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GLOBAL BUSINESS REPORTS

South African Mining

South Africa sits at a turning point. Many decisions concerning socio-economic policies, energy infrastructure and safety will determine its future.

A REPORT BY GBR FOR E&MJ

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Cover photo: Impala Platinum's shaft at Rustenburg (with courtesy of Implats)

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South Africa: Africa's Superpower

South Africa boasts Africa's largest economy and strongest political influence, but does South Africa have what it takes to prosper from the current commodity boom?

Aluminium smelter in Richards Bay. (Photo courtesy of BHP Billiton)

More richly endowed than either Russia or Australia, with an estimated $2.5 trillion (the equivalent of R18 trillion) worth of metals and minerals in the ground at today's prices, South Africa has by far the most well endowed mineral wealth of any country in the world (American Citibank Group, Metals and Mining Strategy, April 2010). Containing 52 commodities in the ground and home to the world's largest reserves of platinum group metals (almost 90%), manganese (80%), chrome (73%), vanadium (45%) and gold (41%), and a major reserve holder of vermiculite, zirconium minerals, titanium minerals, coal and iron ore, South Africa's mineral potential is second to none (Chamber of Mines, 2009-2010).

"South Africa has the largest resource base as measured by financial value and is the fifth largest mining jurisdiction," said CEO of AngloGold Ashanti, Mark Cutifani. "It has a legislative framework that is generally clear and built on perceived best practice. South Africa has a legal system that works. There are issues within the Department of Mineral Resources, which have been acknowledged by the Minister and we, as industry, need to be more supportive and work closer with the government. If you look at the cultural change South Africa has navigated in the 15 years of democracy and if you think of the way in which the country has dealt with this, it is incredible. The country has great potential and it has 100 years of mining culture. People understand the industry and both the union and government are supportive."

South Africa hosts the largest mineral reserves, ranks as the fifth largest mining economy by GDP value, leads the world's platinum production and is the fourth largest gold producer, yet the country lags far behind in foreign direct investment and mineral production. A recent report (March 2011) by the Toronto-based Fraser Institute ranked South Africa 67 out of 79 mining jurisdictions around the world, just four places ahead of Zimbabwe. The survey was launched to examine which jurisdictions provide the most favorable business climates for the mining industry. South Africa is at a critical turning point; decisions concerning the nationalization of the mineral industry, security of tenure, underdeveloped transport and energy infrastructure, skills shortages, safety issues and affirmative action policies to boost black ownership in the mining industry challenge South Africa's ability to remain at the forefront of the international mining industry. South Africa needs a collaborative effort from government, industry and labor to improve its competitive edge on the global mining arena and enhance its image as a preferred investment destination.

Mainstay of South Africa

From the discovery of alluvial diamonds in the late 1860s and the Witwatersrand goldfields in 1886, the mining industry has been and remains one of the country's most important economic drivers, contributing 19% of GDP (8.8% directly), approximately 1 million jobs (about 500,000 jobs directly); 18% of gross investment (10% directly); about 10% to 20% of direct corporate tax receipts (R10.5 billion in 2009) and accounting for 35% of the value of the Johannesburg Stock Exchange (Chamber of Mines, 2009-2010). But in the 2001 to 2008 commodities boom, the world's top 20 mining countries achieved an average mining GDP growth rate of 5% a year, while South Africa's mining sector GDP shrank by 1% a year.

South Africa is home to a population of 50 million people, occupies a landmass of 1.2 million sq km (equal to the combined landmass of Germany, Italy and France) and a coast line stretching almost 3,000 km. It is now strategically aligned with its Asian counterparts, India and China as the most recent addition to the BRICS partnership as of December 2010. Some argue South Africa, whose economy is about one-quarter the size of India's, is simply too small to join the group of the world's top-four major emerging markets and future economic powerhouses. But South African officials disagree, stating it is the country's strategic importance both regionally and globally that matters. As one of China's largest trading partners, reaching two-way trade revenues of R119.7 billion, South Africa looks to China for investment to meet the increasing demands of the mining industry through developing infrastructure, including transport systems and energy projects.

As South Africa has become the African continents springboard for majors, juniors and service providers, South Africa will now offer improved access for BRIC members to Africa, as well as enhanced investor confidence. "South Africa has the financial muscle and, with its recent invitation to join BRICS, the opportunities within the industry are likely to improve," said Dr. Fred Sutherland, managing director Africa, Golder Associates.

Sharing the Wealth

The Mineral and Petroleum Resources Development Act (MPRDA) was enacted to address the inequalities resultant from the Apartheid regime which came to an end in 1994, and which prevented Historically Disadvantaged South Africans (HDSAs) from owning the means of production and from any meaningful participation in the mainstream economy. The MPRDA was designed to facilitate the participation of HDSAs in the mining and minerals industry.

Within the MPRDA, section 100(2)(a) lies the mining charter, also known as the Broad Based Socio Economic Empowerment Charter for the South African Industry, which was designed by the government to effect sustainable growth and transformation in the mining industry through specific targets. In an attempt to disperse national wealth, South Africa has set a target of 26% black ownership of its mines by 2014, but preliminary targets to reach 15% in 2009 have disappointingly not been met. It also requires that mining companies substantially and materially increase the economic participation of HDSAs within the industry, from employment to procurement. The new legislation paved the way for South Africa's junior mining sector to emerge, stating that mining rights not used in an allotted timeframe by mining companies to exploit minerals would revert back to the state.

Godfrey Gomwe,
Executive Director of Anglo American South Africa

Since its inception, a number of shortcomings pertaining to ownership, procurement, employment equity, beneficiation, human resource development, mine community development, housing and living conditions have been identified and are being relooked at. In the course of 2011 the entire act is to be reviewed in order to address these shortcomings and will be approved by cabinet at the end of the year.

Remodeling

In the wake of the global financial crisis, a tripartite group consisting of the government, the Chamber of Mines and labor unions worked together, through the Mining Industry Growth Development and Employment Task Team (MIGDETT), to minimize mining job losses and to find sustainable solutions for the mining industry. The interventions in the MIGDETT process also aim at creating an enabling environment for investment as well as reducing the cost of doing business in South Africa. Anglo American's Executive Director Godfrey Gomwe believes the task team is making positive strides. "MIGDETT is a process to identify what a "globally competitive South Africa" could look like, there is recognition that we missed the last commodity boom and there is a clear effort to try to take advantage of the next cycle," Gomwe said.

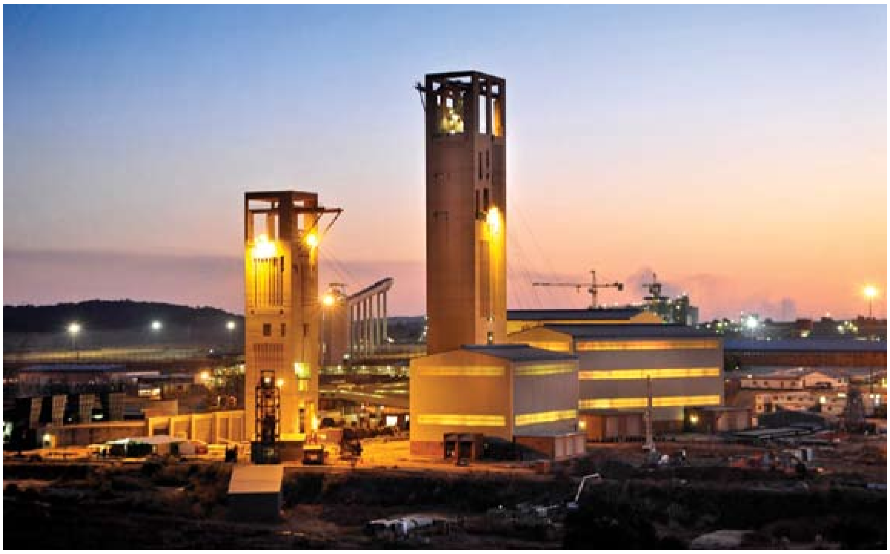
In essence, the task team was mandated to identify bottlenecks and to come up with possible solutions intended to make the industry competitive. The MIGDETT process had already identified a number of weak areas in the industry, including regulatory uncertainty and underdeveloped infrastructure, both of which led to the country's downgrading in the Fraser Institute report. A 13-pronged strategy to address these has been put in place.

President Zuma has called on South Africa, with strong support from industry, to embark on a bold New Economic Growth Path to create 5 million jobs and reduce unemployment from 25% to 15% by 2020. The new growth plan aims to enhance economic growth, employment creation and equality in South Africa and has identified both mining and mineral beneficiation as one of the key contributors.

If South Africa can address investor concerns and, in some cases, misperceptions, its top financial institutions, corporate footprint and knowledge of all of the African continent position the 'rainbow nation' well to lead the continent into a century of economic prosperity.

A Mining Nation Evolves

Although major gold discoveries may be a thing of the past, South Africa is still home to some of the greatest developing gold ore bodies in the world.



A significant investment, Gold Fields' South Deep mine represents the future for South Africa's gold mining sector. (Photo courtesy of Gold Fields)

Dominating South Africa's gold, platinum, chrome, coal and base metal production were the traditional major mining houses Anglo American, De Beers, Gencor, Billiton, Gold Fields, JCI, Anglovaal and Rand Mines. The rise of a new democratic constitution in 1994 resulted in significant restructuring.

