secondary processing, has been the primary obstacle to rapid development of these resources. Remoteness naturally brings additional challenges in terms of cost, risk and scale of development of the required transport, utilities and supporting infrastructure. Until recently, the tier-one mining and metals Organizations used to have the balance sheet strength to develop integrated mine and logistics projects but have been under increasing shareholder pressure to restrict new capital expenditure.

During the period when companies focused on achieving growth, they were more tolerable of price increases, wastage and inefficiencies. However, in search of “quick wins”, many Organizations have initiated programs to review supply chain processes, procurement practices and supplier agreements. Executives have shifted the focus to eliminating inefficiencies and being more disciplined and focused on cost management.

Suppliers are becoming accustomed to the resetting of supply arrangements to remove scarcity premiums and more aggressive procurement. It is the new world.

While larger companies tend to be in a stronger position to negotiate better terms with contractors and suppliers, rising costs have resulted in consolidations and collaborations within the industry leading to synergies, economies of scale and greater negotiating power. Interestingly, some industry players have begun to forge collaborative relationships with their contractors and suppliers, with the aim of achieving greater savings and increased productivity. For example, in an effort to identify opportunities to reduce wastage from the supply chain, procurement teams could engage and collaborate not only with other functions within the Organization but also with their suppliers.²⁴

Increased project complexity, coupled with pressures on supply chains, is forcing many companies to review their project management methodologies. In doing so, many are identifying a significant lack of standardised processes, controls and systems required to decrease contractor reliance and achieve global synergies. In particular, some of the areas of optimisation that companies are focusing on include:

- ▶ Scrutinising procurement, management and consumption - optimising inventory levels
- ▶ Reducing lead times from ordering to receiving goods, through to using the goods
- ▶ Revisiting mining contractor agreements and establishing key performance indicators (KPIs), remuneration structures and performance management initiatives that are focused on efficiency and cost effectiveness

An often over-looked threat is how natural and environmental disasters highlight the risks 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 far-reaching implications for prices, future supply and investment decisions. While the short-term focus is on cost control, companies should consider the possibility of being impacted by supply chain disruptions in their overall risk management strategy and framework.

²⁴ *Business risks facing mining and metals 2012-2013*, EY, June 2012.



Responding to the challenge

- ▶ Ensure project and supply chain performance is monitored and managed by aligning owner and contractor teams through pragmatic contracting strategies and incentive programs
- ▶ Analyse the strengths and capabilities of your supply chain
- ▶ Evaluate your exposure if you are at the end of a supply chain
- ▶ Conduct a supply chain maturity assessment
- ▶ Do scenario planning and impact assessment across the supply chain
- ▶ Run diagnostics of supplier capability and risks
- ▶ Identify critical spares and supplier capability to expedite
- ▶ Focus on sustainable cost reduction programs
- ▶ Divest in non-core assets
- ▶ Review capital tied up in high levels of pre-stripping, advance development and stockpiles
- ▶ Consider of the use of contract mining vs. sale or leaseback
- ▶ Review supplier contracts
- ▶ Outsource
- ▶ Create of strategic joint ventures to optimize economies of scale



Commodity price and currency volatility

6





South Africa continues to feel the effects of the global economic market, evidenced in the recent fall in the rand against the US dollar, which has declined approximately 20% against the greenback since the start of 2013. Although other emerging market currencies saw similar weakness, South Africa's history of currency volatility, coupled with low growth prospects and domestic challenges, aggravated the rand's poor performance.²⁵

To an extent the weakening of the rand during 2013 shielded South African mining companies against the weaker commodity prices. Consequently, it also shielded mining companies against the full impact that cost inflation could have had on margins.

Commodity price and currency volatility impact sales as well as the costs of producing salable product. Commodity price and currency fluctuations have an immediate impact on a company's revenues whereas similar fluctuations have a medium-to long-term effect of costs. However, it is generally more difficult to reverse these fluctuations (particularly weakening of currency or increases in input costs) from production costs because these factors become embedded in the supply chain and procurement practices. Typical input costs affected by the volatility in price and currency are oil, steel, timber, rubber, chemicals and reagents, and capital equipment.

