MACIG

THE OFFICIAL MINING IN AFRICA
COUNTRY INVESTMENT GUIDE

2016

Welcome Note from the Publishers

In 2014, the Investing in African Mining Indaba™ and Global Business Reports (GBR) partnered to launch the inaugural issue of the Mining in Africa Country Investment Guide (MACIG). We are delighted this year to present the third edition, which will focus on 14 African mining jurisdictions selected from months of detailed research and on-the-ground interviews.

2015 was another very challenging year for the mining sector, perhaps even more so than 2014. Commodities prices continued to languish at historically low levels and new investment has been slow to come, particularly in more mature jurisdictions. Most ominously, the Chinese economic miracle, which has undergirded the growth in the global mining industry for the past three decades, is slowing down. For the first time since 1990, Chinese GDP growth is set to dip below 7%. Africa has also seen its own challenges from terrorism to recovering from the Ebola outbreak in West Africa.

Despite all the global headwinds and local challenges, some jurisdictions are growing and are creating more opportunities in which to attract investment. Companies are generally retrenching, but are taking cost-saving steps and implementing greater efficiency in the process. The power sector has long been a hurdle for mining on the continent, but there are potentially some encouraging initiatives underway, and the discovering of new oil and natural gas fields bring greater optimism about the continent's ability to address these issues. Finally, an upswing in global commodity prices could well occur in the second half of 2016, and Africa's mining industries will be well positioned to grow in such a case.

This third edition of MACIG will give readers an unprecedented view into the following countries, which have an appetizing investment climate: Angola, Botswana, Democratic Republic of Congo, Ghana, Lesotho, Mali, Mozambique, Namibia, Niger, Republic of Congo, South Africa, Tanzania, Zambia, and Zimbabwe. Each section will highlight a jurisdiction including a country fact sheet, an interview with the government minister, and a geological map, as well as GBR's market analysis and private sector comments. This in-depth analysis gives our audience the most current information and insights in order for them to make intelligent investment decisions and enhance their expertise on mining on the African continent.

The annual Investing in African Mining Indaba is the world's preferred destination and brand in African mining. Our 2016 program is our strongest to date and reaffirms our core value proposition of providing a platform to allow interaction between investors, mining companies and government to drive investment into the mining sector in Africa.

We thank our global community of more than 7,000 professionals for their continued support of our event. We look forward to providing you with another week of unparalleled content, networking and investment opportunities as you have come to expect from the annual Mining Indaba.

Sincerely,

Jonathan Moore
Managing Director,
Mining Indaba™
Twitter symbol: @MiningIndaba_JM

Agostina Da Cunha,
General Manager,
Global Business Reports

This research has been conducted by Molly Concannon, Nathan Allen, Sharon Saylor, Katie Bromley, Meredith Veit, Lubo Novak, and Jean Pierre Salendres.

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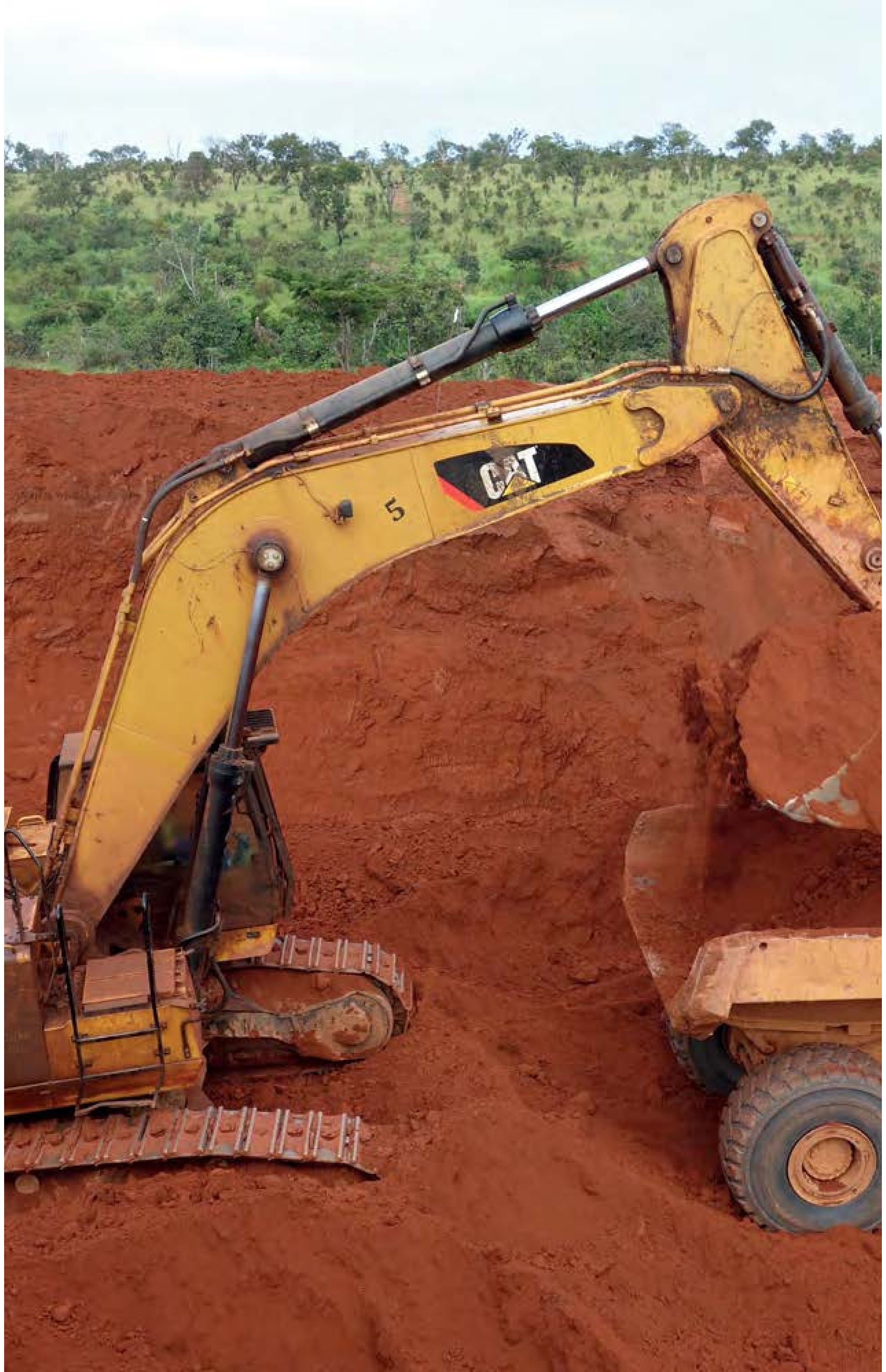
A Global Business Reports Publication
For updated industry news from our on-the-ground teams around the world, please visit our website at gbreports.com, subscribe to our newsletter by signing up to our VIP list through our website, or follow us on Twitter: @GBReports.

Image: ENDIAMA



Ministerial Interviews

Interviews with ministry officials from 14 jurisdictions give readers insight into government strategies to bolster mining activity and attract foreign investment.

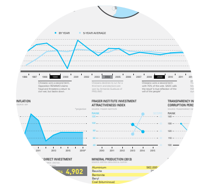
29, 66, 91, 110, 157, and more

Editorial Content

Each of the 15 jurisdictions featured is analyzed by GBR's journalists, who spend weeks on the ground visiting with industry leaders to gain a deeper understanding of the industry.

30, 67, 92, 112, 150, and more

Factsheets



Quantitative data is not lacking in the following pages, and we aim to help readers better understand the underlying political, economic, and mining trajectories of each country.

12, 27, 89, 107, and more

Country Maps

Detailed geological maps, courtesy of SEMS Exploration, allow investors to get a lay of the land from afar and reveal the complexity of each country's mineral deposits.

7, 13, 48, 58, 138, 164, and more

Future Outlook

The African mining industry is both old and new, but companies are bringing new insights to the continent all the time. We share some of their visions for the future of the industry.

168-169

The Official Mining in Africa Country Investment Guide, 2016

Welcome to the third edition of the Mining in Africa Country Investment Guide (MACIG) produced in partnership with African Mining Indaba™ and Global Business Reports (GBR).

The following report was no small undertaking. It is the culmination of one year of on-the-ground research by GBR journalists, who met face-to-face with industry executives, government officials, and association leaders to learn about mining on the Africa continent. Now in its third edition, this year's MACIG covers includes the following countries as top ten destinations: Botswana, Democratic Republic of Congo, Ghana, Mali, Mozambique, Namibia, South Africa, Tanzania, Zambia, and Zimbabwe. Four additional countries—Angola, Niger, Lesotho, and Republic of Congo—are featured as "up and coming" jurisdictions, while Senegal and Burkina Faso receive special attention in our look at the region of West Africa.

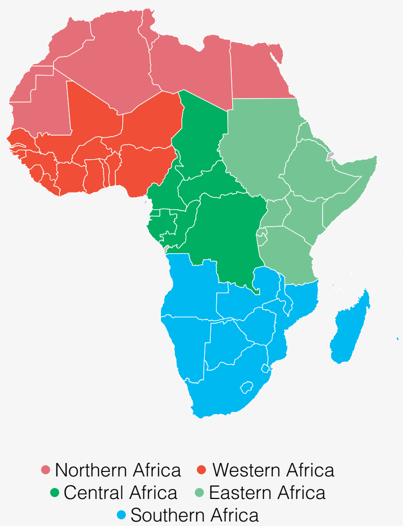
With the exception of North Africa, the research spans the entire African continent. Naturally, Southern Africa provides the largest focus, as its minerals are the most prolific and its jurisdictions the most mature, but Central and West Africa are also home to mineral powerhouses that receive significant attention. Most readers will be familiar with the general outlines of why the larger jurisdictions are attractive, but many may not know much about the less well-known countries. MACIG 2016 allows readers to explore these jurisdictions, and compare their opportunities and challenges alongside the big boys. In no other publication can a reader find as diverse and deep an insight into the mining industry across Africa.

The reasons why we chose to include the countries that we did are explained in the regional overviews that start each section. We have relied heavily on quantitative data and qualitative assessments that we have collected during our research in each country, as well as the key indicators about a country's economic performance and potential, mineral production, regulatory regime, and political risk that are found on the first page of each country's chapter.

Low prices in global mineral markets have slowed investment in Africa. China's shift away from a manufacturing-driven economy will slacken its demand for some minerals. Yet, as these pages detail, there are many reasons for optimism, and serious steps are being taken my governments to secure energy and water supplies and build new infrastructure. The slowdown in demand growth for some minerals, moreover, may be met by an increase in demand for others. In other words, broad economic trends cannot tell the story of what is happening; African mining jurisdictions can only be considered on their own merits and offer optimism or pessimism based on each investor's criteria. •

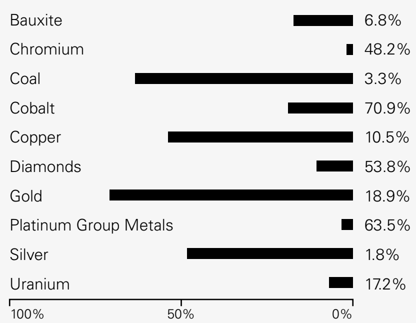
Regions

While there is some discussion about the exact division of Africa's regions, we have chosen to follow the groupings of the African Development Bank. This varies quite substantially from other regional definitions, such as those of the United Nations, and are as follows:



AFRICAN PRODUCTION AS % OF GLOBAL PRODUCTION BY MINERAL (2013)

SOURCE: BRITISH GEOLOGICAL SURVEY



Please note that all country-specific quantitative data for individual countries are intended to provide a broad picture rather than an entirely accurate overview.We have made substantial efforts to ensure that all figures come from reliable sources and have cited them accordingly. Yet almost without exception there will be equally reputable sources that give slightly different data. We have tried to use the most recent data, but, the rapid growth of African mining means that these figures can change quickly.

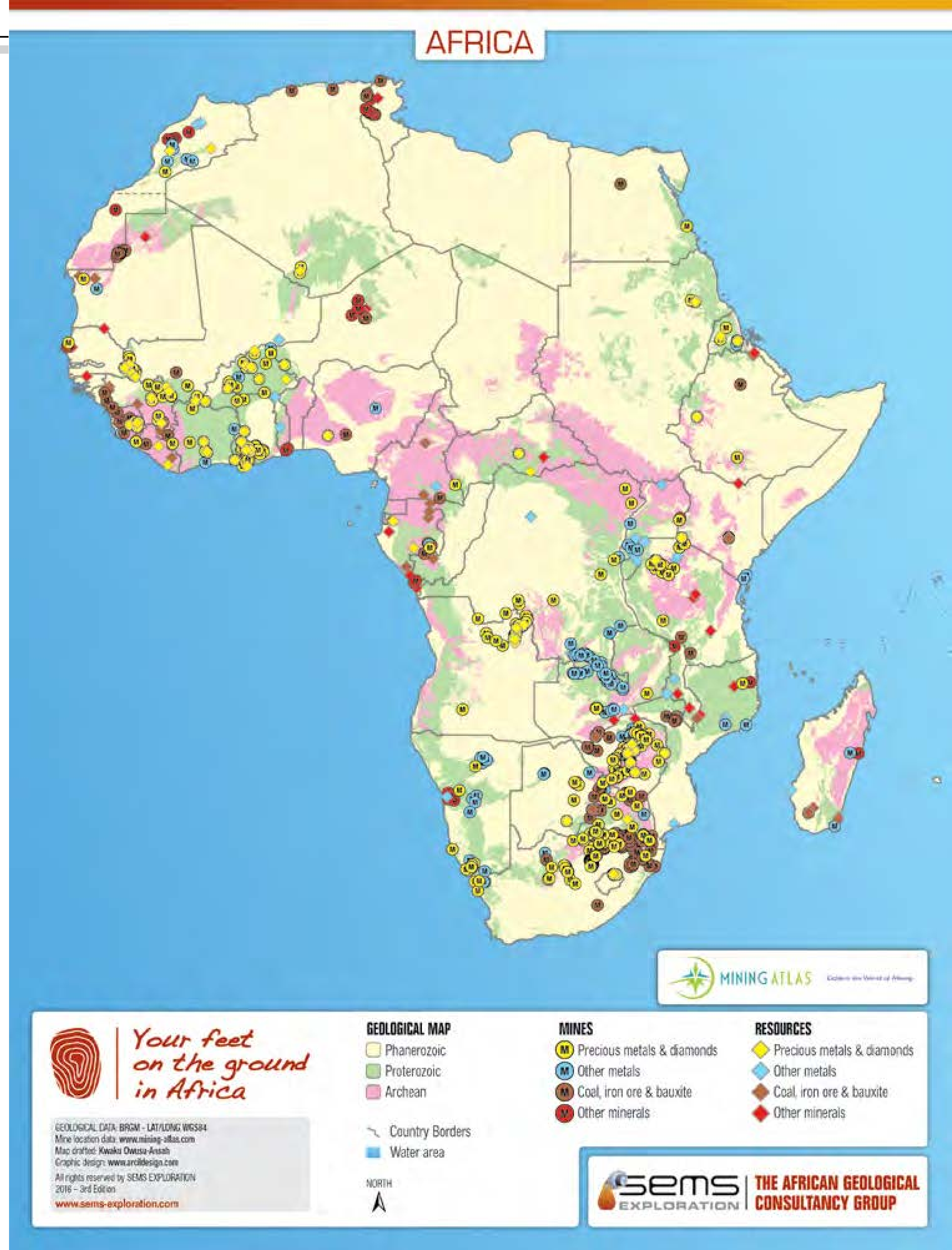


Image: View of Blyde River Canyon in South Africa.
From orangecrush -Shutterstock

Southern Africa

Angola
Botswana
Lesotho
Mozambique
Namibia
South Africa
Zambia
ZImbabwe

MACIG 2016

Southern Africa

Botswana, Mozambique, Namibia, South Africa, Zambia, and Zimbabwe have been long-standing pillars of mining activity, but the Southern Africa region still offers surprises for investors, particularly in Angola and Lesotho.

For the third consecutive year, the Southern Africa region has the largest contingency of top investment destinations in Sub-Saharan Africa; South Africa, Botswana, Mozambique, Namibia, Zambia, and Zimbabwe are all among our top 10. Each is featured in the following pages, as well as other others that have significant potential for future investment: Angola and Lesotho.

The underexplored Southern African nation of Botswana made headways in 2015 with the discovery of the second largest diamond in history at the Karowe mine, owned by Canadian diamond-producer Lucara Diamond Corp. Botswana's long history of diamond mining has transformed it into one of the continent's wealthiest nations. Recently, initiatives were launched to diversify the country's economy from diamonds, as the lifespan of diamond mining in Botswana is forecast to last only 15 more years, and Botswana Copper recently acquired Norilsk Nickel's Southern African investments, with plans to create jobs and become a regional smelting hub. Along with nickel and copper, the country has significant potential in iron ore and coal.

Mozambique, meanwhile, is experiencing a period of political and economic transition. A newly elected president and the expected launch of natural gas projects promise to transform the country's economic and social landscape. The hype of natural gas potential has overshadowed the nation's abundance of coal reserves, which have been hampered by low international coal prices coupled with infrastructure and logistical constraints. Yet Mozambique also has an abundance of graphite, tantalum and gold, and it has recently discovered large deposits of natural gas offshore.

Namibia is a world-class producer of gem-quality rough diamonds, uranium oxide, special high-grade zinc, gold, blister copper, lead concentrate, and salt and is the fifth largest uranium producer in the world. The presence of major international players alongside new players continues to diversify the country's mineral wealth. Operations include including B2Gold's Otjikoto gold mine, Weatherly's Tschudi mine, Swakop Uranium's Husab mine, and Dundee Precious Metals Tsumeb mine.

In December 2015, Weatherly updated its reserves count in northern Namibia to 22.1 million metric tons (mt) at 0.85% copper, an increase over the previous reserve estimate of nearly 196,000 mt. The London-listed major has put forth substantial effort in cost-cutting decisions, and this new information coincides with the evaluation of expansion opportunities to increase processing capacity and further reduce life-of-mine costs to $4,172 per mt. For Tschudi's creation, Weatherly utilized the multidisciplinary consulting specialist LogiMan for fixed-priced engineering and project management solutions. "[It] had an initial market price of $150 million," explains Krzysztof Szymczak, managing director of LogiMan, "LogiMan was able to fix the price at 50% of that tag, lowering the cost to $70 million. We executed the project six weeks ahead of schedule, and entirely on budget." The success of the Tschudi project is partially attributed to LogiMan's management of multiple challenges, including a six-week steel industry strike, a two-week transportation strike, and over a month of lost production due to weather delays. Based in South Africa, LogiMan is not only versed in overcoming these obstacles, but provides the unique offering of a concrete cost guarantee.

In the regional context, Namibia is on its way to becoming a logistics and distribution hub for Southern Africa with the development of the Walvis Bay corridor. Namibia's economic stability, ease of doing business, and wealth of resources also make it an attractive investment destination.

Investors continue to be attracted to South Africa's developed infrastructure, but the country is seeing fewer mining investments than some of its neighbors. South Africa is grappling with a declining currency, legislative changes, expensive labor costs, awkward union problems, insufficient power, and lower grade or deeper and costlier operations. For example, De Beers is currently investing over $2 billion to convert its Venetia open pit diamond mine into an underground operation. The diamond-bearing ore in the mine's current state is expected to be depleted by 2021, whereas this move will extend production to 2043. The high price tag is due to a 900-meter (m) increase in depth and sinking two vertical shafts an additional 1,000 m. A positive to the hearty expansion is its addition to the job market: "Basil Read's civil division was involved in the shaft sinking operations," notes Khathutshelo Mapasa, Basil Read's mining executive officer, "As the mine goes underground, more people will be needed." Basil Read's mining services division has been in operation since the 1980s, providing drill and blast capabilities, surface contract mining, mine design, infrastructure development, and surveying among others. De Beers expects production to commence in 2021. Basil Read is also active in assisting its open pit operations, as it does not have to buy equipment for the open pit that it will not be able to use once they go underground in 2021/22.

Despite such challenges, South Africa will remain a dominant regional player as it hosts the strongest presence of mining experts as well as a plethora of experienced exploration and services companies, a strong financial sector, and technological innovation.

Zambia, Africa's second largest copper producer, is struggling under the weight of six-year lows in copper prices and dealt with one of the worst electricity crisis in recent history. Mines are grappling with escalating operating costs that have led to a significant reduction in the workforce. Imminent plans are underway to address the electricity issues that were caused by a major drought throughout the country, which interrupted the operation of its hydropower dams. Zambia undoubtedly has major potential, and if the government can redress electricity shortages and maintain royalties at an acceptable level, the country can surpass the Democratic Republic of Congo as Africa's largest copper producer.

Second only to South Africa, Zimbabwe has the world's largest platinum and chrome deposits, alongside significant gold, coal, and iron ore reserves. Large, high-grade, untapped mineral resources abound, but the mining sector continues to underperform. In addition to low commodities prices, country-specific challenges such as high costs, indigenous ownership structures, and shortages of power are plaguing performance. With the right policies, Zimbabwe can turn things around.

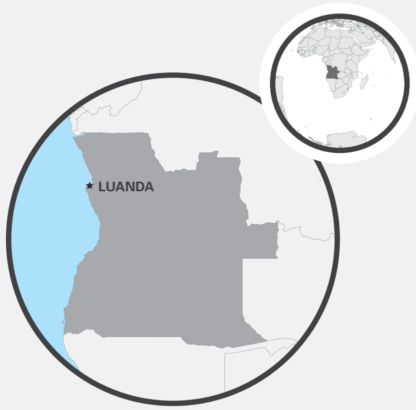
Appearing in this year's edition as an important destination to watch, Lesotho is making strides to grow its mining sector. Lesotho's minister of Mining, the Hon. Lebohang Thotanya, announced at the beginning of 2016 that there will be at least four diamond mine openings this year—the Liqhobong, Mothae, Kolo, and Lemphane mines—which could quadruple Lesotho's annual production.

While the Southern African region has been hard hit by rising labor costs, drought, and legislative change and uncertainty, the geological potential is undeniable. More than 50% of the world's platinum reserves lie beneath South Africa and Zimbabwe, along with significant reserves of the world's diamonds, more than 35% of global gold reserves, and an abundance of copper and cobalt. •

ANGOLA

Angola is a former Portugese colony and after independence suffered a 27-year civil war between 1975 and 2002. Over the past decade, Angola has enjoyed one of the fastest GDP growth rates in the world, largely on the back of its oil and gas reserves. The country's mining industry holds substantial potential: it is Africa's third largest producer of diamonds and it has undeveloped potential for copper, gold, iron ore, nickel, uranium, vanadium, zinc, and other minerals.

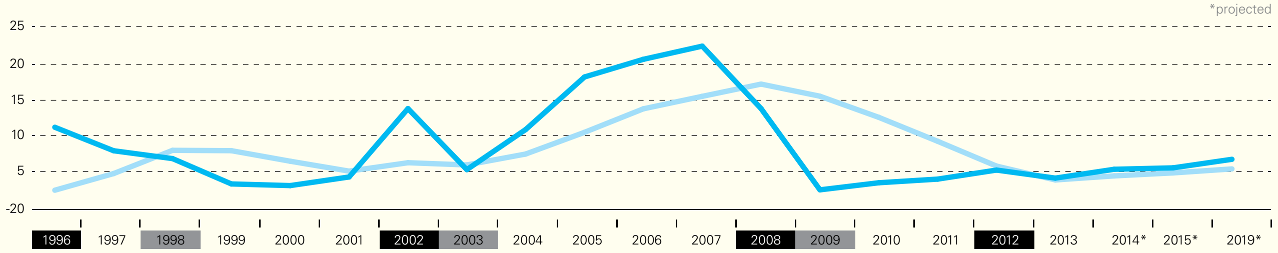
SOURCE: THE AFRICAN RESOURCE



Population: 19,625,353
Land Area: 1,246,700 sq km
Official Language(s): Portuguese
Capital: Luanda
Chief of State: President Jose Eduardo Dos Santos (since September 1979)
Head of Government: President Jose Eduardo Dos Santos (since September 1979)
GDP (PPP): $177.3 billion (2014 est.)
Growth Rate: 4.8% (2014 est.)
GDP per Capita: $7,300 (2014 est.)
Economic Sector Breakdown: agriculture: 10.2%, industry: 61.4%, services: 28.4% (2011 est.)
Exports: $59.98 billion (2014 est.): crude oil, diamonds, refined petroleum products, coffee, sisal, fish and fish products, timber, cotton
Imports: $29.24 billion (2014 est.): machinery and electrical equipment, vehicles and spare parts; medicines, food, textiles, military goods
Major Trade Partners: China, United States, Portugal, India, South Korea, Spain, Brazil

GDP GROWTH (%)

WORLD BANK, IMF, BBC



Dos Santos, Savimbi agree to form unity government join forces into national army.

Full-scale fighting resumes. Thousands killed in next four years of fighting.

Savimbi killed by government troops. Government, Unita sign ceasefire shortly afterwards.

Unita - now a political party - elects Isaias Samakuva as its new leader.

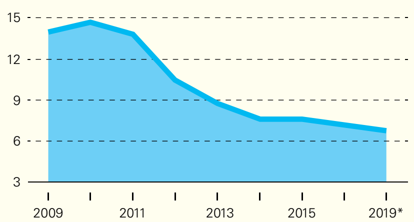
First parliamentary elections for 16 years.

Angola expels illegal Congolese diamond miners. Democratic Republic of Congo responds by expelling some 20,000 Angolans.

Governing MPLA wins a comfortable victory in parliamentary elections, guaranteeing another term in office for President Dos Santos. African Union observers deem the polls free and fair.

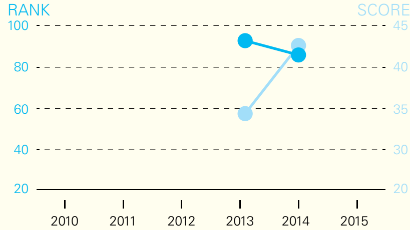
INFLATION

SOURCE: IMF



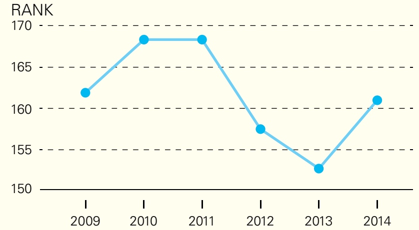
FRASER INSTITUTE INVESTMENT ATTRACTIVENESS INDEX

SOURCE: FRASER INSTITUTE



TRANSPARENCY INTERNATIONAL CORRUPTION PERCEPTIONS INDEX

SOURCE: TRANSPARENCY INTERNATIONAL



STATUS OF THE MINING CODE

SOURCE: CANADIAN EMBASSY, ANGOLA

Corporate Income Tax Rate	25%
Royalties (Precious Stones)	5%
Royalties (Others)	2-4%
State Participation	10%

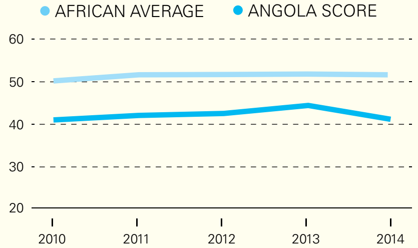
MINERAL PRODUCTION (2013)

SOURCE: BRITISH GEOLOGICAL SURVEY

Diamonds	9,360,470 ct
Salt	200,000 mt
Gypsum	40,000 mt

IBRAHIM INDEX OF AFRICAN GOVERNANCE

SOURCE: MO IBRAHIM FOUNDATION



MINING SECTOR CONTRIBUTION TO GDP

SOURCE: AFRICAN ECONOMIC OUTLOOK

2009 **0.6%** 2013 **0.9%**

FOREIGN DIRECT INVESTMENT

SOURCE: UNCTAD

FDI, $ millions

2013 **-7,120** 2014 **-3,881**

INFRASTRUCTURE INDICATORS

SOURCE: UIC, IEA, CIA WORLD FACTBOOK

ANGOLA SUB-SAHARAN AFRICA WORLD

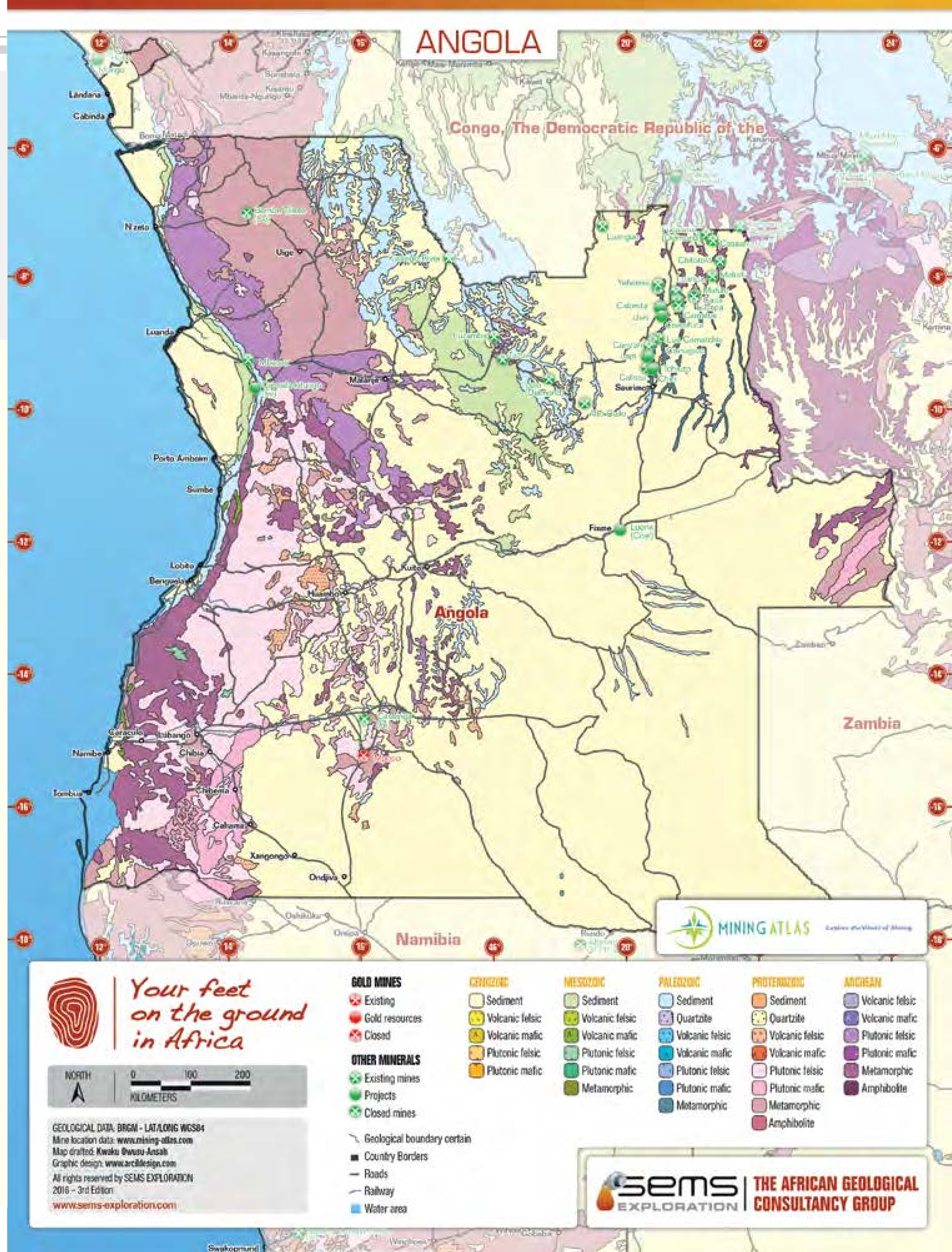
	Angola	Sub-Saharan Africa	World
Electric Power Consumption (kWH per capita), 2012	220	512	3,064
Roads - km/1,000 km2, 2014	41	79	262
Internet Users (per 100 people), 2014	21	19	41

1% 25 50 75 100

BUSINESS ENVIRONMENT RANKING IN AFRICA (OUT OF 47)

SOURCE: WORLD BANK

	2015
Ease of Doing Business	42
Starting a Business	27
Dealing with Construction Permits	13
Getting Electricity	29
Registering Property	38



Hon. Francisco Manuel Monteiro de Queiróz

Minister
Ministry of Geology and Mines
Republic of Angola

The National Development Plan has been operational for over two years. What progress has been made and what can investors expect in the next three years?

The National Development Plan is a five-year plan ending in 2017. The Angolan economy is heavily dependent on oil and diamonds, and the ultimate goal of the plan is to diversify the state's sources of tax revenue, which will strengthen state budget. From a social point of view, the goal is to continue to develop and upskill Angolans, and create new jobs. In the political sphere, the main goal is to maintain stability, continue the process of democratization, promote transparency, and fight corruption.

After two years, there has been progress in all areas. Major investments in various sectors including infrastructure and agriculture have made the economy stronger than ever. Large farms have opened that have dramatically increased the national production of corn, sugar cane, ethanol, and rice. Thanks to these improvements, the World Bank estimates that in 2018 Angola will become a middle-income country. The political situation has also improved; the institutional environment is more reliable, and Angola has been ranked among the top investment destinations in Africa. Currently, it ranks 29th but seeks to be among the top five.

To attract investment and diversify away from diamonds, the government is using airborne surveys to better understand its mineral wealth. Can you provide an update on this?

The National Geology Plan (PLANAGEO) is the most ambitious plan undertaken by the government to improve the geological data and knowledge of Angola's mineral wealth.

We divided Angola into three regions and held an international tender in each region to undertake the geophysical surveys. The project was launched in 2014, when the first airborne surveys started. The three regions were further subdivided into 22 blocks, and PLANAGEO's airborne survey subprogram has covered eleven of the 22 blocks. These have already been processed, and the survey results have been interpreted in five blocks. The initial results indicate huge mineral potential in Angola, with large kimberlite pipes. The next step is to select certain anomalies and conduct more intensive airborne surveys to be further analyzed. This process will be complete in 2017, and we will have 465 maps of to scales of 1:200,000, 1:100,000, and 1:50,000. There is no doubt that within a few years Angola will become a key focus for the larger global mining companies.

To do the analysis, we plan to build three new laboratories: the first in Luanda, the second in the eastern region, and the third in the southern region. Construction started in 2014. The facilities will be world-class and incorporate the most modern technology available.

Angola has increased diamond production, but approximately 80% is exported. How is the government encouraging local processing?

Our policy is to process all the minerals from Angola within the country. We discourage the export of raw materials because it exports job opportunities. It is essential to harness the entire value chain and all the possibilities to create new jobs within Angola. To reduce exports, the government introduced heavy taxes for the sale of raw products outside of Angola.

What measures is the government is taking to improve infrastructure?

Angola has a very efficient natural resources management policy, which has allowed the state to make significant investments in infrastructure. Angola has one of the most comprehensive telecommunications networks in Africa and is building a submarine cable that will connect Angola to Brazil and the United States. By 2017, we will have our own satellite communication. In recent years, the Benguela railway, which connects the deepwater port of Lobito, the Democratic Republic of Congo, and Zambia, has been completely rehabilitated. In addition, we have the railways of Luanda, which run from Luanda to the central area and continue to the mining district in the east. Finally, we have the Southern Railway that will connect Namibia with the port of Walvis Bay. Looking to the future, mineral ports in Luanda and in the northern province of Cabinda are slated for development. By 2017, we will generate over 5,000 megawatts of electricity, the biggest source of which will be the Lauca hydroelectric dam. We will also double the capacity of the Capanda dam. Finally, Angola has a strong financial system. Several international banks have representative offices here, and Angola also has the highest per capita net international reserves in Africa.

What is your assessment of the education system in Angola?

When Angola gained independence, it had only one university. Now it has 43 and ranks second in Africa in investment in education. We had an explosion in the number of educational institutions at the primary, secondary, and university levels. An increasingly qualified labor force will positively affect the mining sector. •

Image: Agriculture initiatives, photo courtesy of Endiama

Angola: Beyond Oil and Gas

Rich in natural resources, Angola is diversifying its mineral exploration

Angola is generally known as an oil-rich nation; oil accounts for 50% of the country's GDP, 80% of the government's revenues, and 90% of exports. Whereas Angola's economy grew by an average rate of 20% between 2005 and 2007, growth slowed to 4.7% in 2014 as a result of falling oil prices. In an attempt to diversify its economy, Angola has began to develop resources beyond oil and gas, including agriculture and, most notably, mining. Rich in iron, copper, gold, diamonds, manganese, phosphates, granite, marble, uranium, quartz, lead, zinc, tin and other minerals, Angola is making concerted efforts to develop the full spectrum of its mineral wealth.