"Prior to 1994 South Africa still had large mining houses, which have now evolved into more focused mining companies. Mining houses held assets in coal, gold, platinum, base metals and also operated in the service industries. Another important evolution was that in the old days, mining houses were required to finance themselves. Now if you want to go to the market and you want to raise money, you have to be operating at best practice. This has been a major transition for South African mining houses and it has been done very successfully. The South African mining companies have adapted to this market orientated approach and we've evolved with them," said Roger Dixon, chairman of SRK, an independent international consultancy, established in 1974 in South Africa, with global operations in more than 40 countries.

Although the constitution and favorable legislations in the MPRDA have paved the way for juniors to enter the marketplace, the dominance of the majors, including BHP Billiton, Anglo American, Impala Platinum, AngloGold Ashanti, Anglo Platinum, Goldfields, Sasol, Harmony and Kumba Iron Ore, are still reflected in the resources sector of the JSE. The top 13 companies by size constitute over 95% of the total market capitalization of all listed mining companies.

Gold: Sunrise, Midday or Sunset?

Gauteng, meaning "place of gold," refers to the thriving gold province, which is home to Pretoria (the constitutional capital) and Johannesburg (the economic hub of South Africa). Originating from the discovery of the Witwatersrand gold fields in 1886 as well as the Barberton Greenstone Belt in Mpumalanga and followed by the Kraaipan Greenstone belt in Gauteng, South Africa's world-class gold mining industry has flourished.

From the initial gold discovery, South Africa dominated the global gold industry for 120 years and was only recently surpassed by China in 2007 as the leading gold producer. With 41% of global gold reserves, South Africa is not surprisingly the birthplace to some of the largest gold mining companies in the world.

Three of the top 10 gold companies are rooted in South Africa[1], AngloGold Ashanti (4.5 million oz), Gold Fields (3.6 million oz) and Harmony (1.4 million oz).

South Africa's Gold Fields is the oldest mining house in the world. It was formed in 1887 in Johannesburg and since then it has grown and morphed itself in many different forms. In January 1998, the old assets of Gold Fields South Africa were merged with the gold assets of Gencor to form Gold Fields Ltd., a new company that maintained 125 years of history. "South Africa is the core of Gold Fields. We have Kloof, Beatrix and Driefontein and between these they still have 20 million oz of good high quality reserves within reach of existing infrastructure. Driefontein is the greatest gold mine this planet has ever seen, this mine has already mined 110 million oz and Kloof has mined 75 million oz," said Willie Jacobsz, senior vice president, head of investor re-

1. As measured by 2010 production of publicly traded gold mining companies.

Bheki Sibiya, Chief Executive of Chamber of Mines

Mark Cutifani, CEO of AngloGold Ashanti

lations at Gold Fields. “South Deep mine is a significant investment in the future of the South African gold mining industry and will be around beyond most other SA mines,” said Nick Holland, CEO of Gold Fields.

According to the U.S. Geological Survey, 6,000 metric tons (mt) of gold reserves remain in South Africa. The main gold producing area, just outside of Johannesburg, the Witwatersrand Basin has already produced more than 41,000 mt of gold and still remains the greatest un-mined ore body in the world.

Inevitably, 125 years of gold mining equates to declining grades, increased depths of mining (reaching more than 4,000 m), greater safety risks and lower profit margins, which have led to a steady decline in gold production and South Africa’s top ranking slip to fourth. In 2010, South Africa produced 191,833 kg of gold, a 6.4% decline on the 2009 production of 204,922 kg (Chamber of Mines). DRDGold, Pamodzi Gold Ltd., Simmer and Jack Mines Ltd., Great Basin Gold Ltd., Pan African Resources and Gold One International also contributed to the 2010 gold production.

As reserves deplete and become harder to mine, AngloGold Ashanti, Goldfields and Harmony remain committed to South Africa, but look to new frontiers in Africa and internationally.

Without adding new ounces to their South African portfolio, AngloGold Ashanti-South Africa’s number one gold producer and significant contributor to the economy, is challenged to maintain high production levels at the greatest mining depths in the world. “The South African operations will be flat as most of the operations are mature. The South African gold industry has been declining over the past 10 years, year-on-year we are seeing declines in the range of 5%-10%.”

The country’s lowest cost producer, AngloGold Ashanti is investing significantly to extend its operations, “We are looking to invest in new technologies to extend the life of some of the existing operations from 20 years to 30 or 50 years. We have put together a technology consortium that is looking to develop the business over the long-term. The participants, amongst many, include GE and 3M. They believe it is one of the biggest technology consortiums they have ever been involved with and possibly the most significant since the Manhattan project, with 33 partners involved in the process,” said CEO Mark Cutifani.

Although some operations may platform out for Gold Fields’ South Deep mine, prosperity is on the horizon. “South Deep mine is the greatest developing gold ore body in the world, with 35 million oz of reserves, 90 million oz of resources and a current life of mine plan that extends to 2076. We have been building the mine for the past two years. It is already producing just below 300,000 oz/y annualized. This is one mine that has more reserves than most international companies, and between our four mines, Gold Fields will be mining gold in South Africa long after any other company. That is not sunset, that is sunrise," said Willie Jacobsz of Gold Fields.

Over the last decade South Africa has developed a junior gold sector. Great Basin Gold is a Canadian junior with a primary listing on the TSX that saw a unique opportunity. "After the political environment changed and subsequently the mining charter opened the door for juniors to play, with Canadian dollars we could have cheap access to large amounts of ounces in South Africa and we obtained the Burnstone project. It is challenging times with a new mine, but Burnstone is vastly different from the other South African gold operations. It is shallow and not labor intensive as it is mechanized, so we do not have the complexities associated with deep level mining," said Ferdi Dippenaar, president and CEO.

Barberton is one of the oldest working gold mines in the world, producing for 120 years and has an extended mine life to an excess of 25 years.

Jan Nelson's appointment to CEO of Pan African Resources brought opportunity with the acquisition of Barberton and has allowed the company to evolve over the past five years from a struggling explorer to gold producer and soon to be platinum producer.

"We started out as an explorer, with no money in the bank, very few resources and we now own the Barberton mine, producing 100,000 oz/y with the potential to grow to 150,000 oz in the next year. We also have a long-term view of 100,000 oz of platinum at the Phoenix platinum project to mine platinum from the chrome tailings discards which enables us to be the lowest cost platinum producer in the word. We are a unique investment opportunity, giving exposure to gold and platinum," Dippenaar said.

Platinum miners operate jackleg drills in a low-profile reef formation. (Photo courtesy of Implats)

Despite South Africa's production declines, majors and juniors still contribute significantly to the economy. "Gold mining, in many ways, has been the mainstay of the South African economy for years, but it's getting to a more mature phase where platinum and coal are now bigger. However, we are still an important part of the economy; 120,000 people are employed in the gold sector, another 120,000 are employed in the service sector supporting the gold sector. For every person employed in the gold sector, it is estimated there are 10 other dependents in the country. This means the gold sector is supporting around 2.5 million people and still remains South Africa's third largest mining sector," said Cutifani.

Bheki Sibiya, recently appointed president of Chamber of Mines (the chamber acts as a conduit between its 50 members, who, in terms of value and volume, produce 80% of the output of the mining industry) said: "We have 130 years of mining history and with our mineral deposits we have another 150 to 200 years of mining in the country."

The cost of gold reached an all time high in April 2010 of more than $1,500/oz, but the volatility and perhaps an overvalued rand are not providing the margins that the industry hoped.

However, a century ago miners were crippled by the inability to extract the gold from the ore; then the introduction of cyanide technology and deeper mining transformed a dead industry to the greatest gold fields in the world.

Perhaps with newer technologies, changes in organizational structures and labor relations, South Africa's treasure may be mined for decades to come.

South Africa is Open for Business

Interview with Susan Shabangu, Minister of Mineral Resources

Can you outline the Ministry's key initiatives intended to help the mining industry navigate through some of the challenges that have arisen since the end of Apartheid?

Let's look at the history and evolution of the industry. During the era leading up to 2004 we succeeded in profiling mining in South Africa during an extremely difficult time. With the end of Apartheid, came the need to rewrite the laws of the country and to create the Mineral and Petroleum Resource Development Act (MPRDA) to replace the Minerals Act (1991).

In 2009 the industry was faced with the financial crisis and subsequently this led to the development of Mining Industry Growth, Development, Employment Task Team (MIGDETT) to look at how best we can grow the industry, how can jobs be saved and created and to link this with the new growth path which aims to create 5 million jobs in the next 10 years. MIGDETT also aims to take forward the objectives outlined in the MPRDA. In 2009, the mining sector saved 20,000 jobs which could have been lost in the financial crisis.

This year we will be reviewing the act as a whole and we will look at the type of legislation needed for the industry to move forward. This is an act that was done during the transition of the industry, promulgated in 2004 with many stakeholders participating. This was done during a difficult time. It was a new democracy and there was no trust amongst industry, government and labor.

Now we have reached a point of maturity and we have identified many gaps in the act. We believe the mining industry is the backbone of South Africa, so now we have to determine how best we grow this sector.

South Africa has set a target of 26% black ownership of its mines by 2014 and current reports indicate we are not on track to meet this requirement. Do you think this is a possible transformation?