The sensitivity to these volatilities is dependent on companies' exposure to import and export activities and the dependency that is placed on these sources. In an environment where import and export activity is high, companies are inclined to spend more executive time on managing these exposures. In an environment of frequent and significant volatility, companies will generally employ specialized skills to assist in mitigating and managing these exposures, often at great cost.

Volatility also increases uncertainty and unpredictability, thereby creating additional risk in long-term business planning and capital allocation.

Some companies may consider hedging again. However, for most, the opportunity to establish an effective hedge has passed, and those that are enticed to enter into significant hedging during this period of volatility may create problems for themselves during the next upswing.²⁶ However, given technologies of today, there are some more sophisticated tools available, which means that mining companies can consider multiple scenarios to identify how and where volatility impact the business - and identify in advance possible actions to optimize their returns.²⁷ Commodity price and currency volatility can be managed, taking advantage of price spikes and limiting the exposure to price slumps. Such choices could include:

- ▶ Undertaking no new action and managing through the cycle
- ▶ Suspending mining and commencing processing stockpiles
- ▶ Reducing shifts and consequently reducing production
- ▶ Deferring new development
- ▶ Moving to highest-grade reserves
- ▶ Abandoning production and selling either the project or hybrids thereof

²⁵"SA's economy is running on empty," *Mail & Guardian*, 21 June 2013.

²⁶"Mining sector to continue facing price, currency pressures," *Mining Weekly*, 24 May 2013.

²⁷ *Business risk facing mining and metals 2013-2014*, EY, June 2013.

Mining companies could also consider building greater flexibility into their cost structure and mine planning to provide a greater range of responses to price and currency volatility. This will allow companies to vary the levels of production more easily without major cost penalties. Some common examples include:

- ▶ Introducing mining contractors to provide labor flexibility
- ▶ Using equipment hire to support peak production
- ▶ Varying advanced stoping and cutbacks required to allow mining flexibility and scheduling during peak production and scaling back periods
- ▶ Outsourcing energy supply to power-by-the-hour model
- ▶ Varying stockpile management
- ▶ Undertaking campaign rehabilitation using contractors

Responding to the challenge

- ▶ Develop a documented understanding of the company's exposure to price and currency volatility
- ▶ Improve the integration of mine and financial planning
- ▶ Improve the speed of mine planning to match volatility
- ▶ Prepare for a future hedging program when prices once again increase, managing short-term price risk
- ▶ Consider increasing the flexibility of costs to more easily vary the level of production, even if it increases overall cost
- ▶ Increase reliance on local suppliers



7

Corporate,
administrative and
overhead costs



Safety, health and environmental costs

8



Through a combination of legislation, company policies and commitments to a safe and environmentally friendly working environment, safety, health and environment (SHE) is being taken more seriously than ever before. Safer working environments require behavioral and corporate culture adaptation as well as substantial investments in better safety standards, training and equipment. Furthermore, it often requires companies to revisit the way in which they mine to ensure that they mine safely. Safety incidents also have punitive consequences whereby mining operations are stopped (section 54 safety stoppages), resulting in production losses and declining productivity.

Act 29 of the 1996 Mine Health and Safety Act of South Africa provides strict regulations on the health and safety of mine workers. For most mining companies, health and safety regulations have become entrenched in the way business is conducted with numerous training programs and initiatives introduced across the industry to promote the health and safety of employees. The seriousness of the issue is due to numerous factors, including companies' social responsibility initiatives, the long-term protection and longevity of valuable skills and the risk associated with reputational damage. The fundamental shift in corporate culture and behavior is reflected in numerous value statements of mining companies such as "If we cannot mine safely, we will not mine"²⁸ and "Safety is our first value."²⁹

Despite commendable efforts in improving overall mining health and safety, there are still safety issues and fatalities experienced across the industry. According to the provisional figures released by CoMSA, up to 6 May 2013, fatalities at South African mines have decreased by 15% year-over-year.³⁰ Nevertheless, mining companies will have to continue investing time and money in health and safety initiatives, including training, maintenance of working conditions, scheduling of working shifts and technological improvements.