In order to develop minerals present in Angola's soil, the government is first conducting a geological survey of the whole country, which is one of the largest, if not the largest, geological surveys in progress in the world. The project is called PLANAGEO and its aim is to map the areas that have the greatest potential. Three international consortiums were selected to conduct this work: CITIC, a Chinese construction giant; UTE PLANAGEO, a Spanish-Portuguese venture; and Costa Negócios, a Brazilian company. Each is responsible for a different territory of Angola, roughly equivalent to one-third of the country, and for mapping the geological potential of its respective territory. In order to do this, airborne geophysical surveys must be conducted first. The data collected and the results deduced will remain classified until the project is expected to conclude in 2017.

Eusebio Lopera Caballero, director of operations at UTE PLANAGEO, which is responsible for surveying an area of 480,000 square kilometers (km), said: "The consortium consists of three companies: IGME, is the Spanish Geological and Mining Institute; LNEG, the Portuguese National Energy and Geology Laboratory; and IMPULSO, a full service technical/managing-assistance private company. IGME holds about 40% of the consortium with both LNEG and IMPULSO holding about 30% each."

UTE will invest approximately $115 million in the project.

"The PLANAGEO project has divided the country into three operators and CITIC was involved with the construction of three laboratories in Luanda, Huíla and Lunda Sul to analyze samples from the project. CITIC is responsible for the northwestern block which represents a quarter of the country. The Ministry/IGEO divided CITIC's block into five smaller blocks with three aircrafts operating there in total. By dividing the block into smaller sections, the Ministry/IGEO can determine which block requires more detailed work to be done. This solution was decided upon to make the project more economically feasible for the country. The aircrafts come from CGG in South Africa. CITIC has already started with data collection on the first three blocks and work on block four and five will commence in the near future to meet the Ministry's requirements," said Zhang Hongrui, CITIC's vice director for the PLANAGEO project.

Although CITIC's progress has been excellent, the company has faced security issues in Cabinda, an exclave to the north of Angola. "CITIC has had some challenges, as one of our designated blocks belongs to the Front for the Liberation of the Enclave of Cabinda (FLEC). FLEC is a political movement fighting for the independence of the Cabinda province. Working in this region is sometimes dangerous and safety is a problem," added Zhang Hongrui.

The three consortiums do not perform the airborne geophysical surveys themselves, but have subcontracted other firms specializing in this field. CITIC is working with CGG and UTE PLANAGEO and Costa Negócios work with Xcalibur. Both CGG, which will cover 25% of Angola, and Xcalibur, which will cover the other 75%, are very experienced in Africa. "Xcalibur commenced with the project in August 2014, and there is close to a 1.2 million line-km that we have to cover. We have been flying with four operating systems and we have covered about 68% of our territory to date. We expect to finish by the end of 2015 or the beginning of 2016," said Andrés Blanco, director at Xcalibur.

The companies have adapted the technology used to suit the conditions on the ground. "The technology is a combination of the plane and the equipment. In terms of the equipment, Xcalibur uses best available standard market equipment. We do, however, have a proprietary acquisition system that the company has developed and we have a patent for integrating the equipment on the aircraft. We also have developed an advanced methodology for magnetic noise reduction on our planes to do real time compensation. The aircrafts that we utilize are usually used for crop dusting and firefighting. We have modified them for airborne geophysics. We have also developed an automated operating system which enables the crews to be very efficient," added Blanco.

However, CGG and Xcalibur only collect and process the data with the interpretation and quality control (QC) left up to the consortiums themselves, some of which have chosen to subcontract these responsibilities to other companies. One example is Geosondas which has already been involved with CATOCA, the largest diamond mine in Angola, and in addition to data interpretation and QC, Geosondas also provides drilling and blasting services. "The data gathered from the airborne surveys conducted for Angola is analyzed by Geosondas to see if it is correct and if those companies doing the airborne works are fulfilling the requirements," said Judsi de Sousa Calado, the director. "Geosondas and the other QC companies are not divided, and we analyze data from all the blocks," he added.

Other players, not yet participating, are keen on getting involved with PLANAGEO and its subsequent stages. "Geosurveys has presented its capabilities to the ministry and other players, and awaits possible involvement for the next phase of the PLANAGEO project once targets have been defined. Currently, the project is at the aeromagnetic-detection stage and collection of samples," said Ricardo Rodrigo, director of Geosurveys, a company specializing in geophysical surveys mostly for the civil engineering sector.

> **"Despite economic conditions, we are looking to create value and further employment opportunities for the local people of Angola. We know Angolans are the foundation of success for ENDIAMA."**
>
> **- António Carlos Sumbula, Chairman and CEO, ENDIAMA**

The PLANAGEO project is certainly good news for Angola and the country looks to greatly benefit from its natural riches in the future. Some mining players have already expressed interest even in these early stages. "Geosondas has been approached by companies looking to get involved in the exploration stages; we are not allowed, however, to discuss the PLANAGEO project results with these companies. The PLANAGEO project is bringing positive attention to the Angolan mining sector, and there is a significant number of companies that are sending proposals to come and invest in the country. The interest is not only in diamonds, but in other commodities, such as copper and gold as well," explained Judsi de Sousa Calado.

Angola's Diamonds Shine On

Angola is the world's fourth largest diamond producer by value and sixth by volume. The diamond mining industry first developed over a hundred years ago during colonial times. The industry seeks to revitalize itself and conduct further development, as only 40% of the country's diamond potential has been explored.

Diamond producers the world over are having a tough time. Market prices have been in a gradual decline over the past five years that shows no signs of letting up. De Beers, for example, has experienced a 23% drop in profits halfway through 2015. Despite these difficult current market conditions, diamond mining remains big business in Angola. ENDIAMA, the national player, has a 32.8% stake in the fourth largest kimberlite diamond mine in the world, CATOCA.

Given the current challenges in the market, service providers like Barloworld Equipment Angola go the extra mile to ensure top clients such as CATOCA remain productive through the use of their equipment.

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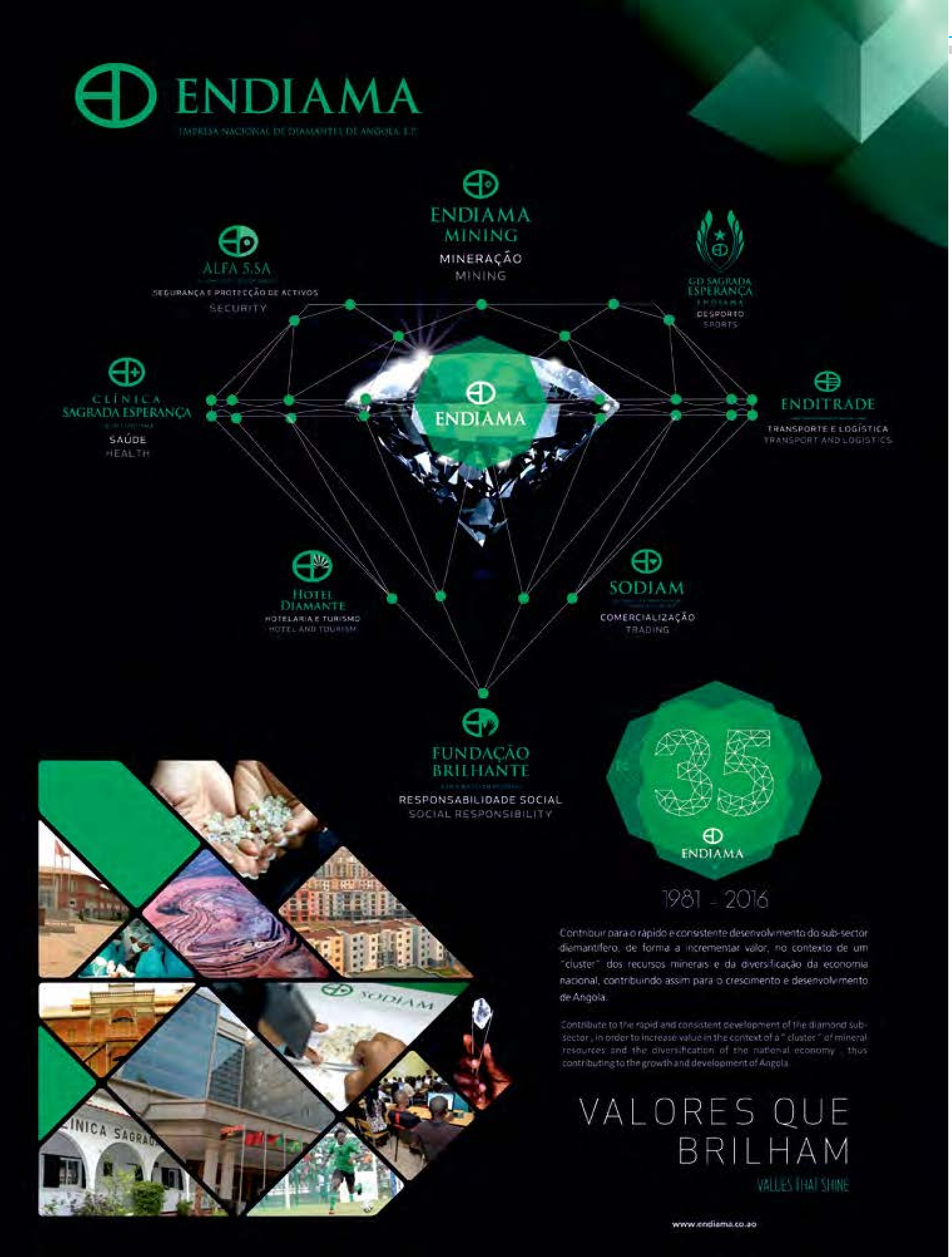

therefore at CATOCA, operator training has been provided directly to the customer and their operations teams," explains Daniel de Faria, operations manager-mining, Barloworld Equipment Angola.

ENDIAMA's chairman and CEO, António Carlos Sumbula reflects on what has contributed to a successful mining powerhouse and Angola's profitable diamond mining industry. "ENDIAMA has grown over the years and today has operations in seven different sectors, including mining, trading and marketing, transport and logistics, health, safety, social responsibility, and sports. We are involved in activities from trading diamonds and building dams to building hotels. The result is a very successful and powerful national company that has the capacity to fund exploration activity and grow the diamond industry with further added value." In conjunction with the company's ambitious growth plans is ENDIAMA's social investment strategy. "Despite economic conditions, we are looking to create value and further employment opportunities for the local people of Angola. We know Angolans are the foundation of success for ENDIAMA," concludes Sumbula.

The other shareholders are ALROSA with an equal share of 32.8%, ODEBRECHT with 16.4%, and LLI Holding with 18%. ALROSA is a Russian diamond-producing company with an output of roughly 25% of the total world production. "CATOCA is Angola's main diamond producer and, at the same time, the fourth largest diamond mine in the world. The value of the rough diamonds in Angola in 2014 amounted to $985 million for a total of 7.8 million carats. CATOCA is a leader with a share of 76% in volume and 47% in value. We aim to sustainably recover diamond reserves, ensuring that our products are internationally distinguished by their high value and quality. We strive to promote development, environmental responsibility, and a positive organizational climate, based on safe practices, ethical values and principles. As of the end of 2014, the treated ore amounted to 10.1 million metric tons (mt) and a total of 6.5 million carats were recovered with a content of 0.64 carats per mt. CATOCA's goal over the last few years has been to reduce costs," said Sergei Amelin, the general director.

CATOCA continues to develop both its existing production capacities and conduct new exploration in surrounding regions. "We have conducted exploration up to a depth of 600 meters (m). We have now concluded these activities and are focusing on the construction of a second factory. We are planning on doing additional geological exploration of up to 900 m. The information gathered will allow us to conduct a feasibility study and explore the possibility of building an underground quarry at the specified depth. Our planned growth has been 5% and today we are exceeding our plan and growing at a rate of 10%. There is currently a need to expand our treatment facility. We have been continually investing in our enterprise. In 2002 and 2003, work was carried out the results of which enabled us to create projects for the development of the concept of exploration work on the neighboring territories of CATOCA. As far as growth for 2014 is concerned, the geological prospecting work in the Gambo, Luaxe, Gango, Quitubia, Tchiafua, Luangue, and Vulege concessions was given sequence to, and in some cases initial studies showed very promising results in regards to the feasibility of the projects. The total area of the concessions is 16,000 square meters," added Amelin.

Another major diamond mining project in development is the Lulo mine operated by the Australian company Lucapa Diamond. A 63.05-carat, white diamond was discovered at the mine in the first half of 2015 showing the mine's great promise. The Lulo mine, located 700 km east of Luanda, is an alluvial mining operation as opposed to CATOCA, which falls under kimberlite pipe mining. Lulo is a venture between Lucapa and the Angolan government and diamonds found there are classified as type-2a, which are the most rare and have the highest value. Lulo could prove to be even more valuable than CATOCA in the future and Lucapa plans to increase production there to about 40,000 bank cubic meters (bcm) per month in the second half of 2015.

Not to be outdone, ALROSA is also interested in developing further diamond projects. "ALROSA continues active geological exploration operations, focusing not only on Russia but also on Africa, a region with a high potential for discovery of new major diamond deposits. As we already mentioned, ALROSA has exploration projects in three African regions – Angola, Botswana and Zimbabwe. It is important to say that Russian companies are warmly welcomed in these countries. This allows ALROSA to successfully develop its projects. Africa is a promising region that is also being considered as an opportunity to increase ALROSA's production volumes in the future. These countries were chosen by our experts as a result of careful analysis of the resource potential of all the countries that mine diamonds. ALROSA closely cooperates with some local companies and has joint ventures in Angola and Botswana. In Angola the

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Image: It is with great pride that Barloworld Equipamentos Angola had delivered the first D11T to the largest alluvial mine in terms of carats produced in Angola. Persons in picture: Vasco Santos, Gavin Knight, and the Sociedade Mineira do Cuango Production Manager, Steven T Emrys-Evans.

company operates the exploration joint venture with Angolan national diamond company ENDIAMA (the companies are co-founders of CATOCA, with each having a 32.8% share). In 2015, ALROSA and ENDIAMA established new joint venture in Angola called Kimang with equal shares of 50% each aimed to explore new deposits. We have selected potential territories for this new venture and have applied for the appropriate licenses. We plan to finalize all legal requirements in 2015 and aim to conduct first aerial followed by ground exploration during the next dry season. The first area of interest is Kuango, where ALROSA is prepared to invest $15.5 million over the next three years with more capital being made available depending on results," said Konstantin Grave, ALROSA's deputy director in Angola.

ALROSA, just like De Beers, is experiencing a drop in demand and prices. "Within the existing circumstances on the global diamond market, it is necessary for all the market participants to uphold a responsible and balanced position aimed at stabilizing the market situation. For its part, ALROSA lowered rough diamond prices by 6% since the beginning of the year and cut supply volumes at the latest trading sessions in accordance with the market environment. We are monitoring the market situation very closely and our pricing policy is in line with the market. We also consider it necessary to bring back the programs focused on the promotion of polished diamonds as an emotional symbol to stimulate consumption," said Alexander Gorlov, ALROSA's director in Angola.

As the development of other resources waits its turn, diamonds continue to provide Angola with a stable source of export revenues, and the experience that the country has gained from diamond mine operations will be invaluable when it comes to other metals and minerals in the future.

ENDIAMA's Sumbula invites investors to partner with the national conglomerate to help extend the kimberlite fields. "As ENDIAMA expands its mining activity throughout Angola, we are also broadening our network of partnerships and are looking for investors to explore these kimberlite deposits. Kimberlites represent the largest unexploited diamond resource and large capital investment is required for their development." He continues: "Investors can rest assured that they will partner with a leading national company that has a track record of working with both large multinationals such as ALROSA as well as smaller companies such as Petra Diamonds."

> **"The Planageo project is bringing positive attention to the Angolan mining sector and there is a significant number of companies sending proposals to come and invest in the country. The interest is not only in diamonds, but in other commodities such as copper and gold as well."**
>
> **- Judsi de Sousa Calado, Director, Geosondas**

Sodiam, the national diamond trading company is also looking to set up international partnerships in polishing as well as jewelry production in Angola. "ENDIAMA inaugurated our first polishing factory in February 2015, and there are many opportunities to establish further factories and increase the value added in the country. Investors are welcome to contribute to the emergence and development of a national jewelry industry both in precious and semi-precious stones," remarks Sumbula.

Rebuilding Angola Through Construction and Improvements in Human Capital

After the civil war ended in 2002, the Angolan government set out to rebuild the country's battered infrastructure. Roads, railways, ports, airports as well as power plants all needed to be renewed to facilitate export of the country's natural riches and in turn bring about economic development and much-needed jobs. The mining industry has benefitted tremendously from this construction boom, as much of the mining activities are located in remote regions of the country.

Daniel de Faria explains: "After the war, it was difficult to find skilled laborers locally, so to ensure that we could support our customers we employed a substantial amount of expatriates, especially in the technical areas. Our commitment to local enrichment in any country in which we operate is a strategic imperative. In 2006, Barloworld invested a significant amount in an artisan development program that trained and developed an average of 30 people a year. These trained artisans are now marketable for other industries and companies, which has contributed to the economic development of areas of Angola."

Mining and construction companies themselves have spearheaded these efforts and completed numerous projects aimed at developing the areas surrounding their mines, which has subsequently improved the social and economic well being of their workforce as well as their families.

CATOCA has been at the forefront of such initiatives. "We have developed programs in the fields of education, health, housing, culture, sports and recreation, environment and safety, and others. Health wise, CATOCA has a medical center that operates 24/7 with expertise in several areas like infectious diseases, pediatrics, orthopedics, cardiology, internal medicine, gynecology, and ophthalmology. In 2014, the center served 13,021 people. In housing, the house-building program for company employees (the Sagrada Esperanca Village Program) was continued. The projects that the company has in partnership with the provincial government, particularly the school snack program, the 'PADES' program to support the production of cassava, fish, and fruit; the sports development program; and also the CATOCA solidarity program were resumed in 2014 with very promising results. CATOCA is also committed to employing and training Angolan nationals. The total number of employees as of 2014 was 2,027, of

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which 91% were represented by national labor and 9% by expatriates," said Sergei Amelin, general director of CATOCA.

The government is interested in increasing local content and spells out the need for companies to employ at least 70% of Angolans of their total workforce. Many companies have therefore put in place training programs to increase the country's human capital. CITIC's logo can be seen prominently displayed on numerous construction sites around Luanda. Beside PLANAGEO, the company has greatly contributed to Angola's reconstruction efforts and provided training programs to educate the locals. "CITIC is also involved with the construction of the laboratories and the training of local workers. We sent 30 laboratory technicians to China for training to improve their expertise so they can operate the equipment properly. CITIC does not only provide training for the laboratories, but also training in the geophysical, geological and geochemical fields," said Wang Zheng, commercial director at CITIC.

Companies like Geosurveys serve as training grounds for young geologists who then move on to greener pastures in the oil business. "The company's experience of geology students coming into the mining industry is that they arrive with big expectations gleaned from colleagues who have entered the oil industry enjoying better conditions of employment and higher salaries; it is therefore difficult to retain geologists in the mining sector. Of the students that Geosurveys work with, 80% take employment in the oil industry once they have graduated," said Ricardo Rodrigo, director of Geosurveys.

Odebrecht, a 16.4% shareholder of CATOCA has been continuously present in Angola for more than 30 years, which includes the civil war period. Within its involvement in CATOCA, Odebrecht has undertaken many construction projects. "We have been involved in this project since 1994 and began with constructing the infrastructure of the mine. To date, this is our only direct involvement in mining, but we are very content with our participation in this project. CATOCA is now looking at other sites with good potential, and Odebrecht stands ready to lend its hand in the development of these projects," said Marcos Machado, director of Odebrecht Africa Fund.

Besides CATOCA, Odebrecht has contributed its expertise in hydroelectric power generation. "We have successfully undertaken projects in challenging environments in Angola, an example of which was the hydroelectric dam of Capanda in Malanje province that started in 1984," said Marcus Felipe de A. Fernandes, director of planning, human resources, and institutional relations at Odebrecht.

Currently, Odebrecht is involved in the construction of one of the largest hydroelectric power plants in Africa – Laúca. "Its capacity will be 2,070 megawatts (MW) of power, representing 35% of the country's power production. The project is coordinated by the Cabinet of Middle Kwanza River Development (GAMEK) under the scope of the Ministry of Energy. The project mainly includes the construction of the dam in cylinder-compacted concrete, achieving 130 m of height and a volume of 2,600,000 cubic m, intake channel, spillway and an electric substation. The powerhouse has six Francis-type turbines with a capacity of 334 MW each. Moreover, we have our own infrastructure for the concrete delivery composed of conveyor belts, which increase productivity and efficiency – the transportation rate of concrete is 500 cubic m per hour. Laúca is essentially a fully functioning city of about 7,000 people," added Marcus Felipe de A. Fernandes.

Naturally, as with any construction projects, there is a need for quality equipment suppliers. The ever-present Atlas Copco has been operating in Angola since 2008 and provides not only construction and mining equipment, but generators also represent a sizeable chunk of its revenues in a country with a sometimes-unreliable power grid. "Currently the construction sector is very important in a country like Angola. When Atlas Copco first came to Angola, the compressor technique was the biggest sector. After two years, the company entered the mining industry and changed to construction in the last two years. The market changes in a cycle in Angola, and Atlas Copco follows the trend and opportunities. In the next two years, mining will probably move back to the top for Atlas Copco," said Luis Torres Marques, country manager of Atlas Copco. "Of Atlas Copco's team, 30% is servicing the mining industry. The company is making a tremendous effort to invest in the mining sector. We have expats from Portugal who are in the country to train the local nationals. We will be prepared to expand and offer more services to the mining industry in the future," added Marques.

Angola has come a long way from its post-civil war days. The country's construction boom, only slowed by the recent drop in oil prices, has been astounding. Its population has clearly gained from infrastructure developments that will serve as the basis for attracting additional foreign investments. Moreover, the government has shown commitment to legislating and enforcing local content regulations that have undoubtedly improved Angola's human capital through training and skills transfers from expatriates. As the PLANAGEO project nears completion, Angola will only benefit further, as the mining sector is set to expand beyond diamonds and provide thousands of new jobs lifting millions out of poverty and independence of the Cabinda province. Working in this region is sometimes dangerous and safety is a problem," added Zhang Hongrui.

The three consortiums do not perform the airborne geophysical surveys themselves, but have subcontracted other firms specializing in this field. CITIC is working with CGG and UTE PLANAGEO and Costa Negócios work with Xcalibur. Both CGG, which will cover 25% of Angola, and Xcalibur, which will cover the other 75%, are very experienced in Africa. "Xcalibur commenced with the project in August 2014, and there is close to a 1.2 million line-km that we have to cover. We have been flying with four operating systems and we have covered about 68% of our territory to date. We expect to finish by the end of 2015 or the beginning of 2016," said Andrés Blanco, director at Xcalibur.

The companies have adapted the technology used to suit the conditions on the ground. "The technology is a combination of the plane and the equipment. In terms of the equipment, Xcalibur uses best available standard market equipment. We do, however, have a proprietary acquisition system that the company has developed and we have a patent for integrating the equipment on the aircraft. We also have developed an advanced methodology for magnetic noise reduction on our planes to do real time compensation. The aircrafts that we utilize are usually used for crop dusting and firefighting. We have modified them for airborne geophysics. We have also developed an automated operating system which enables the crews to be very efficient," added Blanco.

However, CGG and Xcalibur only collect and process the data with the interpretation and quality control (QC) left up to the consortiums themselves, some of which have chosen to subcontract these responsibilities to other companies. One example is Geosondas which has already been involved with CATOCA, the largest diamond mine in Angola, and in addition to data interpretation and QC, Geosondas also provides drilling and blasting services. "The data gathered from the airborne surveys conducted for Angola is analyzed by Geosondas to see if it is correct and if those companies doing the airborne works are fulfilling the requirements," said Judsi de Sousa Calado, the director. "Geosondas and the other QC companies are not divided, and we analyze data from all the blocks," he added.

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BOTSWANA

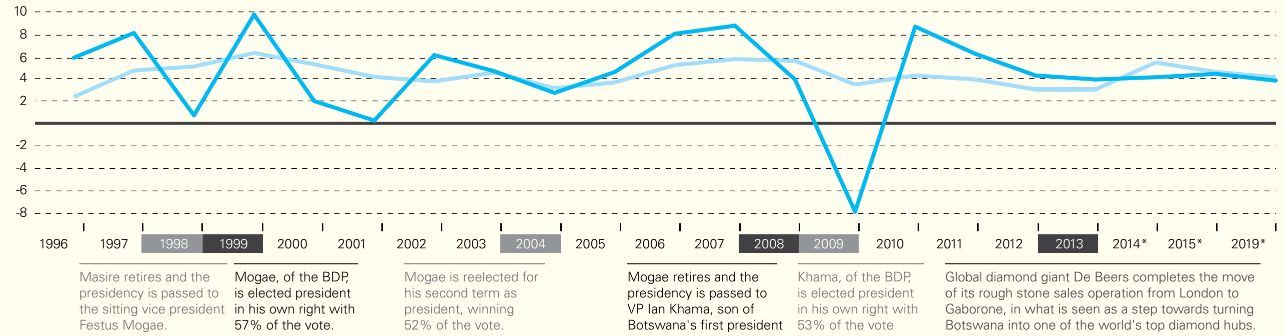
Since Botswana gained its independence from Britain in 1966 it has established a impressive democratic system and a reputation as the least corrupt country in Africa. Economically it has done very well, with GDP growth dropping into negative figures only once (2009) since independence. Botswana's mineral industry is very well established: diamonds play a large role in the economy, and base metals, coal, gemstones and various industrial minerals are also produced. Unexploited mineral resources include chromium, gypsum, manganese, and others.

SOURCE: THE AFRICAN RESOURCE

Population: 2,155,784 (July 2014 est)
Land Area: 581,730 sq km
Official Language(s): English
Capital: Gaborone
Chief of State: President Seretse Khama Ian Khama (since April 2008)
Head of Government: President Seretse Khama Ian Khama (since April 2008)
GDP (PPP): $35.87 billion (2014 est.)
Growth Rate: 4.4% (2014 est.)
GDP per Capita: $17,000 (2014 est.)
Economic Sector Breakdown: agriculture: 1.9%, industry: 34.2%, services: 63.9% (2014 est)
Exports: $8.516 billion (2014 est.): diamonds, copper, nickel, soda ash, meat, textiles
Imports: $7.989 billion (2014 est.): foodstuffs, machinery, electrical goods, transport equipment, textiles, fuel and petroleum products, wood and paper products, metal and metal products
Major Trade Partners: South Africa, UK, China, Belgium, Namibia, Zimbabwe, Israel

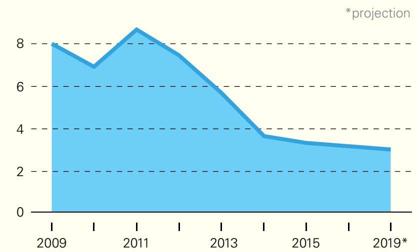
GDP GROWTH (%)

SOURCE: WORLD BANK, EIU



INFLATION

SOURCE: IMF



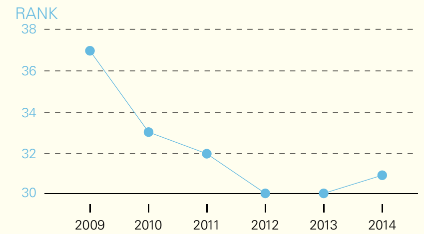
MINE PRODUCTION

SOURCE: BRITISH GEOLOGICAL SURVEY

Coal	1,495, 653 mt
Cobalt	248 mt
Copper	51,254 mt
Diamonds	22,693,000 ct
Gold	1,206 kg
Nickel	22,848 mt
Platinum	218 mt
Palladium	1,337 mt
Salt	521,306 mt
Silver	22,597 kg

TRANSPARENCY INTERNATIONAL CORRUPTION PERCEPTIONS INDEX

SOURCE: TRANSPARENCY INTERNATIONAL



STATUS OF THE MINING CODE

SOURCE: GBR, GOVERNMENT OF BOTSWANA

Corporate Income Tax Rate	30%
Royalties (Precious Stones)	10%
Royalties (Precious Metals)	5%
Royalties (Others)	3%

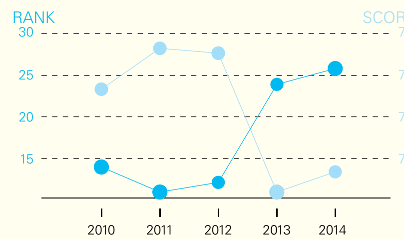
MINING SECTOR CONTRIBUTION TO GDP

SOURCE: AFRICAN ECONOMIC OUTLOOK

2009 **15.9%** 2013 **24.5%**

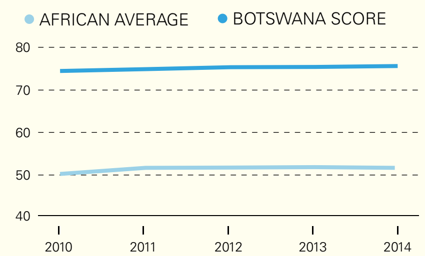
FRASER INSTITUTE INVESTMENT ATTRACTIVENESS INDEX

SOURCE: FRASER INSTITUTE



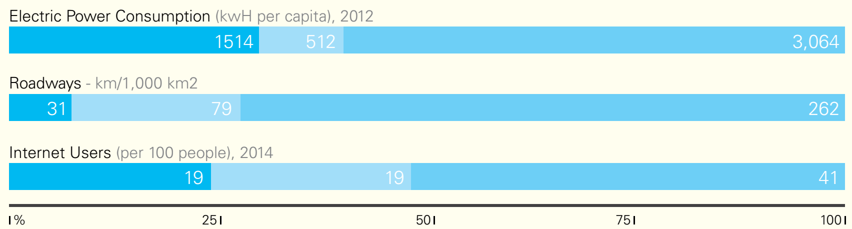
IBRAHIM INDEX OF AFRICAN GOVERNANCE

SOURCE: MO IBRAHIM FOUNDATION



INFRASTRUCTURE INDICATORS

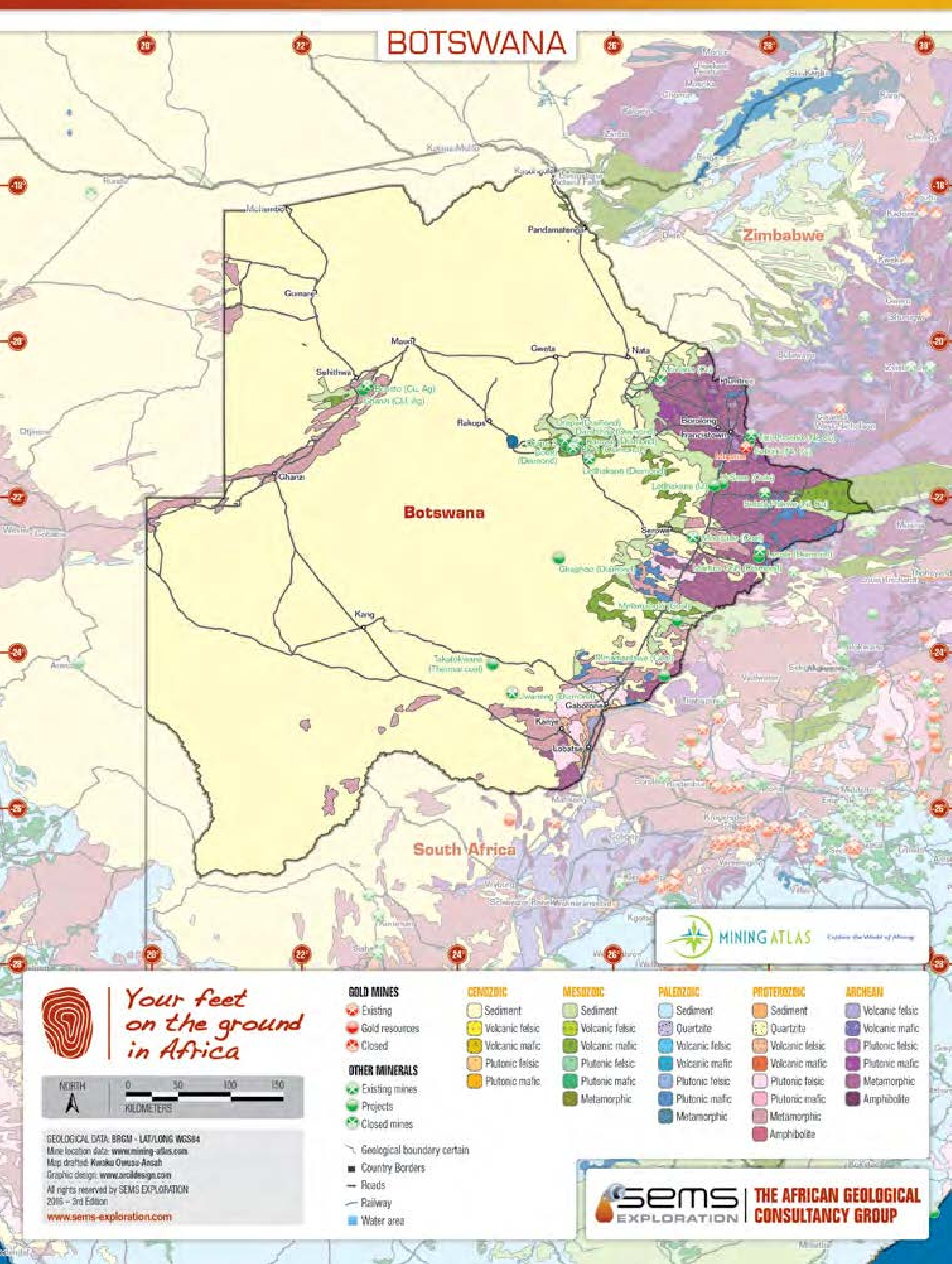
SOURCE: UIC, IEA, CIA WORLD FACTBOOK



BUSINESS ENVIRONMENT RANKING IN AFRICA (OUT OF 47)

SOURCE: WORLD BANK

	2015
Ease of Doing Business	3
Starting a Business	28
Dealing with Construction Permits	11
Getting Electricity	10
Registering Property	3



Hon. Minister Onkokame Kitso Mokaila

Minister
Ministry of Minerals, Energy and Water Resources
Republic of Botswana

Given the global commodity crisis, the Ministry is actively working to keep Botswana's mines operational. Which ministerial initiatives would you highlight as the most impactful?
As you know it is very difficult when commodity prices are depressed. The Ministry is working with the people to maintain efficiencies, such as deferring royalty payments the best that we can within the law. It is imperative for the national economy that mines stay afloat. The Ministry is studying success stories around the globe in order to help companies maintain operations. The government in Chile, for example, manages price volatility by helping their mines survive economic downturns. Botswana, too, aims to master the cyclic nature of the industry, and deferring royalty payments is one of the primary lessons that we learned.

In the past, one of the key goals of the Ministry has been diversification. How fruitful has this plan been thus far, and what other goals does the Ministry have for 2016?
The Ministry is trying to position Botswana as a metallurgical hub and has increased participation in feasibility studies. We are also analyzing ways to take advantage of existing and potential mines so that Botswana's mining industry is prepared for the future. When prices rise again, we want to move quickly. Copper will always be lucrative, along with diamonds of course, but Botswana is also rich in iron ore, uranium, silver, and more.
Another realization has been the importance of small- and medium-scale mining development, which Botswana has yet to fully appreciate. The Ministry is considering providing environmental impact assessments at virtually no cost and building up artisanal miners in a sustainable manner so that they can enter production affordably. The minerals are here, and our citizens should have the opportunity to take advantage of them.

Due to a reduction in the coal price, the Namibia-Botswana railway project has been experiencing delays. What is the current status of this project?
The railway was initially designed to transport coal, but we have decided it would improve viability if it carried all commodities and goods. The project will be led by the private sector and supported by the two national governments. The governments are currently busy resolving the soft issues, such as ease-of-passage politics, alignment, talking to communities, etc. Once all of these issues are managed, including water and security, the private sector can join us in action. When the feasibility study is complete, we will know a concrete timeline for mobilization.