Through MIGDETT we are examining issues of transformation to identify what has not been achieved and how to advance the cause of transformation. For instance, the 2004 mining charter stated all mining companies must be transformed and empowered and it was expected that every mining house achieve an interim target of 15% black ownership by 2009 and a final target of 26% black ownership by 2014. Reaching only 9% in 2009, the target was not achieved. If we look at transformation, the issue of human resources as per charter targets saw companies employing more white women. In South Africa our constitution pertaining to the issue of women in the industry is not based on color and the mining industry has manipulated the clause and has used white women to achieve their targets. We need to make sure that more black people are involved in the industry in the technical and professional areas. We need to look at mining companies applying scholarships to young black people and to women. We have also discovered the issues of sustainable development were very weak and not occurring in a coherent way. The legislation and the charter are fairly new, and we have had to revise the charter and act to see why they could not achieve their targets. One of the key problems was the lack of mechanisms for annual evaluation of target performance. I am now satisfied with the current mechanisms we have put in place. To ensure that on an annual basis targets are met, we are checking to ascertain we can assist and identify any challenges in the implementation of the program.

Currently South Africa is a resourcebased economy. What potential do you see for value added mineral operations in South Africa?

South Africa has been a country that has been exporting its commodities for many years with no value added. We have put together a document that deals with a beneficiation strategy. We have taken it to government and to cabinet with the intention of adopting it as new government policy. It is a consensus document reached by all parties in government, labor and industry. We have set clear targets and one of the targets is to create 40,000 jobs this year through the mining sector.

There has been a misperception in the industry; the belief that a mining company would be compelled to beneficiate. This is not our policy. Our policy is that when there are other companies in the value chain that want to beneficiate, mining companies must not say they are locked into long-term agreements with other companies that export their products.

We need commodities available for local production and local manufacturing. I am satisfied to say we have seen a lot of companies that are interested to come to South Africa to build steel plants and refineries. Our policy of beneficiation is going to work. The mining sector has responded positively.

The president has called for sustainable jobs and to create a living wage as well as decent fringe benefits and this creates an opportunity for more professional and technical people to come into the sector. The participation of many companies in skills development is commendable. We are not yet there. We still need to create the jobs and grow the industry, but we are on the right track. Beneficiation will create new industries and create the needed jobs in South Africa, which will drive the economy forward.

Since your tenure, the Ministry has been commended on the streamlining of the mineral processes to remove regulatory uncertainties and bring transparency and stability to the mining sector. Can you outline some of the key

findings of these audits and the major legislations and processes that will be put in place as we move forward?

When I joined the industry there was a lot of noise about corruption and maladministration. I then put a moratorium on new prospecting licenses and ordered the department to conduct an audit. During the audits, one of the key findings was that the current system we had was not adequate to deal with the challenges faced by the industry.

For instance, we have seen double granting; two companies have been given the same prospecting right, which has created problems in determining who owns the land. We also saw our systems were very weak as there was a lack of use of technology, which resulted in a lot of paperwork. By moving to an electronic system we have identified other issues, and we have discovered people who have been granted licenses without a paper trail and in those cases we have engaged with them to revisit their application, which in some cases rights have been revoked. We have also identified a lack of environmental management plans, which is a condition for the granting of a license.

As a result of the audits findings and the challenges in terms of the act, which are currently being reviewed, we issued a moratorium for six months as we could not continue allowing applications coming in when we had challenges around prospecting licenses. It is a process that has identified the gaps and we unveiled the electronic system in April 2011 to allow transparency.

The system allows people to apply online and also view their existing prospecting and mining rights. All the companies who have been granted rights are on our system. What exists in the department can be found by everyone rather than relying on officials. We need to make sure our current commodity opportunities are applied for in a way that takes our economy forward and that makes our economy grow consistently by creating certainty in the industry.

I am confident that moving forward we will be able to deliver a transparent service that meets the needs of the industry as a whole.

One of the most influential factors impeding international investment is the issue of nationalization. Can you comment on the ministry's position?

First of all, I must highlight that in South Africa, government policy is not for nationalization. We had a national general counsel of the ruling African National Congress where this issue was tabled. It was decided that, given that it has never gone through the process of policy development, for the first time the youth league would table the item for discussion. It was decided further that an independent research study be done to see if it is a viable option for South Africa, and the policy will be debated and discussed in 2012. But at this juncture, nationalization is not a government policy.

It is an issue that has been tabled at the level of the political party. I am confident to say that the policies we are implementing currently are the correct policies and as government.

We will continue to make sure that the interest of the economy of South Africa is taken care of. If we say we want to create jobs and attract investment, we are mindful as government and as a country what is needed to grow the economy of this country and hence the issue of attracting investment and hence vis-à-vis nationalization cannot be ignored. These are issues we can debate, but we have to bear in mind that attracting more investment into South African economy is very critical.

Despite some of the issues we have talked about, South Africa has by far the greatest mineral wealth, a constitutional democracy, a stable political environment and some of the top financial institutions in the world and really has the opportunity to be at the forefront of the global arena. As a final question, what would be your message to the readers of E&MJ about the Department of Mineral Resources and the future of the South African mining industry?

South Africa is a mining destination. Mining is not a sunset industry, but a sunrise industry. Our legislative framework is conducive to investment. We are democratic and a country that recognizes human rights, offers stable financial institutions and continuously responds to the challenges of the world. Right now, we are reviewing the mining act. This is a recognition that the world is dynamic and changes, hence our legislation and our laws need to respond to the changes of the world.

There are a lot of opportunities; we have 60 different minerals in our soils. Anyone who has an interest in South Africa should know that we are transforming the industry and we are opening up to the world and trying to be as transparent as possible. We are open for business.

Beyond Gold

From the heritage and mining culture of gold, South Africa should be well positioned to develop other minerals.

Although gold discoveries of massive scale are probably a thing of the past and a decline in production of the mature gold mining sector is to be anticipated, from the heritage and mining culture of gold, South Africa should be well positioned to develop other minerals. The non-gold sector has the potential to counterbalance reduced production levels of gold, so far this is not the case. "Mining is in our blood, but unless we address our issues we will find ourselves at the back end of the queue of the mining boom. From 2001 to 2008 our competitor countries, the top 20 mining countries, GDP grew by 5% per year at the same time South Africa's GDP shrank by 1% per year," said Dr. Con Fauconnier, retired CEO of Exxaro Resouces Ltd.


Dr. Tony Harwood, Chairman of Universal Coal

Coal

South Africa is the fifth largest coal producing country in the world, producing about 224 million tones of marketable coal per year. Approximately 25% of South Africa's coal production is exported, mainly through the Richards Bay Coal terminal (RBCT), the single largest export coal terminal in the world. RBCT opened in 1976 with an original capacity of 12 million tones per annum and has grown into an advanced 24-hour operation with a potential design capacity of 91 million tons per annum.

Eskom, South Africa's parastatal utility company, has helped pave the way for South Africa's coal industry to flourish. "For much of the two decades prior to 2008…the mining industry showed good growth and a lot of this growth was based on Eskom's ability to provide stable power and the fact that Eskom was the largest buyer of coal in South Africa, which meant a robust export industry was built as Eskom provided stable cash flow for coal supply," emphasizes Brian Dames, chief executive, Eskom. According to Eskom, 77% of the country's electricity demands are supplied by coal and this will remain relatively unchanged in the next decade as two new major coal fired power stations, Medupi and Kusile are scheduled to come online as well as the relative lack of suitable alternatives to coal as an energy source.

South Africa's major coal producers include BHP Billiton Energy Coal South Africa, Anglo American Coal, Xstrata, Exxaro Resources Ltd., and Total Coal, a division of Total SA. Exxaro, is South Africa's largest black-owned mining company formed by the merger of the Eyesizwe and Kumba's coal division. Sasol, headquartered in South Africa is the world's largest coal-to-chemicals producer.

Traditionally Mpumalanga's Witbank coalfields accounting for 40% of South Africa's coal production has been known for its richness in coal reserves and well-developed infrastructure. Dr Tony Harwood, chairman of Universal Coal Plc, an emerging near-term thermal coal production and development company comments, "We have over 300 million tones of thermal coal in three projects, located in the Witbank area, which is a very well established coal mining area in South Africa. All three projects are exploitable by open-pit, in the early years of the mine life, with low strip ratios. They are also close to infrastructure road and rail. We are focusing on low-cost operations, and want to bring these three projects to become mines in the next three years." Mpumalanga will remain an important coal mining destination, but the Waterberg region in the Limpopo province will most likely become the next coal frontier, however, not without significant capital expenditure. Development in the Waterberg region becomes much more complicated, with sparse access to water, limited rail infrastructure compounded by long distances to the port, making this area rich in coal reserves a more expensive endeavor.

Eskom's steel program suggests a future shortage of coal, implying the need for development of new coal mines and increasing global demand means more pressure on Eskom to pay market leading prices for coal. Dr. Harwood has already seen interest from foreign and domestic coal consumers, " There is a huge interest from China, India, and Korea, as well as Europe. A number of groups have approached us looking for offtake agreements, and are looking to invest in Universal Coal in order to secure long term supplies of our high quality coal."

Estimates of South Africa's coal reserves are 53 billion tones and at current production rate there should be almost 200 years of coal supply left.

Fight or Flight

Growth constraints, including underdeveloped road and energy infrastructure, as well as security of tenure and threats of nationalization, contribute to the lack of new FDI into South Africa and a web of rumors that South African majors are disinvesting in the nation. But according to BHP Billiton and Anglo American, South Africa will remain at their heart center. "There are many rumors we are looking to exit South Africa. There can be nothing further from the truth. In the last two years, we have invested more money in the energy coal business than we have ever done in the past; we invested US$1 million in Klipspruit, expanding the production from 4.8 to 8 million mt, in addition, jointly with Anglo, we built a 16 mt processing plant to cater for another 8 mt and we are just about to commission another massive project called Douglas Middelburg Optimization. We combined the two mines to create a large 35 km long open-pit mine. This project cost US$175 million and has a life of mine until 2034," said Xolani Mkhwanazi, chairman of BHP Billiton SA Ltd.