In terms of occupational health concerns, the mining industry continues to face challenges. The CoMSA recently commented that not enough progress is being made with respect to noise-induced hearing loss (NIHL). According to the Department of Mineral Resources (DMR), an average of 1,600 cases of NIHL are reported a year. Meanwhile, recent data indicates that tuberculosis (TB) and HIV figures are being managed within the mining industry. The HIV epidemic has stabilized, and infections are declining, in line with the rest of the subregion. Mining companies have implemented several HIV programs over the years, with most workers having access to antiretroviral (ARV) therapy through company programs.³¹

Access to clean water remains a concern in South Africa mines due to its relative scarcity in the country, as well as high-cost and competing interests from communities, citizens, Government and other industries for this resource. Water scarcity and associated stringent environmental conditions are increasing the costs for mining companies. While water consumption can lead to a significant increase in costs, water management, preservation and conservation is becoming increasingly important and will continue to require more managerial attention in future years.³²

²⁸"Vision, values and goals," Goldfields website, http://www.goldfields.co.za/com_gf_overview.php, accessed 10 July 2013.

²⁹"Safety our first value," AngloGold Ashanti website, http://www.anglogold.co.za/subwebs/informationforinvestors/reports08/ReportToSociety08/p/sh/first_value.htm, accessed 10 July 2013.

³⁰"Tripartite industry milestones analysis report: OH&SPC Circular no 12/13," Chamber of Mines of South Africa, 10 May 2013.

³¹"Noise-induced hearing loss worrying - CoM," *Mining Weekly*, 17 May 2013.

³² *Business risks facing mining and metals 2013-2014*, EY, June 2013

Compliance with increased regulatory and reporting requirements relating to land access, permitting, environmental approvals, rehabilitation and climate change are other areas mining companies have been dealing with. Companies are investing considerable time and capital in maintaining their reputation as good corporate citizens by being transparent and adhering to these regulatory requirements. The cost of noncompliance with these obligations is high because failure to meet the expectations of regulators can lead to fines, forfeitures, business restrictions and reputational damage.³³



Responding to the challenge

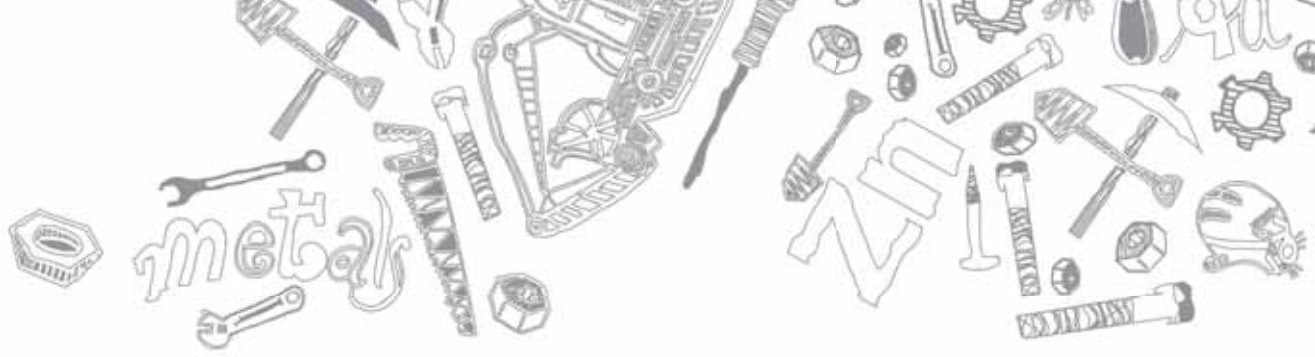
- ▶ Require in-house compliance teams to keep the scope and framework of compliance obligations highly visible and actively communicate them to corresponding functional and delivery personnel
- ▶ Integrate technology in the business that could provide helpful analysis in safety improvements and through controls could enhance productivity and reduce employee exposure to unsafe conditions
- ▶ Introduce robust maintenance processes and systems to ensure optimal equipment performance
- ▶ Identify why these incident occur through a detailed analysis and create measures to prevent recurrence
- ▶ Set greenhouse gas reduction targets that are linked to production
- ▶ Recognise cost savings and offset opportunities from emissions trading through initiatives for Clean Development Mechanism (CDM) projects
- ▶ Consider installing of low-carbon electricity generation capacity and energy-efficient technologies, such as efficient compressed air systems, to reduce greenhouse gas generation

³³ *Effective capital project execution in mining and metals*, EY, 2011.