President Khama recently announced that in order to avoid an oncoming recession, Botswana intends to use its foreign reserves to stimulate the economy. Do you have access to such funds in order to fast track infrastructure projects?
The Ministry of Minerals, Energy and Water Resources is investing heavily in water and energy infrastructure to stimulate development, as it is our core responsibility to ensure all economic areas of the country that have potential for growth are properly advised.
Botswana has been experiencing an energy deficit, but will be a net exporter of power by the end of 2018. Our peak power requirements are around 610 megawatts (MW) during the winter. But by the time our initiatives are complete, we will be producing 1,200 MW. The old Morupule A power plant will be revamped and brought back online providing 132 MW of power, and the Morupule B Power Station is also experiencing renovations. Not only are we refurbishing current infrastructure, but we are adding 300 MW to the grid via the Brownfield Power Plant Project, and that bid will soon be awarded. The Ministry has announced a request for renewable projects, calling for two 50-MW solar stations in the northwest of Botswana. Previously, a mine in that area was forced to shut down due to a lack of accessible power. To address the problem, the government will finance solar investment, including the construction of a 400-kilovolt line to that area. The Ministry is also looking at power sharing through the ZIZABONA Project, which is a partnership between Zimbabwe, Zambia, Botswana, and Namibia.
In regards to water, all of our dams are in the north, where there is plentiful rainfall, and the government is building a pipeline, North-South Carrier (NSC) 11, to supply the south. The 75-kilometer (km) section from the 400 million cubic Dikgatlhong Dam to Palapye is finished, while the line to Gaborone is still under construction. About 100 km from Gaborone, the Ministry sponsored 32 boreholes in Masama to augment the pipeline, providing an extra 30 million liters of water to the area. An additional 30 boreholes are to be drilled for a collective 60 million liters of water, which will then be added to the 60 million liters that are already flowing from the north-south carrier. In two years, all things being equal, we shall have sufficient water in Gaborone and the southern region. In four years we will have the resilience and security we need to back up the line. •

Bountiful Botswana

Mining continues to propel Botswana's economy forward and offer investors a stable and secure jurisdiction

Botswana achieved independence in 1966, but has never experienced serious civil unrest or instability, keeping the country out of the international news and far from the forefront of peoples' minds. Though it is globally ranked as business friendly, Botswana remains under-represented in public discourse. Consistently classified as one of the top mining destinations in Africa by the Fraser Institute, Botswana is a particularly secure and stable target for investment. Similar findings are boasted in the World Bank's ease of doing business survey, showing improvements in nearly all policy factors, including increased availability of labor and skills, less uncertainty concerning the administration, enforcement of existing regulations, and security. Foreign direct investment in Botswana is led by the mining sector, followed by banking.

Competing with Russia for the title of world's leading diamond producer, Botswana's economy is still fundamentally rooted in the diamond-mining sector—despite efforts to diversify, i.e. the Economic Diversification Drive (EDD). Largely due to Debswana, the nation's largest private sector employer and mining company, Botswana has been the world's largest producer in terms of diamond value for the past few years. From a macro-economic perspective, this leaves the country susceptible to a global decrease in diamond demand. Coal, however, is seen as a means to diversify mineral output, and the Chamber of Mines expects Botswana to export 115 million metric tons (mt) in the next ten years. Overall growth for the industry, driven by an uptake in diamond and coal production, is expected to average 3.7% per year from 2013 to 2017.

Land & Reserves

Largely flat and semi-arid, Botswana's terrain predominantly consists of the Kalahari desert, which covers approximately 77% of the country's total land area. Botswana accords high priority to environmental protection, as over a third of the total land area is classified under some form of conservation. Nearly 17% is designated to national parks and game reserves, 20% as wildlife management zones, and 1% as forest reserves. Considering Botswana is mostly desert, it is highly prone to droughts.

Though exploration has greatly slowed recently in Botswana, smaller mining operators continue to search for potential. "Technically, we still know very little of what lies underneath the sand," noted Mike de Wit, COO of Tsodilo Resources.

Meanwhile, some of the major mining houses are extracting some of the world's most valuable diamonds. "Diamonds will be the first sector to bounce back, followed by copper, then gold. Even if mines are forced into minimalism for the next 12 months, we will see an immediate turn around once prices are in our favor," said Charles Siwawa, CEO of the Chamber of Mines. "Diamonds have traditionally been the center of gravity for mining revenue and the Kalahari copper belt has significant potential, but investors should not forget that Botswana has the second largest coal deposit in Africa, and the construction of the [Namibia-Botswana] railway line will help develop that asset further," he continued.

Though the size of resources is immense, coal and other commodities are unfortunately not of high grade. The cost of exploration and mining must be minimized if coal is to be economically exploited.

Diamonds

Botswana has been mining diamonds for over 40 years, but De Beers' relocation to Botswana has certainly "created a buzz in the atmosphere," according to Toby Frears, managing director of the Okavango Diamond Co. (ODC). De Beers sources around 60% of their product from Botswana and now sells from Gaborone every five weeks; therefore, all other diamond sellers follow suit. Because there are multiple diamond sources, Botswana is a target for accredited buyers; however, global diamond demand is low, leading to an abundance of stock. Even De Beers has reduced production, but assures that they are consolidating their efforts in preparation for an efficient and effective 2016. At their Jwaneng mine, the cut-8 project has been mobilized, with meticulous attention being paid to waste stripping.

Paul Rowley, executive vice president of De Beers said: "A sector of our business that deserves proper attention is beneficiation. We want to see factories and the proliferation of beneficiation in our business model. We remain committed to the countries in which we operate, our partners, and our employees."

This value-addition based initiative is, of course, intended to boost national earnings from the precious stones. In 2015, two of Botswana's diamond cutting and polishing factories

Image: Chobe National Park, Botswana, Photo courtesy of Molly Concannon.

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We are not chasing carats. Carats are vanity, revenue is sanity, but profit is, in fact, absolute reality.

- Paul Day, COO, Lucara Diamond Corp.

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closed, while others have had to retrench and downsize. Largely due to the narrowing price margin between rough and polished diamonds, profitability has been difficult for the tangibility of in-country beneficiation.

ODC was established by an agreement between the Botswana government and De Beers in 2001 for the purpose of marketing Debswana's rough diamond production. Its role within the context of beneficiation is to make Botswana into a leading rough sourcing destination. "Our scale and open trading platform attracts buyers from around the world, who visit Botswana every sale to view our diamonds, generating business for the domestic service sector. Botswana now offers exciting buying opportunities for rough buyers with multiple producers, not just ODC, selling regularly out of Gaborone. Together with buying opportunities in South Africa, the Southern African region as a whole is now an important destination for diamond buyers from the traditional markets," said Frears. In 2014, ODC sold just less than 3.3 million carats (ct) for $552 million, with a 23% fall in sales for the first half of 2015. Debswana has also reduced diamond production targets from 23 million ct per year to 20 million ct per year, due to sluggish market demand.

Gem Diamonds is currently operating on a very sizeable ore-body, the Ghaghoo mine, which was purchased from the Strata-De Beers joint venture in 2007 and is looking at how to best expand their operations to make it more profitable. This mine officially opened in September 2014, and is now producing 45,000 mt of ore per month. "The recovered grade is higher than expected, and we would like to move to the next phase of our project, increasing the tonnage throughput," stated Haile Mphusu, managing director of Gem Diamonds.

Expansion plans were hampered due to uncontrollable flooding, but the largest challenge remains Ghaghoo's remote location, making transport and power expensive obstacles. The mine is 160 kilometers (km) away from the nearest tarmac road and equally as far from the nearest point of grid power. Regardless, Gem Diamonds is confident that the mine will achieve its desired output for 2015.

Lucara Diamond Corporation, a new diamond producer and member of the Lundin Group, recently uncovered their largest diamond of 1,111 ct—the second largest diamond ever discovered—at their Karowe mine in Botswana. In 2015, Lucara had ten weight percent specials, meaning ten percent of the diamonds recovered were greater than 10.8 ct. "When we established the mine, we observed a slightly more coarse distribution than what one would find in a normal diamond mine," noted Paul Day, COO of Lucara Diamonds. "Lucara re-designed our processing circuit with the primary aim of being able to recover these large diamonds as early as possible in the process plant, prior to damage and value reduction by the comminution circuit."

Having invested in a $55 million plant upgrade as well as new XRT technology, Day promises that these findings are not luck, but trained observations and skilled "engineering reactions to geological phenomenon." Lucara is confident that it will continue to produce large and exceptional stones. There are six XRT sensor based sorters at the Karowe mine, each with the capacity to treat up to 150 mt per hour at over 8,000 hours per year, with high efficiency of diamond recovery and low concentrate yield. Day points out that Lucara will be on schedule for projected throughput, but they are more concerned with mining value. Essentially, 5,000 ct at $200/ct is less desirable than 2,000 ct at $500/ct: "We are not chasing carats. Carats are vanity, revenue is sanity, but profit is, in fact, absolute reality," quoted Day.

Diversification

President Ian Khama is not shy about the fact that one of the greatest challenges facing Botswana's economy is a lack of diversification. Aside from diamonds, Botswana also harbors copper, coal, nickel, uranium, silver, soda-ash and iron ore—with copper and nickel potentially being a major contributor of export earnings. Uranium production is increasingly likely, as Australian A-Cap Resources applied for its Letlhakane mining license in August of 2015. "The ministry is trying to position Botswana as a metallurgical hub through an uptake in feasibility studies," said the Hon. Minister Onkokame Kitso Mokaila, of the department of Minerals, Energy and Water Resources. "We are analyzing ways to take advantage of existing and potential mines to be prepared for the future."

Coal

Coal is arguably the most promising for forthcoming development, with heavy investments from both international and domestic players. Botswana contains an estimated 212 billion mt of coal resources, of which about three to five billion mt are deemed economically attainable. There are 13 main deposits and mines within Botswana's borders, overseen by African Energy, Shumba Energy, Jindal, Minergy, and three others, yet most concessions remain in the pre-feasibility stage. The coal quality is suitable for power generation and a majority of the coal mined is used domestically for energy production.

Morupule is the only operating coal mine in Botswana, located near the town of Serowe, and it supplies Botswana's only coal-fired power station. Production sits at 700,000 to 1 million mt/y, but capacity has been expanded to 3.4 million mt/y. Output is expected to increase as a means of better servicing the Botswana Power Corporation's plan to add four, 150-megawatts (MW), coal-fired power stations. Coal is also exported from Morupule to Zimbabwe, Zambia, and the Democratic Republic of the Congo. After completing phase I of the expansion, the Morupule Coal Mine (MCM) is investigating reserves that rest on the northern boundary of the concession with the intent of establishing an open pit mine to fill demand.

Shumba Energy's Sechaba project has a targeted production date of 2018 and aims to develop the area into an energy complex that can fill domestic and international demand for power. In April of 2015, Shumba Energy acquired the new Mabesekwa coal project, harboring approximately 860 million mt of thermal coal. Shumba Energy has completed its coal studies, environmental work and secured surface rights for the concession—water rights are still pending. Power production is proposed to commence by the middle of 2019, providing a minimum of 265 MW to the grid.

Located 81 miles south of Morupule is the Mmamabula coalfield. In 2013, Jindal was granted environmental clearance for the first phase of their Mamabula Energy Project, which will consist of a 600-MW power plant and all associated infrastructure, produce 4.5 million mt of coal sales per year, and consume 6.4 million cubic meters of water. The final product will evolve to be a 1,200-MW capacity power station. Jindal also has a strategy to overcome the fall in the price of coal: "Whenever there is a slow dip in the industry, it is time to rethink, restructure, and refresh for that time to come," said Neeraj Saxena, project manager for Jindal Africa Botswana.

Saxena explained that there are many challenges facing the coal industry worldwide, but if one studies the trends of the resource, prices have a tendency to suddenly increase exponentially. "Australia has seen changes in legislation, which are slowing coal production. The Supreme Court of India just cancelled over 200 mining licenses that have been granted by any government in the past 20 years. China has taken up new environmental laws that are making operations more stringent on the quality of coal that they are going to import. South Africa has faced a lot of challenges because they were too heavily reliant on coal export," Saxena pointed out.

Jindal Africa is taking this opportunity to properly position itself for a suffering supply-driven price spike, remaining highly optimistic about the future of coal in Africa.

Base Metals

The northwest of Botswana is covered in a surface layer of 40 meters (m) to 50 m of sand, so that exploration is only effective with either highly skilled geophysics or drilling. "The geology of northwest Botswana is merely a westerly extension of the copper belt in Zambia/DRC, probably through southeastern Angola, thus miners' focus changed from diamonds to base metals," explains de Wit, of Tsodilo Resources. The Central African Copperbelt, the world's largest sediment-hosted, stratiform copper province, is thought to have extending equivalents in Botswana and Namibia, in the form of the Kalahari Copperbelt.

Due to the economic slowdown in China, the closure of the Bamangwato Concessions Ltd. (BCL) smelter, and falling commodity prices, both copper and nickel saw a decrease in exports by 2.6% from Q1 2015 to Q2 2015. Yet this trend is not expected to continue. Khoemacau Copper, the Cupric Canyon Capital private equity firm subsidiary, announced that it will spend P 2 billion (roughly $177 million) on a new copper and silver mine in the northwest region of Somelo. With first sales predicted in 2018, the mine is expected to produce 50,000 mt of copper and 1.4 million (ounces) oz of silver every year. After drilling and feasibility work in Zone 5, there is an estimated 100.3 million mt of measured and inferred ore—copper grading 1.95% and 20 g/mt of silver. With a strike length of 4.2 km and an average width of 10 m, the strata-bound ore body is conducive to low-cost underground mining. Ore processing could be possible via the Boseto mill, but the asset is in need of expansion and there lacks an ore transportation system to bring the ore across the 30-km span. There are also plans for Khoemacau's Boseto mine to re-start operations within the next three years.

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Okavango Diamond Co. (ODC)

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In 2012, the Boseto copper mine was the first mine to ever be commissioned and commercially exploited on the Kalahari Copperbelt. "I wish to commend Discovery Metals that amidst the global economic ills, you forged ahead without wavering. You remained firmly focused to deliver the mine which employs about 500 people, 96% being citizens," said President Khama at the historic opening. This inauguration had been long awaited, as the first documented reconnaissance and grassroots exploration of the Ngamiland and northwest area was conducted in the early 1960s. Shortly after commencing production, however, higher-than-anticipated operating costs paired with lower-than-projected copper prices led to the project being mothballed. Discovery Metals built Boseto at a cost of $175 million, and Cupric Canyon purchased it for $35 million in 2014.

Tshukudu Botswana Metals, which is owned by the Metal Tiger and MOD Resources joint venture, has signed a deal to acquire Discovery Mines. This acquisition links with 14 additional prospecting licenses that are adjacent to MOD Resources' existing Mahumo project. Mahumo is thought to have around 4.3 million oz of silver, the majority of which is measured and indicated.

The government's focus on beneficiation has also shifted towards base metals, with the intent of constructing a new smelting plant to begin exporting more matte. Together, the Chamber of Mines and the ministry are analyzing the results of a pre-feasibility study for their base metals beneficiation project. Siwawa noted: "So far it looks very plausible."

Deliberation persists on where exactly the plant should be located, but financial institutions, including the African Development Bank, have agreed to participate if the pre-feasibility results are positive. The project would, tentatively, be completed within four to five years.

Regulatory Environment

A functioning parliamentary republic, Botswana remains a low political risk country and one of Africa's most stable democracies. Mining activity is administered under the Mines Act, which is under review in the hope of attracting more non-diamond miners to the country. The legislation allows for a 15% government stake in mining projects and aims to find a balance between maximum profitability and managing environmental impact. With the current downturn in commodity prices, the Ministry of Minerals, Energy, and Water Resources is working with mining companies to maximize profits or simply to remain afloat, most notably by deferring royalty payments.

As highlighted in Botswana Mining Law Review by Jeffrey Bookbinder of Bookbinder Business Law (BBL), the existing mining law framework is strengthened by many pro-investment initiatives under the Mines Act. Mining companies can experience a streamlined licensing procedure, increased security of tenure and transparency, free repatriation of profits, stability in environmental legislation, international arbitration of disputes, the right to market mine products, freedom of commercial operation, and investor-friendly equity agreements.

Other paramount pieces of legislation include the Mineral Rights in Tribal Territories Act, which states that the rights to minerals situated on tribal land are vested in the state; the Mines, Quarries, Works and Machinery Act, which protects the safety and health of persons doing the physical labor on site; the Precious and Semi-Precious Stones Act, which creates a mandatory duty of disclosure on any prospecting license holder upon the discovery of precious stones; and the Unwrought Precious Metals Act, which controls the dealings of gold, silver, their ores and any other metal deemed valuable by the Minister. On July 25, 2015, the ministry published an amendment to the Precious and Semi-Precious Stones Act that added parameters and penalties surrounding diamond beneficiation. The bill states: "…diamonds mined in Botswana are beneficiated included being sorted, valued, processed, sold, bought, marketed or otherwise within the country's borders."

The Precious Minerals Act was amended to alter the oversight of licensing for the diamond sector, as the government decided that juniors needed greater access to the market. "Third parties are now able to acquire licenses, while De Beers relinquished their rights to many smaller mines, opening up opportunity for those who want to champion those junior operations," said Bookbinder. Consequently, Botswana has seen a rise in junior miners looking for prospective licenses.

"Not only is the legislation fairly simple, but it has been historically applied in a transparent, efficient, and non-corrupt manner," explained Bookbinder.

The process for license application is quite clear, and a map of all prospecting licenses is produced every quarter. Local entities are also granted the opportunity to apply for prospecting licenses under a structure designed for economic empowerment. Thus far, however, many locally rooted mining ventures are in need of a joint venture due to the lack of knowledge or experience of operating alone. Favorable to foreign investors, Botswana does not have any kind of indigenization laws restricting ownership, and the government has kept a very consistent approach to mining legislation. The efforts for small-scale integration and mineral diversity are not reflected in regulation, but rather in the approach of implementation.

The Botswana Environmental Practitioners Association recently established new structures based on self-regulation and control in regards to environmental standards. The local government is now responsible for implementing these laws to ensure that mining houses are complying with international best practices. "Change can be found in the way projects are screened for environmental impacts and there is a heightened strictness in required processes," said Tiroyaone Rhio Keikitse, regional manager of Golder Associates Botswana.

Taxation

Botswana has a very competitive tax regime, with progressive changes made through the 2013-2014 budget proposals, amending the Income Tax Act and the Value Added Tax Act. Alterations to the Income Tax Act were implemented to increase transparency between the government and other tax authorities and to broaden the requirement to keep accounts and records, making each individual liable for paying taxes an added element on file. Other alterations include standardizing the interest chargeable at 1.5% per month compounded and eliminating the 2020 sunset clause in the International Financial Services Centre (IFSC) legislation. The Value Added Tax Act now has an expanded definition of capital goods, newly including mining capital expenditure. In addition, penalties chargeable for failure to file a "nil" or "refund" VAT are now at a maximum of P5,000 (roughly $443), in comparison to the previous zero. VAT is broadly imposed at the rate of 12%.

Features to the tax regime that are unique to Botswana are, in some cases, specific to the resource sector as mining plays such a large role in the national economy. For example, KPMG notes that mining capital allowances are granted to the extent of 100% of any mining capital expenditure. Special provisions apply to IFSC companies, as well as approved mining businesses. In addition, assessed losses from business can be carried forward for no longer than five years, except for mining and farming, which can be carried forward indefinitely. For those two sectors, prospecting income and losses and capital gains and losses are determined separately.

Other differences of note are that capital losses can only be carried forward for one year and income from a source within Botswana is taxable in Botswana. Mining taxable income ranges from 22%-55% for resident companies, excluding the diamond industry, which follows a formula based on a profitability ratio as a percentage of gross income. For non-resident companies, taxes are set at a standard rate of 30%. Mining income is defined as the use of mining rights over the land, shares, or rights in mining companies that hold mineral rights in Botswana, and mining or prospecting information over the land.

Infrastructure

In comparison to other countries within the region, Botswana has a well-developed network of infrastructure. Roads are still navigable due the country's heavy investment in the past, and additional railway lines are soon to be constructed. Botswana has 971 km of rail, 18,482 km of road (23% of which is paved) and 92 airports. Management of these assets could be improved, but upgrading the efficiency of transport systems and access to water and power remain a national priorities.

Botswana's President Ian Khama appealed to his fellow African leaders in August 2015 to expedite the implementation of the Southern African Development Community (SADC) signed agreements, one of which is a $64 billion infrastructure program. SADC wants to build cross-border infrastructure in the areas of energy, transport, tourism, water, and information technology. As the SADC chairperson, Khama is pushing for the organization to properly honor its commitment: "The people of southern African will not judge us by adoption of key documents alone, but rather by the outcomes achieved following implementation," he said.

The national drive for infrastructural development is apparent, but delays are a result of inefficient spending and minimal project governance.

At present, a platform does not yet exist for the public announcement and breakdown of contracts. "The way that assignments are scheduled, awarded, managed, and tracked is not monitored. For example, a company is awarded a contract to build a power station, but they are basically given an open check because there are no set project controls (cost engineering, risk management, quality control, and schedule control)," explained Oabona Kgengwenyane, managing director of InnoLead Consulting.

Without the proper base-lining of costs coupled with gate reviews, the government will continue to receive submissions of increased monetary variation. InnoLead was involved in implementing the Diamond Trading Company's transition from Londong to Gaborone, organized the shutdown for the BCL copper/nickel mine, and continues to service Debswana in terms of management training and controls.

Transport

In conjunction with the Namibian government, Botswana aims to construct a $6-billion, roughly 2,400-km railway line between Gaborone and Walvis Bay for coal transport. This bilateral agreement was signed in March of 2014, however the price of coal in the interim has derailed the project timeline. Neither government has abandoned the project, but both countries are now exploring the option of having a railway that carries additional commodities. Siwawa, of the Chamber of Mines, pointed out that there are many logistical challenges that need to be resolved, such as overcoming the harsh geologic terrain, and avoiding national parks: "The government needs to account for all elements, including ensuring ease of accessibility to current and potential mines. As a central part of the SADC, Botswana needs more infrastructure to give and take from the rest of the world."

Botswana is a landlocked country, though mining executives such as Saxena prefer to approach logistical challenges with the mentality of it being "land-linked." Botswana is also considering extending the railway line into Zambia and the Democratic Republic of the Congo.

Though there are discussions of a Namibia-Botswana railway line, financial planning for coal export will entail high transportation costs until physical construction of the railway begins. Rail is significantly cheaper than road transport, which is why many commodities are currently transported south to the Durban port. "Walvis Bay is preferred as it is very efficient, but not economical," explains Gareth Lendrum, general manager of Bolloré Africa Logistics Botswana, "From Walvis Bay, one can discharge containers from a vessel and deliver them to Gaborone exponentially faster."

If the Namibia-Botswana government-to-government railway is built, productivity would greatly increase across the spectrum, and the ministry plans to further delegate to the private sector after intangible issues, such as ease of passage politics, talking to communities, etc., are resolved.

In the meantime, mining houses are allocating a significant portion of their budget for transport logistics. Lendrum explained that the key to minimizing costs is astute attention to detail and thinking creatively about the means one has available: "For example, Bolloré saves their clients' money by utilizing local companies, that buy local fuel, which is R2.0/L ($0.12/L) cheaper than South African fuel. The trucks will be sent from Botswana to Johannesburg rather than the other way around. A truck can run 2.5 km/L, and thus you are saving R5.00 ($0.32) per km of which the distance is about 1,000 km," representing savings of approximately $320.

Freight control and supply chain management are critical in Botswana's geographical position.

MACIG 2016

Water

The mining sector accounts for 10% to 15% of total water use in Botswana—three quarters of which is currently used in diamond production. Coal operations have historically been less water dependent, however, the growth of coal mining is expected to put additional pressure on already scarce water resources. High costs associated with water development on site coincide with an interest in using raw/non-potable water for mineral production. As noted in a study by Waves: "By increasing the use of non-potable water, competition with domestic users and economic sectors that need potable water is reduced and overall development opportunities for the country are increased."

Mines such as Jwaneng, Boseto, Karowe, and Mowana all have their own water abstraction and supply, but Mupane gold, Tati Nickel, and Phoenix copper/nickel mines only receive water from the Water Utilities Corporation. The mines that cannot supply their own water are charged a water-scarcity tax, or resource rent; these prices fluctuate in accordance with commodity prices to ensure that the producers are still profiting from mining.

Power

Peak domestic demand is estimated at 542 MW, a reflection of the drastic increase in electricity consumption in recent years. Having to source power from neighboring countries, principally South Africa, makes for an unstable inflow. The entire region is suffering from shortages, including South Africa's electricity corporation, Eskom, which has been forced to reduce power exports. In the World Bank's Ease of Doing Business Index, Botswana dropped 11 spots to 107th in 2014, which was the country's steepest downward reconsideration to date. This category is, however, expected to show improvement once the country brings its power plants online. The Botswana Power Corporation, hand-in-hand with the Botswana government, prioritizes the mining sector, minimizing any power interruptions on site.

In 2011, the Ministry of Minerals, Energy and Water Resources announced that it plans to add 1,200 MW of electricity to the national grid in six years time. Two 300-MW power stations are in planning for construction, and the Morupule B coal-fired power station expansion should produce 600 MW of electricity once commissioned. South Korea's POSCO recently won the bid to construct and operate one of the 300 MW plants, with a completion target set for May 2020 and a price tag of $800 million.

The Botswana Department of Geological Study declares that Botswana contains about 5.6 trillion cubic meters of coal bed methane (CBM) reserves in the Central Kalahari Karoo basin. Recently, there has been a significant increase in developing CBM projects in Botswana as a means of low-cost, clean and efficient fuel production for power plants; however, out of more than 50 companies that hold CBM leases, very few have carried out sizeable resource assessment work to date. Kalahari Energy (KE) has been pursuing CBM development and in 2009, it formed a joint venture with Exxaro Resources to complete a five-well production test. KE currently operates the 90-MW Orapa power plant and seeks to construct a new 180-MW plant.

Shumba Energy, formerly Shumba Coal, is working towards a diversified energy mix, principally in regards to the construction of a solar plant. The cost of solar has decreased to be comparable with coal and Shumba Energy sees solar as the way of the future. Utilizing cleaner energy could help the SADC region achieve a cut in their climate-changing emissions, as environmentalists note that the region faces worsening impacts such as acute droughts and more unpredictable planting seasons. The fundamental disadvantage with photovoltaic energy is establishing storage capacity, significantly adding to the base cost of any project. Botswana experiences over 3,200 hours of sunshine per year, yet its contribution to the national energy balance has yet to be significant.

Shumba Energy is crafting power station designs and conducting transmission studies in conjunction with the Southern African Power Pool. "The shortage is crippling and is problematic not just from a domestic perspective. There are estimations that growth in the region would have been double what it was last year if there had been sufficient power," said Mashale Phumaphi, managing director of Shumba Energy. "In the SADC region, the current shortage measures up to 18,000 MW, which is about 35 times the baseload generation capacity that Botswana has at the moment. This is a huge gap, caused by recent industrial and retail usage growth, that needs to be filled and can only be filled through a combination of improved transmission infrastructure and the constructed of significant amounts of new generation capacity across the region."

Along with industrial and retail growth, heightened energy demand is also due to the success of the National Electricity Access Programme, which resulted in 49,897 additional households connecting to the national grid in the past seven months. Even still, only about 22% of Botswana's population has access to electricity, highlighting the immense amount of impending future demand. "This region is in a power crisis, and we need to utilize that as a catalyst for enhancing the physical links between countries in terms of transmission and IPP development," said Phumaphi. "The various fuel sources for power generation are abundant. Demand for power is abundant. The issue lies in implementation in a bankable fashion. We need to sort out this critical issue and it is not just for one country to address alone."

Looking Forward

Even with troubled market conditions, Botswana is not waiting for an upturn in commodity prices and the availability of mining capital; it is working to create opportunities today. Concessions coming online in the medium term include the A-Cap Resources uranium mine, the Lerala Kimberly diamonds mine, and the Jindal Mamabula coalfields, to name a few. Tati Nickel also opened a tender last year, creating a stir for Botswana's service providers. "Everyone is getting into the starting blocks waiting for the gunshot to run. Once things turn around, these mines will take off," said Jean Stocker, area manager of Botswana for Basil Read.

Botswana has haughty goals, but they are not at all empty statements. "Botswana is full of potential and even through these are tough times, we are one of the only countries that can declare that profitability remains," claimed Minister Mokaila.

The ministry is in the process of building an additional pipeline for the north-south water corridor, and expects Botswana to be a next exporter of power by the end of 2018. Plans are in place, and mines are in motion—a testament to the stable foundation on which the industry resides. •

LESOTHO

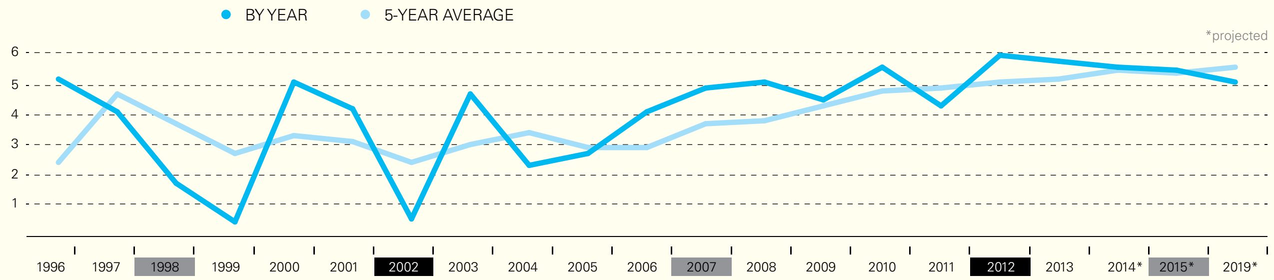
Basutoland was renamed the Kingdom of Lesotho upon independence from the UK in 1966. The Basuto National Party ruled the country during its first two decades. King MOSHOESHOE was exiled in 1990, but returned to Lesotho in 1992 and was reinstated in 1995 and subsequently succeeded by his son, King LETSIE III, in 1996. Constitutional government was restored in 1993 after seven years of military rule. From a mineral perspective, the country is known for its diamond produciton.

SOURCE: CIA WORLD FACTBOOK

Population: 1,947,701
Land Area: 30,355 sq km
Official Language(s): Sesotho and English
Capital: Maseru
Chief of State: King Letsie III (since February 1996)
Head of Government: Prime Minister Pakalitha Mosisili (since March 2015)
GDP (PPP): $5.575 billion (2014 est.)
Growth Rate: 3.4% (2014 est.)
GDP per Capita: $2,900 (2014 est.)
Economic Sector Breakdown: agriculture: 5.4%, industry: 28.6%, services: 66% (2014 est)
Exports: $815 million (2014 est.): manufactures (clothing, footwear), wool and mohair, food and live animals, electricity, water, diamonds
Imports: $1.837 billion (2014 est.): food; building materials, vehicles, machinery, medicines, petroleum products
Major Trade Partners: South Africa, China, South Korea

GDP GROWTH (%)

WORLD BANK, IMF, BBC



1998: LCD wins general elections, Pakalitha Mosisili becomes prime minister. Opposition stages protests against results. Rioting breaks out. At government's urging the South African Development Community (SADC) sends military force to help restore order.

2002: Ruling Lesotho Congress for Democracy (LCD) wins parliamentary elections, held under new system which gives smaller parties voice in parliament. Poll endorsed by international observers but rejected by opposition as fraudulent.

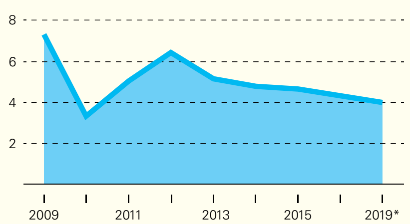
2007: Ruling LCD wins early parliamentary elections, taking 61 of 80 constituencies; leader of the opposition ABC challenges the outcome.

2012: Thomas Thabane becomes prime minister following elections.

2015: Pakalitha Mosisili becomes prime minister at the head of a coalition formed after early elections.

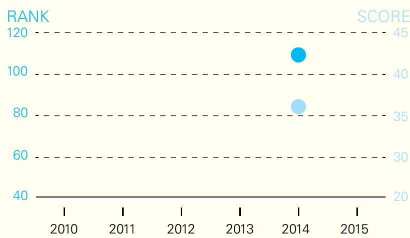
INFLATION

SOURCE: IMF



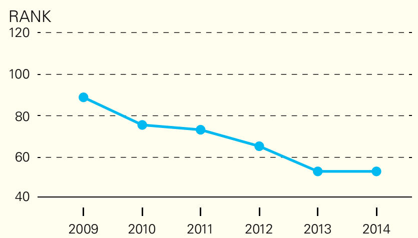
FRASER INSTITUTE INVESTMENT ATTRACTIVENESS INDEX

SOURCE: FRASER INSTITUTE



TRANSPARENCY INTERNATIONAL CORRUPTION PERCEPTIONS INDEX

SOURCE: TRANSPARENCY INTERNATIONAL



STATUS OF THE MINING CODE

NA	NA

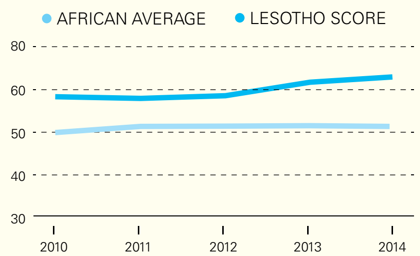
MINERAL PRODUCTION (2013)

SOURCE: BRITISH GEOLOGICAL SURVEY

Diamonds	414,013 ct

IBRAHIM INDEX OF AFRICAN GOVERNANCE

SOURCE: MO IBRAHIM FOUNDATION



MINING SECTOR CONTRIBUTION TO GDP

SOURCE: AFRICAN ECONOMIC OUTLOOK

2009 **6.9%** 2013 **4.9%**

FOREIGN DIRECT INVESTMENT

SOURCE: UNCTAD

FDI, $ millions

2013 **50** 2014 **46**

INFRASTRUCTURE INDICATORS

SOURCE: UIC, IEA, CIA WORLD FACTBOOK

LESOTHO SUB-SAHARAN AFRICA WORLD

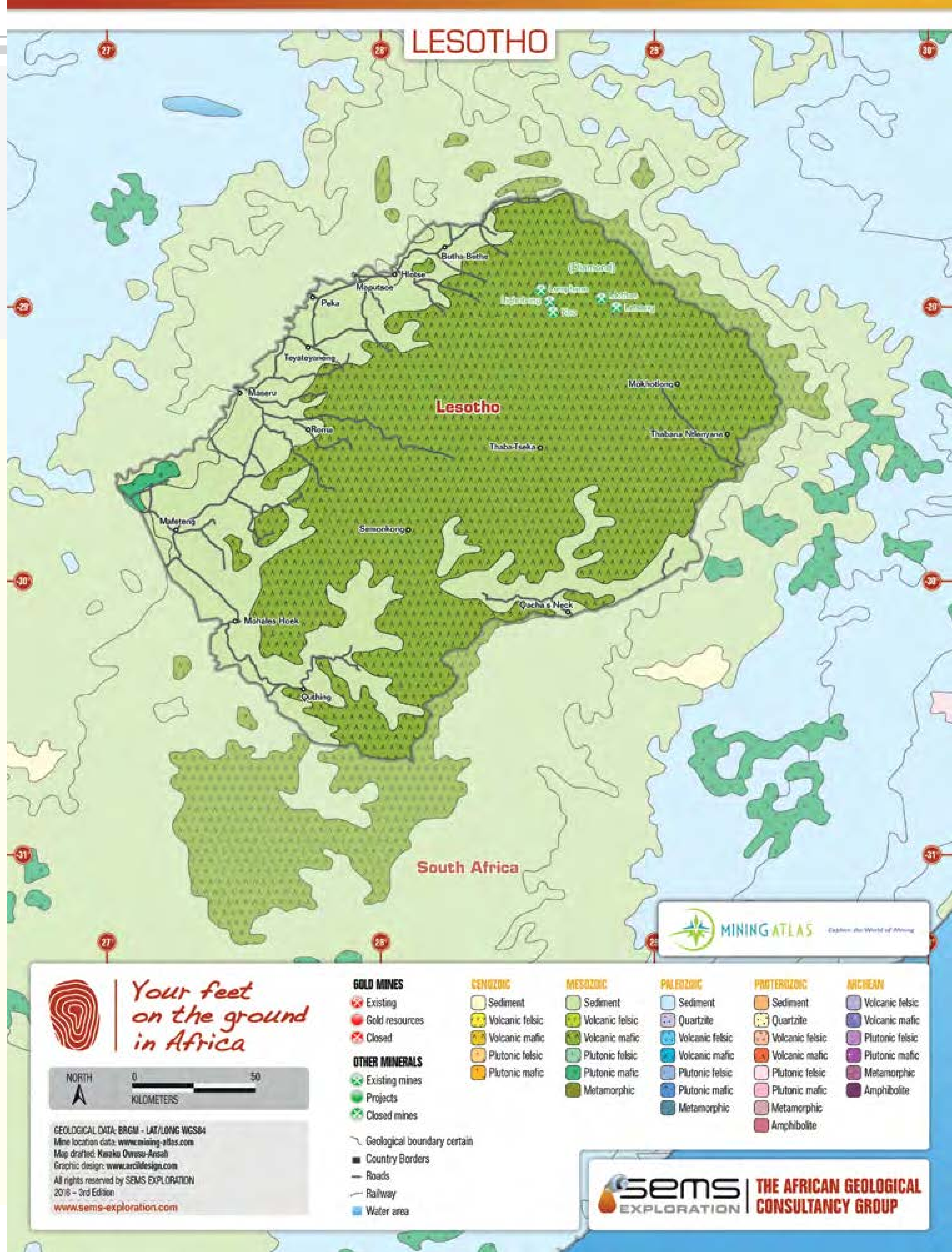
	Lesotho	Sub-Saharan Africa	World
Electric Power Consumption (kWH per capita), 2012	NA	512	3,064
Roads - km/1,000 km2, 2014	198	79	262
Internet Users (per 100 people), 2014	11	19	41

1% 25 50 75 100

BUSINESS ENVIRONMENT RANKING IN AFRICA (OUT OF 47)

SOURCE: WORLD BANK

	2015
Ease of Doing Business	10
Starting a Business	15
Dealing with Construction Permits	38
Getting Electricity	20
Registering Property	13

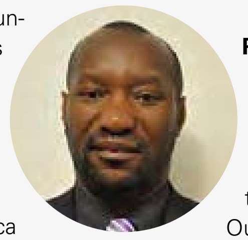


Hon. Lebohang Thotanyana

Minister
Ministry of Mining
Kingdom of Lesotho

> **"Lesotho is a virgin territory with opportunities everywhere you turn. Lesotho has one of the highest concentration of kimberlite pipes probably in the world. Our diamonds are the Rolls Royce of the sector, yielding the highest quality and thus the largest profit margins. With the industry averaging around $100 per carat, our mines are fetching over $2,500 per carat."**

Since the February 2015 elections, what changes to the mining sector are being introduced by the government?
The most prominent change is Lesotho's new Minerals and Mining Policy, which is based on global best practices. Guiding tools and a legislative framework must first be put into place to ensure that the sector grows sustainably. Our aim is to find the right balance between the government as a provider of the resource and those who develop it, with an underlying focus on transparency. This policy updates the process for which mines are acquired and how revenues are deployed. There is an ever-increasing drive towards transparency in Africa, and Lesotho must rise accordingly.