Anglo American holds a balanced portfolio both in terms of geographical spread and of product spread. With leading positions in platinum and diamonds and holding a strong position in iron ore (single largest mine in South Africa and the fourth largest producer in the world), and leading position for copper. About 40% of Anglo's net operating assets are in South Africa and South Africa represents a significant portion of their group portfolio both in terms of their employee numbers and in terms of the substance of the business. Anglo American announced an aggressive growth plan of $4.8 billion in the next three years in South Africa alone. "Our growth will be around platinum, iron ore and coal, and will be largely organic in South Africa. We have one of the strongest project pipelines in the industry within the current commodities we are operating in. By 2015, we will grow by at least 50% volume. This growth will come from four projects globally which are currently under implementation and the Kolomela iron ore growth project in South Africa, currently in development and which will be commissioned in 2012 and will add 9 mt to our production profile. We will remain a very important player in South Africa; we are here to create jobs and to be relevant in the context of South Africa," said Godfrey Gomwe, executive director of Anglo American.

For BHP Billiton, its aspirations for growth and willingness to invest further in South Africa will not be reflected. Mkhwanazi is frustrated from the lack of investment in infrastructure over the past decades, which will constrain the industry for years to come. "The challenge we have as a company in South Africa is we are constrained in terms of growth. We would like to grow, but we can't. We are in three business' in South Africa; energy coal, manganese and aluminum. We cannot

Nkomati Mine of Norilsk Nickel

grow our aluminum business because of lack of power. In fact we have had to close half of the potline of one of the smelters in Richards Bay and this business will not expand until the power situation changes. We have recently expanded our coal business, but we are now constrained by the Transnet freight rail, which is the same for our manganese business," said Mkhwanazi. "My objective is to find ways to work with government and to partner with them to ease these infrastructure constraints. We are talking with Eskom and Transnet to expand the manganese line. However, BHP is going to spend US$80 billion over the next five years in organic growth, (expenditure that is equivalent to the sum total of the three largest banks in South Africa) and not a lot of it will come to South Africa, because there is no project we can invest big sums of money into because of infrastructure. It is not that we are not wanting to, it is simply that we are unable to invest further in South Africa."

Although South Africa hosts 80% of the world's manganese reserves in the Kalahari basin, the current market share is only 15% as compared to China who holds a market share of 35% with only 5% of the world's known manganese reserves. Due to logistical constraints, including transportation of manganese to the ports the development potential is hindered.

Despite rumors that Norilsk Nickel is disinvesting in South Africa, it is constantly looking for new opportunities there, although its operations are also located in a rural area, which means challenged infrastructure and difficulty in maintaining skilled staff.

"We have had senior level discussions with government and at the moment are aggressively seeking partners for new joint ventures. As of the nature of our growth, we are open to different scenarios. There is still considerable potential for the discovery of significant deposits in areas of the country that have yet to be fully exploited," said Wayne Venter, executive of operations at Norilsk Nickel.

Norilsk Nickel is the world's leading producer of nickel and palladium. Although its main mining and metal production units are located in Russia, its foreign assets are now located not only in South Africa, but also in Botswana, Australia and Finland. Its South African mine, Nkomati, will be ramping up to 20,000 mt/y. Nkomati, a 50:50 joint venture with African Rainbow Minerals, is an important strategic asset for Norilsk Nickel.

Infrastructure Development

Transnet, South Africa's state-owned logistics group responsible for South Africa's rails and ports, and Eskom, South Africa's power utility, have committed to significant expenditure in the upcoming years to improve the country's infrastructure. Transnet will spend over R110 billion on its investment programme over the next five years. This is in addition to the R73 billion already spent over the past five years on expanding capacity and improving infrastructure in port, rail and pipeline assets.

Transnet has been investing heavily in new and improved infrastructure, but is still far from meeting the annual capacity of 91 million tones at Richards Bay Coal Terminal. In 2010, South African coal exports rose to 63 million tones, as a result of increased demand from China and India. Transnet is also looking to raise the rail and port capacity on the iron-ore line from Sishen to Saldanha to 60-million tones a year and to increase manganese exports to 4,2-million tones through Port Elizabeth.

Eskom has embarked on an aggressive new build programme, with additional power stations and major power lines being built on a massive scale to meet rising electricity demand in South Africa. Eskom's capacity expansion budget is R385 billion up to 2013 and is expected to grow to more than a trillion rand by 2026. Eskom is expected to double its capacity to 80,000MW by 2026. Brian Dames, chief executive of Eskom explains that "since April 2008 we have had no interruptions due to a shortage of capacity and no customer has been asked not to expand. The issue, however, is to determine the appropriate timelines for new mining projects to come online."

Peter Labrum, the managing director for SRK South Africa, believes "the potential for increased investment in South Africa will be dependent on how the country reacts to the deficiencies in infrastructure and power supply and most importantly how it addresses the supply of qualified technical people." From South Africa, SRK has established offices in Zimbabwe, DRC, and Ghana and have additionally a joint venture in Angola.

Platinum

The metal, hovering around $1,800/oz in the first quarter of 2011, plunged 66% during the economic crisis, but has rebounded from autocatalysis, as well as increased platinum jewelry demand. South Africa's Bushveld Igneous Complex (BIC) is the largest known PGM (platinum, palladium, rhodium, osmium, ruthenium and iridium, occur together in nature alongside nickel and copper) reserve and South Africa is the world's leading platinum producer (4.5 million oz) and produced 8 million oz of PGMs in 2009 (Chamber of Mines).

Together Anglo Platinum, the world's leading primary producer of platinum group metals (PGMs), accounts for about 40% of the world's newly mined platinum[2] (2.57 million oz), Implats (1.74 million oz) and Lonmin (694,000 oz) contribute to the bulk of the nation's production, with other contribution from Royal Bafokeng Holdings, Northam Platinum and Eastplats. Within the BIC, the main PGM producing reefs are the Merensky Reef and the Upper Group 2 (UG2) Reef, which occur around the eastern and western limbs. Demand fundamentals appear healthy, but supply will continue to be constrained and this has led to price tension. With this forecast, South African producers large and small are ramping up operations to increase their output.

Implats group, known for its flagship mine, Impala Platinum, has been through an aggressive growth strategy over the past decade. "When Implats saw an increase in market demand, we recognized our limited resource base (from only one geographical area) and effectively over the years we purchased Marula Platinum, Mimosa Platinum (50:50 joint venture with Aquarius Platinum), Zimplats (in Zimbabwe), Two Rivers (an entrée with African Rainbow Minerals) and Afplats. We spent the last decade increasing our exposure to resources in the ground, and in 1998 we created the Impala Refining Service," said David Brown, CEO of Implats group, the second largest platinum producer worldwide.

2. Based on 2010 production levels

2010 estimates 100,000 oz of platinum was essentially lost in South Africa. This was attributed to strike action and safety issues amongst the world's leading producers. Both Implats and Anglo Platinum saw decreases in platinum production, but Anglo Platinum has plans to produce 2.6 million oz this year to make up for lost production and Implats is working hard to restore its annual production to 1 million oz at Impala Platinum, according to David Brown. "On average, we should be developing 120-130 km per year at our flagship mine to ensure face availability and to catch up for the lack of development that was done in the past. During the mid and late-1990s, the cash generative potential of the business was muted as compared to today. At Impala we had an investment mismatch between old infrastructure and new infrastructure. We are currently sinking three shafts; 20 shaft (deliver 2011), 16 shaft (deliver 2013), 17 shaft (deliver 2016). There was a hiatus in terms of vertical shaft development, but once we have 20 and 16 shaft moving up to production we will restore up to the 1 million mark."

While production losses can be attributable to operational performances, the platinum industry is also constrained by energy and water availability. "South Africa has huge infrastructure challenges. This year we have an energy shortfall of 6 terawatt hours and 9 terawatt hours next year. In our platinum business we require 1,000 MW for our growth pipeline, so it will be important for South Africa to grow its energy base for new projects. Equally there needs to be a contribution from industry to improve energy efficiency in their operations and create power saving projects," said Godfrey Gomwe, executive director of Anglo American.

The industry has been plagued with increased depths in mining, increased safety issues and flooding which have curtailed what should have been higher production levels. South Africa sits on the resource base and many of the unique properties of PGMs make them indispensable to modern technology and industry. Surely this is an opportunity that cannot be missed.

Shedding Weight

The mining sector was one of the hardest hit during the recession. Mining companies were constrained and forced to tighten their reigns, restructure their organization, their balance sheets and in some cases, dispose of uneconomic assets. De Beers, the world's leading diamond company, with more than a century of mining history, is now benefiting from the strong price recovery and demand in China and India, but the situation was not the same several years ago. "De Beers took the necessary measures to get DBCM in good shape to weather the storm and bring it back to the tipping point, where we could weather further downturns in the market and at the same time be ready to take advantage of any market improvements," said Phillip Barton, CEO, De Beers Consolidated Mines (DBCM). "We brought our cost base down and aligned production down to meet reduced demand. However, we retained enough skills in the company that should the upturn come as we saw in the 30s, we would be well positioned to take advantage of it. This meant a major restructure of the business and we had to sadly retrench a number of people to get the company to that point. With a recovery late in 2009 and a strong recovery in 2010, we could then reap the benefits, with further restructuring and we implemented more of what we had learned, especially around how to get our cost base down and operate smarter. We carried this into the 2010 business plan and we saw fantastic results, some of the best results ever. De Beers has disposed of some of its assets that do not fit its operating model going forward and instead have refocused efforts on key assets, having recently approved the feasibility study for Venetia, its flagship mine, to take the mine underground. This study may lead to a huge investment of nearly 10 billion rand and will expand life of the mine beyond 2040.