9

Cost of being a
socially responsible
corporate citizen

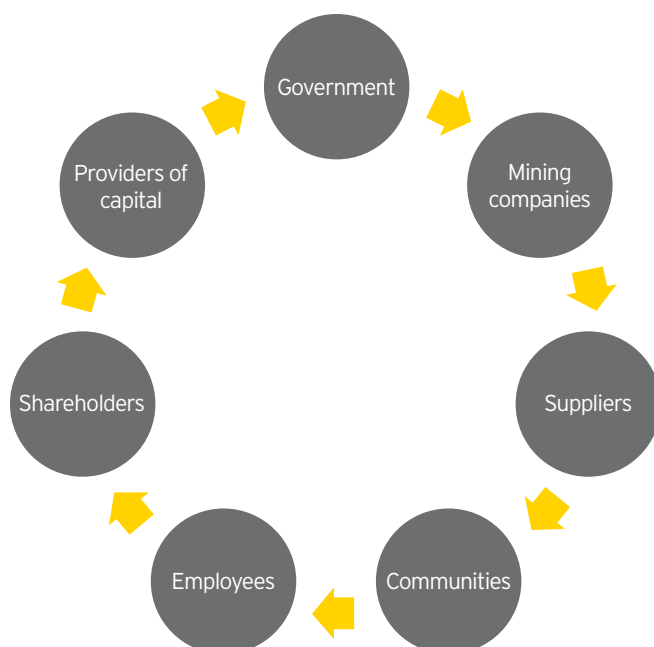


Being a socially responsible corporate citizen means taking responsibility for your impact on the environment, employees and your host community. It generally refers to those efforts that go beyond normal requirements of regulators or environmental protection groups. These activities often involve incurring costs that do not immediately translate into financial benefits for a company, but instead promote positive social, communal and environmental change as well as long-term sustainability of the mining industry through the earning of a social license to operate.

The need for a “social license to operate” is widely understood and accepted by the mining industry. Globally, regulators are increasingly seeking to fill the gap between community expectations and existing laws with increased regulation.

In general, mining companies in South Africa have responded better than their global peers to the challenges and have developed an appreciation for the value of a well-maintained “social license to operate.” They have come to understand that they cannot operate in isolation and that decisions need to be made collectively for the benefit of the company and for other stakeholders. Notably, since the introduction of King I, II and III, companies’ visions have shifted from one where shareholders’ value and owners’ satisfaction were sole corporate goals to one that considers, protects and promotes all stakeholders, including employees, customers, suppliers, shareholders, the environment and the community.

Key stakeholders in the South African mining industry



As the number of stakeholders have grown in the past years, so too have the expectation and the complexity of them. In a volatile environment, managing the needs of all of these often-competing stakeholders who contribute to giving mining houses a “social license to operate” is a delicate and telling task. South Africa’s sociopolitical issues, combined with its aging infrastructure, call for finding increased investment and long-term solutions. Inevitably, this will result in higher costs in the sector.

Achieving a social license to operate is one challenge, but maintaining it is another. The key to both is communicating the value through the concept of shared value. Globally, the sector’s understanding of the potential of shared value is in its infancy, suggesting a real opportunity for addressing this matter. Companies can find better ways to demonstrate shared value in a manner that draws attention to the benefits of their initiative.

Shared value revolves around focusing on the connections between societal and economic progress, which have the power to unleash the next wave of global growth. A practical example of creating shared value includes increasing the capability and capacity of local businesses to provide goods and services to mining and manufacturing operations in the areas they operate. This can increase efficiency and reduce costs in the supply chain, reduce environmental impacts, and contribute to a more sustainable and resilient local community that shares in the value of the operations.