Lesotho is the first country on the continent to adopt a policy that is totally aligned with the Africa Mining Vision, which is the primary reason why Lesotho is an exemplar for other countries to follow. Progressive elements of the legislation include corporate social responsibility guidelines that govern the relationship between the mines and the community, clarifying what both parties should expect. We are already seeing interest from our peers to study and benchmark with our new system, as many are coming to realize that it is among the best mining frameworks in the world.

What steps is the ministry putting in place to determine what resources, and respective quantities, are underground?
Lesotho's mining industry is dominated by its diamond abundance, but it is aiming to diversify. Firstly, the ministry itself has invested in geochemical mapping, which covers two thirds of the country, and has shown many positive indicators. Discovering what can be exploited commercially, and productively, has been a top priority. In conjunction with that, we are working with Japan Oil, Gas and Metals National Corp. (JOGMEC) in search of base and precious metals, including rare earth minerals and platinum-group elements (PGEs). These two initiatives are the result of Lesotho's new model for exploration and allocation. Lesotho has long been overshadowed by South Africa in regards to its mineral potential, yet geographically we have a very similar make up. Our grounds are just as rich, but our opportunities for growth are exponentially more lucrative.

Paragon Diamonds has explicitly outlined their belief in Lesotho's diamond potential. How have these predictions affected investor perceptions?
Over the past two years, Lesotho has seen a drastic increase in attention towards our mining sector. Our current projects act as successful case studies, spurring interest and incentivizing involvement. Presently, we have issued 19 prospecting licenses to different companies that are exploring for diamonds, which is the most in Lesotho's history. The government granted Paragon a second mine for development that we hope will have a major impact on the national economy. There is an abundance of potential; all that is needed is proper investment.

What is your final message as to why Lesotho is a premier investment destination?
Lesotho is a virgin territory with opportunities everywhere you turn. Lesotho has one of the highest concentration of kimberlite pipes probably in the world. Our diamonds are the Rolls Royce of the sector, yielding the highest quality and thus the largest profit margins. With the industry averaging around $100 per carat, our mines are fetching over $2,500 per carat. Of the twenty largest stones found in the world, three of them came from a single Lesotho mine. There are many areas with a similar geology that we hope to explore, and we are developing a proper, investor friendly environment to peruse that terrain. By 2016 we will likely have four mines in production, as well as have completed preliminary hydrocarbon and oil-exploration procedures. Lesotho is open for business and new ideas, and is ready for you. •

Lesotho: Polishing Their Practices

Dominated by diamonds, Lesotho's mining industry was initiated by J Scott and De Beers in the 1950s. There is a lack of geographical data to affirm claims of the country's mineral diversity, but it is well accepted that Lesotho has one of the most concentrated areas of kimberlite intrusion in the world. The Letseng-La-Terae mine (of the UK-based Gem Diamonds) has unearthed three of the 20 largest white gem-quality diamonds ever recorded. Several kimberlite pipes have been demarcated in the north, while alluvial gravel is deemed most promising along the lowlands of the southwest. Second to diamonds, significant deposits of heavy, white-firing, and stoneware clays have begun to be exploited. Fine-grained, dense basalt and dolerites have also been discovered in plethora, which serve as valuable dimension stones for building. Alternatively, certain rock formations suggest the possibility of uranium, coal, and other industrial minerals within Lesotho's borders, but there have been no successful investigations to date.

> **"Lesotho is continually moving up in the ranks in the World Bank's Doing Business Report, from 153 in 2012 to 136 in 2014 and 128 in 2015."**

Identified as a growth enabler in the National Strategic Development Plan (NSDP), mining has taken a leading role in advancing Lesotho's economy. In 1999, the contribution of the minerals sector to GDP was just 0.1%. In June of 2015, the newly appointed Minister of Mining, Lebohang Thotanyana avowed that the mining sector currently contributes 10% of GDP and is a major provider of Lesotho's revenue; hopes for an even greater societal impact continue to be a governmental priority. Categorized as a low human development country, Lesotho published a report last year stating that "it is important to underscore the fact that the economic contribution of mining investments will not only be judged by their percentage of GDP, but will be indexed by the sector's outcomes toward social progress." Indirectly employing nearly 3,000 people, the United Nations Development Programme (UNDP) sees mining as providing a passage from poverty for Lesotho's citizens, but only if well managed. The UNDP and the African Mineral Development Center (AMDC) have thus been providing Lesotho with the technical support that it needs to see these goals to fruition. Both the AMDC and UNDP are instigating national reform through the agenda of the African Mining Vision, which focuses on uplifting the entire mining value chain.

As a result of recent policy reforms, the investment climate is progressively more favorable. Lesotho's tenure system was updated through the Land Act of 2010, allowing foreign entities to maintain land ownership, if local investors retain a 20% stake. The Companies Act of 2011 instilled efficiency, reducing the time it takes to start a business from 40 days to five days. In 2013, the Minerals and Mining Policy was first drafted, providing a transparent and predictable regulatory framework designed specifically to attract foreign direct investment (FDI). The ministry proposes that Lesotho's diamond industry requires upwards of $372 million in FDI to achieve its targets of increased diamond exports and faster realization of tax revenue growth. The Minerals and Mining Policy was presented before the cabinet in May of 2015, and awaits expected approval. According to the U.S. Department of State, Lesotho's legal, regulatory, and accounting systems are "transparent and consistent with international norms…[and] no U.S. firms have identified corruption as an obstacle to FDI in Lesotho." The government plans to undergo further reform, however, and the international community is already recognizing Lesotho's progress. Lesotho is continually moving up in the ranks in the World Bank's Doing Business Report, from 153 in 2012 to 136 in 2014 and 128 in 2015.

Infrastructure deficits and power shortages challenge the development of remote areas that possess mining potential, but the Lesotho Highlands Water Project is expected to assuage those inadequacies. In March of 2014, King Letsie III oversaw the launch of the project's second phase, which involves building the Polihali dam, constructing a Polihali-Katse transfer tunnel, laying new roads, and a 1,200-megawatts Kobong pumped storage project. As diamond mines continue in construction, access to power is a positive indicator of sustainable growth for the sector. Firestone Diamonds is nearly halfway complete in engineering the Liqhobong diamond mine with an expected production date of late 2016, and Paragon remains devout in their acquisition of the Mothae and Lemphane projects. The Hon. Thotanyana, Minister of Mining, noted that the Ministry is currently processing "90 new, prospective mining licenses, which is the most in Lesotho's history."

As Lesotho pushes to have the most attractive investment environment in Africa, Thotanyana aims to strictly ensure that any investor wishing to come into the country is willing to abide by national standards of corporate social responsibility. Harboring such valuable natural resources, Lesotho is determined to combat the resource curse through polishing their policies. Some day soon, Lesotho could be shining as bright as its diamonds. •

MOZAMBIQUE

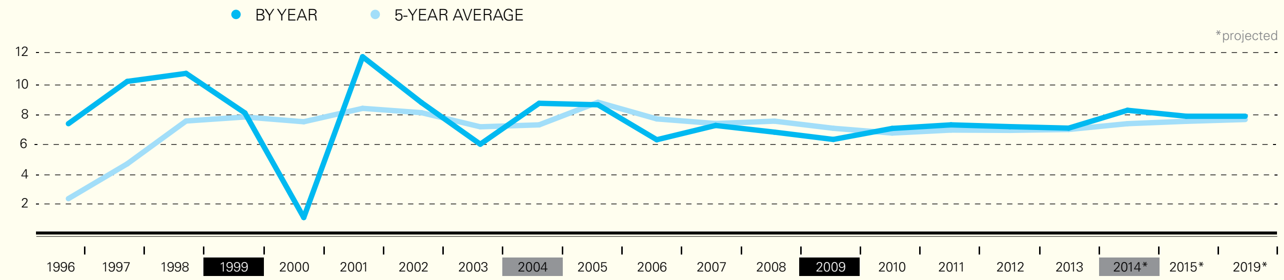
Mozambique was a Portugese colony that suffered heavily from the slave trade. After a decade-long struggle for independence it then suffered a civil war between 1977 and 1994. Recently, however, it has enjoyed a period of political stability and extended high economic growth. Its mining industry holds indisputable potential to become one of the region's leaders in this sector. It is a significant global producer of aluminium, ilmenite, tantalum and zircon, and has production or potential for coal, gold, copper, iron ore, vanadium and other minerals.

SOURCE: CIA WORLD FACTBOOK

Population: 25,303,113
Land Area: 799,380 sq km
Official Language(s): Emakhuwa 25.3%, Portuguese (official) 10.7%
Capital: Maputo
Chief of State: President Filipe Jacinto Nyusi (since January 2015)
Head of Government: Prime Minister Carlos Agostinho Do Rosario (since January 2015)
GDP (PPP): $31.21 billion (2014 est.)
Growth Rate: 7.4% (2014 est.)
GDP per Capita: $1,200 (2014 est.)
Economic Sector Breakdown: agriculture: 28.6%, industry: 21.2%, services: 50.2% (2014 est)
Exports: $3.92 billion (2014 est.): aluminum, prawns, cashews, cotton, sugar, citrus, timber; bulk electricity
Imports: $7.958 billion (2014 est.): machinery and equipment, vehicles, fuel, chemicals, metal products, foodstuffs, textiles
Major Trade Partners: South Africa, China, India, Italy, Belgium

GDP GROWTH (%)

WORLD BANK, IMF, BBC



Chissano wins a second term. Opposition RENAMO claims fraud and threatens a return to civil war, but backs down.

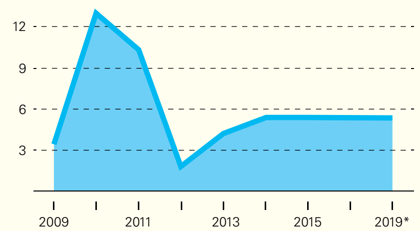
Chissano declines to run for a third term and elections are won by Armando Guebuza of FRELIMO

Chissano wins a second term with 75% of the vote. SADC calls the result "a true reflection of the will of the people"

The Mozambique Democratic Movement, formed out of RENAMO in 2009, may slightly shift dynamics in October elections.

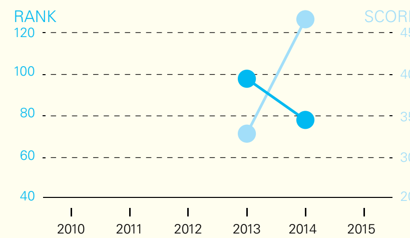
INFLATION

SOURCE: IMF



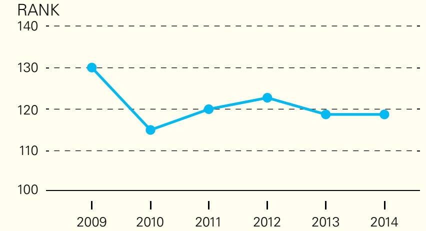
FRASER INSTITUTE INVESTMENT ATTRACTIVENESS INDEX

SOURCE: FRASER INSTITUTE



TRANSPARENCY INTERNATIONAL CORRUPTION PERCEPTIONS INDEX

SOURCE: TRANSPARENCY INTERNATIONAL



FOREIGN DIRECT INVESTMENT

SOURCE: UNCTAD

FDI, $ millions

2013 **6,175** 2014 **4,902**

MINING SECTOR CONTRIBUTION TO GDP

SOURCE: AFRICAN ECONOMIC OUTLOOK

2009 **1.6%** 2013 **3.6%**

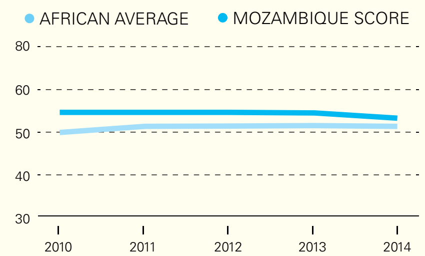
MINERAL PRODUCTION (2013)

SOURCE: BRITISH GEOLOGICAL SURVEY

Aluminium	562,000 mt
Bauxite	7,500 mt
Bentonite	1,500 mt
Beryl	60 mt
Coal (bituminous)	40,926 mt
Diatomite	550 mt
Gold	180 kg
Lead	1,700 mt
Salt	130,000 mt
Tantalite	150 mt
Titanium Minerals	724,000 mt
Zirconium	31,400 mt

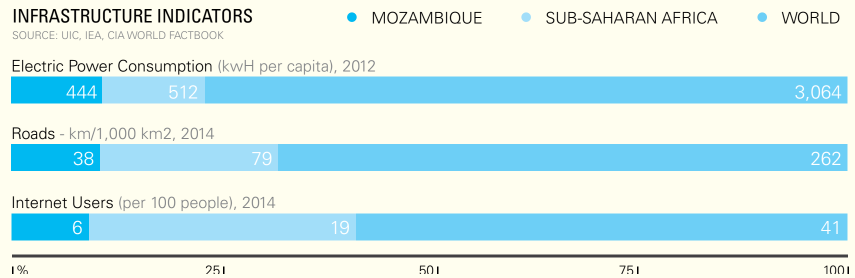
IBRAHIM INDEX OF AFRICAN GOVERNANCE

SOURCE: MO IBRAHIM FOUNDATION



INFRASTRUCTURE INDICATORS

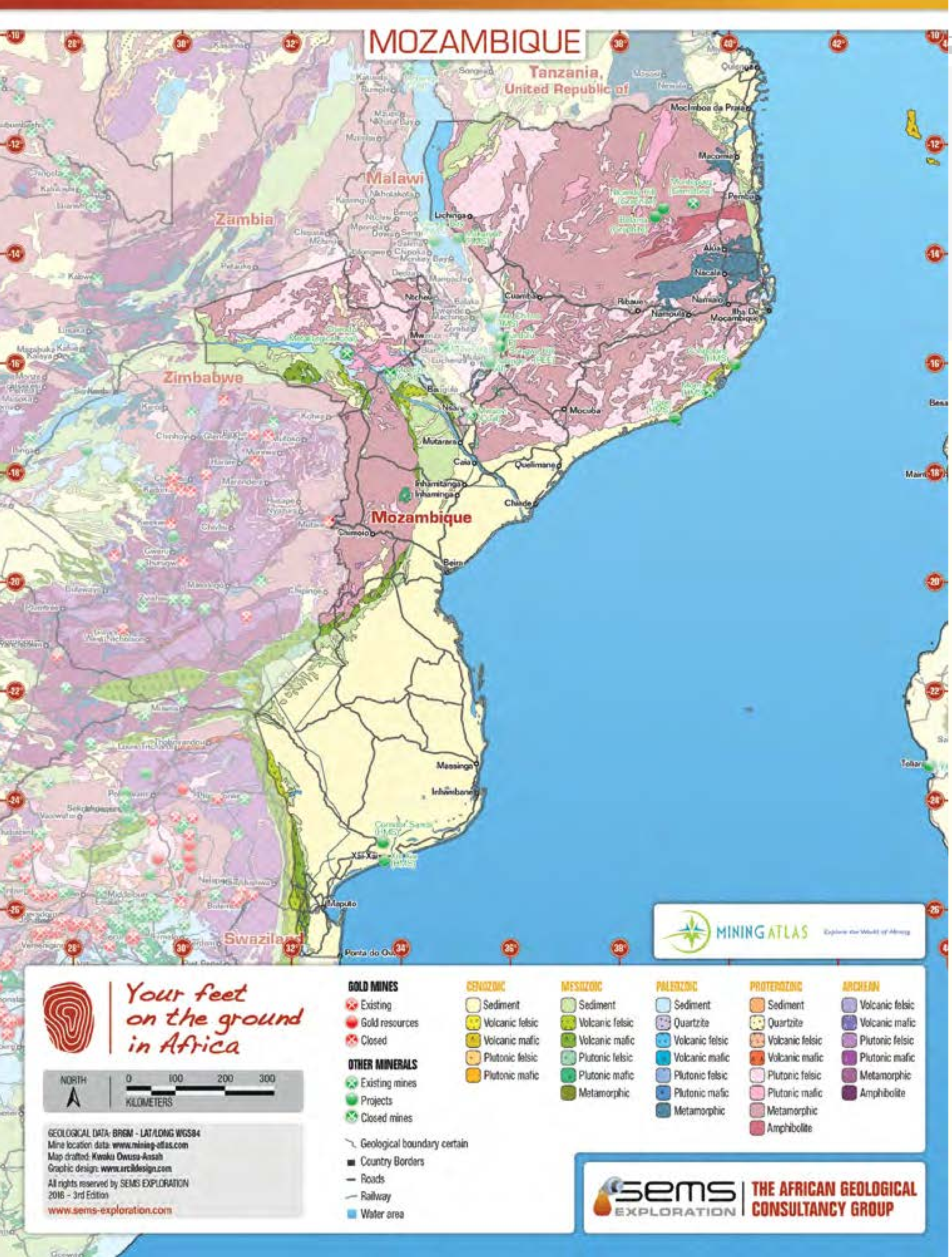
SOURCE: UIC, IEA, CIA WORLD FACTBOOK



BUSINESS ENVIRONMENT RANKING IN AFRICA (OUT OF 47)

SOURCE: WORLD BANK

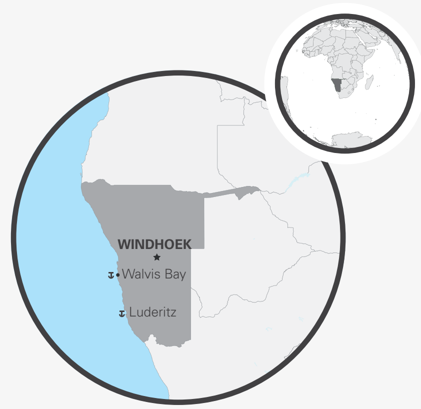
	2015
Ease of Doing Business	14
Starting a Business	18
Dealing with Construction Permits	1
Getting Electricity	28
Registering Property	12



NAMIBIA

Namibia gained independence from South Africa in 1990, after previously being a German colony until 1920. It has had a stable multiparty democracy in place since independence and has enjoyed strong economic growth. Namibia's mining industry forms a significant part of its economy: the country is the world's second largest producer of diamonds in terms of value, and the world's fifth largest producer of uranium. It also produced copper, gold, lead, manganese, silver and zinc, and has potential for iron ore.

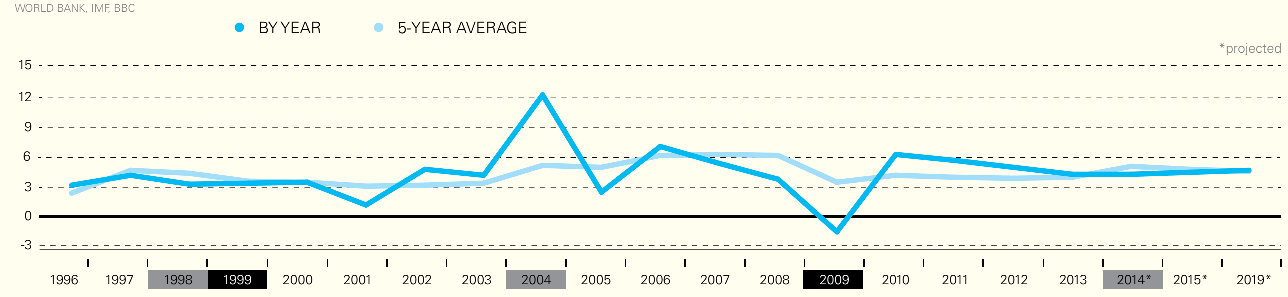
SOURCE: CIA WORLD FACTBOOK



Population: 2,212,307
Land Area: 824,292 sq km
Official Language: English
Capital: Windhoek
Chief of State: President Hage Geingob (since March 2015)
Head of Government: President Hage Geingob (since March 2015)
GDP (PPP): $23.48 billion (2014 est.)
Growth Rate: 4.5% (2014 est)
GDP per Capita: $10,700 (2014 est.)
Economic Sector Breakdown: agriculture: 6.3%, industry: 29.9%, services: 63.8% (2014 est)
Exports: $4.626 billion (2014 est.): diamonds, copper, gold, zinc, lead, uranium; cattle, white fish and mollusks
Imports: $7.36 billion (2014 est.): foodstuffs; petroleum products and fuel, machinery and equipment, chemicals
Major Trade Partners: South Africa, United Kingdom, Angola, India

GDP GROWTH (%)

WORLD BANK, IMF, BBC



Namibia takes a more active role in regional affairs by sending troops to the DRC as part of a SADC contingent.

Sam Nujoma, Namibia's president since independence, is reelected. A secession attempt in the Caprivi region fails.

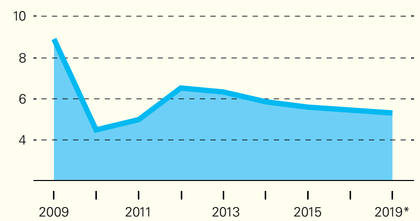
Nujoma transfers power to Hifikepunye Pohamba, also of the Swapo party.

Pohamba reelected president with 75% of the vote. Though opponents questioned this, observers called it fair.

Election scheduled for November. The Swapo party will almost certainly maintain the presidency.

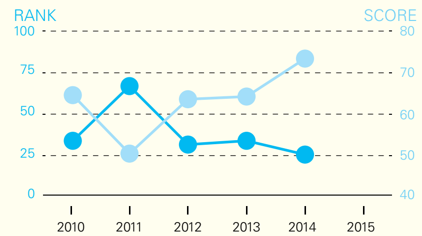
INFLATION

SOURCE: IMF



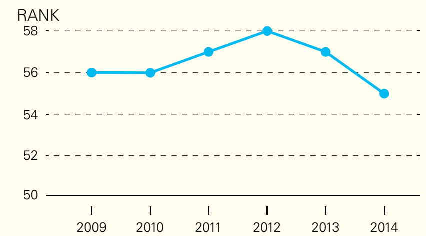
FRASER INSTITUTE INVESTMENT ATTRACTIVENESS INDEX

SOURCE: FRASER INSTITUTE



TRANSPARENCY INTERNATIONAL CORRUPTION PERCEPTIONS INDEX

SOURCE: TRANSPARENCY INTERNATIONAL



STATUS OF THE MINING CODE

SOURCE: THE CHAMBER OF MINES OF NAMIBIA

Foreign Ownership Allowed	100%
Corporate Tax Rate (diamonds)	55%
Corporate Tax Rate (non-diamonds)	37.5%
Royalties (Precious Stones)	10%
Royalties (Gold and Others)	2-3%

MINING SECTOR CONTRIBUTION TO GDP

SOURCE: THE CHAMBER OF MINES OF NAMIBIA

2013 **13.2%** 2014 **11.6%**

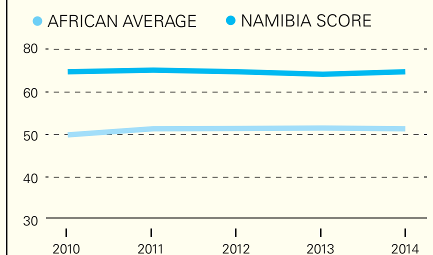
MINERAL PRODUCTION (2013)

SOURCE: BRITISH GEOLOGICAL SURVEY

Copper	4,896 mt
Diamonds	1,762,378 ct
Fluospar	90,000 mt
Gold	2,045 kg
Lead	10,851 mt
Manganese Ore	42,000 mt
Salt	826,985 mt
Silver	2,010 kg
Uranium	4,328 mt
Zinc	187,500 mt

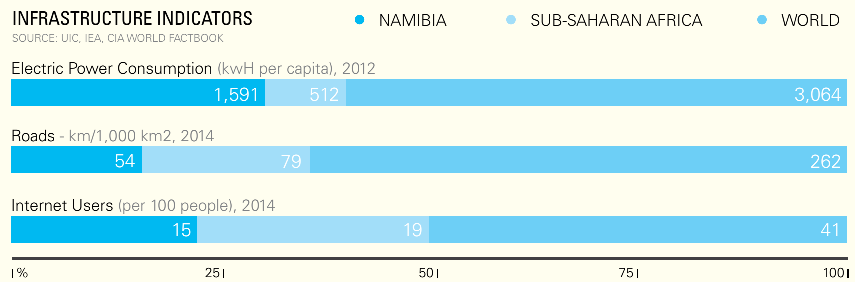
IBRAHIM INDEX OF AFRICAN GOVERNANCE

SOURCE: MO IBRAHIM FOUNDATION



INFRASTRUCTURE INDICATORS

SOURCE: UIC, IEA, CIA WORLD FACTBOOK



BUSINESS ENVIRONMENT RANKING IN AFRICA (OUT OF 47)

SOURCE: WORLD BANK

	2015
Ease of Doing Business	7
Starting a Business	35
Dealing with Construction Permits	5
Getting Electricity	2
Registering Property	41

Hon. Obeth Kandjoze

Minister
Ministry of Mines and Energy
Republic of Namibia

The mining industry is traditionally one of the main drivers of Namibia's economic growth, making the country very prone to the fluctuations of global mineral demand and prices. How has the recent decrease in commodities prices impacted the ministry's plans for the industry's growth and development?
The decrease in commodities prices primarily affects the economic growth and development of the country, and not necessarily the plans and activities of the ministry. The industry, however, has adjusted accordingly, particularly by instituting cost-cutting measures in their operations. That means either retrenching some employees or suspending additional staff recruitment, which negatively affects the contribution to the fiscus and overall growth and development.

Diamonds and uranium are Namibia's most prominent mineral exports, but copper, magnesium, zinc, silver, and gold are also present on the national production portfolio. What is the ministry's strategic outlook in regards to diversification and beneficiation?
The government has commissioned a study to look into minerals that could have potential for local beneficiation or value addition. The report has been finalized, and the government is now considering it with the view to develop a national mineral beneficiation strategy. The study covered all the minerals that are produced in Namibia, including diamonds and dimension stone, some of which are currently being beneficiated locally.

Small-scale miners have been receiving more attention from the Ministry, particularly the miners at the Uis settlement in the Erongo Region. Can you speak about how small-scale miners are being repositioned in the grand scheme of the sector and the impetus behind this initiative?
The small-scale mining sector has its inherent challenges. The participants are normally uneducated and lack access to equipment and financial resources. Our strategic plan has a special focus of legalizing their activities as well as impacting technical information and assistance to the communities. Where funds are available, we have procured equipment and donated it to those that are organized in co-operatives or associations. In fact we encourage the establishment of such organizations in order for our assistance to reach a wider range of the population. There are also projects that we have identified to benefit those small mining communities, but funding for developing these projects is a challenge.

Namibia is known for its stable policies with a sound political environment. Can we expect any changes in regards to the mining code that will further entice foreign direct investment into Namibia?
The draft mineral bill is intended to still be investor-friendly. There are, however, considerations to be made for both local and foreign investors to meet the government halfway in its quest to eradicate poverty amongst our people.

What updates are available concerning the Walvis Bay expansion and the construction of the Neckartal Dam? What other key infrastructure projects are being developed that will increase power supplies and improve accessibility to the grid?
It is a well-known fact that Namibia is importing most of its energy requirements from the elsewhere in the region. The ministry, with its key state-owned enterprises, has identified short and medium-term power projects that will alleviate Namibia's dependence on imports without compromising the affordability of energy to industry and especially the poor. These projects have been divided into short-term and long-term categories.
There are several short-term, smaller projects that can be deployed within less than 18 months. These include 90 megawatts (MW) of solar photovoltaic energy, 44 MW of wind power, and 120 MW of emergency generators using either light or heavy fuel oil. All of these projects are managed by employing independent power producers. In addition, the country is looking into buying power through power purchase agreements from neighboring utilities. These will be designed to address any shortage during mid-merit and peak operations.
There are also medium- to long-term solutions. These include the deployment of large (in the Namibian context) projects that are either operated on a base-load dispatch, such as Kudu Gas to Power Project, or renewable projects that are equipped with storage such as concentrated solar power.

What are the ministry's concrete goals for this coming year?
The aforementioned 120 MW emergency generation project is envisaged to deliver power by August 2016. •

Image: Tshudi copper plant 2015, photo courtesy of LogiMan

Namibia: Africa's Top Destination for Mining

Political stability and mineral variety and depth continue to draw foreign capital, despite some of the steepest tax rates in Africa.

As the number one mining-investment destination in Africa—and ranked 25th globally—Namibia is endowed with extensive mineral deposits of diamonds, uranium, copper, lead, gold, and zinc. Mining is the largest contributor to national GDP, and encompasses about 58% of exports. "Though commodities are under price pressure at the moment, the diversity of minerals gives this country strength, helping stabilize the Namibian economy," notes Wicus Burger, country manager of Komatsu Namibia. "Namibia has wonderful political stability, which offers a platform for companies to operate in a safe environment."

Diamonds

Namibia has been mining diamonds since 1908, when railway worker Zachariais Lewala stumbled upon an alluvial stone. A diamond rush took place near Luderitz thereafter, resulting in the mining of 7 million carats (ct) between Lewala's discovery and the start of World War I in 1914. After the war, mining commenced, and diamondiferous beaches near Oranjemund were the new focus. That area has since been mined unremittingly for nearly 80 years, producing a cumulative 65 million ct of gems. Namdeb Holdings, an agreement between De Beers and the Government of Namibia, was created in 1994, and has since continued to extract from Oranjemund.

Namdeb Holdings is owned 50% by the government and 50% by De Beers. Eight licenses are mined on behalf of Namdeb Holdings by Namdeb under contract, while an additional offshore license is mined by Debmarine Namibia. Namdeb Holdings is the largest contributor of income to the National Treasury, while employing around 2,000 people who then indirectly support an additional seven.

Namdeb's newest addition, the Sendelings Drift mine, is currently in full production under their Orange River mining license. A majority of its licenses are held in some of Namibia's most ecologically sensitive areas, including the Sperrgebiet National Park. The mines have the added engineering challenge of a less than minimal environmental footprint, and the areas must be fully rehabilitated upon mine life completion. "Knowing that [Sperrgebiet] areas will be used for nature-based tourism in the future, it is very important to make sure that we minimize the impact of our operations," says Riaan Burger, managing director of Namdeb. In light of this, Namdeb has decided not to construct a large tailings dump, but to promptly return waste material to its original mining pits for continuous rehabilitation. "We have only built a very small, fine tailings disposal pit, by constructing a dry front-end for the operation, and introducing water later in the process. While this design comes with its own set of unique challenges, it has resulted in a substantially smaller ecological footprint, reduced working costs, and reduced power and water requirements," Burger affirms.

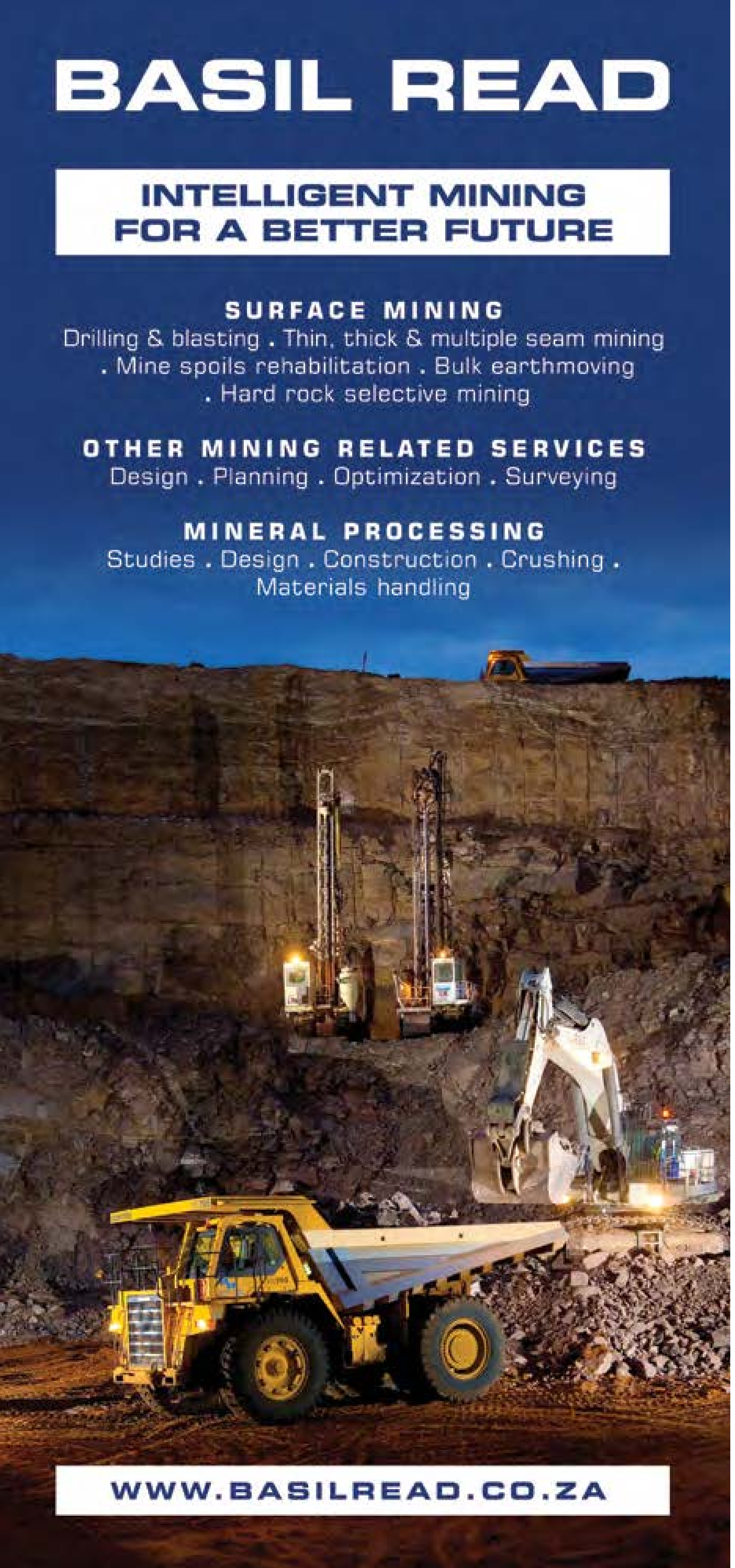
In its processor plants, Namdeb uses seawater instead of chemicals to reduce environmental impact, and their mid-water exploration work has minimal ecological affect due to the lack of marine life in the concession. Mid-water operations are still in the research and earthmoving phase, as part of the mining process is to push back the sea by dumping sand to create new beaches, on which Namdeb mines. Deep water and land sampling technology exist, but the technology to sample in the surf zone is still in development. "Namdeb has a Probe Drill Platform (PDP) that drills holes through the sediment into the bedrock," explains Burger, "This process allows us to infer if there is a desirable resource in the surf zone and from there we start accretion." The Zaamwani Surveyor, designed for near shore mining, is currently being tested. The N$1.5-million vessel was built for the acquisition of high-resolution data using multi-beam echo-sounder technology, and is expected to yield results with increased accuracy.

The geology of mid-water deposits is more closely aligned to land mining, hence its placement under Namdeb's purview, but marine mining is also unyielding. Namibia is thought to have about 1.5 billion ct on its seabed, from which Debmarine produced 1.2 million ct in 2014. In May 2015, Debmarine began constructing a deep-water diamond exploration and sampling vessel, costing $149 million. This will be the sixth ship in the company's fleet—113-meters long and diesel-electric powered—with a displacement of 12,000 metric tons (mt). Once the ship is completed in 2017, Debmarine can utilize it fully for three-year spans before it must return to port for maintenance.