Minister Shabangu has complimented BHP Billiton on the divestment of their coal assets and has urged many other majors to do the same. Xolani Mkwanazi, chairman of BHP comments on the companies strategy, "We had a lot of reserves and we did an analysis of what we can meaningfully develop within the given time. The reserves we were unlikely to develop we decided we would give them to the transformed companies. What we have divested are the mines we cannot develop in the near future or the reserves that are too small. Our strategy is to go for big, low cost, upstream and expandable resources."

Reason Eventually Prevails

There is no greater deterrent to foreign investment, than the threat of nationalization. Established operations may take comfort in the resolute position by key governmental ministers including Minister Shabangu, President Zuma and senior leaders within the African National Congress (ANC) who highlight the devastating effects of a nationalized mining industry. Nevertheless, undoubtedly this creates a major stumbling block for the requisite long-term mining investments needed to grow the economy. The ANC's youth leader, Julius Malema, representative of an important constituency in South Africa, has succeeded in getting the issue on the party's agenda. The African National Congress (ANC) has appointed a team of independent researchers and mining experts to investigate the appropriateness of nationalizing the South African mines.

"The approach by the ANC to appoint independent researchers is lauded as this will not only increase the credibility of the findings, but will also ensure a wider support of those findings once the investigation has been completed," said Bheki Sibiya, chief executive for the Chamber of Mines. Earlier this year the industry witnessed the launch of the state's first mining company, the African Exploration Mining and Finance Corp. (AEMFC). "This company cannot be given an unfair competitive advantage to private sector companies, as this would send the wrong message to investors and potential investors," said Sibiya.

The industry anxiously awaits final decisions on the topic which are more than 1 year away. "I am confident the developments in the regulatory frameworks are positive and by July 2012 the issue of nationalization will be finalized…we believe we will make sound decisions. We have taken steps back, but soon we will take the steps forward. The mining industry is a competitive advantage for this country and can underpin a lot of development in South Africa. Reason eventually prevails," said Xolani Mkhwanazi, president for the Chamber of Mines.

Industry Addresses MPRDA Issues

Although the MPRDA has liberalized the industry and created racial diversity the government needs to quickly address its shortcomings.

Women in mining: Female electrician (Laticia) and maintenance operator (Madirang) at Voorspoed Mine. (Photo courtesy of De Beers Consolidated Mines)

The government's lawmaking showpiece, the Mineral and Petroleum Resources Development Act (MPRDA) came into being in 2004 with what appeared to be fundamentally sound legislations to address the inequalities and transform the mining industry, but in the past seven years has revealed many ambiguities. These have been identified and an entire overhaul of the act is currently underway, but not without creating uncertainty and an unclear regulatory environment.

Webber Wentzel's Peter Leon, one of the top legal advisers in the continent, noted at the time of development there was "too much subjective discretion and lack of time periods for decisions that would make the act very difficult to implement." Webber Wentzel, established in the 1860s, has the largest mining practice group in the country. Leon was proven right over the years, as lengthy time lags for granting of licenses and permits prevailed, instances of double granting of permits arose and subjective discretion of governmental staff to approve or enforce Black Economic Empowerment (BEE) involvement weighed heavily on the industry.

The (MPRDA) requires that mining companies transform their ownership structures or facilitate BEE, with 15% Historically Disadvantaged South African (HDSA) ownership of equity in their companies or the equivalent attributable units of production to HDSA owners by 2009 and 26% by 2014. Disappointingly, the first tranche of 15% has not been met and the industry transformed by a mere 9%. It also requires mining companies substantially and materially increase the economic participation of HDSAs within the industry, from employment to procurement.

As Frank Gregory, managing director for The Mineral Corporation points out "The mineral resource is a national heritage, and it needs to be shared with people who have lived in the country for thousands of years. The concept of BEE (for sustainable development of communities) is absolutely right. I think we're going to see that it will spread rather than contract. At the current time, approximately 400,000 people in this country earn more than a $1000 a month; only 0.1% of the population can be considered wealthy." However, to date the intended transformation has not achieved its objective and many companies approached the transformation as a compliance issue rather than a genuine transformation.

"The idea was to try to bring in as many HDSA's into the mainstream business, but what we have are people that are becoming rich overnight, and 95% of HDSA's are not getting any benefit. As part of the industry team to negotiate the empowerment legislation, what was in my mind was a system that would benefit a broad spectrum of people. The DMR has recognized that there are shortcomings in the legislations. We focused too much on ownership instead of training and educating people," said Dr. Con Fauconnier.

"This is a learning process; many believe we could have done it better and it could have been broader, and benefited more people than it did," said Mkhwanazi.

Unfortunately the overhaul of the legislation was too late save Kumba Iron Ore from having its mining license swept from under the company's feet and awarded to an empowerment company, Imperial Crown Trading (ICT). ArcelorMittal SA (South Africa's largest steel producer) failed to convert its old-order rights to neworder rights under the MPRDA, which meant their prospecting right was given back to the state and awarded to ICT after Kumba had applied for the mining right to give it full ownership of Sishen (South Africa's largest iron ore deposit).

This decision caused chaos in the industry and raised concern about the DMR's systems. The minister said there was a problem in particular with section 9(1)b, which governed the applications procedures and led to double grants. A proposal to have ICT purchased by ArcelorMittal, an R800 million empowerment deal was then submitted and should be finalized later this year.

Section 11 of the MPRDA, which relates to the transferability of rights, is supposed to safeguard against the almost immediate sale of recently granted mineral rights for a premium; the so-called flipping of mining assets. This area is currently up for review. A similar situation of double granting arose with Rio Tinto's Palabora mine, and Lonmin was ordered by the department to stop selling nickel, copper, chrome and any minerals other than the platinum group metals, as another company had now been granted those prospecting rights. The minerals occur naturally together and it does not make economic sense to mine them separately. Issues of double granting creating insecurity of tenure have been now acknowledged and addressed.

"Prospecting is even more risky than mining," said Leon. "There has been inconsistent application for BEE requirements for prospecting companies. Under the act as it stands, the DMR can impose BEE on a prospecting company, but does not have to do so; the application on this rule is inconsistent. I believe, if you get a mining license the condition is that you give up some of the equity to HDSA and the imposition of BEE on prospecting should be obsolete."

Despite its demise, the MPRDA has liberalized the industry, increasing competition amongst juniors and multinationals and, since its inauguration, there have been a plethora of listings of mining companies. The act also succeeded in creating racial diversity, in an industry that previously was nonexistent.

The mining sector was the first sector to broach transformation, and is now the largest contributor by value to black economic empowerment in the economy (in terms of the value of BEE transactions completed).

The formation of Exxaro, whose entry into the market was through the merger of the Eyesizwe and Kumba's coal resources, is now one of South Africa's largest diversified mining companies, listed on the JSE with a world-class commodity portfolio in coal, mineral sands, base metals and industrial minerals, and exposure to iron ore through a 20% interest in Sishen Iron Ore Co. (SIOC). As the second-largest South African coal producer, with capacity of 45 million mt/y and the third-largest global producer of mineral sands, this is truly a successful transformation to a black owned and operated mining company.

African Rainbow Minerals, created in 2004, is also a diversified mining and minerals company, with world-class long-life, low-cost assets forged through mutually beneficial partnerships with major players in the platinum, iron ore, manganese, copper, chrome and coal. African Rainbow Minerals have successfully established themselves as a black owned and operated company both in South Africa and around the continent.

BSC Resources has the same aspirations and has already demonstrated strong management. It has successfully established South African coal operations, partnered with mining giant Vale and developed the capability to move into Africa. "We are looking to be more active not just in South Africa but around Africa. We want to develop skills among South Africans and go out into the rest of the continent and add value there. Our involvement in a project in Namibia is proof of that. We acquired the project and it is now listed. It was not an empowerment deal and we look to do the same in neighboring countries. We want to continue to be explorers across the continent and to remain first movers. We are a niche player; most BEE companies are passive shareholders, holding a 26% stake. We try to own our projects outright until we bring in a partner. We have a very strong institutional backing from local and international companies," said Bongani Mtshisi, CEO of BSC Resources.

Industry has embraced the transformation and has recognized that to operate successfully in South Africa you need a BEE partner that can actively add value. Richard's Bay Minerals is the largest producer of titanium minerals, high purity pig iron, rutile and zircon and was formed from a joint venture Rio Tinto and BHP Billiton and brought on board a BEE Partner, Blue Horizon, in 2009. "The transition that the nation is making through their transformation so that the leaders of tomorrow reflect the diversity of South Africa today, both in terms of racial and gender diversity, is very exciting," said Managing Director Elaine Dorward-King.

To tackle the issues Leon has made a recommendation to government to look at best practices in other jurisdictions such as Ghana. "I have suggested to government to seriously consider creating an independent regulator for the mining industry. This model has been successful in Ghana, and it has had a positive impact on their regulatory regime, and they continually rank higher on the Fraser Institute Report. The commission employs technically competent people to deal with regulatory obstacles and inform and make recommendations to the Ministry. This is something we seriously need to consider."

Making Strides

The Chamber of Mines has locked horns with government and agreed on a common vision: to create a meaningfully transformed, competitive and growing mining industry.