Equally important is measuring the value that has been created for all stakeholders, demonstrating the returns achieved from both a social and financial standpoint, and communicating this value to all the stakeholders so that the benefits are visible and obvious.





Responding to the challenge

- ▶ Engage early with local communities to understand and address concerns around mining operations and implement strategies to reduce impacts
- ▶ Identify opportunities on how mining operations can be adjusted to create more value for communities and additional return for the company
- ▶ Consider opportunities provided by local supplier, community and employee capabilities
- ▶ Measure and report on the value created and use this data to continuously monitor and improve performance
- ▶ Incorporate "social license to operate" risks into the enterprise risk management framework with clear and proactive risk mitigation strategies
- ▶ Embed mitigation strategies in all critical business processes to ensure an integrated approach
- ▶ Foster trusting and supportive relationships with all stakeholders
- ▶ Integrate sustainability key performance indicators with productivity outcomes, as well as in remuneration structures
- ▶ Use sustainability outcomes to attract and retain workers who value the company's sustainability philosophy
- ▶ Improve speed to act on potential license issues
- ▶ Integrate sustainability objectives into long-term planning
- ▶ Improve relationships and dialogue with Governments
- ▶ Develop an understanding of the fast-changing union environment
- ▶ Continue the debate and engagement about a stable, transparent and predictable policy environment for the mining industry

An aerial photograph of a large-scale mining or industrial site. The landscape is dominated by various colored pits and structures, including a large orange-red pit on the left, a large greyish-white pit in the center, and a circular green pit in the bottom right. A road and a line of evergreen trees are visible in the lower center. The overall scene is a complex of earthmoving and resource extraction.

10

Exploring, discovering
and replacing reserves
and resources

Given the current lower metal prices, skeptical investors and the uncertainty of sufficient returns, investor interest in exploration projects has decreased. Early-stage exploration is risky because the success rate of converting exploration activities into profitable operations is low and unpredictable. Mining companies are struggling to fund new exploration projects due to the lack of funding and interest received from their investors who prefer investments in current, more certain, high-grade operating assets.

Furthermore, it has also been noted in the industry that ballooning capital costs on core development projects have forced companies to reduce their current spending programs due to an inability of effectively control and manage capital costs.

Many of the mining services companies are also experiencing the clear intention to slow down and control exploration spending programs.³⁴ The short-term focus of markets is causing them to be indiscriminate on cost reductions. Drops in exploration expenditures have been applauded equally. At the same time, declining assets, lower grades and higher safety risks associated with mature mines render it essential for mining companies to continue investing in exploration projects. Taking this into account, the lower short-term investments in discoveries for new resources will have an impact on the sustainability of the industry as a whole, especially since it is an industry whose long-term business strategies and returns are dependent on these new discoveries.

The exploration sector itself is facing escalating operational costs because exploration and development projects are increasing in technical complexity, while suitable projects are increasing in size to compensate for falling grades and to achieve economies of scale.³⁵

In the current low-risk environment, it seems unlikely that companies will increase exploration spending in the near term. This does not bode well for junior explorers and for the mining and metal sector in general, the long-term sustainability of which is dependent on investment in new discoveries.



Responding to the challenge

- ▶ Suspension of exploration and the dismantling of exploration capability will negatively impact future availability of developments
- ▶ Change in investor sentiment and risk appetite has made it difficult for junior explorers to raise sufficient capital for exploration projects
- ▶ Increasing stockpile utilization
- ▶ Downsizing exploration teams to match deferred or redesigned pre-feasibility study and exploration programs
- ▶ Greenfield exploration expenditure cuts

³⁴“Exploration spending decisions by miners slower than expected,” *Mineweb*, 24 June 2013.

³⁵ *Business risks facing mining and metals 2013-2014*, EY, June 2013.

EY's Global Mining & Metals Center

With a strong but volatile outlook for the sector, the global mining and metals sector is focused on future growth through expanded production, without losing sight of operational efficiency and cost optimisation. The sector is also faced with the increased challenges of changing expectations in the maintenance of its social license to operate, skills shortages, effectively executing capital projects and meeting Government revenue expectations.

EY's Global Mining & Metals Center brings together a worldwide team of professionals to help you succeed – 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.

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