Uranium

Namibia's mining industry is the fourth largest in the world, with its position expected to further improve with the introduction of several additional mines in development. Swakop Uranium's Husab mine is expected to begin production at the start of 2016, with a projected output of 15 million mt per year, making it the second-largest uranium mine in the world. Bannerman resources Etango mine and Valencia Resources Norasa project are also hopeful additions to the national yield.

There are two uranium mines currently in operation—Rio Tinto's Rossing Uranium and Paladin Energy's Langer Heinrich—that together produce over 6 mil-



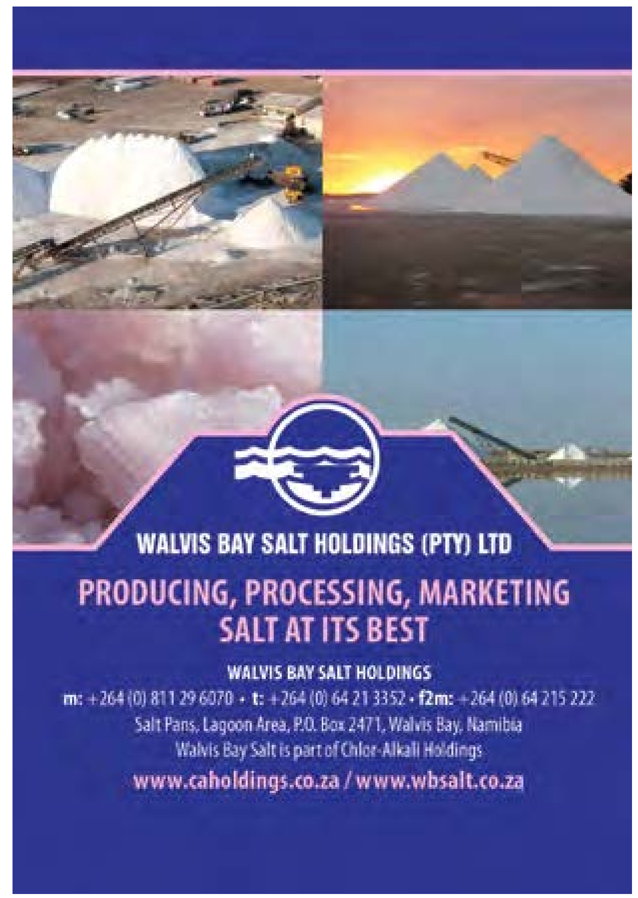
lion pounds of uranium in 2014; however, both have reduced output in 2015. Areva Resources' Trekkopje mine was mothballed in July 2013, and is waiting until uranium prices recover. Hilfa Mbako, country manager for Areva Resources Namibia and the new Namibian Uranium Association's president, is confident that they are soon to receive instructions to bring the mine back online from global headquarters: "The Trekkopje project is only 85% completed; therefore, we are positive that the MAXI—the larger plant—will be completed in due time." Mbako notes that the uranium price is only one-seventh of what it should be, but the prices will soon rise and he expects to be digging again in about a year.
As described by Rio Tinto's Rossing Uranium's managing director Werner Duvenhage, the drop in the uranium price is a result of oversupply on the spot market, and in 2014, Rossing Uranium made the decision to solely deliver into long-term contracts. "There is a significant difference between spot and term-market prices, and, as long as you put products into the spot market, you are actually making circumstances worse," explains Duvenhage. Spot prices for 2015 have averaged $37 per pound, while term prices averaged at $46.50. Due to restructuring, it will take time for production levels to increase again to that of 2013, which was over 2,400 mt.
Rossing has since rehired 92 people from the large retrenchment of 2014, and has adopted an Integrated Productivity Model of operation. Employees are challenged to create cash generation initiatives that will reduce costs, which Duvenhage says has greatly worked as both an empowerment tool and an efficiency mechanism: "One innovation in 2015 came from our blasting team through the use of gasbags…as you do not need to fill the hole to the bottom, there is much less blasting material needed to get the same job done." The year was not without its challenges, however, as there was a massive fire at the final product recovery plant, an unanticipated burden to the bottom line. The plant is now up and running with the repair of the two damaged roasters.
Reptile Uranium, the operating subsidiary of Australia's Deep Yellow, is currently waiting for test results on their Paleochannels geophysical analysis. Of all their concessions, this deposit is thought to have the highest grade, and Reptile plans to utilize the resource to produce an intermediate product. "Assuming the results are positive, it is a low capital expenditure and low operational expenditure entry into operation and will more readily generate cash flow to sustain the business. We have three projects—two of which can be combined, Omahala and Tuba Sands—but the paleochannel resource appears extensive. The exploration work needs to match that, but based on the work we have done with independent consultants, there is huge potential," says Greg Cochran, managing director of Deep Yellow. So far, Reptile has been operating as a small-scale start up to generate cash flow.

Gold

Gold was first discovered in Namibia in 1899, but mining was abandoned in due to low grades. The Navachab gold mine, situated in the Erongo Region, has the longest history in Namibia, and was acquired by QKR from AngloGold Ashanti in 2014. Namibia's second gold mine, B2Gold's Otjikoto mine, was inaugurated in June 2015. By the end of the third quarter in 2015, the mine produced 106,349 ounces (oz) of gold, selling at $1,100 per oz, and is one of the lowest cost gold producers in the world.
In August 2015, B2Gold completed their mill expansion project, with the intent of increasing output from 3 million mt per year. Milling will be strategically maneuvered as to not reduce the life of mine, but tonnage has since increased to about 400 mt per hour. Though the grade of the ore is slightly below expected, "B2Gold Namibia has a much higher recovery than intended. We cannot control the grade in the ground, but we can control the efficiency in which we extract the ore," says Mark Dawe, the new country manager of B2Gold Namibia.
Despite low commodity prices, B2Gold is not cutting costs towards corporate social responsibility and invested $1 million into giving back to the community in 2015. This figure is set to increase to $1.5 million in 2016. "We also have an education center in alliance with the Ministry of Education that stimulates kids' intellectual drive and improves the scholastic achievement rate in the region," explains Dawe. The facility has already serviced over 500 children, and, with the addition of accommodation, over 1,000 children can participate in B2Gold's programs next year. Though these initiatives are not a requirement, Dawe feels that there are systems in place to ensure local citizens prevail: "The government has done a great job in controlling the mineral resources and assuring the whole country benefits from each mining operation, and I would like to see B2Gold's name on at least one more mine in Namibia."

Other Important Minerals

There are many positive developments across the minerals spectrum. Lodestone Namibia recently received its mining license to develop the Dordabis iron ore project, Craton Mining & Exploration received a mining license for the Omitiomire copper oxide project, and the Tschudi copper mine, owned by copper producer Weatherly International, is due to produce 17,000 mt/y by 2017. Vedanta Resources is also extending the life of its Skorpion Zinc mine by two years, and Rosh Pinah has been experiencing better recovery rates for both zinc and lead.
Weatherly recently announced an update on their copper ore reserves, of 24.4 Mt, at the Tschudi Copper Project. Unit costs have been cut by 9% and productivity has increased by nearly



"Weatherly's Tschudi mine] had an initial market price of $150 million. LogiMan was able to fix the price at 50% of that tag, lowering the cost to $70 million. We executed the project six weeks ahead of schedule, and entirely on budget."

- Krzysztof Szymczak, Managing Director, LogiMan

40%, with 8,000 mt already mined. "The baseline was to move 650,000 cubic meters of ore per month by June 2015, but by April of that year we were already moving 700,000 cubic meters," explains Khathutshelo Mapasa, Basil Read's mining executive officer, "Since November we have been moving 800,000 cubic meters per month." Basil Read specializes in asset optimization, helping clients achieve more with less. With the Tschudi mine reaching commercial production this past October, Weatherly has reported an 18% rise in revenue for the previous financial year.

Gecko, a multi-disciplinary service provider and Namibia's largest drilling company, is signing final approvals to take over the Okorusu mine, located less than 50 km north of Otjiwarango. This site is part of an alkaline igneous-carbonite dike complex and has been exploited since the 1920s. Gecko created a new metallurgical laboratory for in-house analytical needs and research and development, which will now be relocated to their newly acquired operation. "We hope competition approvals will be completed by March 2016, and plan to produce a number of products from this operation, including magnetite and aggregates," affirms Pine Van Wyk, managing director of Gecko Namibia. Gecko holds licenses for many industrial minerals and has the capacity to operate internationally.

Walvis Bay Salt Refiners, the largest producer of solar sea salt in sub-Saharan Africa, is investing in a new wash system to increase quality at its plant. "Walvis Bay Salt Refiners would also like to diversify into new products, which translates to beneficiation," states Andre Snyman, the company's managing director. Beneficiation remains a prominent topic of discussion, but there have yet to be sizable advancements in that regard. The Joint Value Addition Committee was constructed in 2013, and the government has since announced the downstream value addition potential for a multitude of minerals, none of which are legally regulated.

Regulatory Framework & Taxes

The government of Namibia and the Chamber of Mines strongly desire foreign investment into the country, and thus far they have ensured and solidified many incentives. Four years ago, new tax proposals from the Minister of Finance were brought into public discussion, but the Chamber of Mines proved that the new proposals were detrimental to the mining industry and thus rejected them. "The Namibian government is open to listening and reasoning with the mining industry," explains Veston Malango, CEO of the Chamber of Mines, "[which is why] the investment climate and the taxation regime in Namibia has remained competitive."

That being said, where there is definite change is with Black Economic Empowerment. Until recently, the government was not particularly concerned about the structure of mining companies but it is now becoming more prescriptive of company requirements, which in turn is making investors hesitant to invest in the country. The New Equitable Economic Empowerment Framework (NEEEF) document seems to be the foundation of where Namibia is headed. The NEEEF follows the same principles and five empowerment pillars of South Africa's BEE, the only difference being the weight of the locally required percentage.

Presently, the greatest blunder in policy is in relation to the acquisition of environmental clearance licenses. The Environmental Management Act's most recent amendments were enacted in 2012, and there are still kinks that need to be straightened out. For example, there are no explicit procedures for the process of certificate renewal. In addition, now the Ministry of Mines and Energy cannot issue a mining license before obtaining an environmental clearance certificate, which is usually completed in the reverse order. "There is a misunderstanding as to the true state of affairs, but we are seeing improvement. New legislation takes time, and this is the first general environmental legislation to govern Namibia," states Hugo Meyer van den Berg, partner at Koep & Partners.

Meyer van den Berg also assures that there will be more involvement of Epangelo, the state-owned mining company, and a more active presence of government in all mining projects. Diamonds, copper, gold, uranium and rare earths have been defined by the Namibian government as strategic minerals and, therefore, any new project aiming to mine these minerals must be undertaken through a joint venture with Epangelo.

Mining taxes in Namibia are steeper than any other industry, which is why the reduction of the withholding tax rate from 25% to 10% in 2014 was a needed relief. Mining income tax is set at a rate of 37.5%, which is added to the flat rate royalty, which varies between 2% and 5%. For ordinary taxes, one could already be at 42.5%. If export levies and other indirect taxes linked to a company are added, tax rates become even more significant. The Chamber of Mines anticipates that outstanding tax amendment bills, including the Export Levy Bill, will soon be tabled in Parliament with favorable outcomes. "The mining industry has brought in a significant amount of foreign direct investment, but if that withers, Namibia is going to struggle to maintain a GDP level of 6%," confirms Robert Grant, senior partner of KPMG. Namibia needs to start implementing the proper alterations under the surveillance of the private sector if it hopes to sustain the same levels of growth.

Infrastructure

Namibia's National Development Plan Four stresses logistics and distributional development as key priorities for the coming years, and in February 2015, the government finalized an actionable outline as to how they will make Namibia the logistical hub for the Southern Africa region. Part of this plan is the Walvis Bay expansion project, which will create a new island from reclaimed land to double container capacity at the port to 650,000 twenty-foot equivalent unit. The terminal will cover 40 hectares and have a quay length of 2,100 m. Burmeister & Partners, a locally owned consulting and engineering company, is currently involved in assuring the success of the project. Ronald Kubas, managing director of Burmeister & Partners, says "I expect that public spending on infrastructure will only get stronger, and there is an additional harbor to be developed that is currently accepting bids for feasibility studies." Burmeister & Partners has also serviced Weatherly, Rossing Uranium, and Namdeb in the past.

In the current market environment, transport options are reduced to the single least expensive one, incentivizing the need for further infrastructural investment nationwide, but especially at Namibia's ports. Johny Smith, CEO of the Walvis Bay Corridor Group (WBCG), explains that running a successful port is not simply pushing through cargo, but rather establishing partnerships and helping to reduce costs throughout the supply chain (i.e. reducing the time it takes to cross borders): "Our long-term approach is to convince more international trading operatives that Walvis Bay's cost, safety, security and ease of doing business benefits are ideal for sustainable transactions." In 2014, WBCG established a new link between Walvis Bay and Houston, Texas in the United States, and is now looking at new options for connections to Europe.

Security of uninterrupted power and water supplies remains a major concern for the industry, with increasing costs for both. Electricity tariffs are arguably increasing above the Namibian consumer price index, and looming drought is of utmost concern. NamWater is trying to raise around N$1.5 billion (roughly $97 million) for refurbishment, and there are talks of the government's intent to purchase Areva Resources' desalination plant. A large pipeline is under construction along the main road from Swakopmund to Windhoek, which is an indicator that the government is, in fact, interested. Areva Resources built sub-Saharan Africa's first desalination plant to source the first phase of their operations and accommodate NamWater. "Currently NamWater buys and sells water from our plant to supply other mines in the surrounding area—such as Rossing Uranium, Langer Heinrich etc. We are situated in a desert, and the region is quite thirsty," says Mbako.

Namibia currently sources most of its power from Zambia, Zimbabwe, and South Africa; however, all state-owned enterprises across the region are struggling to meet demand. NamPower has a short-term, 250-megawatts (MW), gas-powered generation plan that will take affect by the end of 2016. The Kudu gas-powered project continues to struggle in getting started, with a needed investment of more than N$10 billion (roughly $647 million), but the Baynes hydropower project, at 600 MW, is another potential provider, which will share power between Angola and Namibia.

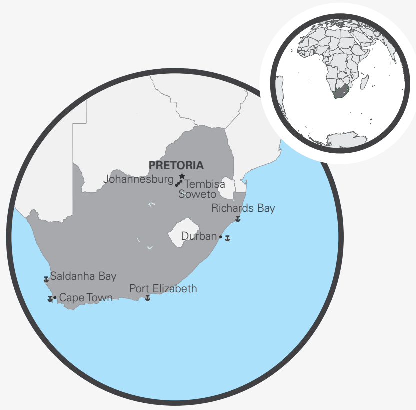
Conclusion

Mining will continue to be the backbone of Namibia's economy, in spite of challenging commodity prices. Beneficiation, though the addition of processing plants and smelters, and transportation and power based infrastructural advancements are the most pressing topics for the industry at hand. As the private sector urges government to invest further in these logistical and value-adding initiatives, all are watching to see if Namibia remains Africa's top investment destination for the years to come. •

SOUTH AFRICA

South Africa has long been the African continent's dominant political and economic power, although in recent years its rate of growth has not kept pace with some of its continental peers (despite its membership of the BRICS). Nonetheless, it maintains an edge. Its mineral industry is one of the strongest in the world: it is the top or one of the top global producers of platinum, vermiculite, chromium, palladium, zirconium, vanadium, rutile, ilmenite, manganese, and gold, along with production of many others.

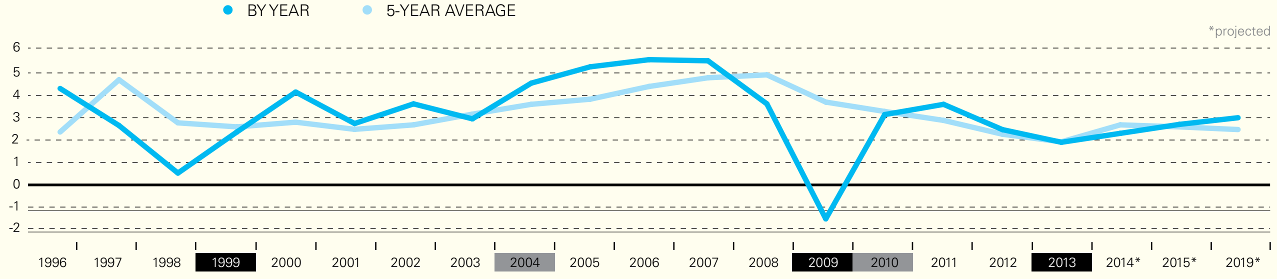
SOURCE: CIA WORLD FACTBOOK



Population: 53,675,563
Land Area: 1,214,470 sq km
Official Language(s): IsiZulu, IsiXhosa, Afrikaans, Sepedi, English, Setswana, Sesotho, Xitsonga, siSwati, Tshivenda, isiNdebele
Capital: Pretoria (executive), Bloemfontein (judicial), Cape Town (legislative)
Chief of State: President Jacob Zuma (since May 2009)
Head of Government: President Jacob Zuma (since May 2009)
GDP (PPP): $707.1 billion (2014 est.)
Growth Rate: 1.5% (2014 est)
GDP per Capita: $13,100 (2014 est.)
Economic Sector Breakdown: agriculture: 2.5%, industry: 29.5%, services: 68% (2013 est)
Exports: $92.54 billion (2014 est.): gold, diamonds, platinum, other metals and minerals, machinery and equipment
Imports: $98.87 billion (2014 est.): machinery and equipment, chemicals, petroleum products, scientific instruments, foodstuffs
Major Trade Partners: China, Germany Saudi Arabia, United States, Japan, Nigeria

GDP GROWTH (%)

WORLD BANK, IMF, BBC



Thabo Mbeki of the ANC wins the 199 elections, with 66% of the vote and 244 seats in the National Assembly.

Mbeki is reelected with 70% of the vote, and the ANC wins 279 seats in the National Assembly (out of 400).

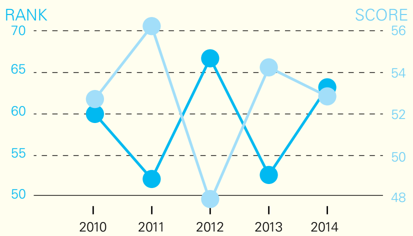
Jacob Zuma of the ANC replaces Mbeki as the ANC's candidate and wins 66% of the vote to become president.

South Africa becomes the fifth member of the BRICS. South Africa hosts the 2010 FIFA World Cup, the first time it is hosted in Africa.

A number of labour disputes and strikes affect a number of sectors, including mining.

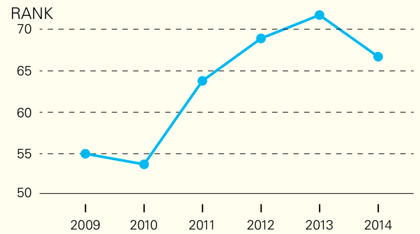
FRASER INSTITUTE INVESTMENT ATTRACTIVENESS INDEX

SOURCE: FRASER INSTITUTE



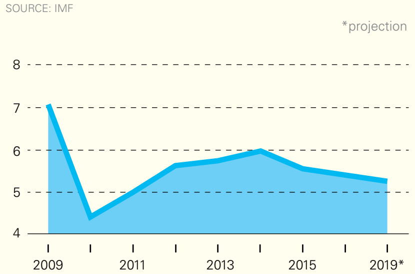
TRANSPARENCY INTERNATIONAL CORRUPTION PERCEPTIONS INDEX

SOURCE: TRANSPARENCY INTERNATIONAL



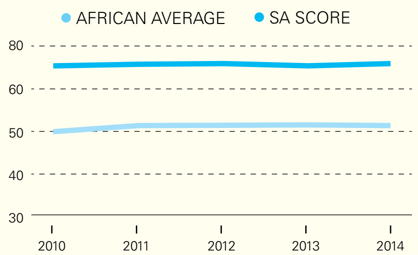
INFLATION

SOURCE: IMF



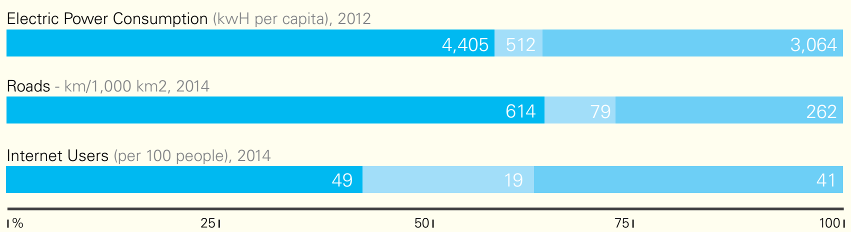
IBRAHIM INDEX OF AFRICAN GOVERNANCE

SOURCE: MO IBRAHIM FOUNDATION



INFRASTRUCTURE INDICATORS

SOURCE: UIC, IEA, CIA WORLD FACTBOOK



MINERAL PRODUCTION (2013)

SOURCE: BRITISH GEOLOGICAL SURVEY

Aluminium	822,000 mt
Antinomy	2,332 mt
Attapulgite	21,233 mt
Bentonite	177,187 mt
Chrome	13,644,699 mt
Chromium	3,621,283 mt
Cobalt	1,294 mt
Copper	80,821 mt
Diamonds	8,168,113 ct
Feldspar	191,443 mt
Ferro-alloys	4,196,000 mt
Fluorspar	180,000 mt
Gold	159,724 kg
Gypsum	559,443 mt
Iron Ore	71,543,088 mt
Kaolin	22,295 mt
Lead	41,848 mt
Limenite	1,120,000 mt
Magnesite	80,000 mt
Manganese	10,952,000 mt
Mica	309 mt
Nickel	51,208 mt
Paladium	76,008 kg
Perlite	400 mt
PGM (other)	51,156 kg
Phosphate Rock	2,131,854 mt
Platinum	137,024 kg
Pyrophyllite	17,336 mt
Rutile	130,000 mt
Salt	479,024 mt
Sillimante Minerals	270,000 mt
Silver	68,777 kg
Steel	7,254,000 mt
Talc	4,924 mt
Uranium	531 mt
Vermiculite	127,658 mt
Zinc	30,145 mt
Zirconium	292,000 mt

Hon. Godfrey Oliphant MP

Deputy Minister of Mineral Resources
Republic of South Africa

South Africa is continually one of the world's largest producers of manganese, chrome, and platinum. Which government policies would you attribute to South Africa's success?

Firstly, the new law that South Africa implemented in 2004, the Mineral and Petroleum Resources Development Act (MPRDA). South Africa had about 800 mines and quarries before the law, but today it has 1,700 mines and quarries. Secondly, South Africa's success story cannot be told without mentioning the institutions that have been supporting the industry for many years, such as the Council for Geoscience (CGS), which is over 100 years old. The CGS is credited for geo-mapping the country, and right now we are trying to increase the image resolution to ascertain mineral quality as well as quantity. Thirdly, we have a legal framework that is supported by the stability of South Africa's democratic government and ensures investor certainty. We are in the process of strengthening the MPRDA further with amendments. Otherwise, South Africa's potency lies in its experience and remarkable geology. South Africa is said to be the richest country in the world in regards to mineral value, and that excludes energy minerals.

What is the government doing to combat environmental degradation and adverse health affects associated with mining?

In 1994, South Africa strengthened its environmental laws, but the prior laws were unfortunately very lax. The legacy that we are sitting on of environmental damage is of over 100 years of mining without regard to the environment, so the government is left with a substantial liability. Many companies leave money in guarantees and trusts for rehabilitation, but the government is encouraging concurrent rehabilitation. Companies do not need to wait 30 years after closure to access and restore; it must be done as you go. Australia is a model with its efficient and effective methods of capitalizing on resources while preserving areas, and South Africa is learning to develop solutions that prioritize both the environment and production levels, as they are not mutually exclusive. South Africa has about 6,000 derelict and ownerless mines to take care of, some of which are lain with illegal gold-mining activity.

In regards to the human factor, many people are suffering from asbestosis, TB, and silicosis from mine and gold dust. The government is tracking and tracing ex-mine workers within and around our borders—including Lesotho, Botswana, Mozambique and Swaziland, which have been major labor-sending areas. A few years ago, the government began running special clinics, one-stop centers, for ex-mine workers to be properly diagnosed and treated. Symptoms can become active twenty years after leaving a gold mine, for instance, and these clinics were established to ensure those people are supported with doctors who can properly identify the problem.

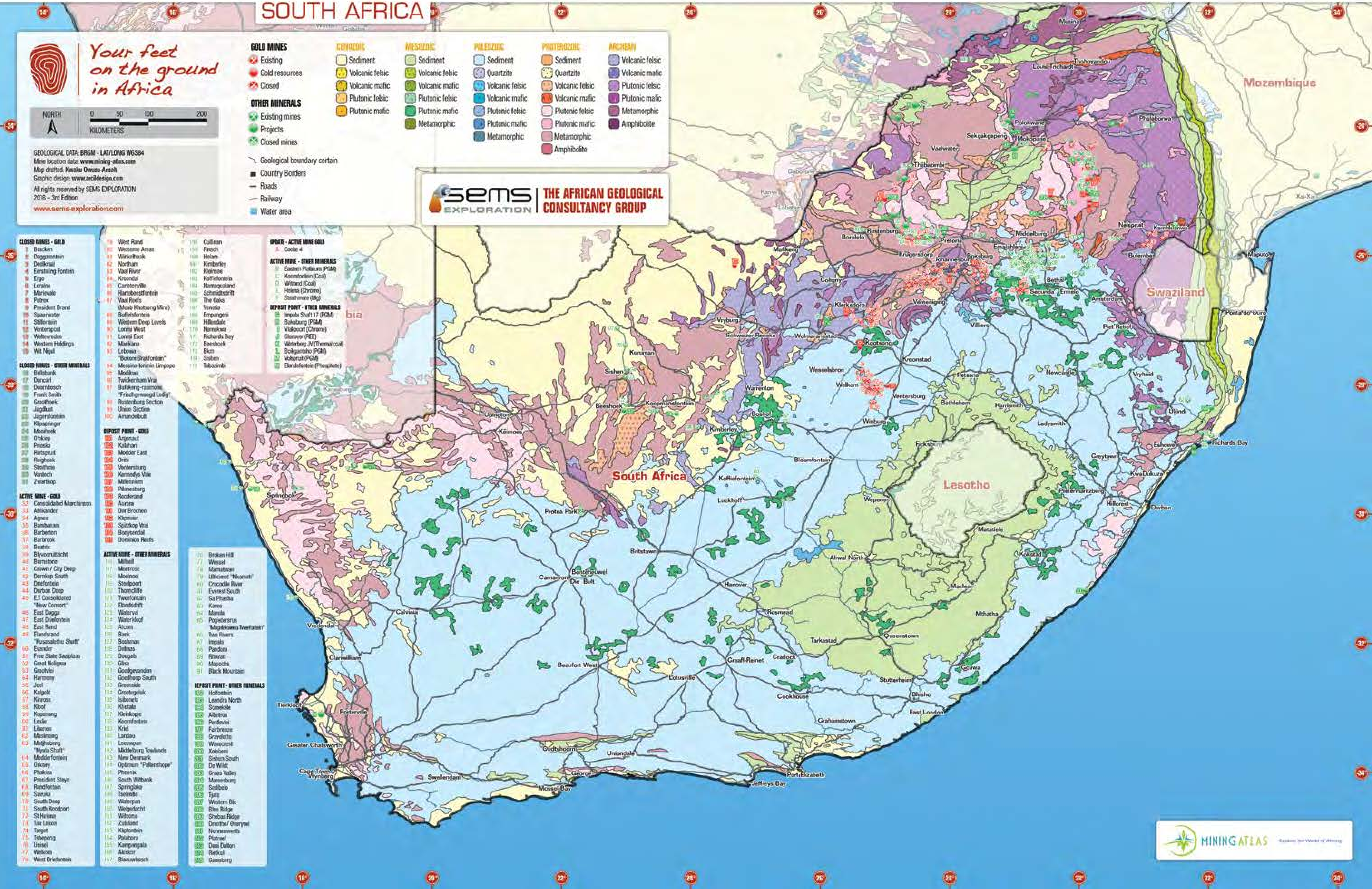
The media tends to focus on negative aspects of South Africa's mining industry. What positive aspects have the media been ignoring?

South Africa has a very solid structure for mining, but it is not without its weaknesses. The government still needs to ensure that mineworkers are getting a fair share for their labor, which is why we are looking into minimum wage for the country. The same applies to the communities surrounding the operations, as you cannot have a sea of poverty with an island of wealth. Those in the peripherals of the mine should also have access to water and electricity, which are issues that need resolving. But the government is not leaving that to the mining companies, as we too are putting in financial assistance of nearly 2 billion rand to work with stakeholders and improve mining towns. We are also investing in infrastructure, with improving roads, rail, electricity etc.

Investors are particularly wary of the MPRDA review surrounding the "once empowered, always empowered" sentiment and BEE stakeholders backing out of partnerships. How does the government envision resolving this tension?

The MPRDA stipulates that companies must have 26% BEE equity at any mine. Those that have abided by the law and undergone good transactions are not complaining. There are some companies that originally received authorization in 2004 on the basis that by 2014 they would have achieved 26%, and issues lie with those that have been unsuccessful in that regard, and they have all received letters to that effect. The companies that have been most successful are those that gave their workers ESOP shares and trusts, and the government is encouraging that route. But ultimately it is a commercial transaction. How companies decide to sell is entirely up to them. The only requirement is an end result of 26%. We are refining in some aspects, for example, it is acceptable to have less than 26% if you are offsetting against beneficiation. In that sense the government is broadening the scope of BEE, and South Africa is moving forward.

Mining investors can enter South Africa with confidence, as all of the value chains in place. We are champions of the African Mining Vision, and our attitude is forward ever, backwards never. Africa is growing in leaps and bounds into the future, and we encourage investment across the entire region. It was once said that Africa is the "dark continent", and our goal is to light it up. •



SOUTH AFRICA
Your feet on the ground in Africa
NORTH
0 50 100 200
KILOMETERS
GEOLOGICAL DATA: BRGM - LAT/LONG WGS84
Mine location data: www.mining-atlas.com
Map drafted: Kwaku Owusu-Ansah
Graphic design: www.acildesign.com
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Existing
Gold resources
Closed
OTHER MINERALS
Existing mines
Projects
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Geological boundary certain
Country Borders
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Railway
Water area
CENOZOIC
Sediment
Volcanic felsic
Volcanic mafic
Plutonic felsic
Plutonic mafic
MESOZOIC
Sediment
Volcanic felsic
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Plutonic mafic
Metamorphic
Amphibolite
ARCHEAN
Volcanic felsic
Volcanic mafic
Plutonic felsic
Plutonic mafic
Metamorphic
Amphibolite
SEMS EXPLORATION
THE AFRICAN GEOLOGICAL CONSULTANCY GROUP
CLOSED MINES - GOLD
1 Bracken
2 Daggafontein
3 Deelkraal
4 Eersteling Fontein
5 Ergo
6 Loraine
7 Marievale
8 Petrex
9 President Brand
10 Spaarwater
11 Stilfontein
12 Ventersport
13 Weltevreden
14 Western Holdings
15 Wit Nigel
CLOSED MINES - OTHER MINERALS
16 Bellsbank
17 Dancarl
18 Doornbosch
19 Frank Smith
20 Grootboek
21 Jagdlust
22 Jagersfontein
23 Klipspringer
24 Mooihoek
25 O'okiep
26 Prieska
27 Rietspruit
28 Rieghoek
29 Steilhoek
30 Vantech
31 Zwartkop
ACTIVE MINE - GOLD
32 Consolidated Murchison
33 Afrikander
34 Agnes
35 Bambanani
36 Barberton
37 Barbrook
38 Beatrix
39 Blyvooruitzicht
40 Bernstone
41 Crown / City Deep
42 Dornkop South
43 Driefontein
44 Durban Deep
45 E.T. Consolidated "New Consort"
46 East Dagga
47 East Driefontein
48 East Rand
49 Elandsrand "Kusasalethu Shaft"
50 Evander
51 Free State Saaiplaas
52 Great Noligwa
53 Grootvlei
54 Harmony
55 Joel
56 Kalgold
57 Kinross
58 Kloof
59 Kopanang
60 Leslie
61 Libanon
62 Masimong
63 Matjhabeng "Nyala Shaft"
64 Modderfontein
65 Orkney
66 Phakisa
67 President Steyn
68 Randfontein
69 Saeuka
70 South Deep
71 South Roodepoort
72 St Helena
73 Tau Lekoa
74 Target
75 Tshepong
76 Unisel
77 Welkom
78 West Driefontein
79 West Rand
80 Western Areas
81 Winkelhaak
82 Northam
83 Vaal River
84 Kroondal
85 Carletonville
86 Hartebeestfontein
87 Vaal Reefs (Moab Khotseng Mine)
88 Buffelsfontein
89 Western Deep Levels
90 Lonmin West
91 Lonmin East
92 Marikana
93 Lebowa "Bokoni Brakfontein"
94 Messina-lonmin Limpopo
95 Modikwa
96 Twickenham Vrai
97 Bafokeng-rasimone "Frischgewaagd Ledig"
98 Rustenburg Section
99 Union Section
100 Amandelbult
DEPOSIT POINT - GOLD
Argonaut
Kalahari
Modder East
Orbi
Ventersburg
Kennedys Vale
Millennium
Pilanesburg
Rooderand
Aurora
Der Brochen
Klipmier
Spitzkop Vrai
Booysendal
Dominion Reefs
ACTIVE MINE - OTHER MINERALS
Millsell
Montrose
Moelnooi
Steelpoort
Thorncliffe
Tweefontain
Elandsdrift
Waterval
Waterkloof
Alcorn
Bank
Boshoek
Delmas
Dougals
Glisa
Goedgevonden
Goedhoop South
Greenside
Grootegeluk
Isibonelo
Khutala
Kleinkopje
Koornfontein
Kriel
Landau
Leeuwpan
Middelburg Towlands
New Denmark
Optimum "Pullenshope"
Phoenix
South Witbank
Springlake
Tselentis
Waterpan
Welgedacht
Witcons
Zululand
Klipfontein
Palabora
Kampengala
Alexkor
Blaauwbosch
Cullinan
Fresch
Helam
Kimberley
Klansoe
Koffiefontein
Namaqualand
Schmidtsdrift
The Oaks
Venetia
Empangeni
Hillendale
Namakwa
Richards Bay
Beeshoek
Bkm
Sishen
Tabazimbi
UPDATE - ACTIVE MINE GOLD
Cooke 4
ACTIVE MINE - OTHER MINERALS
Eastern Platinum (PGM)
Koornfontein (Coal)
Witrand (Coal)
Helena (Chrome)
Strathmore (Mg)
DEPOSIT POINT - OTHER MINERALS
Impala Shaft 17 (PGM)
Bokatlang (PGM)
Vlakpoort (Chrome)
Glenover (REE)
Waterberg JV (Thermal coal)
Bokgantsho (PGM)
Volspruit (PGM)
Elandsfontein (Phosphate)
Broken Hill
Wessel
Mamatwan
Ulticoest "Nkomati"
Crocodile River
Everest South
Sa Phasha
Karee
Marula
Pogieterstrus "Mogalakwena Tweefontein"
Two Rivers
Impala
Pandora
Rhovan
Mapocha
Black Mountain
DEPOSIT POINT - OTHER MINERALS
Holfontein
Leandra North
Sumekele
Albetros
Perdevlei
Fairbreeze
Grandeto
Wescorest
Xolobeni
Sishen South
De Wildt
Grass Valley
Mareesburg
Sedibelo
Tjate
Western Bic
Bles Ridge
Shebas Ridge
Dreithe/ Overysel
Nonnenwerth
Platreef
Dani Dalton
Retkal
Gamsberg
Mozambique
Swaziland
Lesotho
South Africa
Musina
Thohoyandou
Louis Trichardt
Polokwane
Mokopane
Phalaborwa
Sekgakgapeng
Vaalwater
Thabazimbi
Rustenburg
Pretoria
Nelspruit
Middelburg
Emalahleni
Krugersdorp
Johannesburg
Boksburg
Bethal
Secunda
Ermelo
Amsterdam
Bulembe
Maputo
Ponta do Ouro
Mafikeng
Borolelo
Coligny
Klerksdorp
Vereeniging
Villiers
Vryburg
Schweizer-Reneke
Wolmaransstad
Kroonstad
Piet Retief
Kuruman
Sishen
Wesselsbron
Welkom
Ventersburg
Petsana
Newcastle
Vryheid
Warrenton
Boshof
Beeshoek
Koopmansfontein
Upington
Keimoes
Kimberley
Winburg
Bethlehem
Harrismith
Ladysmith
Ulundi
Eshowe
Richards Bay
Ficksburg
Bloemfontein
Koffiefontein
Greytown
KwaDukuza
Pietermaritzburg
Hillcrest
Durban
Luckhoff
Springbok
Protea Park
Wepener
Matatiele
Kokstad
Britstown
Aliwal North
Carnarvon
Bontepeuwel
Die Bult
Hanover
Maclear
Mthatha
Calvinia
Vredendal
Rosmead
Tarkastad
Queenstown
Clanwilliam
Beaufort West
Graaff-Reinet
Cradock
Gcuwa
Lotusville
Stutterheim
Bhisho
Tierkloof
Porterville
Cookhouse
East London
Grahamstown
Greater Chatsworth
Oudtshoorn
Uniondale
Cape Town
Wynberg
Swellendam
George
Mossel Bay
Port Elizabeth
Jeffreys Bay
MINING ATLAS

South Africa: Needing a Boost

South Africa's mining sector is in desperate need of a shake up. Recently The Minister of Economic Development, Ebrahim Patel remarked South Africa's mining sector is "in trouble" and former National Union of Mineworkers (NUM) general secretary Frans Baleni said the future of the industry looks scary. These comments are unsurprising given the fall in commodity prices. Moreover, one of South Africa's key trading partners, China, is shifting away from export-led manufacturing and towards greater domestic consumption, as outlined by their 13th Five-Year Plan (2016-2020). Analysts at the South African Institute of International argue that this shift could lead to higher demand for products such as copper and platinum group metals—materials used for technology products such as smartphones and solar panels. Contrarily, prices and demand are likely to further decrease for products in which South Africa is rich, such as coal and iron ore. Country-specific challenges are even more alarming. South Africa grapples with expensive labor, stringent unions, electricity shortages, changes to legislations and lower-grade and deeper mines, which result in costly operations. All of these factors contribute to the volatility of the South African rand, and it will be a challenge to balance economic growth and control inflation.