Hydraulic re-mining with a Fraser Alexander Track Gun. (Photo courtesy of Fraser Alexander)

With the end of Apartheid came the struggle for engagement between government, industry and labor. Over the years the collaboration between these parties has strengthened. "When the world went into financial chaos in September 2008, two countries took the time to understand what impact that would have on the country; South Africa and Zambia. South Africa had previously negotiated with the industry's input, an earnings based royalty system. However in 2008 at the economic downturn they held back the implementation of this system, on the basis of not wanting to negatively impact the industry. There is not any other country I have seen that tries to work as constructively as our country does with its mining industry," said Cutifani.

Further strengthening this partnership was the "The Mining Industry Growth Development and Employment Task Team" (MIGDETT), established in December 2008 to manage the impact of the global economic crisis on the mining sector and to reduce the number of retrenchments, and to help position the South African mining industry to take better advantage of the next commodity cycle. This led to the development of a tripartite—government, industry and labor—Strategy for the Sustainable Growth and Meaningful Transformation of the South African Mining Sector. The MIGDETT task team recognized the importance of competitiveness and transformation and conducted detailed research into the factors constraining them. Two work streams were established; the first would concentrate on the competitiveness and growth of the mining sector and the second would focus on transformation in the sector and the Mining Charter review. "Through MIGDETT we have locked horns with government and agreed on a common vision for the industry: we want to achieve a meaningfully transformed and growing mining industry. The relationship between industry and government has never been better," said Sibiya. The prognosis is promising, and MIGDETT has already achieved success by getting the mining sector back onto government's list of priorities.

Gys Landman, president of the Southern African Institute of mining and metallurgy, the professional institute that provides news and views about technological developments in the mining and metallurgical sector, believes South Africa's mining industry is making positive strides. "We came out of a difficult time and we are getting some stability. The good news is at least there is a lot of good momentum and recognition that we must work collaboratively together and the mining industry is expected to grow at an average of 4% a year." As per MIGDETT's intent, the government's New Economic Growth Plan aims to enhance economic growth, employment creation and equity in South Africa and has identified both mining and mineral beneficiation as one of the key contributors. The strategy of the New Economic Growth Plan is to reduce unemployment from 25% to 15% by 2020 and has targeted the mining industry to create 140,000 more direct mining jobs by 2020 and 200,000 by 2030. The growth path highlighted value added as a key component to job creation. The International Development Corp. (IDC), the state owned funder's Abel Malinga, head of mining and beneficiation, reports the increased focus of funding allocation to beneficiation projects. "We have been exporting raw material to the rest of the world and then importing those value added product at ten times the price. We would want to have a situation where we export a beneficiated project. We are looking at beneficiation consciously, instead of exporting the jobs we want to create jobs, to tackle the unemployment in South Africa. Beneficiation makes business sense."

In addition to beneficiation, the growth path highlights a review of the MPRDA (which is already under way), as well as lowering logistics and skills costs.

Transparency

The new South African Mineral Regulation Administration (Samrad) online system was launched in April 2010 by the Department of Mineral Resources to tackle the issues of double granting, corruption and lack of transparency, enabling investors to apply for prospecting rights, mining permits and mining rights from anywhere in the world. This system is an improvement from the previous single layered NMPS to a 264 multi-layer system which includes consideration for environmentally sensitive areas. Prior to the release of Samrad, the government issued a six-month memoratorium on prospecting rights, while the Department of Mineral Resources undertook a comprehensive audit. Results revealed that despite the 26,000 applications and huge number of prospecting rights that were issued since the inception of the MPRDA, the exploration activity was not reflective. The audit also revealed 122 cases of double granting and the disengagement of the various departments to work cohesively for licensing requirements.

In the wake of the Kumba Iron Ore and ArcelorMittal debacle over prospecting rights as well as Lonmin's halted operations, the Samrad was developed prior to the completion of the revised MPRDA and beneficiation strategy that is set to be approved by Cabinet late 2011 or early 2012 to address immediately investment concerns about mineral rights and security of tenure.

Social and Labor Plan

As part of the MPRDA, the social labor plan was created to legislate how mining activities are going to be conducted in a manner that leads to sustainable development. The mining industry faces significant pressure, both nationally and globally, to increase productivity and reduce costs, and, at the same time, improve mining safety and contribute significantly to the communities in which it operates.

Norilsk Nickel's Wayne Venter discusses how important local partnerships can be in achieving these objectives, "From a skilled workforce point of view, in the South African context you have the requirement to recruit from the local communities. It is a huge challenge to supply our operations with the necessary skilled employees. Training is becoming more and more important. Since it is a new mine, we do not have an adequate training system in place yet, but are actively working on this and we are fortunate to have African Rainbow Minerals as a partner. They have a lot of experience in Corporate Social Responsibility and know how to appropriately invest money into the business to add value."

South African companies are spearheading initiatives for the global mining community, demonstrating leadership in profitable, safe and environmentally sustainable mining. Richards Bay Minerals has developed an internationally recognized environmental programme to restore the biodiversity in the mined sand dunes. Elaine Dorward-King, managing director, Richards Bay Minerals proudly explains: "We create a lake in the dunes and progressively mine the sands taking out the heavy sand particles, spitting back out 95% of the sand, hence we only remove about 5% of the total volume of the dune. As we mine, we continually recondure the dune. This process of progressive reclamation has been able to demonstrate that you can mine and make this compatible with good environmental performance. It is fascinating to see some of the natural forest that has been revegetated and in terms of biodiversity, structure and function it is very hard to distinguish this from a forest that has never been disturbed."

Guys Landsman, CEO of Detnet and President of Southern African Institute of Mining and Metallurgy

In 2010 Anglo American spent 111 million dollars globally on corporate social initiatives and roughly 80% was allocated to South Africa, including the largest HIV programme of any corporate anywhere in the world. Anglo American's Zimele flagship program is currently implemented globally, with companies such as DeBeers, Hitachi and Barloworld copying the model. Godfrey Gomwe, chairman of Zimele explains: "Zimele is our enterprise development initiative; to create jobs and bring enterprise to areas with little or no economic activity. We do this at several levels, we look at our supply chain, and we try to make this benefit a broader community. We look in and around the vicinity of the mines and help to develop enterprise and create jobs over and above those created from the mining operations. We also offer training to run a business and, out of that, they learn to create a business plan and we fund them through their plan. They have to pay taxes and the regular contributions in order to develop the economy. We also finance exploration, we fund up to the bankable feasibility stage. Within the portfolio we have 15,494 employed in the business that we created and these are jobs outside of our normal core activity. We have invested 453 million rand into this program."

Environmental Impact

From over a century of mining, the country is faced with a legacy of environmental unfriendly mining which has plagued the industry with acid mine draining in Gauteng. In 2002 for the first time, the Western Basin overflowed with acid water into Robinson Lake, but since then the situation has worsened significantly in recent months and government is considering imposing a mining industry levy to finance the clean up. Coffey Mining's Chris Fredericks notes: "The industry has been long established, which means that many licenses were granted years ago and therefore the environmental considerations were not a key concern. The newcomers are going through the processes and adhering to the environmental legislations, which means that the future development of the industry is now being developed on a solid footing, sound environmental management and company compliance to those requirements, which is good practice. For companies to provide the level of compliance now needed, there is a lot of remedial work that needs to be done to make the project attractive. For the intelligent investor he has to consider those. This is a huge factor in the economic evaluation of the project and is very often pushed out to the tail end of the project. This is the way of the modern world; we do not want to see acid mine drainage and tailings damage failings, those are things that should not happen if the correct environmental plans are in place and the adequate closure plans are made."

Leon Furstenburg, managing director for Knight Piésold Consulting remarks, "South Africa has strong environmental legislation and environmental protection and mine closure legislations are at international standards, but the enforcement of it is dubious and decisions are not always made on a reasonable basis." The launch of the Department of Mineral Resources's new online system is intended to address these issues. However, Lambert van der Nest, chief executive officer from Fraser Alexander, sees the industry moving forward: "South Africa has some of the best environmental legislations in the world and we are seeing the application of those moving on the right direction." Fraser Alexander is a proudly South African company with a history of 100 years (in 2012). South Africa has an abundance of tailings dumps and many old mining sites, which require rehabilitation and Fraser Alexander has been involved in the managing of tailings dams throughout its history, but the company is now seeing the need to also look at other environmental elements such water retreatment, waste water management and environmental rehabilitation. He further comments, "Fraser Alexander is very strong on environmental solutions. We work in partnership with some of our clients on R&D projects. Specifically we focus on the water component of the tailing dam. Rehabilitating tailing facilities and planning for mine closure prior to the end of the life of the mine is also a big area, and one where we can offer a lot of innovation. In deposition, our team has been active in developing products where we deliver the tailings material in a much more cost effective way than to the tailings dam."

Leon Furstenburg says, "The main business thrust is new mining and new licensing. For foreign investors it is extremely difficult to navigate through the environmental legislations."

Skill Development

The social labor plan is the mandate for companies to contribute to skill development. South Africa's skill shortage is crippling the industry, but this is not unique to the southern most country in the continent; this is a global problem. South Africans are recognized worldwide for their skills, especially when it comes to deep level mining, but as Bill McKechnie, general manager South Africa, Snowden, a leading mining consultancy headquartered in Australia, points out: "Acquiring skilled and knowledgeable people is a major challenge in South Africa. There has been a large exodus of trained professionals out of the country over the past twenty years and this reduces the size of the pool of expertise and results in an ageing workforce."