Mining is one of the most important sectors in the South African economy, contributing approximately 7% to the gross domestic product. Roger Baxter, CEO of the Chamber of Mines of South Africa says: "The sector is smaller than it was in 1994 and currently represents only 10% of the market capitalization of the Johannesburg Stock Exchange, down from a previous 30%." South Africa's dependence on the sector, has thrown the country on the cusp of a recession. Results from the Q3 2015 posted an annualized growth of 0.7%, contracting 1.3% from the three previous months.

Joblessness has reached its peak since 2008 with more than 25% of the population unemployed. Mining is one of the largest industries in South Africa and employed more than 510,000 people in 2014, with platinum group metals accounting for more than 37% of this employment. As a result of South Africa's less than optimal conditions, several mining companies are threatening further retrenchments, a fate South Africa can not afford. To date, a dramatic decline in production has resulted in more than 23,000 layoffs. Globally, Anglo American's CEO Marc Cutifani said the company is cutting its global workforce by a third, impacting South African operations. Long discussions between the private sector and unions in the platinum and gold sectors have sparked huge debate in South Africa and strikes and labor disputes are hastening the mechanization of mines. South Africa, despite its leading stance in underground mining, has lagged behind in mechanization and automation due to job creation initiatives that counter low unemployment rates. Yet if mines are to survive, they have no choice but to adopt the new technology already deployed elsewhere in the world.

Increasing efficiencies and cost reduction is now the name of the game across the supply chain. "Global commodity prices affect all business in the mining industry, whether you are a supplier or a producer. This is more prevalent now than three or four years ago, but there are still many opportunities because mines are now exploring how to improve efficiencies. Howden has high-quality products, technology, skills and talent that have allowed us to shift our business to address upgrades and modifications and services of mine equipment," explains Thomas Bärwald, CEO of Howden Africa Holdings Ltd. Howden is a leader in mine ventilation and cooling, as well as pollution control equipment in South Africa.

In the short term, however, restructuring will form part of the cost cutting to navigate this downturn. Platinum miners, including Lonmin and Anglo American Platinum, could retrench up to 6,000 and 8,000 workers, respectively. In the gold sector, Harmony Gold and Kumba Iron Ore could face a similar turning point. Coal workers can expect layoffs as Eskom renegotiates its coal contracts with current mining companies. Glencore, an Eskom provider, has provisionally agreed to sell its distressed Optimum Coal Mine for $136 million, which saved nearly 500 jobs. The mine went into business rescue—where one can legally and temporarily delay creditors' claims—in August 2015, as it was selling for below the cost of production. Tegeta Exploration and Resources controls the asset effective January 1, 2016.

The new Minister of Mineral Resources who was appointed in the second half of the year was met with dismay and skepticism from the private sector. Hon. Minister Mosebenzi Zwane certainly faces a tall task. Several imminent issues include the interpretation of the ownership clause in the mining charter and overlapping mining rights. The Mineral and Petroleum Resource Development Act II (MPRDA) and its mining charter was sent back to the national assembly early in 2015, and industry is still awaiting final changes. Policy reform and intelligence gathering concerning South Africa's mineral operations remain important, as the country wishes to move from its historic status as an exporter of cheap raw materials towards a manufacturer and supplier of knowledge-based services. Some advocates argue that downstream beneficiation is a narrow interpretation on how to achieve this goal, and suggest a national emphasis on upstream and horizontal integration. In the meantime, industry still awaits clarity from government.

Despite the mining sector's woes, investors continue to be attracted to South Africa's developed infrastructure and attractive lifestyle. The country has exceptional mineral endowment and several major commodities have the potential to supply far more than world markets can consume. In 2014, South Africa had the world's largest reserves of platinum at 63,000 metric tons (mt), the world's second largest gold reserves at 6,000 mt, and the fourth largest diamond reserves at 70 million carats. Despite the mining sector's decline, mining still contributed 25% of South Africa's exports, provided 1.4 million indirect jobs and brought in 15% of foreign direct investment and 20% of private investment, according to South Africa's Chamber of Mines.

In the short term, South Africa needs to boost agriculture, tourism and manufacturing sectors to mitigate the fallout from the mining sector and in the long term, create favorable policies, foster cohesiveness between unions and the private sector, and invest in new electricity generation. Increasing efficiencies including improving productivity and cutting costs are the only way forward if South Africa is to regain its position as one of the most attractive investment destinations in Africa in the coming years.

The rainbow nation can remain a dominant regional mining player for both mining companies and services, building on its expertise, strong financial sector, and technological innovation, especially in deep underground mining. The South Africa mining industry is one of the country's few world-class industries that can continue to generate wealth and employment opportunities on a large scale. •

A New Cooperative Mineral Economy for South Africa

Claude Baissac,
Managing Director, Eunomix

The news headlines over the past six to 12 months certainly conjure a sense that something ominous is occurring, with their depressing litany of stories about mines being closed, ministers removed, workers furloughed, communities angered, licenses revoked, litigations launched, wage agreements failed, and strikes threatened.

Of course South Africa is not facing the sobering impact of slumping commodity prices alone, but the impact in South Africa does seem to be more pronounced than in other countries.

Industry, government, and labor seem to have increasingly polarized expectations of our mining industry and its role in South Africa: issues around transformation; nationalization and the role of the state; beneficiation; taxation; housing and living conditions; working conditions, productivity and safety; communities and local development; acid waters and pollution; and of course wages. The conflicts abound, heightened by catastrophes like Marikana.

But are these disputes new? Our (Eunomix's) view is that rising commodity prices in fact permitted inherently unsustainable practices and relationships. The boom of the early 2000s allowed companies to absorb dramatic cost increases, taking on ever growing commitments while expanding production on the continuation of the old labor-intensive, migrant-workers model.

Now the party's over and prices have crashed, exposing just how unsustainable the capital expenditure lever truly was. Many stakeholders now feel short-changed – and understandably so. Through a combination of intentional and accidental factors – the Mining Charter and the run for safety that many mining houses and foreign investors started about a decade ago – the country's mining industry has achieved remarkable degrees of local ownership. Those capitalists from London have largely been replaced by large and small shareholders, many of whom are ordinary South Africans – mine workers included, only adding to the immiserating effect of the crisis.

At the same time, mining houses are running out of options to meet these increasing stakeholder demands. Restructuring is one of the most obvious solutions, but the government will continue to resist downsizing. Labor unions, locked in a bitter internecine battle, will not agree to wage deals that fall short of promises they have made. Communities facing widespread poverty, poor services and few economic prospects will continue to expect much.

> "The benefit of this compact is obvious: the prospects of profits motivate investors to underwrite the huge capital investments required."

So with fewer options and raised stakes, shutting down operations entirely, or radically cutting long-term capital expenditures in the hope of better prices appears inevitable. This is a massive threat to the long-term prospects of our mining industry, its shareholders, and other stakeholders.

Luckily, that which we have undone, we can fix. Indeed, this extraordinary crisis has largely been created by the industry's main stakeholders themselves, who have loaded the country's extraordinary endowment with unachievable expectations. A new deal should be possible if all parties accept their fair share of responsibility in the situation as a precursor to finding sustainable outcomes.

South Africa has a solid foundation for this. The Mineral and Petroleum Resources Development Act (MPRDA), for all of its issues, achieved something remarkable: it vests all mineral resources to the people through state custodianship. Mining companies do not own these resources. They are given the right to explore, put them on their balance sheets, mine, process, refine, sell and retain the proceeds therefrom provided they comply with regulation and pay royalties.

The benefit of this compact is obvious: the prospects of profits motivate investors to underwrite the huge capital investments required. Profits act as both the reward for risk without direct government investment and the only sustainable source of mineral rents from which socioeconomic benefits are derived, while legislation ensures that social returns are guaranteed and the public interest is protected.

This spirit of shared custodianship could form a solid basis for designing a new cooperative mineral economy. Such a cooperative mineral economy should seek to maximize benefits for all custodians. It should be led by good economics: an independent, expert valuation of the potential economic wealth based on realistic future prices, followed by identification of the key investments required to unlock this potential – infrastructure, labor, skills and technology. And supported by the answer to a key question: how do we share the risk and returns?

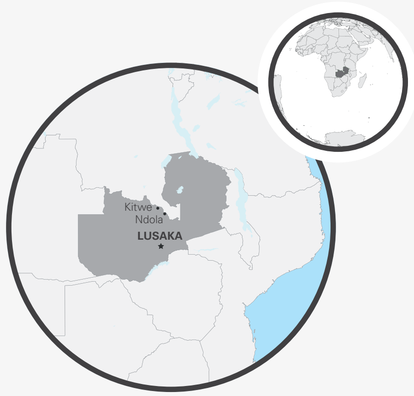
Whatever basis or approach is adopted, it needs to be done collaboratively and it needs to be done fast. The time for talking about the need for a social compact is over. We now just need to get on with it. As Kgalema Motlanthe pointed out in a recent interview, the "industry's current period of desperation is conducive to participants tackling issues with open minds. When you have a desperate situation, you also can't leave anything to tomorrow. It has to be done today." •

Claude Baissac is Managing Director of Eunomix, a consultancy that works on the fundamentals of sustainable growth in resource rich countries

ZAMBIA

After independence from the British, Zambia was ruled by 18 years by the founding president. Since 1991, however, it has established a democratic system. Economically, it has high and stable growth and shows a long-term improvement in business environment indicators. Zambia is one of the world's largest producers of copper and cobalt and is a significant global producer of gemstones. Potential also exists for gold, iron ore, zinc, lead, manganese and nickel.

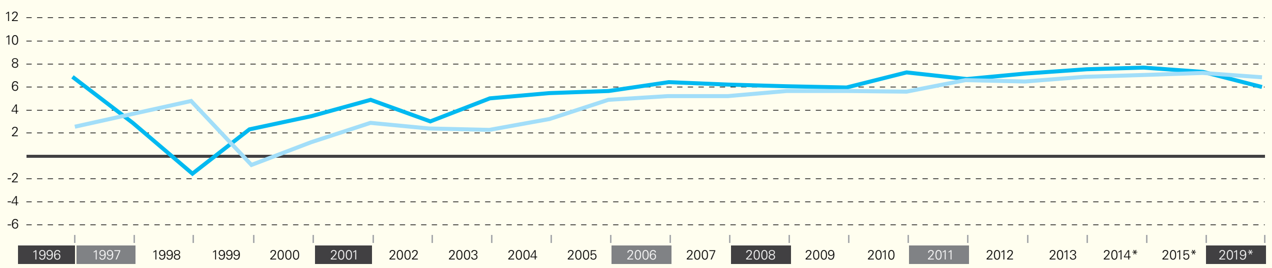
SOURCE: THE AFRICAN RESOURCE



Population: 14,638,505 (July 2014 est)
Land Area: 752,618 sq km
Official Language(s): Bemba, Nyanja, Tonga, Chewa, Lozi, Nsenga, Tumbuka, Lunda, English
Capital: Lusaka
Chief of State: President Edgar Lungu (since 25 January 2015)
Head of Government: President Edgar Lungu (since 25 January 2015)
GDP (PPP): $61.05 billion (2014 est.)
Growth Rate: 5.4% (2014 est)
GDP per Capita: $4,100 (2014 est.)
Economic Sector Breakdown: agriculture: 10.8%, industry: 32.9%, services: 56.3% (2014 est)
Exports: $9.214 billion (2014 est.): copper/cobalt, cobalt, electricity; tobacco, flowers, cotton
Imports: $8.081 billion (2014 est.): machinery, transportation equipment, petroleum products, electricity, fertilizer, foodstuffs, clothing
Major Trade Partners: South Africa, Democratic Republic of Congo, Switzerland, China, Algeria

GDP GROWTH (%)

SOURCE: WORLD BANK, EIU



1996/1997: Elections are boycotted by the main opposition party, UNIP, and Frederick Chiluba of the MMD is reelected.

An attempted coup d'etat fails. 84 people, including former president Kenneth Kaunda, are arrested.

2001: Levy Mwanawasa of the MMD wins the presidential election. The MMD lost parliamentary majority, but regained it in byelections.

2006: Mwanawasa is reelected with 43% of the vote and the MMD win 75 of the 159 national assembly seats.

2008: Mwanawasa died in a Paris hospital and was suceeded by his vice president Rupiah Banda.

2011: 20 years of MMD rule come to an end when Michael Sata of the Patriotic Front wins the 2011 elections.

2019*: Edgar Lungu becomes president winning election.

STATUS OF THE MINING CODE

SOURCE: GLOBAL BUSINESS REPORTS

Corporate Income Tax Rate	30%
Royalties (Open Pit)	9%
Royalties (Underground)	6%

MINE PRODUCTION (2013)

SOURCE: BRITISH GEOLOGICAL SURVEY

Beryl	2 mt
Cobalt	6,389 mt
Copper	763,805 mt
Gold	5,207 kg
Refined Lead	2000 mt

MINING SECTOR CONTRIBUTION TO GDP

SOURCE: AFRICAN ECONOMIC OUTLOOK

2009 **9.3%** 2014 **7.0%**

FOREIGN DIRECT INVESTMENT

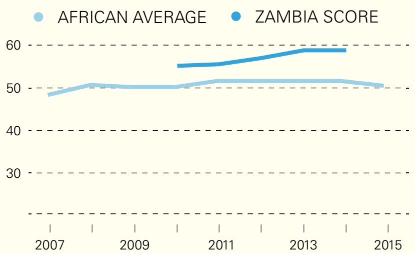
SOURCE: UNCTAD

FDI, $ millions

2013 **1,810** 2014 **2,484**

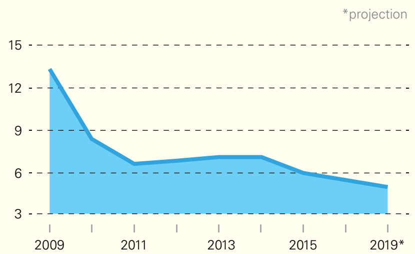
IBRAHIM INDEX OF AFRICAN GOVERNANCE

SOURCE: MO IBRAHIM FOUNDATION



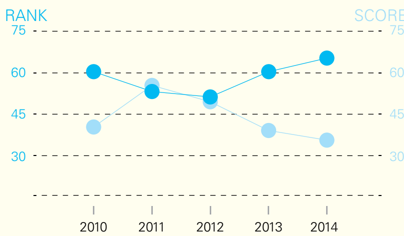
INFLATION

SOURCE: IMF



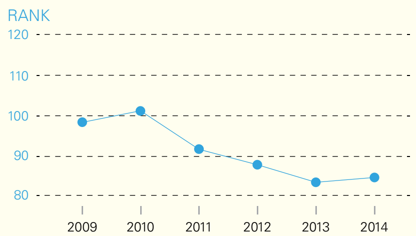
FRASER INSTITUTE INVESTMENT ATTRACTIVENESS INDEX

SOURCE: FRASER INSTITUTE



TRANSPARENCY INTERNATIONAL CORRUPTION PERCEPTIONS INDEX

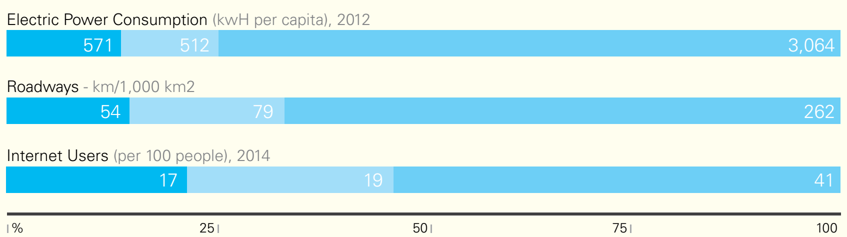
SOURCE: TRANSPARENCY INTERNATIONAL



INFRASTRUCTURE INDICATORS

SOURCE: UIC, IEA, CIA WORLD FACTBOOK

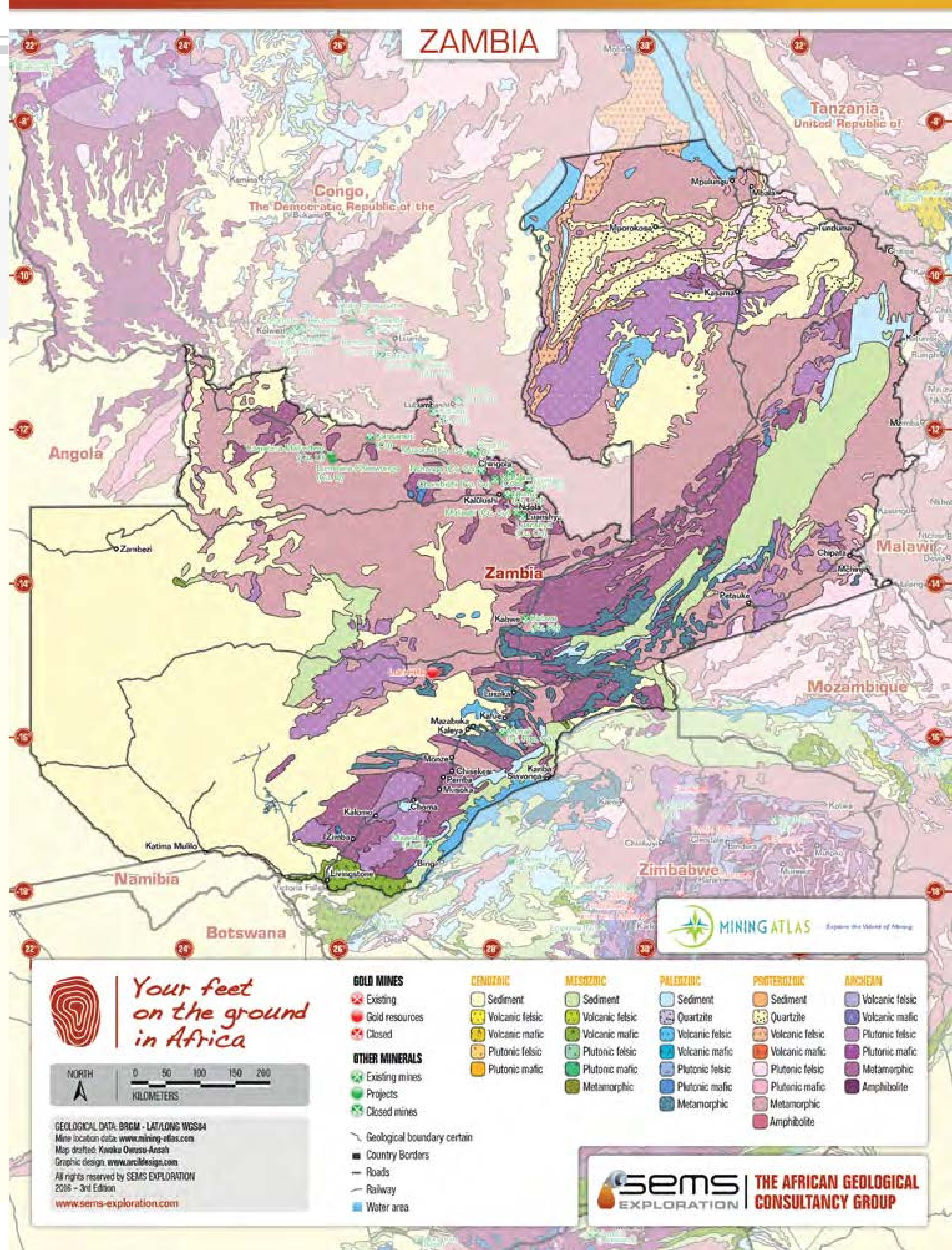
ZAMBIA SUB-SAHARAN AFRICA WORLD



BUSINESS ENVIRONMENT RANKING IN AFRICA (OUT OF 47)

SOURCE: WORLD BANK

	2015
Ease of Doing Business	6
Starting a Business	8
Dealing with Construction Permits	14
Getting Electricity	11
Registering Property	32



Hon. Christopher Yaluma

Minister
Ministry of Mines, Energy & Water Development
Republic of Zambia

Zambia's mining operations have been predominantly focused on the Copperbelt region, but due to its abundance of mineral wealth, the country is diversifying its focus. What else does the ministry hope to develop?
Zambia has been mining copper for over eight years, and the ministry realizes that this will eventually be a diminishing asset. The long list of minerals resident in Zambian soil includes nickel, iron, uranium, precious stones, vast deposits of manganese, and gold. Diversification is still in the exploration stage, as aeronautical surveys from border to border will ensure that we have the best data for interpretation. Surveys will be completed before the close of 2016. We will fly over current operations to ensure that nothing was missed. The ministry recognizes that investors are looking for accurate and up to date information, and we aim to ease their decision-making.

Zambia still has tracks of copper that are quite good, with a variety of grades, and our attention has shifted to the northwest. There lies what I believe to be the new copper belt of Zambia. Mining development is picking up in the northwest, not only in regards to copper, but amethyst, emeralds, and aquamarines as well. Zambia intends to diversify and venture where we have not ventured before.

How is the government working to keep mines operating in spite of low commodity prices and nuanced power problems?
Earlier in 2015, the ministry sat down with the miners to discuss the terms of royalty rates, and we truthfully negotiated a final decision. There was uncertainty in the regulation, which slowed production for a period, but we are now on agreeable terms and striding forward. Next year, we aim to outperform the DRC, as Kansanshi and Kalumbila, have just been commissioned. Zambia is ready to show our superiority when it comes to mining.
Power problems have been serious as mother nature, and climate change, left us with low water levels in the Zambezi river basin. The Kariba hydropower plant has about three to four months left of power generation, and we are working to prolong that period. Regulations and restrictions of water inflow into the turbines have been put in place, as full generation would dry up the basin completely. Zambia is importing 100 megawatts (MW) from Mozambique, another 148 MW from a gas-powered private producer, and from the power ship that docks in Mozambique in January. There is certainly a plan in place for the short-term, and the long-term solution is solidifying.

What does the long-term power generation plan encompass, and when will miners reap its benefits?
Zambia's coal-fired power station, Maamba Collieries, was just completed and will provide an additional 200 MW. EMCO unit's coal fired plant will be in commission two years from now. The Itezhi Tezhi hydropower station is expected to come online sometime this year, but due to the anticipated water problems it will likely yield 50% of the previously projected output, translating to about 50 MW. Zambia has other large hydropower projects that have been in operation for years, and hopefully we receive enough rain over the next three years to fill those basins. Regardless, the ministry is in the advanced stage of investing in solar powered farms, which should provide an additional 1,200 MW by the end of October 2016. Some companies are also looking into Zambia's wind patterns as well to see what kind of power that could yield. Needless to say, we are not leaving any stone unturned.
At present, the mining industry has not been restricted on power usage. The government is in full understanding that the mining plays a large role in our national economy. Each operation has submitted their needs, and whatever power is in excess that the government needs to import will be charged at a premium in order to share the cost burden. Discussions regarding this procedure were all positive, and miners have welcomed the idea.

Along with power stabilization, what developments can we expect from Zambia in the coming years?
We are highly cognizant that investors predict performance based on policies and fiscal frameworks, and we do not intend to destabilize their planning. Thus, a primary goal of our government is to provide steady legislation. Our meetings with mining industry players have fostered an open- dialogue environment that will surely aid in avoiding consistency issues. Within the next few years, the mining sector will have performed beyond what anyone could have projected. There has been hardship, but after sorting out our issues Zambia has already seen production increase. The ministry is opening up discussions concerning the budget for next year, which has not been done before, and we are certain this will have a positive impact on output. The foundation for the mining industry is very fertile, and I can guarantee growth more sizeable than anything that has been done over the past three years. •

Zambia: A Nation with Copper Foundations

Well known for its political stability and its prodigious wealth of minerals, Zambia has recently shocked investors by implementing a shakeup of the tax system.

The history of modern Zambia is intricately linked to the copper beneath its soil. The British South Africa Company was first drawn to the area around today's Copperbelt province in the 1890s by reports of the intricate copper jewellery and ornaments fashioned by the local people. The company immediately set about extracting the metal from the ground while the British government entered into negotiations with the Belgians to delineate a northern border with the Congo.
One story has it that it was a dispute between the British and the Belgians over rights to copper that gave Zambia its distinctive curl shape, with the DRC's Katanga Province protruding rudely into the Copperbelt. The British set out their preferred borders by marking a straight line of trees with blue paint, allotting themselves the lion's share of the deposits. During the night the Belgians drew up their own borders with more permanent beacons dug into the ground. When the British miners protested, the Belgians shrugged their shoulders, claiming that there was no evidence of any prior demarcation; all the trees had been mysteriously cut down.
Despite these squabbles, present-day Zambia plays host to some of the world's richest copper reserves. Almost uniquely in Southern Africa, the country has remained entirely free of conflict and civil war throughout its 51 years of independence. Given such a long track record of stability the past year has been uniquely tumultuous for the usually tranquil nation. The sudden death of President Michael Sata in October 2014 triggered an unplanned general election, which ushered in new leader Edgar Chagwa-Lungu.

> **"Zambia's economy revolves around the mining industry, so any issue that damages the mines' profitability indirectly affects a huge chain of other businesses."**
>
> **- Shaun McCann, Operations Director, JVChantete**

However, for the miners the upheaval began before Sata's demise, when his government voted to bring in a new tax regime, removing corporation tax but increasing royalty payments to 20% for open pit mines and 9% for underground operations. The move angered the mining houses and came perilously close to provoking the exit of one of the country's largest investors. Fortunately, the new government pledged to repeal the legislation and, as of July 2015, a less draconian system of taxation now governs the sector.
While an unplanned – though commendably transparent – general election and an unpopular tax code are problems that would be the envy of many less developed nations, the ramifications were severe. As Shaun McCann, operations director for JVChantete, points out, "Zambia's economy revolves around the mining industry, so any issue that damages the mines' profitability indirectly affects a huge chain of other businesses."
At a macroeconomic level, the country is facing some difficulties. Having weathered the storm of low commodity prices

→ 70

Image: Miners at Nkana refinery.

67 ←

for three years, Glencore, the country's largest miner, announced that it would be suspending operations at Mopani Copper Mines. Following this news, Moody's announced that it was downgrading the country's credit rating and the Kwacha entered a rapid decline.

Nevertheless, the outlook for Zambia is not entirely gloomy: protectionist regulations limiting local companies' ability to carry out transactions in foreign currencies were revoked and new mining operations are coming online. Notable among these is First Quantum's Trident complex in Kalumbila. The dual project comprises a copper mine and a nickel operation and has a nameplate capacity of 300,000 mt/y copper cathode, which has the potential to increase the country's total production up to 1 million mt/y over the next year. Outside the copper sphere, the gemstone industry is booming and there is significant potential to develop other minerals such as manganese and zinc.

Our interviews were marked by a tone of grudging optimism. While the industry may have been shaken by the events of the past year, it has not been stirred. The new government's pro-business stance and willingness to negotiate with the mines has boosted confidence among local players and international investors alike. As the copper price begins to stabilize and the taps to investment are re-opened, Zambia's strong economic fundamentals and long history of successful mining should ensure that the nation remains highly attractive to resource developers.

The Great Tax Debacle

Fiscal flip-flopping

Zambia has always been seen as a high-tax environment. Nevertheless, it was the long-term stability of the fiscal regime that proved attractive to the miners. Taxes may have been high but as long as they were consistent mines were able to make accurate forecasts and adapt their business plans accordingly.

The rapid flip-flopping in tax policy that we have seen over the past six months has undermined this perception of stability and left some investors sitting on the fence with regard to planned expansions in the country.

For several years, the industry was taxed by means of a two-tier system, comprising a standard 30% corporation tax and a top line mineral royalty tax (MRT) of 3%, which increased to 6% in 2013. This was then shelved in 2015 in exchange for a drastically altered single-tier regime. Corporation tax was abolished and MRT rates were increased to 20% for open pit mines and 9% for underground operations.

The resulting furore resonated throughout African mining.

Grumbling about tax rates is a common enough phenomenon but the increase was so sudden and so extreme that some mines were unable to operate profitably while fulfilling their obligations.

A standoff developed between Barrick Gold Corp and the government as the Canadian gold miner warned that it would be forced to put its Lumwana concern under care and maintenance, jeopardizing thousands of jobs. Meanwhile, First Quantum immediately issued a statement putting all investments in their Zambian operations on hold. Other operators predicted widespread scale backs and layoffs.

In the face of such concerted opposition the government was left with no choice but to backtrack and draft a new code that was less onerous for the mines. This came into force on July 1, seven months after the start of the episode.

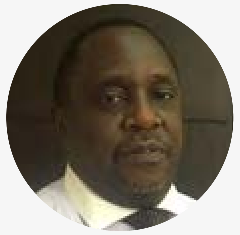
Why did this happen?

There is always bound to be some give and take between the extractive industries and their host nations. As Iven Mulenga, managing partner at Kitwe-based law firm Iven Mulenga & Co. explains, "In any mining jurisdiction there is always a tension between mining firms, which want to maximize profit, and the government, which wants to maximize tax revenues and ensure that the country benefits from the industry."

Nevertheless, since the sector was privatized in the early 2000s, Zambia's

→ 72

Elijah C. Bandah SC



Partner
ECB

What kind of involvement does ECB have with the mining industry?
The big copper mining houses tend to seek us out specifically for dispute resolution but we have offered other services in the area of corporate advisory, such as assisting KCM in the realm of structured financing and acquisitions.
On the gemstone side of the industry we are called upon to deliver a broader range of services. Many of these operations are small cooperatives that go into joint ventures with outside companies and ECB has been instrumental in drawing up these agreements. On occasion we have even worked with greenfield sites, guiding our clients through land acquisition and project finance. When a project moves into the operational phase, ECB is there to assist with all aspects of compliance with local regulations.

The Zambian government has faced criticism for its inconsistency over tax policy. How has the situation played out today?
Over the past few years, the government has made several changes to the tax system. The current regime was considered too harsh on the mining companies and some were unable to operate profitably while fulfilling their obligations. The government has conceded that this regime was too strict and so they have gone some way to appease the mining sector. The compromise they have reached seems to be relatively fair, although of course the mining companies will continue to complain that they are being squeezed too hard.

Your team at ECB has been practicing law for many years but the firm in its current incarnation is fairly new. How would you like to develop the practice in the coming years?
In the near future we see an opening to start up an office in Lusaka. We will be working hard to streamline our areas of practice to deliver a better and more specialized service to our corporate clients. The focus will remain on corporate and commercial law with a heavy bias towards dispute resolution. There is also potential to build the business up in Northwestern Province to cater to the burgeoning mining industry. As the practice grows it will be necessary to take on more lawyers and strengthen our talent pool. Zambia continues to be a highly exciting investor destination. Any new investors coming into the country need look no further than ECB for all their legal service needs. •

70 ←
mines had managed to exist in a fairly easy symbiosis with the state. The reasons behind the sudden shift in this relationship are twofold.
Firstly, the government relies heavily on money generated by the mines. With the exception of the sharp crash in commodity prices occasioned by the 2008 Global Financial Crisis (GFC), copper prices rose consistently from 2004 to 2012, providing an easy source of funds to the government. However, prices then began to slide. After two years they still showed no signs of recovery. Fearful that it would not be able to fulfil budgetary requirements the treasury saw a swift hike in taxes as the simplest way to plug its funding gap.
The second reason is political in nature. While Zambia's mining sector is highly developed, most other aspects of the country are not. According to UNICEF, 64% of the population lives below the poverty line, with the figure rising to 80% in rural areas. The mines may drive the economy but a large part of the populace sees little benefit from them. This makes them an easy target for vote-hungry politicians. Stirring up animosity and imposing punitive tax rates on the industry is a popular policy in certain circles, despite the fact that scaring away investment is a sure fire way to exacerbate the current situation.

The New Code

The new regime goes some way towards addressing the mines' concerns. Mineral royalty tax rates have been scaled back to 9% for open pit and 6% for underground mines. The 30% corporation tax has made a comeback, as has the 13% variable profits tax levied on companies with net profits in excess of 8% turnover. Nevertheless, it has not been met with universal acclaim. According to Hayward Muller, finance manager of Kansanshi Mining PLC, First Quantum's major mine in the country, "The incoming code is still too demanding of mines… If the copper price rises above $7,000/mt then the new code will be an improvement, but below these levels the majority of our gains will go towards the revenue authorities." At the time of writing, copper is trading at $5224/mt.
The decision to treat underground and open pit mines as different entities with different MRT rates has also caused controversy. "This division between underground and open pit is unprecedented around the world and we do not see it as the best option for the country," said John Gladston, government affairs at First Quantum Minerals Ltd. "We would rather see the government consult with a broader range of experts within Zambia and international organizations such as the IMF and the World Bank to create a more enduring tax code."
While the mines may not like the new code, they are at least prepared to live with it if the government can guarantee that there will be no further shakeups. Most analysts seem confident that under President Lungu there are unlikely to be any changes. However, with another general election due in 2016, the possibility of a new government being voted in and implementing another code will remain at the back of investors' minds. → 74

Mining and the Power Shortages

By Herbert Marime,
Senior Manager, Advisory Services,
KPMG Zambia Ltd.

Recent Press Headlines

Headlines such as "Electricity shortage, low copper prices hit Zambian mines", (Reuters, 8 September 2015) have not been uncommon in the past few months following the recent turbulence in the mining sector, which may have been caused by, among other factors, weak copper prices and energy shortages. The government has already revised its economic growth prospects downwards from 7% to 5%, pointing to the significance of the mining sector to the national economy.
This article seeks to examine whether risk management practices within the mines could have mitigated the impact of these factors, with a focus on energy. Such an examination would not be possible without a survey of the maturity of risk management practices and the extent to which the impact has been experienced by the mining industry in Zambia. While the expectation would be that power utilities would form a major part of the analysis, the focus here is on the activities that mining companies could have taken.

What Measures Were Taken?

In answering the question of what measures were taken, let us look at the definition of risk management according to the Committee Of Sponsoring Organisations (COSO) of the Treadway Commission – "Enterprise Risk Management is the process, effected by an entity's board of directors, applied in strategy setting, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives."
The most striking development that resembles attempts to reduce reliance on the ZESCO grid was the launch of Maamba Collieries. The venture, which will supplement 300 megawatts (MW) to the national grid by 2016, is owned by Zambia Consolidated Copper Mines (ZCCM-IH), 35% and Nava Bharat (Singapore) Pte Ltd, 65%. While this looks like a mainstream e ort by the mines to reduce reliance on the ZESCO grid, the shareholding of the initiator suggests otherwise. It instead looks more of an enterprising venture on the part of ZCCM-IH and Nava Bharat.
Also prominent in recent headlines has been the announcement by the Zambian Minister of Mines, Energy and Water Development, Christopher Yaluma, that the government will add 1,200 MW of solar power to the national grid by August 2016 (Zambia Daily Mail, 14 August 2015). In the same announcement, the minister confirmed that 100 MW were being imported from Mozambique. While both these measures are now in the public domain, they seem short of the 560 MW national deficit and come late to avert the current crisis. Lastly, the measures are initiatives by the power utility, ZESCO, and cannot be ascribed to the mines themselves.

What Could Have Been Done?

Faced with the risk of power shortages, mines have considered options ranging from self-supply to investing in upgrading the power utility grid. Due to the high cost of self-supply, many mining companies have settled for a combination: they tap into the grid, resorting to self-supply as a back up. Another alternative is to self supply and sell any excess power back to the grid but, that scenario would require a regulatory environment that has been adapted for such transactions.

Conclusion

Having conducted a high level review of the power situation as it relates to mines in Zambia, my view is that it would be naive to conclude on the adequacy of their e orts to mitigate the risk of power shortage. The reason is that the alternatives to relying on the national grid are complex, extremely capital intensive and require long planning horizons.
In addition to being better equipped to deal with changing business environments, some of the more significant benefits of implementing enterprise risk management in organizations are:
• Improved likelihood of achieving business objectives;
• Improved prioritization of mission critical activities;
• Improved corporate governance.
Greater agility in responding to changing conditions is the benefit that mines would have enjoyed the most when dealing with the recent reduction power supply. Risk management is not intended to be an exact science but it does provide a systematic approach to identifying, quantifying and implementing mitigating actions, which greatly improve the likelihood of achieving business objectives.
While it is difficult to assess the mining companies' efforts in isolation from ZESCO's, the onus still remains on ZESCO to have its own, mature risk management function that ensures an uninterrupted and affordable supply of power. In the final analysis, if the impact of the power shortage results in residual risk that exceeds the mines' risk tolerance levels, the mining companies may ultimately disinvest and this would not be a desirable outcome for the Zambian economy. •

KPMG
cutting through complexity

72

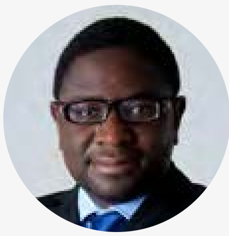
VAT Trouble

Separate to the on-going saga surrounding the direct taxes on the mines, 2015 has also seen several issues arise with VAT rebates, or the lack thereof. Exports are not liable for VAT so the mines should receive a full repayment for all the copper they ship, on submission of the correct documentation. However, payments are being withheld. "There are still outstanding claims for VAT rebates that should have been repaid several months ago," explained Fanwell Luswilli, manager at BDO. "This has affected many industries but the impact has been hardest on the miners, as they tend to make the largest claims." It is unclear exactly how much money is owed to the mines – unsurprisingly they are not keen to publicise the exact figures – but the total runs to several hundred million dollars. This has put a lot of pressure on cash flow and there are reports of some operations resorting to short term loans to cover expenses.

The disputes came about due to another unpopular piece of legislation that has since been revoked. Before March 23 2015, any company exporting minerals was required to provide the Zambian Revenue Authority (ZRA) with a certificate of import from the final purchaser. While this may sound like a reasonable requirement, the reality is very different. "Given the nature of global trade and the predominance of middlemen traders in the metals industry, this was extremely difficult. There was

76

Charles Mkokweza



Partner
Corpus Legal Practitioners

Could you start us off with an overview of the firm's history and an introduction to your main practice areas today?
Corpus was set up 20 years ago in 1995. Our founding partner and the first wave of partners have since left, leaving us behind as the second generation of partners. As it stands, the firm consists of six partners and a further 26 lawyers. We are probably the largest law firm in Zambia right now and we are certainly the most specialized mining practitioners. Our involvement with the mining industry is very extensive and we work with most, if not all of the country's principal mines. We operate across four main practice areas: corporate advisory, dispute resolution, energy, resources and infrastructure and banking and finance. Each group is made up of approximately six specialist lawyers. Needless to say, there is sometimes considerable overlap between these areas and some cases require participation from all the groups.

Dispute Resolution is an area that is facing increasing demand from mining companies. Where do most disputes arise and do you see the situation improving with the arrival of the new tax code?
The focus of the dispute resolution practice is generally on arbitration between private investors and government. Many of our clients for this service are mining houses or energy companies. In our experience, most disputes arise in the area of tax. When it comes to land ownership or license holding the government has become much more definitive in ensuring that any property owned by private investors remains in the hands of these investors. However, tax remains a rather fluid area. It is not always easy to predict what the government will do next; we have seen changes to the tax code come in almost every year. In general, investors have been able to live with this uncertainty but over the past five years the changes have become increasingly extreme, culminating in the introduction of the 20% royalty for open pit mines last year. Fortunately, the new president appears to be more attuned to the dynamics of how business and government should interact. Since coming to power, he has reversed the 20% royalty and has introduced a new tax regime that came into force in July 2015. If he wins the forthcoming general election in 2016 there will be more continuity and stability in the sector. If the opposition wins we are still confident that most of the current policies will be upheld, regardless of the populist political rhetoric emanating fromsome opposition candidates. We are the preferred law firm for around 90% of the country's mining companies and we have seen them become much more positive about future investments over the past year.

Looking to the future, as Zambia's economy seems poised for a new period of growth and development, what is your vision for Corpus over the coming years?
Right now we only have 32 lawyers and we are stretched to capacity. Over the next 18 months we expect to increase our headcount by 50%. We also hope that we can do more to support the private sector. At present, we do a lot of work with international counsel but we feel that over the past 20 years we have amassed a considerable level of know-how. As long as we see more stability in the political and economic spheres we think that the private sector will start to pay more attention to Zambia and investors will make more of an effort to support local service providers.

Given the intensely competitive environment for investment dollars at the moment, why should mining houses choose to focus their resources on Zambia?
We consider Zambia to be one of the best destinations for investment in Africa. We have a reasonably stable regulatory framework, a comparatively mature democracy, and a legal system that respects the interests of the private sector. Additionally, the country is relatively unexplored compared to other African mining jurisdictions. The constitution is likely to be transformed this year to reflect the better-structured bill of rights and the way that the government operates. This will bring about a lower influence from the executive branch and better protection for investors. From that perspective, we are very optimistic about Zambia's future and we will continue to grow above the average rate for Africa. •

74 ←

also a stipulation for the initial buyers to deposit their payments in a Zambian bank, which is also problematic," said Michael Phiri, partner of KPMG Zambia's tax practice. "These rules have since been relaxed but exports made prior to 23 March were deemed to be local sales and liable to be taxed at the full rate of 16%."

Today mines are only required to present a certificate of receipt from the entity to which they make a direct sale. However, most of the exporters are still sitting with huge liabilities on their accounts, which means they will not be able to receive any refund for sales made prior to March 23. Accounting departments are now frantically chasing down documentation from across the globe in an effort to placate the ZRA.

Transfer Clampdown

There may be more bumps in the road ahead for these accounting departments. Last year, the Minister of Finance, Alexander Chikwanda, announced that he would be looking into ways to tighten up laws controlling transfer pricing. The practice of overcharging for goods or services within different branches of a multinational organization as a means of offshoring profits and avoiding tax is well known, but enforcement of rules designed to prevent it remains difficult.

"Legislation is in place to curb transfer pricing but the guidance in the legislation is not sufficiently detailed to arm the regulators," explained Chisanga Chungu, managing partner at Deloitte Zambia. "It is unclear what documentation a taxpayer is obliged to keep in order to prove that he is in compliance with the transfer pricing legislation." It is difficult to establish just how much revenue the government is deprived of thanks to improper transfer pricing but a UN study suggests that across Africa the total could be as high as $38.4 billion per year.

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- Chisanga Chungu, Managing Partner, Deloitte Zambia"

"We believe that even the exchange rate suffers because the profit centres for all the mines are located out of the country. The incentive is always there for the larger companies to offshore their profits, which has made USD flows a largely one-way traffic," complained Geoffrey Mulenga, president of the Association for Zambian Mineral Exploration Companies (AZMEC).

The issue is more than just an African problem. Australian Prime Minister, Tony Abbott has repeatedly condemned the practice and called for better enforcement of international laws to promote a more transparent system. As of yet, Mr. Chikwanda has yet to give any details of his plans for better local enforcement so Zambia will continue to rely on international organizations to monitor illicit outflows.

Financing Development

Banking

Zambia's financial sector has become increasingly crowded over the years but the industry is not particularly mature and, at present, none of the country's banks have sufficient balance sheets to finance large projects. While smaller loans are available, rates are high and lack of access to capital remains a key setback for economic growth. The problem is particularly acute for SMEs, as large multinationals are better positioned to tap into external sources for funding. This characterisation could admittedly be applied to a whole host of African nations, but Zambian businesses perhaps suffer worse than their regional neighbours.

Contractors with experience of operations in both Zambia and the DRC note that it is generally easier to obtain financing in the DRC. Although Zambia has the longer history of mining, Congolese bankers are much more aggressive in pursuing new clients and seem to be more open to financing capital equipment purchases.

One of the reasons why banks struggle to offer competitive rates to private clients is that they have been crowded out by the public sector.

"Since the days of the PF government, the state has been involved with an extensive campaign to develop new infrastructure. However, it does not generate sufficient revenues to fund such large projects", said Helen Lubamba, head of corporate and investment banking at Stanbic Bank. "The result is that the government is one of the heaviest borrowers in the country."

Government spending is largely financed by loans from commercial banks and by direct loans from other countries, particularly China. That being said, two rounds of Eurobonds were successfully issued in 2014 to the value of $1.75 billion. A further round, worth $1.25 billion was issued in July 2015. With an 11-year average maturity period and a coupon rate of 8.97%, the bonds proved extremely popular and were oversubscribed to the tune of two buyers for every bond, suggesting a high level of confidence in Zambia's future growth.

In spite of this fund raising, there has been a lot of strain put on foreign currency reserves, while the value of the Kwacha has depreciated by 50% against the dollar over the past 18 months. In an effort to bolster the foundering Kwacha, the Bank of Zambia capped interest rates and introduced higher statutory reserve requirements for all banks, thereby making it even more difficult for them to lend to commercial clients.

Given that spending commitments will probably continue to outpace state earnings, the trend for heavy borrowing is unlikely to end soon.

In September, Moody's downgraded Zambia's credit rating from a respectable B1-Stable to a B2-Negative outlook. The agency cited a sustained deterioration in fiscal and debt metrics as the key driver behind the change, noting that reduced copper production and domestic electricity shortages would constrain business activity.

The Zambian government responded that the downgrade was "unsolicited" and that investors should ignore it, claiming that Zambia only has "rating relationships with Fitch Ratings Ltd. and Standard & Poor's.

Although this may sound like bleak news, the reality may not be so bad. It is important to remember that there is a new government in place and forecasters have a tendency to make predictions based on the actions of the previous regime. "To put it bluntly, expectations are low," said Charles Mkokweza, managing partner at Corpus Legal Practitioners. "However, we believe that this government has the potential to surpass all expectations." After six months, it is clear that those in power have some substance to their policies."

"Since the days of the PF government, the state has been involved with an extensive campaign to develop new infrastructure. However, it does not generate sufficient revenues to fund such large projects. The result is that the government is one of the heaviest borrowers in the country.

- Helen Lubamba, Head, Corporate and Investment Banking, Stanbic Bank"

Furthermore, the IMF maintains that the state is not in any danger of falling into insolvency; at current growth rates Zambia will continue to be able to service its debts. Given the high fiscal multiplier effect of investing in infrastructure, and the urgent need for Zambia to improve its road and rail networks, the heavy spending may well pay off in the long run.

Alternative financial avenues

While traditional forms of fundraising such as debt or bond issues have their place, most financial experts would like to see more involvement from private equity (PE) and more prominence given to public private partnerships (PPPs.) Total private equity investment across Africa reached a record $4 billion in 2014. Most of this has been directed towards Nigeria, South Africa and Egypt, which offer more mature economies and, crucially, much larger populations. PE is a relatively new arrival to Zambia and it seems that the big firms are still testing the waters before committing more substantial resources. "So far, appetite has been for smaller investments in the range of $5 million to $20 million, which is not sufficient to finance a power plant or mine. Nevertheless, if these small projects are successful then larger players will be attracted to the country," said Jason Kazilimani Jr., senior partner and chief executive at KPMG Zambia.

The need to find alternative sources of funding, particularly for power projects, will soon become a priority for Zambia. Given the long-term nature of such projects, now is the time to start securing finance. "We are generating almost as much as our capacity will allow, and the infrastructure is functioning well. There is a 50 MW HFO plant in Ndola that has helped stabilize supply around the Copperbelt region. Before the end of the year we should see another 150 MW coal fired plant come online in Maamba," said Jackson Sikamo, president of the Chamber of Mines. Pressure on the electricity supply is not as extreme as in the DRC but demand is predicted to grow much quicker than supply.

Beyond the need for alternative sources of funding, there is also a lot of enthusiasm for alternative sources of energy. Approximately 99% of Zambia's electricity is generated by large hydro plants but there is huge potential to diversify. Small-scale off-grid solar power plants have become popular in isolated rural areas and it may be possible to roll out expanded versions in urban areas to soften demand on the national grid. According to research by the International Renewable Energy Agency (IRENA) the country has sufficient resources to develop biomass, solar, wind and geothermal energy generation.

"The idea behind this is to encourage non-mining enterprises and thereby diversify the Zambian economy.

- John Gladston, Government Affairs, First Quantum Minerals Ltd."

Making better use of existing coal deposits in the south of the country could also be an option. "There is great potential for coal-bed methane in Zambia, although there are currently no operational sites in the country, said Garry O'Neil, director of Ox Drilling, a drilling contractor with extensive experience in Zambia, Zimbabwe and the DRC. "We have an upcoming contract with an Australian company to conduct some exploratory drilling for them as soon as they receive their license. The great thing about coal-bed methane is that it is quick, cheap energy"

Production

Copper: Fierce Competition from the Congo

Zambia has long identified itself as a copper-producing country. Its position as Africa's leading producer of the metal seemed to be a part of the natural order. While the DRC's copper deposits have always been recognized as substantial, most Zambians viewed the country as too dangerous and too unstable to pose any real competition. It therefore came as a shock to some when, in 2013, the noisy neighbour to the north posted production figures that outstripped Zambia's by a considerable margin. This divergence in total output continued into 2014 as the DRC's production grew to 1.1 million mt/y while Zambia's contracted from 760,000 mt/y to 730,000 mt/y
There are several reasons behind this trend. Some are temporary: Mopani's production was lower than average in 2014 because of planned maintenance on its Mufulira smelter in the middle of the year and Barrick Gold's Lumwana experienced a breakdown on one of its ore conveyors, limiting throughput and ultimately capping total production. Other causes are more structural: greater stability in the DRC over the preceding decade promoted new investments, which only recently entered into production.
To some extent it can be seen as a question of grades. The Congolese industry is less mature so new mines are able to exploit high-grade surface deposits that require less processing. Zambian mines, on the other hand, are predominantly underground. Operators are being forced to dig ever deeper to retrieve the ore, which drives up production costs.

Case Study: Trident

140 km west of Solwezi, a giant has been stirring. Until a few years ago, the town of Kalumbila was a sleepy hamlet, glossed over by most maps. First Quantum's Trident Mine Complex has changed that for good. The $2 billion investment comprises two parallel operations: the Sentinel copper mine and the Enterprise nickel mine. Construction began at the end of 2012 and the project is now in the commissioning phase. Sentinel boasts measured and indicated resources of 1,027 million mt copper at an average grade of 0.51%. Pursuing this type of high-volume, low-grade deposit is atypical for the region and is more reminiscent of the mammoth open pit mines of South America. Maintaining a high throughput will be imperative to keeping the project economical. At capacity, the operation will shift 55 million mt/y of ore to produce between 280,000 mt/y and 300,000 mt/y of refined copper. This level of production should ensure that First Quantum remains Africa's biggest copper producer, and may help Zambia regain its position as Africa's leading copper producing country. Kansanshi, First Quantum's first mine exceeded its nameplate capacity within a few years of commissioning and there is potential for Trident to replicate this success too.
The first concentrate was produced on December 31, 2014, 10 years since Kansanshi went into production. The plant is now going through a standard optimization process to ensure that the whole operation runs at maximum efficiency. For such a large mine, ensuring a stable power supply is crucial to success. To this end, First Quantum has been constructing a ring of 330 kv power transmission lines around Zambia, which is due to connect into Lusaka West in the next few months. This will allow for both of Sentinel's mill trains to run simultaneously. The Enterprise nickel play is First Quantum's third nickel mine and has been designed to treat ore at a rate of 4 million mt/y. The plant will be integrated into Sentinel's infrastructure and will be located approximately 12 km south-east of the Enterprise pit. Initial production is forecast to reach 38,000 mt/y, with the option to increase up to 60,000 mt/y as and when the nickel market demands it.
The vision for Kalumbila is grander than a simple mine development. First Quantum has built an entire town surrounding the project, with over 1,000 houses already completed. This is expected to grow exponentially as production takes o and investors begin to take notice. Both mines at Trident have 25-year leases and the plan is for Kalumbila to become a self-sustaining community long before reserves are depleted. The town is already home to a multi-function economic zone that has been set up to attract foreign investment in non-mining industries. This will be an extremely important stepping stone for Zambia as the country looks to diversify away from its reliance on exporting raw materials.

It is certainly true that many of Zambia's mines are getting old - some of today's deposits have been mined since the 1920s – but it is not necessarily true that they are depleted. Operation has not been continuous as many mines have changed hands several times, passing through the first period of private mining during the first half of the 20th Century, the nationalization of the 1970s to the 1990s and then the second wave of private operation beginning in the year 2000. The advanced age of infrastructure at some mines has led to some concerns over safety. Local newspapers have taken to running scare stories about the dangers of working in the mines after an unfortunate spate of accidents at Mopani Copper mines. Others are less convinced: "Recently there have been some accidents in the mines but we do not believe this is part of a larger trend: they are isolated events. We believe the mines operate to a very high standard," said Dave Gravett, managing director of New Concept Mining, a supplier of underground mine support systems.
When ZCCM sold off their operations, the buyers took over assets that had suffered from many years of underinvestment. As such, their first moves were geared towards damage control and rehabilitation, not exploration, but since then extensive exploration campaigns uncovered massive reserves. When Glencore took over the Mufulira and Nkana mines via its Mopani Copper Mines subsidiary, they only had around five years of operational life left. With the new $323 million Synclinorium shaft currently being sunk, the company predicts that there will be another 45 years of operations.

Image: Employees at work in the Locomotive workshop.

Some figures within Zambia's mining community believe that the supposed divergence between Zambia and the DRC's fortunes has been overstated. "There is still a question mark hanging over the DRC's production figures," claims Daniel Banister, regional general manager of Atlas Copco Zambia. "Reported output has overtaken Zambia's total production but it is necessary to analyse these statistics very closely before drawing any definitive conclusions." There are some areas of contention regarding the methodology employed by the respective ministries. Copper concentrate that is produced in the DRC but processed in Zambia is routinely counted by both countries.

Looking to the future, in the near term it seems unlikely that the fortunes of the two nations will continue to diverge so greatly. Production in the DRC should stabilize, while Zambia's output should rebound, largely thanks to First Quantum's mammoth Trident complex, which will continue to ramp up throughout 2015. Meanwhile, the scramble to develop new mines in the DRC has subsided and it is unlikely that we will see any major copper projects come online until after the general election at the end of 2016.

Gemstones

Although copper tends to steal the headlines in Zambia, the country's burgeoning gemstone industry has come into focus recently as precious stones are more insulated from the price volatility that afflicts bulk commodities. Zambia produces around 25% of the world's emeralds and is home to Africa's largest known deposits of amethyst and aquamarine, although these are not well exploited.

The vast majority of Zambia's emeralds are produced by one mine, Kagem. Easily the world's biggest emerald mine, the operation is 75% owned by London-listed Gemfields, with the remaining 25% equity held by the state. Gemstone mining is often seen as an area more suited to artisanal miners but Kagem has proved that large-scale mechanized mining can be successful too. "The geology of gemstone formation is extremely complex and, as such, the upfront investment required with respect to exploration and the development of project specific expertise and competence is very high," explained Kagem's director of operatoins, CV Suresh. Since taking over the mine in 2008, Kagem has invested over $130 million in rehabilitating the operation. It is now embarking on a further 100 m pushback at its main pit, with a total cost of $50 million.

As of 2013, all Zambia's emeralds must legally be sold at auctions within Zambia. This policy was extremely unpopular with the market when it was first brought in: Gemfields' share price plunged by 27%. However, consistently solid attendance at these auctions over the past two years has demonstrated that it is still possible to operate profitably without selling at major hubs in Europe or India. According to figures from Gemfields, in 2008 the average price of low-grade, rough-cut emerald was $0.30 / carat, while today it is $3,00 / carat. The company attributes this to its proprietary grading system, a concerted international marketing effort and its long-standing connections to deep-pocketed buyers.

Case Study: Mopani Copper Mines

During the unbundling of state mining assets, Glencore went through a competitive tender process to become the owner and operator of the Mopani Copper Mine facilities. Today, the main shareholders are Glencore (73.1%), First Quantum (16.9%), and ZCCM-IH (10%).

The suite of assets includes mines at Nkana and Mufulira, near Kitwe, as well as a refinery at Mufulira. The deposits that make up the two sites have been mined since the early 1930s. Copper cathodes produced at Mufulira refinery are recognized as some of the purest in the world and are listed under the MCM moniker on the London Metal Exchange.

During nationalization, Mopani suffered from decades of under-investment, leaving the assets in poor physical and financial condition. Since privatization, over $4 billion has been invested to rehabilitate and expand operations. Today, Mopani provides employment to approximately 20,000 people, divided between 9,000 fulltime employees and 11,000 contractors. Since a collapse in total output in 2009, production has continued to rise year on year, with a record 149,666 mt produced in 2013.

Several environmental liabilities were inherited from the days of national operation, the most notorious being the Mufulira smelter. Built in 1937, the smelter emitted 100% of its sulphur dioxide output into the environment,. As a result of an extensive investment campaign undertaken jointly with the government, advanced sulphur capture technology was installed and today 95% of SO_2 is captured. The smelter was upgraded again in 2015, removing the outdated electro-refining process. This most recent $74 million program has introduced more modern ISA Refinery Technology.

In September 2015, Glencore announced that it would be suspending production at Mopani for 18 months as part of a $10 billion global debt-reduction plan. The mine has been operating at a loss since the copper price dropped below the $6,000/mt mark. During the 18-month downtime, Glencore will invest $550 million in modernizing the shaft and improving processing facilities, which will help raise output and reduce costs. While the company is keen to point out that this is not a shut-down or a divestment, the suspension comes as a heavy blow to the local industry given that the operation accounts for over 20% of Zambian copper production.

It is unclear how many jobs will be lost, though Glencore has claimed that a significant proportion of its employees will be retained to work on the modernization. Talks are being held with the Ministry of Mines to establish what level of compensation workers who have been laid off will receive.

Exploration

Since the unravelling of the so-called commodities super-cycle towards the end of 2012, mineral exploration activity across the globe has fallen.

Kris Jedrzejczyk is managing director of Blu Rock Mining Services, one of Zambia's largest drilling companies. Despite the downturn he remains sanguine about prospects for the future. "While copper prices were high there was a frenzy to drill all over the Copperbelt. This has obviously subsided but we recognize that mining runs in cycles; at the moment we are at the bottom of a cycle but soon prices will start to rise again," he said. In the meantime, the company is branching out to offer other services such as drill and blast and underground drilling.

While there is little to be done about global economic headwinds, there are steps that Zambia could take to make the country more attractive to potential explorers. The first is to conduct a detailed geological survey. The Copperbelt has been mined for centuries and is well mapped out but large swathes of the country are entirely unexplored.

The second would be to streamline the processes involved with applying for permits and exploration licenses. According to Geoffrey M. Mulenga, president of the Association of Zambian Mineral Exploration Companies (AZMEC), "There are several cases in court at the moment concerning disputes over tenement ownership. If the system were better administrated this would not be such a problem."

In Zambia, land ownership takes two forms: legal title from the Ministry of Lands or customary ownership by a traditional leader. It is estimated that over 60% of Zambia's territory is held in the latter form. In both cases, the title-holder only has surface rights; underground mineral wealth remains the property of the state. However, to gain access to deposits, miners must negotiate a contract with the landowner. Historically, relationships between miners and communities have been positive. Traditional leaders generally view any interest in their land as an opportunity to benefit their people, rather than as an affront to their authority. In the case of any major dispute the government has the right to appropriate land if a mine development is deemed to be in the best interests of the country. Any community living in the vicinity must then be relocated and rehoused at the expense of the developer and the state.

Promoting Local Content

Between 2000 and 2014, multinational miners from across the world invested $12 billion into the sector and today's mines are operated by an assortment of Canadian, Australian and Chinese companies.

The one country missing is Zambia. After a century of experience, there is enough expertise in the country to run a mine but the sheer cost of developing a project is prohibitive. International banks are reluctant to lend to Zambian businesses so the amount of capital required is simply out of reach to local companies.

Mawe Exploration and Technical Services Ltd was formerly a department within ZCCM-IH, the state mining company, but was spun off into a separate enterprise in 2013. "There are approximately 4,000 small-scale miners operating in the country, with licenses covering the full spectrum of Zambia's mineral wealth. However, they lack the technical skills, finance and equipment to develop their businesses," explained Mawe's managing director, Wilphred K. Katoto. "We have developed a framework to identify small-scale miners with highly prospective tenements and help them develop their concerns."

The company is targeting manganese projects in Luapula but there is potential to work with phosphates, copper and other industrial minerals. The first step is to find smelters that could become potential off-take partners and equipment companies to supply subsidized machinery. As the miners become more experienced, Mawe intends to exit gradually from these arrangements, leaving the new businesses to stand on their own feet.

ZCCM: From National Monopoly to Private Investment Partner

The history of Zambia Consolidated Copper Mines Investment Holdings (ZCCM-IH) plays a large role in the development of the country's illustrious mining sector. During the first half of the 20th Century Zambia's mining industry grew from strength to strength, eventually producing 760,000 mt/y by the end of the 1960s. In an effort to harness this growth and deliver more wealth to the Zambian citizens the industry was nationalized in the 1970s by President Kenneth Kaunda. ZCCM Limited was created as the state body responsible for owning and operating all of the country's copper mines.

However, the move backfired. The following three decades of nationalization saw a sharp decline in total production and employment as the government failed to reinvest sufficient funds back into the mines. By the late 1990s it became clear that it would be necessary to reopen the sector to private companies to avoid the industry grinding to a halt. Between 1996 and 2000 ZCCM-IH's mining concerns were unbundled and majority stakes were sold off to new investors.

ZCCM-IH's Current Portfolio

ZCCM-IH is the successor to the old government mining company. Its portfolio includes shares of between 10% and 100% in 15 different businesses around the country. The majority of these are operational copper mines and smelters but the group also has interests in limestone mining, coal, power generation and banking. The Government of the Republic of Zambia holds 87.6% of the shares, while the remaining 12.4% are listed on the Lusaka Stock Exchange, the London Stock Exchange and the Paris Euronext.

This ownership model is set to shift in the near future as ZCCM-IH looks to sell 27.5% of its shares on the Lusaka Stock Exchange. The rules of the Lusaka Stock Exchange state that the government may not own more than 50% of any listed company. This presents investors with a unique opportunity to buy into a leading African holding company with significant interests in the Zambian mining sector. ZCCM-IH is already the largest company by market capitalization on the Lusaka Stock Exchange with a value in excess of $1 billion. In 2014, ZCCM-IH held a rights offer to clear debt owed to the government and declared its first dividend, paying out $40 million to its shareholders, the biggest dividend payout by any stock ever listed on the Lusaka Exchange.

New CEO, Dr. Pius Kasolo, is looking to reinvigorate the company and transform it from a passive passive presence sitting on the boards of investee companies into a proactive investor in new projects and a dynamic engine at the heart of the Zambian economy.

Diversification and local beneficiation

Add value to raw materials. Diversify the economy. Incentivize industrialization. These three phrases, and similar variants, have assumed a mantra-like status among development economists and politicians alike. However, the supposedly simple prescriptions have proved more difficult to implement in practice.

In terms of first-step value addition, the country is performing reasonably well: at present, Zambia does not export any raw copper ore. "Our exports start at blister copper level, and even this constitutes a very small part of our output; there is just one blister smelter in the country," said Jackson Sikamo, president of the Chamber of Mines. "There are some companies exporting anodes before they are refined. However, over 70% of our exports are in the form of cathodes." It is the next stage in the chain, the production of finished products, which has been trickier to bring to fruition. Very few companies in Zambia purchase locally produced copper to transform into useful items. Instead, cathodes are exported to China, processed and then returned to Africa as wire, piping or in electrical goods.

There is, however, one notable exception to this trend. ZAMEFA is a Zambian company situated in Luanshya that manufactures copper rods, bare copper wires, low voltage power cables and a range of other copper products. All their raw materials are sourced locally and they have managed to carve out a significant market share not only within Zambia, but also in the DRC and even South Africa. While ZAMEFA may be the exception rather than the rule, its success is a positive sign that local manufacturing is more than just a pipe dream.

Elsewhere, the most successful factories are those that directly support the mining industry. A handful of local factories have sprung up to provide grinding balls and castings to the mines. As SAG mills have become ubiquitous within the modern mining industry, the demand for high-quality forged grinding media has grown exponentially. Currently, local producers are only able to satisfy around 15% of domestic demand, so there is plenty of room for new local players.

Although there are a range of Chinese companies exporting to the region, the volumes involved in ball production mean that close proximity to end users is a strong competitive advantage.

Competing against China in other sectors where proximity is less of a differential is much harder. Some economists are advocating other strategies, essentially leapfrogging over industrialization into a knowledge economy. They claim that it will be more beneficial for Zambia to leverage its engineering experience and knowledge of African environment to focus on product design, while actual manufacturing is contracted out to lower-cost countries. The theory is neat but there have yet to be any examples of such products being launched to the market.

Big miners are also making an effort to attract a broader spectrum of businesses to the country. First Quantum's Trident project at Kalumbila will feature a multi-function economic zone that will house several new investments. "The idea behind this is to encourage non-mining enterprises and thereby diversify the Zambian economy," said John Gladston, government affairs for First Quantum. "We have already attracted a Chilean company, ME Elecmetal, to invest $40 million to build a state-of-the-art grinding ball factory."

The role of South American investment in the country is currently minimal. The Latin American attitude towards its copper-producing brethren in Africa has thus far proved rather standoffish. Given the high level of copper expertise concentrated in Chile and Peru there is clearly scope for skills transfer and technological improvements. However, the global scarcity of funds for mining investment appears to have propagated a culture of competition rather than collaboration.

For now, hiring skilled professionals and tradesmen is a challenge in Zambia as demand still outstrips supply. "There are technical colleges in the area and they do a reasonable job of educating new technicians but they lack practical, hands-on training, explains Harish Patel, managing director of CP Engineering, a supplier of fasteners and fabricator of

bespoke pieces for mines and industrial plants. "Whereas in more developed countries students will have access to a wide range of machines, in Zambia it is common for an entire class to share just one piece of equipment."

The mines all run extensive training programs, which will eventually lead to a deeper talent pool for all businesses. but for the immediate future they need all their trainees to man their own operations. Most small businesses therefore rely on their new recruits learning from experience. Lesmart General Dealers is an engineering firm that specializes in repairing and overhauling Deutz diesel engines. "We personally trained all of our staff. Some of our people already have a mechanical background and some are taken straight from school. The level of the new recruits we take on is generally very good but there are some aspects that can only be learned through experience," said Andrew Phiri, Lesmart's technical director.

Equipment

Zambia's mines embrace hi-tech

All the major equipment brands have some kind of representation in Zambia. Many of the big players have been there for decades, including Atlas Copco, which celebrated its 66th anniversary in the country in 2015. While mining output may have been trending downwards, equipment providers have been investing heavily in new premises and capabilities. Sandvik recently inaugurated a new technical centre in Kitwe, while Bell has just opened its new $9 million facility a few kilometres outside the city. "The service area comprises 11 bays, which are serviced by a 10 mt overhead crane. This allows us to service, maintain and rebuild any of the equipment we sell," said Bell's managing director, John Fleetwood.

This increased spending on service facilities reflects a heightened demand for quick turnaround times. All the major OEMs offer comprehensive maintenance programs but some companies are not happy with the downtime that their machines suffer. "We carry out all maintenance in-house because we feel that it is far cheaper and far quicker than relying on the OEM. Given that we often operate in very remote areas this is particularly important," said Kris Jedrzejczyk, managing director, Blu Rock Mining Services.

New service centres are also a result of a new interest in more sophisticated technology. In the past, Zambian mines tended to opt for the simplest, most robust machinery but they are now waking up to the value that advanced technology can bring. Mopani has brought in remote controlled underground jumbos and loaders and First Quantum recently splashed out on a state of the art trolley-assist system for two of its ramps at Kansanshi and is planning to install a third line in the near future. This has boosted productivity by 10% and in the long run should reduce production costs by 10% as well.

Atlas Copco's regional general manager, Daniel Banister is also seeing more interest for equipment that can feed data streams into mines' central control centres: "Miners want their machines to record metrics such as the tonnage they are carrying, how many loads they have delivered and whether this load falls within the range specified in the production schedule," he said. The challenge to implementing further advanced technology such as automation or wireless communication is the infrastructure. Many of Zambia's underground mines have been exploited for decades and the current operators inherited the existing infrastructure, which was designed during the era of hand-held equipment.

As discussed earlier, Zambia's banks are fairly risk-averse and rates for local companies looking to purchase capital equipment are still not competitive. This has led to a situation whereby small companies are forced to purchase second-hand equipment, as they do not have the cash to buy new, and large companies arrange their financing overseas. Not everyone is satisfied with this state of affairs. "Mines meet with equipment providers thousands of miles away from the sites and secure big contracts without setting foot in Zambia," said Neville Coltman, general manager of Turnpan Zambia Ltd. (TZL), a supplier of MAN and Volkswagen trucks. This obviously has a negative impact on Zambian operations and we would like to see the government take stronger measures to encourage the mines to give more work to local suppliers."

Logistics and Transport – Landlocked or Landlinked?

Zambia's landlocked position is often cited as a major setback to the country's economic development. The lack of a seaport complicates trade arrangements, prevents access to export markets and drives up the cost of imports. However, recently attitudes have begun to shift. Experts are increasingly looking at Zambia's geographical setting as a blessing not a curse. It shares borders with eight countries and can be seen as the link between Central and Southern Africa, opening Zambian businesses up to a potential market of 170 million people. Politicians are now trying to market the country as a regional transport hub.

As a member of both the Southern African Development Community (SADC) and the Common Market for East and Southern Africa (COMESA) it is possible to import and export goods between other member countries without paying duties. Furthermore, proximity to the DRC is a key advantage. Companies that wish to tap into the Congolese market but are wary of the associated risks often choose to set up a forward operating base in Northern Zambia. However, if the government really wants to capitalize on these advantages, it must improve infrastructure.

Zambia's road and rail networks has declined in recent years. The highway between Kitwe and Solwezi, a key route for trucks carrying copper concentrate from the pits to the smelters, is a patchwork mess of potholes, gravel and crumbling tarmac. The two towns are only 230 km apart and the journey from one to the other should take around two hours, but the reality is often closer to five.

One of the main reasons behind the sudden deterioration in road quality was the increased traffic volumes brought about by the decline in rail transport.

Historically, trains carried most of Zambia's heavy freight. Until the early 1980s the mines received and dispatched most of their inputs and outputs via rail. However, over the past 20 years, the quality of rail transport has declined. In 2003 the operation of the railways was sold off to a private concessionaire, but the new operator did not invest enough in the network around the Copperbelt. Known as the Intermine, this network connects the mining towns and plants around the region and was originally built to move materials. As the network deteriorated, mine operators looked elsewhere for their logistical needs and turned to the roads. Trucks now carry most of Zambia's freight, which has exerted a huge strain on the road network. The average lifespan of a road has greatly diminished in the past decades, while the number of accidents has shot up.

In 2012, the concessionaire was stripped of its operating license and the network was nationalized again. "Zambia Railways was handed the concession and provided with a grant of $120 million to rehabilitate the network," said Godfrey Chibunde, director of freight services for Zambia Rail. "Our first priority was damage control: the Intermine was essentially dead and train speeds were so low that our turnaround was too expensive to be economical. We embarked on a program to ensure that all the dysfunctional lines on the Intermine were rehabilitated and all the Copperbelt towns were reconnected."

Improvements can already be seen. Mines are returning to rail as a means of transport within the country and as a route for exports. Average speeds for freight trains have increased from 15 km/h to 30 km/h and by the time the investment program ends this should further rise to 60 km/h. As speed increases so too will volumes. In 2014, the network shifted a grand total of 1 million mt freight but by 2018 Zambia Rail plans to be transporting 5 million mt/y.

Alongside investment in rail, the Zambian government is also prioritizing spend-

"The new investment side of ZCCM-IH will be the engine that drives the company forward. I am building a new team, with a new business division, which actively seeks out new opportunities."

- Dr. Pius Kasolo, CEO, ZCCM-IH

ing on roads. Under the umbrella of its Link Zambia 8000 Program, the Road Development Agency aims to improve 8,200 km of poor quality roads and connect all the provincial capitals by 2017. So far over 2,000 km have been improved.
Durban remains the port of choice for most of the mines although its dominant position is now threatened by Dar Es Salaam and Walvis Bay. Since completing a large expansion program last year waiting times for berths in Tanzania have improved dramatically. Meanwhile Namibia is investing heavily in improving infrastructure at Walvis Bay. Both offer significantly lower costs than Durban and a shorter distance to Zambia. "We currently transport a lot of goods back and forth between Zambia and Walvis Bay in Namibia," said Elrick De Klerk, financial director at Buks Haulage Limited (BHL). "We believe this corridor is much more competitive than Dar Es Salaam or Durban as there is only one border crossing involved." Buks Haulage has seen so much demand for services to Namibia's key port that it set up a permanent office in Namibia, Buks Haulage Logistics, in 2014, to complement its headquarters in Solwezi.