Mr. Vaughn Duke, chief executive officer of Sound Mining, recognizes the shortage as an opportunity and has a team of older experienced engineers providing consulting services to the industry. "We started Sound Mining to address a clear gap in the market in terms of mining engineering skills." The South African government hopes to create 30,000 more engineers in the country by 2014 and plans to undertake major changes in university funding formulae in order to achieve this target. But South Africa is faced with a dichotomy; extraordinarily high levels of unemployment, low levels of engineering skills, coupled with demanding labor legislations. As Dr. Con Fauconnier, retired president for the Chamber of Mines of South Africa, says: "We have some extremely sophis-

Atlas Copco Drilling Solutions through its Southern Africa distributor, Barloworld Equipment, supplies large surface blasthole production rigs to open pit mines throughout Southern Africa. (The Atlas Copco Pit Viper 271 is shown here. Photo courtesy of Atlas Copco)

ticated labor legislation in this country, perhaps almost too sophisticated for the nature of our workforce as it makes it very difficult to retrench employees when times are difficult. We have a ratchet effect; huge demands for wages increases and this pushes up the entire cost structure in the country."

South Africa's wage demands continue to grow. The National Union of Metalworkers of SA demands for a 20% increase and the National Union of Mine Workers is currently demanding 14%, while the official economic position of the government, as outlined in the new growth path, calls for wage restraint. "In the next years, the cost of labor will be an issue. 6 years ago salaries were 40% less than what they were in the US. Today they are, in a lot of cases, equal or more expensive. Our labor force needs to understand international trends and not just focus on national trends. For example, the world is offering 2% increases and we are asking for 10%," says Jaco van der Merwe, general manager Atlas Copco.

The mining industry, has been summoned by President Zuma to create employment opportunities and part of this strategy is through indirect employment created through value-added. Terry Gillhan the general manager of Bell Equipment sales South Africa reinforces the government's position on the need for beneficia-

Piezcocone (CPT) Probing at Palaborwa Mining Company (Photo courtesy of Knight Piésold)

Dr. Con Fauconnier, retired president of the Chamber of Mines of South Africa

tion to create employment as well as the contribution of Bell Equipment, a local South African equipment provider to job creation. "We are South African, we employ 2500 people, but the knock on effect creates an additional 30,000 employment opportunities. There is no local content in imported products and very little value added. The manufacturing sector in this country needs to flourish and companies need to buy local and support local. The iron ore that ArcelorMittal mine in this country actually ends up as a Bell truck; this is a real value add. This is what the country needs to do more of." As Terry also states, local South African manufacturers understand the operating conditions unique to the African continent, "the conditions in Africa are harsh, amnient temperatures and rainfalls are high, we have a good understanding of Africa and we know what it takes to make equipment reliable and durable for these conditions." The disadvantage however for South African manufacturers is the strong and often fluctuating local currency which makes importing companies very competitive.

Support Services Adapt to Meet the Industry's Demands

Early industrial development flourished on the back of the diamond and gold mining industry. The sector fostered the establishment of some of the leading engineering, construction, financial, water and energy services. More recently, not only did the phasing out of the concept of the "big six mining houses" create the junior mining industry, but it enabled the service industry to grow their business and participate in projects which were previously in the hands of the mine owners themselves. The industry has been unbundled engendering new possibilities for those with skills.

Frank Gregory, managing director of the Mineral Corporation, notices: "Extensive amounts of corporate memory were lost and intellectual property data dispersed as it hemorrhaged out of the mining companies when they were being stripped." Three of four of the founders of the Mineral Corporation came from JCI and one from Anglovaal and, together, they saw two opportunities. "From the loss of intellectual property, there was the ability to share our mining industry experiences with the new emerging companies. Further, we have an extensive global network and we saw the opportunity to alert the financial institutions around the world that we were in business. The restructured mining companies generally no longer had the in-house financial muscle to fund deals and they would seek assistance from financial institutions, not only in South Africa, but marching to the Toronto Stock Exchange or London Stock Exchange looking for equity financing arrangements," continues Mr. Gregory.

The trend is to outsource all or part of the engineering functions, which means that mining houses no longer have to carry the overhead of permanent engineering staff when they are not engaged in projects or during times of financial havoc. Outsourcing is even more apparent amongst some of the new Black Economic Empowerment Juniors, which in some cases lack expertise and know-how. Atlas Copco has witnessed many changes.

"With the new mining charter, the face of our customers is changing. We see a lot of movement away from the large mining houses to new junior miners that will be black owned. If we want to be competitive, we need to adapt to that. Our company is very progressive when it comes to transformation. Because we have a very strong local representation, with local management we are positioned well to deal with new customers in the future," says Jaco van der Merwe, general manager Construction & Mining Technique Southern Africa.

On the other hand, well established South African consultancies, such as Knight Piésold, celebrating 90 years of existence in 2011, have found that because of their long history they have already established a very diversified practice. "We are the most diverse of the Knight Piésold practices worldwide, which is a legacy from the country's history of working in isolation, which meant we needed to diversify rather than specialize," says Leon Furstenburg, Managing Director, Knight Piésold Consulting.

Headquartered in South Africa, with 37 years of experience in the country, SRK's South African division is also the most di-

Frans Baleni,
General Secretary of National Union of Mine Workers

versified practice amongst their global operations. Peter Labrum, Managing Director of SRK Consulting South Africa comments on increased competition, "Prior to 1994 South Africa was isolated and it was not a place where people wanted to do business. Today there is more competition, certainly with service providers as global companies move into Africa."

As companies evolve to adapt to changes, the challenge the industry and related industries face now is how to advance technically and improve safety without compromising employment.

Safety Drives Technology

South African mines are the some of the deepest and most dangerous in the world. Frans Baleni, the general secretary for the National Union of Mineworkers, the largest recognized collectively bargaining agency representing mine workers in South Africa with 320 000 members, expressed his dissatisfaction. "We are not pleased with the reported death of 128 in 2010." He believes the industry will not achieve safety improvements under present conditions. "Remuneration is founded on a low-based salary and large bonus structure, making it easy for employees to compromise safety. The second problem is the absence of peer review mechanisms."

Although some of South Africa's mining conglomerates have moved towards higher technology, mechanization and innovation, which leads to longer-term improvements in safety and productivity, the country, however, is not on the same footing as others such as Australia. This may in part be attributable to the government's investment in research and development. In 2009 the South African government contributed R578-million to South African companies to fund mining R&D, compared to Australia's commitment of A$4,3-billion during the same period. Geobrugg's manager of African operations, Bart Schoevaerts, believes that the initial cost implications hinder the mining industry's affinity for change, "The sector is of the mentality that if something works, why should we change and the South African mining industry is still very labor intensive and non-mechanized."

Geobrugg has developed a mechanized method to install rock fall barriers for mining operations and is currently working in collaboration with AngloGold Ashanti and the technology consortium to improve methodology for deep level mining. The big challenge in safety is to remove people from the unsupported ground and away from the blasting.

In addition to improved safety, as Rod Humphris, Managing Director of Omnia Group (parent company of BME Mining) highlights the increase in productivity and efficiency are enormous, "In terms of electronic detonators, we have brought to market a user-friendly electronic detonator that is currently undergoing regulatory approval. This product is extremely advantageous for the mining industry and can save a mine up to 30% off their dragline time. He further adds, "Electronic detonators offer very good vibration and fragmentation control. The mines are encouraged to consider costs holistically rather than in silos in order to optimize total expenditure. The readiness of the industry to adopt the technology is improving steadily."

Both DetNet and BME are seeing an increased uptake of electronic detonators by mining companies. Gys Landman, chief executive officer of DetNet, a leading supplier of electronic initiating systems formed a strong partnership with Dyno Nobel and AECI.

The purpose of DetNet was to design, develop, industrialize and assist with the manufacturing of electronic detonators mainly through those two channels to market. He sees the opportunities for this technology particular relevant to the South African environment "As a result of ore bodies becoming more difficult to access and a general lowering of grades, there will be a migration to new technology within the mining industry. As such, The role that electronic initiation systems play in mining operations will continuously expand," he believes. To deal with the complexities of a shortage in skilled workers, the blast is controlled through electronic media and designed in such a way that it is intuitive for miners to use and as a result the knowledge is easily maintained.

As a result in growth in electronic detonators, the requisite need for nitrates has created an opportunity for Omnia group to invest in a second nitric acid plant to meet the demand in the market. Their second plant, scheduled to come online in 2012, will be about 40% larger than the existing plant and will place the company in a position to grow into the market as it expands.

AngloGold Ashanti is a leading light in safety improvements, and with mines at depths of 4000 meters with seismic activity, this is not an easy feat. "We defined a different way of working together to improve safety and to look at the root causes of the accidents. Based on this we made technical changes to the way we operate. We have seen a 70% improvement over the past three years and we believe we will see another 70% over the next three years. Within a space of five years we will be comparable to any developed country. Today our American operations are amongst the top quartile performers in safety across the continent and AngloGold Ashanti globally is just behind the North Americans on average. South Africa is our biggest challenge. Three or four years ago we had injury rates double that of North America. If we continue making the progress we have seen, we will be amongst the best in the world and there is no reason why we shouldn't be," says Mr. Cutifani.

AngloGold Ashanti's consortium is looking at automation and technologies that will remove people from areas of most risk. "We are exploring new mining methods, new mining machines and new transport systems to basically redesign the process from beginning to end. We are working on a fully integrated model and we have been looking at the whole organization strategically; the operation model and its impacts on safety and production. This is a major step change and no other mining company has taken it on," he continues.

South Africa has also seen heavy investments in "people metrics" (for example heart rate performance) to understand the physical implications of what employees are enduring whilst underground and improve safety and productivity of the operations. In addition, significant progress has been made on research into an underground tracking system, which is a real-time locating system that monitors the underground position of personnel.

Further Technological Advancement

Mining companies are adopting energy efficient machinery and are increasing their investments in new energy technologies. AngloGold Ashanti, in three years, has reduced their energy consumption by more than 15% through the application of different innovations.

Schneider Electric's Wilhelm Swart says: "In South Africa we have soaring escalation of electricity demand; our energy costs are increasing 4 fold over a 3-year phase and with this shortage, our demand outstrips our supply until 2016-2017. Mining is very energy intensive, and we believe that you can save 20-40 percent of energy in the modern day mining environment through a holistic programme of fixes. We leverage the saving in safety, energy efficiency and productivity. We did a large project for Anglo Platinum (3rd largest energy user in the country); they did not know where 65% of their power was being used, so we did a measurement project where we put metering all over their sites and collected the data at their different hubs. We deployed meters to see where the key usage was and now they are busy analyzing the data to look for areas of improvement."

We are seeing a global drive for more efficient mining methodology, but South Africa's producers, manufacturers and service companies have been forced to adapt in order to avoid the repeated energy crisis which took place in 2008 and resulted in halted mining operations as a electricity demand outstripped supply.

"Clients are always looking for more efficient ways of extracting the minerals from the ore bodies; therefore we are constantly striving to develop different processes and different equipment to increase the efficiency. We have an energy and environment technologies segment

Moab Khotsong metallurgy plant South Africa.
(Photo by Annalien Swanepoel, courtesy of AngloGold Ashanti)

to Metso which provides cutting edge research on preservation of energy and the Metso mining and construction division works closely with them to improve the utilization of energy," remarks Dave Moon, the VP of Southern Africa for Metso.

Peet Reyneke, acting president for Outotec Sub Saharan Africa, has also seen a shift in the business.

"This has pushed us to develop appropriate new technology so we see applications arising for energy-optimized sintering and smelting, reduced emissions and effluents and more efficient chemical processing."

South African suppliers and multinationals are driving forward higher levels of automation and innovation. MMD, a world leader in Mineral Sizer technology, the original inventors of the Mineral Sizer, have recently developed 'Green Mining Solutions'.

"These eliminate the use of large truck fleets. These include the fully mobile sizing station in combination with large rope shovels and overland conveyer belts," explains Martin Vorster, managing director.

"Our GTMET team have some very exciting technology, we can run extremely low volumes of minerals through their trial plant process, which means mining companies do not have to make huge bulk samples for no profit. Trial can actually be run on core samples. This technology has the ability to save exploration projects hundreds of millions of rands." says Julian Upshall, Business Development Manager for Africa.

Going North

More and more internationalization and opportunistic development across the continent prompts geographical diversification. For many companies, South Africa will remain their core revenue source, but for others their focus will shift towards the more underdeveloped parts of the continent and South Africa will be the springboard for operations across Africa. "The World Bank is expecting growth of 7% across the continent. South Africa is the means to execute this and a lot of the work will be channeled through South Africa instead of through Europe," said Rory Kirk, the managing director of Hatch Africa.

Mr. Kirk is starting to see a revival in spend across the mining sector and sees opportunities for the company to diversify further into southern Africa. Other consulting and engineering companies, such as MDM Engineering, currently with five major projects in various stages of execution and three of which are in South Africa, including the flagship Kalagadi manganese Umtu Project, treating 3 million tpa of magnesium ore, all for export, see more opportunities outside the country. Dave Todd, technology manager said, "Alot of our key client base are the juniors, which are exploring much more over Africa than in South Africa right now." The company

Martin Smith, CEO of MDM Engineering

Daphne Mashile-Nkosi,
Chairperson of Kalagadi Manganese

expects to have 20% of their revenue generated from their South African operations and 80% in Africa as time progresses but still utilizing South Africa to branch out further into Sub-Saharan Africa. Martin Smith, CEO of MDM, notes "Our strategy is up in Africa, we have done work there, and we are moving back there. We are picking up where we left off several years ago. There are a lot of engineering and EPC players in South Africa....but South Africa is lagging the rest of the world in exploration because of governmental issues. It should be growing at a far faster rate."

Major manufacturers such as Cummins South Africa, with more than 90 years of established operations in South Africa has also seen the shift in the companies geographical strategy to a stronger focus in Africa, "For Cummins, Africa is the next major growth area, and we are now in the process of structuring the entire African strategy. Africa is the next big thing. We have an integrated approach and we offer the full suite of services across the whole continent," says Phillip Rhodes, director for the newly created Mining Centre of Excellence at Cummins.

He cautions however that companies looking to diversify must adapt to the cultural translation, "We have reasonable timeframes and constraints that work in South Africa, but are not necessarily applicable in other African countries. We need to make sure that the cultures talk to each other without creating necessary conflict," he continues.

George Bennett the executive director for MDM engineering recently formed a strategic partnership with GR Engineering, a geo-engineering company involved with EPC projects in Australia to take advantage of the huge opportunities presented across the continent. "The attractiveness of the strategic alliance for MDM was to expand within Africa. There are over 150 listed Australian companies with 400 projects across the continent and we can use this partnership to leverage access to these projects. It has already borne fruit as we have qualified for two tenders and the partnership was only made several months ago (December 2010)."MDM is a engineering and project management house with an exclusive focus on mining.

Vaughn Duke from Sound Mining sees the most opportunities for expansion on the continent and believes new international players will be looking for local partners to mitigate risk and understand how to navigate within the continents dynamics, "Most of the activity is going to be on this continent. There will be a lot of business with the Chinese and with the Indians and a big challenge for them will be to understand how to operate and work with the people in Africa."

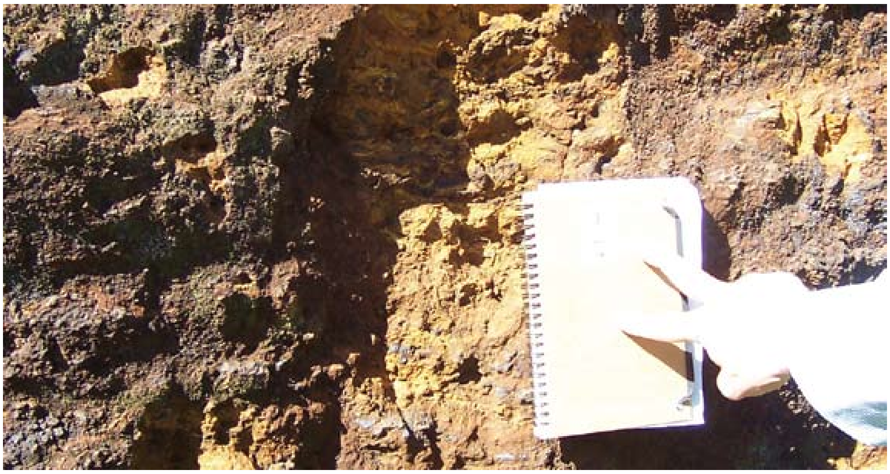
The old method of flying in and flying out is less accepted. Mining companies are demanding more and both services and suppliers are recognizing the importance of founded business and in some cases manufacturing operations on the continent, with South Africa being the most logical destination. "We keep ahead through local manufacturing, which is a significant advantage for us. The mining industry in Africa traditionally has been supported from South Africa. Logistically it makes sense to have established practices. We have agents in several African countries, to provide the first line contact with the client, and in more complex projects they work closely with South Africa. We work through distributors and we currently have installations across the continent, in countries such as Nigeria, Mali, Zambia, Zimbabwe, Malawi and the DRC," says Vorster from MMD mineral sizing.

SEW Eurodrive is also making significant investments both into South Africa and across the continent. "We are investing 20 million into a service plant in Johannesburg and we see this as the key differentiator in the market. We continue strengthening our service capability to the market," said Ute Bormann, the newly appointed managing director for SEW Eurodrive. SEW Eurodrive is a leading supplier of industrial gears to the mining industry. They launched the X series, a product that is well suited for the African market.

For Stewart group, acquisitional growth helps position the company for continental expansion. Stewart Group is an international independent minerals assay and inspection company and they have just installed a new geochemical lab in Johannesburg as part of their strategy to service the business and grow in Southern Africa. They also recently acquired GTMET (from Canada) "There are good opportunities for this business in South Africa and we expect to see this as the year progresses. The acquisition presents Stewart Group and GTMET with an excellent platform to expand our global reach, providing customers with a seamless, integrated service at a time when demand for services is high. It enables Stewart Group to provide our customers across the globe with an integrated service at every phase of the exploration," says Julian Upshall, Business Development Manager for Africa.

Geographical diversification is of course not without its challenges; lack of infrastructure, different working cultures, and in many cases, political instability. "From an SEW South Africa point of view, we see Africa as a target. It is difficult from an investment and technical expertise point of view to move into all African countries. We have over 48000 parts that make up over 4 million combinations, which means the stock holding is very high. This is required to deliver the flexibility needed by our customers, but it makes it challenging to set up assembly plants across the continent."

South Africa has laid the necessary groundwork and created a service delivery model for replication across the continent. "Strategically South Africa is the leading light in terms of the African continent and what we do here and how well we do it, will be used as the template that other developing countries will follow," emphasis Coffey Mining's Chris Fredericks. "If you look at the infrastructure developed in South Africa, the education systems and the regulatory bodies that monitor our sphere of work are of a quality and standard that is acceptable internationally. South Africa is a fantastic example of how you should set up the systems to support the industry," adds Mr. Fredericks.


Sound Mining collecting data for geological modeling at Mrima Hill, Kenya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