What Happens Next?

Can Zambia maintain strong growth amid low copper prices?

If the speed with which new shopping malls are opening is anything to go by, Zambia is experiencing an economic boom. Dazzling new developments in Lusaka and Kitwe draw throngs of shoppers from morning to night. A consumer class has begun to take shape in Zambia, but this new-found prosperity needs to be nurtured if it is to stand a chance of long-term survival. Designer clothes and fancy restaurants are certainly appealing but an economy cannot be built on consumption alone.
Mining provides the foundation upon which the country's future prosperity rests. The average salary for an entry-level miner is $680/month, compared to the national minimum wage of $180/month. Initiatives are in place to attract investment and boost productivity in agribusiness, now the same must happen for mining if Zambia wishes to achieve its target of 5.5% - 7% GDP growth in the medium term.
For this to happen we need to see more communication between the industry and the government. The 2015 tax fiasco was a clear example of a communication breakdown that nearly had disastrous effects. One reason for this is that the mining industry is not a unified force. There is a country wide Chamber of Mines but it has become politicized as many key members have affiliation with certain parties. As such, the government does not like to negotiate with the body as a whole and the miners tend to negotiate with politicians as individual organizations. The sound of many small voices is not equal to one unified presence. To encourage a more productive dialogue, the Chamber must make an effort to become less partisan in its structure.
Likewise, the new government must refrain from unfairly penalizing the mines. Rather than raising royalties and demanding more contributions, a comprehensive tax review should take place. There is a huge amount of informality in the country and the tax base is minimal. Leaders should follow the example of Ethiopia and streamline the process by which small businesses submit their tax returns. This would reduce some of the burden on the mines and leave them some more breathing room to follow through with investments and create more jobs.
The next big challenge is likely to be power. June 2015 saw the first signs of a coming supply crisis as some of the majors were forced to endure planned load-shedding and drop their production. A new 300 MW coal fired plant will come online towards the end of the year but in the long-run this will not be enough to cater to the forecast increase in demand. If the industry is to remain competitive, the state must encourage more investment in power.
If the new government is able to address these problems then the outlook for Zambia is very bright. The country has enjoyed over 50 years of peace and 100 years of mining, its geology is some of the best in Africa and there is a thriving support sector in place. In short, the country is an ideal base for future mine investments. •

"We transport a lot of goods back and forth between Zambia and Walvis Bay... This corridor is much more competitive than Dar Es Salaam or Durban as there is only one border crossing."

- Elrick De Klerk, Financial Director, Buks Haulage Ltd.

ZIMBABWE

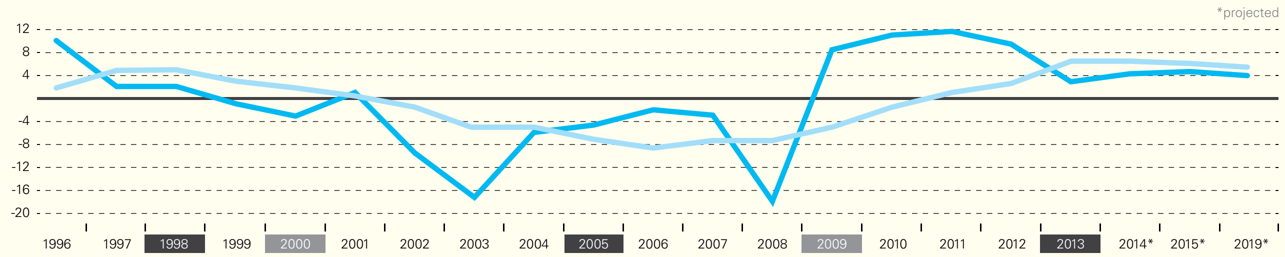
Zimbabwe was a British colony, after which it spent 14 years under a white minority government. Robert Mugabe has held power since 1980 and serves as head of state and government and chief of the armed forces. The country's economy has languished, but the 2008 general elections ushered in a new era and restored economic growth and some degree of foreign investment. Zimbabwe has some of the world's largest chromite, platinum-group metals and diamond resources in the world, and substantial gold and coal resources.

SOURCE: THE AFRICAN RESOURCE

Population: 14,229,541
Land Area: 390,757 sq km
Official Language(s): English
Capital: Harare
Chief of State: Executive President Robert Gabriel Mugabe
Head of Government: Executive President Robert Gabriel Mugabe
GDP (PPP): $27.13 billion (2014 est.)
Growth Rate: 3.2% (2014 est)
GDP per Capita: $2,000 (2014 est)
Economic Sector Breakdown: agriculture: 20.1%, industry: 25.7%, services: 54.2% (2014 est)
Exports: $3.263 billion (2014 est.): platinum, cotton, tobacco, gold, ferroalloys, textiles/clothing
Imports: $5.135 billion (2014 est.): machinery and transport equipment, other manufactures, chemicals, fuels, food products
Major Trade Partners: South Africa, China, DRC, Zambia, Botswana

GDP GROWTH (%)

WORLD BANK, IMF, BBC



Zimbabwe sends troops to the DRC, estimated to have cost hundreds of millions of dollars between 1998 and 2002.

Land redistribution programme leads to the eviction of 4,000 white farmers.

Ruling Zanu-PF party wins two-thirds of the votes in parliamentary polls. Main opposition party says election was rigged against it.

Dollarization of the economy by Finance Minister Patrick Chinamasa ends hyperinflation.

Peaceful elections are held, won by Robert Mugabe and ZANU-PF. A new constitution is approved by 94.5% of voters.

STATUS OF THE MINING CODE

SOURCE: ZIMBABWE CHAMBER OF MINES

Corporate Income Tax	25%
Mineral Royalties	5%
State Participation	51%*

*51% is to be held by indigenous entites, not necessarily the state

SHARE OF MINING EXPORTS (2015)

SOURCE: ZIMBABWE CHAMBER OF MINES

Gold	29
Platinum	28
Diamonds	23
Others	20

FOREIGN DIRECT INVESTMENT

SOURCE: UNCTAD

2013	400
2014	545

*inflows, $ million

MINE PRODUCTION (2013)

SOURCE: BRITISH GEOLOGICAL SURVEY

Chromium	120,000 mt
Coal (bituminous)	4,980,200 mt
Cobalt	200 mt
Copper	8,300 mt
Diamonds	10,411,818 ct
Gold	14,000 kg
Graphite	4,500 mt
Ferro-Chrome	145,000 mt
Lithium Minerals	44,000 mt
Nickel	13,000 mt
Phosphate Rock	17,900 mt
Platinum	8,000 kg
Palladium	6,000 kg
PGMs (other)	2,000 kg

MINING SECTOR CONTRIBUTION TO GDP

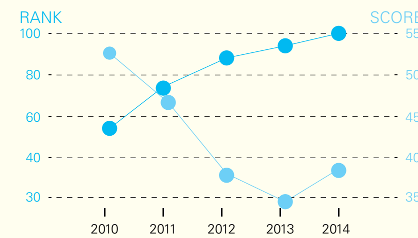
SOURCE: AFRICAN ECONOMIC OUTLOOK, ZIMBABWE CHAMBER OF MINES

2009	8.1%
2013	10.4%

In 2014, mining accounted for 53% of national exports, roughly $1.9 billion.

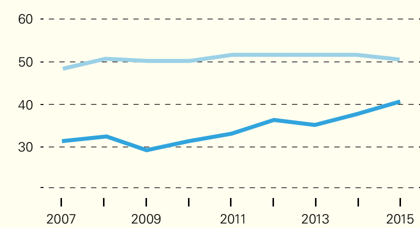
FRASER INSTITUTE INVESTMENT ATTRACTIVENESS INDEX

SOURCE: FRASER INSTITUTE



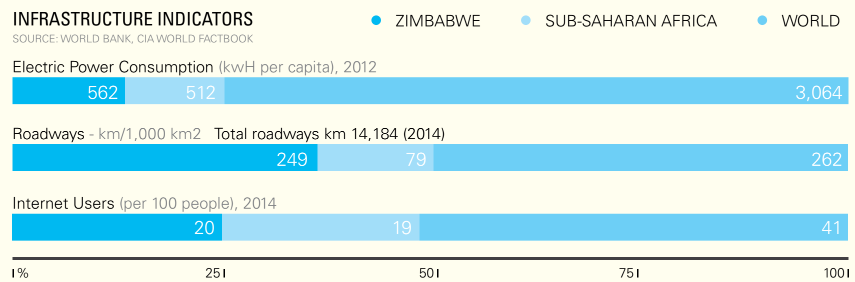
IBRAHIM INDEX OF AFRICAN GOVERNANCE

SOURCE: MO IBRAHIM FOUNDATION



INFRASTRUCTURE INDICATORS

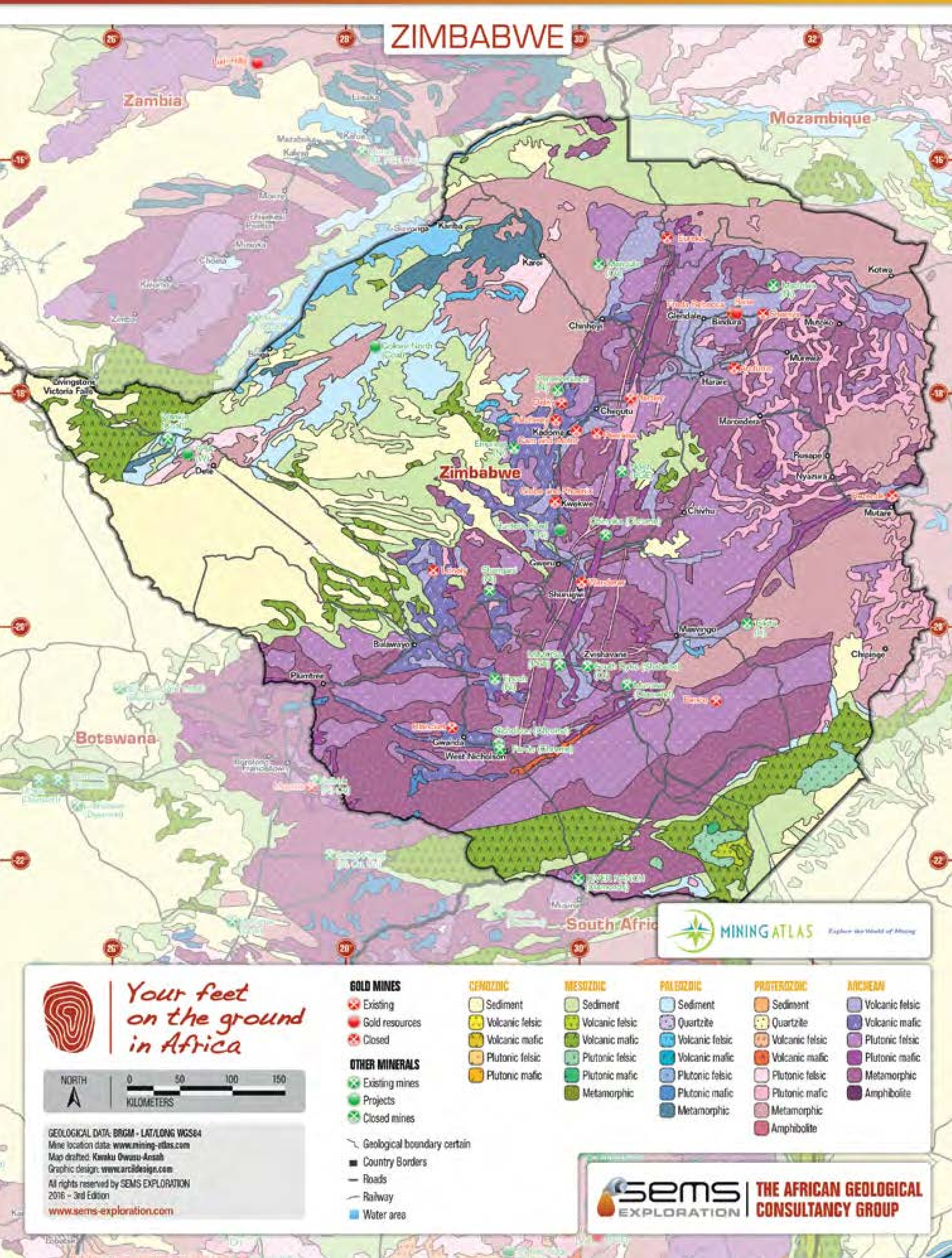
SOURCE: WORLD BANK, CIA WORLD FACTBOOK



BUSINESS ENVIRONMENT RANKING IN AFRICA (OUT OF 47)

SOURCE: WORLD BANK

	2015
Ease of Doing Business	27
Starting a Business	43
Dealing with Construction Permits	46
Getting Electricity	27
Registering Property	16



Hon. Fred Moyo MP

Deputy Minister
Mines & Mining Development
Republic of Zimbabwe

What is being done to foster the growth of small-scale miners and incorporate them into the formalized mining sector?
Zimbabwe is formalizing small-scale miners through three areas that have served as the pillars for progress. First, we formalize them legally, allowing them to use the law to get into the industry. Second, from a resource point of view, we allow them to acquire equipment and small loans to get them started.

Thirdly, from a knowledge standpoint, they must be able to interpret and observe the law and operate in a manner that is safe for themselves, the community, the environment, and their own dependence. Before that, however, we are responsible for researching the social element. As a government we need to know the demography of who they are, how old they are, and their health and education status etc.
Since we started supporting small-scale miners, they have pushed production up from 175 kilograms per month (kg/m) of gold to about 700 kg/m in the past 12 months. The large mines have remained close to 900 kg.

There is valuable information pending in regards to geophysical mapping and the mining law. What plans and revisions can miners and investors expect, and within what timeline?
The cabinet recently approved the mining bill, which is basically on its way to parliament. Zimbabwe has a bilateral legislature in which the bill can be sent back from the upper house; however, the good news lies in that the bill has reached a stage that it has never reached before. The bill will emphasize mineral exploration, as well as title and investment processes, which are key for supporting our good geology. Zimbabwe has recently established a committee of ministers specifically focused on the ease of doing business and crafting policies to attract investors. Once that new cabinet committee publishes their results, our government will be able to adopt further policies to become an attractive investment destination.
The geological investigation will start with the ministry's creation of an exploration policy, for which we need to provide guidelines. For instance, providing miners with a framework for which geology they should explore first, what minerals correspond with which rocks to what degree of accuracy and in what form they should be reported. Without this structure, we could lose important information, and reports that are submitted could be presented incorrectly and inaccurately. Once we solidify this policy, we can build the technical software and hardware skills necessary to have our people fully participating in the process.

Why did Zimbabwe adopt the online cadastre licensing system?
The cadaster system will automate title management to offer transparency and security to investors, who can successfully express their interest online. We also wanted to create transparency in revenue collection through royalty payments by companies and a common, readable geology that government can see and the companies can use as a methodological platform. The ministry will pick two large, two medium, and two small companies to use as research subjects to test the taxation schemes. No penalties will be sought after, but we aim to craft the tax regime and moderate our system based on five years of hard data.

Along with doubling platinum production, how will Zimbabwe's mining industry be positioned in five years time?
Past issues, for example with platinum companies, have arisen due to poor communication on both sides. Now that parties have found common ground, we predict we will be able to double our output of platinum in the next five years, surpassing 1 million ounces per year. One million oz at today's prices of $1,000 is a $1 billion platinum industry, with just one mineral.
There will also be a better balance in diamond production. At the moment our production is mainly from placer/alluvials, but we will see more diamonds from kimberlites, and although volumes may remain about the same, the value will be increased. Zimbabwe has a new diamond cleaning plant, so once the deep cleaning is completed diamonds can be sorted in a much more informed manner and continued on to be cut and polished locally. There is also a heavy focus on base metals, as our first tungsten mine is in production and the Kamativi Tin mine will re-open soon. Kamativi was renowned for its tin production but we are aiming to diversify to related minerals such as lithium, which has a good future in battery Industry. The same expansion is taking place at the Bikita Lithium mine. Zimbabwe also has ferrochrome (of the correct balance of chromium and iron), coal and manganese, so Zimbabwe hopes to be moving towards stainless steel production in the near future.
Lastly, we want our gold production to reach a capacity of 30-metric tons per year (mt/y). Our gold refinery is designed for 50 mt/y, a figure that tells where Zimbabwe should be.
Zimbabwe has world-class geology and will remain with an edge above our fellow regional countries due to our favorable infrastructure and a more productive workforce. Our resilience is due to the capacity of Zimbabweans to work hard on a personal, institutional, and family level. •

Zimbabwe: Mining in Motion

Zimbabwe is taking the right steps to create a robust and investor-friendly mining industry.

The story of Zimbabwe's mining sector can only be told through a historical lens, as the nation's enthrallingly tumultuous past is the only explanation for its inevitable fall and ultimate rise. Modern mining has been in practice in Zimbabwe since the 1890s, but the sector's maturity is only yet comparable to that of a teenager. Socio-political strife has, more than once, hindered or halted mining activities and overall economic development, leaving mining representing below 5% of the national GDP. Contextually, this percentage is surprisingly small. Zimbabwe's Marange diamond fields are reportedly among the largest in the world. Its platinum deposits are second only to South Africa's. Zimbabwe holds 500 kilometers (km) of the Great Dyke and 13 major greenstone belts within its borders. Depending on the appetite of the investor, one could develop gold, chrome, coal, iron ore, asbestos, ferrochrome, nickel, and the list of minerals is over 40 long. As explained by Sternford Moyo, senior partner of Scanlen & Holderness: "Zimbabwe is the only country where you could mine diamonds with the sole of your shoe."

Mineral Wealth

Thus far, only around 65% of the country has been geologically mapped. Akin to most other African mining countries, a lack of data corresponds with a lack of development. A statement by Utho Capital at the 2015 annual Zimbabwe Mining Indaba claimed that Zimbabwe is said to have "a record 6,000 deposits of minerals [with] over 4,000 known gold deposits (about 84 million metric tons (mt)), while the Chiadzwa diamonds [have the] potential to supply 25% of the world's diamond market…[but] the biggest problem has been that these projects are merely concepts with no substantial geological information to back them." A focus of the conference was enhancing national marketing efforts to increase both domestic and outsider exploration.

In October 2015, President Mugabe opened Parliament with the announcement that a Mineral Exploration and Marketing Corporation Bill will soon be presented. Its purpose is to transform the existing Minerals Marketing Corp. of Zimbabwe (MMCZ) into an exploration-intensive conglomerate. Richard Chingodza, acting general manager of MMCZ is already involved in the transition: "The ultimate objective is to lead the private sector in surveying the land themselves, while the government works on aligning Zimbabwe's policies with the desires of investors."

Gold, platinum, and ferrochrome are the minerals Chingodza describes as the key pillars of Zimbabwe's mining industry, and "diamonds, of course, are very emotional, but we have yet to discover more kimberlites."

Gold

With a greenstone belt similar to that of Western Australia, Zimbabwe exhibits some of the best gold yields per square kilometer in the world. Zimbabwe's central plateau, or Archean Craton, consists of both in-situ rock (or bedrock deposits) and alluvial deposits that possess gold. The highest production rate of gold was in 1999, recorded at over 27,000 kilograms (kg). At one time, Zimbabwe was the third largest gold producer in Africa, but it has fallen behind, and produces the same amount, roughly 16,000 kg, as it did in 1985. Some of the greatest mining potential lies in gold development, with most oxide/sulphide deposits being relatively shallow.

Both Bilboes Gold and Metallon Gold either presently or plan to utilize open-pit and heap-leach methods of extraction. With some operations mining as shallow as 200m, Bilboes Gold's current production falls around 1,000 ounces per month (oz/m), equating to nearly $2 million per year. CEO of Bilboes Gold, Victor Gapare, described: "The output is small, but cash positive…keeping the pressure off our shareholders for funding and allowing Bilboes to retain the integrity of its mineral rights."

Bilboes Gold aims to increase production to around 16,000 ounces per year (oz/y) in order to decrease production costs. Many gold miners are pining to widen their margins through economies of scale due to the unfavorable gold price. Resultant of the advocacy work of the Chamber of Mines, gold royalty rates were lowered from 7% to 5%, giving the sector some needed financial relief.

The Freda Rebecca gold mine remains cost-effective due to its excavation strategy and uniquely engineered structure. Toindepi Muganyi, general manager of the Freda Rebecca mine, describes it as an "underground quarry." Though it is technically underground, it is much shallower than many open pit operations. The mine itself is rooted in granodiorite rock, a common characteristic of the area, making the frame extremely sturdy. "The open stops stand steadily without much external support," Muganyi explained. "The largest stop at the mine is about 200 meters (m) x 80 m x 300 m, which can fit over two football fields."

Total production from last year amounted to 58,704 oz, and in 2014 a pilot plant was commissioned to recover even more gold from over 13 mt of tailings.

Metallon Gold, meanwhile, is Zimbabwe's leading producer, developer and exporter of gold, with an aim to increase

Image: Freda Rebecca Gold Mine

production to 500,000 oz per annum by 2019. "Due to unfavorable gold prices, we are taking advantage of the low hanging fruit, mining at the lowest operational costs," noted Ken Mekani, CEO designate of the Metallon Corp. Ltd.

Regardless of economic challenge, Metallon remains with a growth and exploration mindset: "Metallon has already begun implementing its first new project at Mazowe, which should be commissioned by the end of November 2015. By next year's close, Metallon will also embark on a second project, Shamva. Our approach of strategic expansion is through perfecting our developments one at a time. Every year Metallon will be working on something new."

Platinum & Platinum Group Metals (PGMs)

Along the 550-km Zimbabwean Great Dyke, there are four geological centers with confirmed PGM and base-metal deposits: Wedza Complex, Selukwe Complex, Hartley Geological Complex, and the Musengezi Complex. The Hartley Geological Complex is currently the largest PGM bearing area, containing 85% of the known PGM resources in Zimbabwe. The PGMs are present in the main sulphide zone layer, which is, on average, three meters thick. The PGM content is lower than South Africa's ores, with head grades typically below four grams per mt.

The Wedza Complex is currently being exploited by Mimosa mining, whose asset is among the lowest cost platinum producers in the world. They operate a mechanized, shallow underground mine and a concentrator plant that produce 110,200 oz in fiscal year 2014.

Zimplats (of the Implats Group) commands the Heartly Geological Complex while Anglo American commissions the Selukwe Complex. After the collapse and closure of Zimplats' Bimba mine, the Zimplats board has been reviewing the structure of the mine. They stated: "The fact that there were no fatalities or injuries from the mine's collapse bears testament to the extent of our paramount safety standards," states Busi Chindove, head of corporate services for Zimplats. The mine is currently under re-development and is anticipated to be fully operational again by mid-2018.

Anglo American's 2010 platinum project, Unki, is designed to extract and process up to 120,000 mt/m of ore, which would yield around 70,000 oz/y of platinum at full capacity. A sudden 15% tax on raw platinum exports shook the platinum sector in 2015 but was suspended eight months after its introduction. The President initiated the levy with the intent of encouraging local metal processing, but its effects were overwhelmingly negative at a time of global commodity price insecurity. During the first half of 2015, platinum production fell 6.4%, down to 5.9 mt in the span of January to June. It will take at least two years for companies to build the smelters necessary to comply with that type of beneficiation requirement. Zimplats, the largest platinum miner in Zimbabwe, is currently refurbishing a base metals refinery, hoping to bring it to operation by mid-2016.

Ferrochrome & Chromite

According to the U.S. Geological Survey, Zimbabwe holds about 90% of the world's chromite reserves and traditionally produces three ferrochrome products: high carbon ferrochrome (HCFC), ferrosilicon chrome, and low carbon ferrochrome. HCFC producers are mainly located in the Midlands region of the country. Zimbabwe's estimated chromite resource is 930 million mt, while current annual extraction sits at 700,000 mt.

There are four established smelters within the country. ZIMASCO in Kwekwe and Zimbabwe Alloys in Gweru, when combined, represent more than 90% of Zimbabwe's smelting capacity at approximately 490,000 mt/y of ferrochrome product. The Wel-Mining smelter is also located in Gweru, and Maranatha is stationed in Kadoma. Ferrochrome production has seen a continual drop and is now only around 150,000 mt/y. To bring productivity back to the 300,000-mt/y level, the Chamber of Mines declares that improvements in mining methods and overall retooling are in order. ZimAlloys, for example, is currently under judicial management and needs investors to rebuild its furnaces.

In 2011, all chrome ore exports were banned in promotion of value addition. In light of the fact that many smelting facilities needed modernization, the government lifted the ban in June 2015 to allow 30 million mt/y of chrome ore leave the country. WGB Kinsey & Co. is one of Zimbabwe's most experienced construction and open cast mining companies and is very hopeful for the development of the chrome sector. "Before the ban, chrome mining was 90% of our business….but now that it has been lifted, the country is ready to springboard again, and Kinsey's plan is to stay actively involved in mining as the nation builds itself up." said Anthony Kinsey, managing director of WGB Kinsey, "The desire by government to make things work and do the sector right is even stronger now."

In an auspicious move, the Zimbabwe Electricity Transmission and Distribution Company (ZETDC) reduced the power tariff by 21% for ferrochrome producers in the middle of 2015 to improve viable output. ZETDC agreed to lower the rate from 8.5 cents per kilowatt-hour (KWh) to 6.7 cents per KWh. A representative of the Confederation of Ferrochrome Industries in Zimbabwe noted that 40% of input costs are induced by electricity, putting nine of their 13 members in position to close down.

Diamonds

Though Zimbabwe is estimated to hold approximately 30% of the world's diamond resources, there have not been any major explorations or discoveries in the past 15 years. Alluvial gem deposits are becoming less available, which is a problem for diamond mining companies that have previously relied on those reserves for production—alluvials are less capital-intensive and more easily extractable. Coupled with high government taxes, those involved in diamond mining have felt the weight of financial strain.

Most recently, Rio Tinto decided to leave Zimbabwe, selling its 78% stake in Murowa Diamonds to RioZim Ltd., stating the assets would be best managed by a local company.

To date, diamonds account for 23% of the total value of mining exports, but the Ministry is hopeful for a better balance in diamond production through the foretelling establishment of Zimbabwe's new Diamond Deep Boiling Facility. MMCZ now houses this $300,000 plant, and can process 50,000 carats of diamonds in a 30-hour cleaning process, preparing them for sale. On average, Zimbabwe receives between 96 and 200 diamond buyers per week. Minister Chidhakwa also recently merged all five diamond mining companies—Murowa, Mbada, Anjin, Marange Resources (to take over Kusena and Gye Nyame), Jinan, and the Diamond Mining Corporation—in an effort to increase transparency and accountability in the sector, while better enabling the extraction of capital intensive kimberlite diamonds. The government holds a 50% share in the Zimbabwe Consolidation Diamond Corporation (ZCDC), which is the merged entity. The other five players will proportionally share the remaining 50%.

Coal

As a means of electricity generation, Zimbabwe is ardent to exploit its estimated 26 billion mt of coal reserves. The most lucrative areas are located in the Lower Karoo of the mid Zambezi Basin and the Save-Limpopo basin. According to the Ministry of Energy & Power Development, those reserves can be translated into 8,000 years of use at a consumption rate of 3 million mt/y. Hwange Colliery Co, one of Zimbabwe's major coal mining companies, has seen increased production this past year. Coal is one of the only resources in Zimbabwe that has seen a rapid turn-around in output since the global recession, and there are hopes of translating this success into increased accessibility to power. Through the Zimbabwe Power Co. (ZPC), the government plans to expand upon the coal fired Hwange Power Station by 600 MW. Noah Gwariro, managing director of ZPC, said: "The lifespan of a power plant is around 30 years, and nearly all of Zimbabwe's power infrastructure is older than that. The youngest plant is Hwange, at around 33 years old. ZPC is focused on life extensions to ramp up its output once again. We are investigating which companies can revive our systems and apply new technology to generate more efficiently."

ZPC has many plans for power expansion, which are discussed further in the infrastructure section on page x.

Other Base Metals

As testament to Zimbabwe's mineral variety, the country also harbors noteworthy nickel, copper, and iron ore reserves. The Shangani and Trojan mines, operated by the Bindura Nickel Corp., are currently producing nickel commercially. Bindura Nickel Corp. owns the only smelter and refinery, which have been closed for more than ten years due to Zimbabwe's economic recession and the fall of nickel prices. However, Bindura Nickel recently announced that it would have the smelter back in operation by the end of 2015, with the capacity to process 160,000 mt/y of nickel matte. Nationally, nickel extraction continues to remain low, at 90,0000 mt/y. Similarly, iron ore output lacks fulfillment at merely 300,000 mt/y and copper is not currently being extracted at all. Zimbabwe has a high quality iron ore grading, at around 40% Fe, and copper reserves are estimated at 5.2 million mt. Despite the widespread existence of deposits, many smaller copper mines were likely closed down in the 1970s as a result of deteriorating security during the war. Small copper mines are generally clustered, providing significant opportunity for investors looking to consolidate and re-tool the out-of-date entities.

Knowledge is Power in Policy

During the commodity-price boom of the mid-2000s, Zimbabwe failed to exploit its raw material production potential; instead, the government embraced counter-incentivizing, resource-nationalistic regulations, enacting indigenous ownership clauses and a 25% free carry interest for the state. Crippled by policy unpredictability and an exodus of skills, Zimbabwe's mining industry nearly turned to dust with the added burden of hyperinflation and the 2008 macroeconomic crisis. The United Nations Development Programme then reported that the Zimbabwean government desperately needed to "craft a delicately-balanced policy environment that fosters investment" in order for their mining industry to regain form. Now, in 2015, Zimbabwe is rising to the challenge.

The Ministry is determined to establish a consistent structure and efficient practices through the retention of valuable information. "Our new online cadaster system is now a common readable geology that government can see and companies can use as a locked-in-place methodological platform," explained mines deputy minister Fred Moyo.

Digitization speeds up the licensing and collections processes with the added bonus of transparency, publicizing roy-

> "Tarcon is capable of providing the necessary surrounding infrastructure to mines, with vast experience in constructing dams, pipelines, and housing for companies such as Zimplats."
>
> **- Lawrence Gudo, CEO, Tarcon Zimbabwe**

"Before the ban, chrome mining was 90% of our business .but now that it has been lifted, the country is ready to springboard again, and Kinsey's plan is to stay actively involved in mining as the nation builds itself up.

- Anthony Kinsey, Managing Director, WGB Kinsey & Co."

alty payments. This platform is also one of the many research initiatives being utilized to create a more competitive foundation for the industry. The Ministry is conducting its own case studies, following two large, two medium and two small-scale companies as research subjects for taxation schemes. "No penalties will be sought after, but we aim to simply learn the correct tax regime and moderate our system based on five years of hard data," posits Moyo.

The governing bodies behind the sector have many changes in store, and the country is slowly starting to see results. Since dollarization in 2009, the national contribution of minerals grew from $500,000 to $2 billion annually. Last year, minerals constituted 53% of all exports—80% of which were gold, platinum and diamonds. The Ministry predicts that the production of platinum will double to surpass 1 million oz/y, and with the re-opening of the Bindura Nickel mine, nickel is also expected to be a major export within the next five years.

Modernization: Rebuilding Both the Mines and the Monetary Framework

The Chamber of Mines Zimbabwe is focused on ensuring active mines are able to re-establish production capacity and resuscitating those mines that have been left to the elements. After the government's "fast track land reform" program of 1999, which called for the transfer of what is estimated to be 110,000 square km of arable land from white to black ownership, most major companies walked away from large exploration tenements—Anglo American, Ashanti, Kinross, and BHP to name a few. "These projects can be acquired via a low cash management buyout…and with the updated cadaster system, investors can better quantify opportunities that are easily within reach," said Toindepi Muganyi, president of the Chamber of Mines Zimbabwe. "There is huge potential to invest, and when you do, your money can directly become productive capital."

Zimbabwe is a unique market in that there is a plethora of brownfield as opposed to greenfield investment opportunities. Apart from a select amount of gold, platinum and diamond mines, all other operators are currently functioning below capacity. For example, the current annual extraction rate for gold is 20 mt, while the estimated resource is 13 million mt. Iron ore is being extracted at a rate of 300,000 mt/y, yet Zimbabwe is estimated to have around 30 billion mt. Zimbabwe's policy to allow the free flow of capital and dividends is described as an undersold advantage of investing in developing those pending resources. Muganyi explained; "There is no restriction on the amount of foreign currency brought into Zimbabwe, and, if you invest your money here, you can take it out."

Though it is not new, this freedom is often overshadowed by the stark restrictions of the indigenization policy.

The government has softened its grip on indigenization, allowing investors to bargain down from the 51% Zimbabwean controlling interest. Yet bargaining, critics argue, leaves unwanted room for corruption. "Zimbabwe cannot enact laws simply based on political concepts, such as resource nationalism, and we are learning from those mistakes," said Sternford Moyo of Scanlen & Holderness. "For example, the government should not be able to abruptly introduce taxes on un-beneficiated mineral exports. There was no evidence to support that being just. Platinum comes out of the ground as a group of eight, sometimes ten, minerals, and if the tax is on the un-beneficiated platinum alone, then it becomes difficult to implement, as you are then discriminating against the rest of the minerals in the group. If you are extracting gold in that mineral combination, then you are subjected to an additional tax that the gold miner down the road is not subjected to, simply because your gold was found in juxtaposition with platinum."

Fundamental corrections in the law are expected to help increase foreign direct investment and combat the thwarting liquidity crunch. Building financial stamina is a national agenda across industries, and key players such as Stanbic Bank have taken particular interest in spurring the mining industry. Stanbic manages a majority of the accounts for the platinum and gold sector. "Our customers are demanding investment banking services as a means to fund re-tooling," stated Weston M. Makwara, executive director of Stanbic Bank Zimbabwe. "Modernization can produce goods at half the cost…and Stanbic works with customers to provide tailored solutions around the price commodities risk."

Legitimizing Artisanal and Small-Scale Mining (ASM)

ASM is estimated to provide a direct livelihood for upwards of one million Zimbabweans. Under the purview of the UK Department for International Development (DFID) and the United States Agency for International Development, Pact World conducted a study in 2015 on the necessity of legitimizing the Zimbabwean ASM sector for the sake of national economic advancement. Deputy minister Moyo has since cited Pact's findings as judiciously combating some of the most pervasive misunderstandings in the mining industry to date. Researching the social element of ASM economics has long been missing from the government's initiatives, which Moyo says has been an undervalued problem: "It makes sense that the Ministry must first know the demography of those with whom they are dealing."

Mark Viso, president and CEO of Pact World, said: "Many people believe that the typical, artisanal gold miner in Zimbabwe is a single, migratory man in his early 20s who has no education [and] gambles away his money. But the true picture is rather different…the average miner is older and married. He has more formal education, [and he] earns and saves more money."

Since 2014, the Zimbabwean government has decriminalized ASM, and the Ministry has prioritized cultivating legal trading channels: "Zimbabwe is formalizing small-scale miners through three areas that have served as the pillars for progress. First, we formalize them legally, allowing them to use the law to get into the industry. Second, from a resource point of view, we allow them to acquire equipment and small loans to get started. Thirdly, from a knowledge standpoint; they must be able to interpret and observe the law, and operate in a manner that is safe for themselves, the community, the environment, and their own dependence."

Progressive private players are already taking on the ASM integration initiative. XCMG Zimbabwe, a high-performance equipment and spare-parts provider, is championing a small-scale mining economic development program that provides the capacity to bring their gold and chrome initiatives into production. Through the funding of multiple players, there is a plan to construct a $100 million facility for processing, while XCMG grants the necessary equipment without any upfront charges. "Repayment terms for the facilities are linked to the revenue generation from their mining activity… the loan tenure is sufficiently long term to make it affordable and accessible to small scale miners," explained Lawrence Gudo, director of XCMG Zimbabwe.

There are nine small-scale mining processing centers where the minerals are bought and distributed, and the equipment is rented. The operation is highly synchronized, from the ministry to the banks down to the equipment providers, showing a genuine trust and dedication to the formalization of the ASM sector.

Ignoring small-scale mining indirectly affects investors, as proliferation of illegal exploitation has an inevitable affect on market prices. A more holistic view on national gold production allows for a more powerful depth of knowledge and informed decision-making. "Since we started supporting small-scale miners, they have pushed production up from 175 kg of gold to about 700 kg of gold per month in the past 12 months. The large mines have remained close to 900 kg," said deputy minister Moyo, highlighting the calamity of their collective presence.

Large-Scale Restructuring

A common misconception is that ASM and large-scale operations work as adversaries. Yet there are many Zimbabwean operations that developed from the compilation of small-scale projects. For example, the Freda Rebecca gold mine was previously four or five small mines operating separately in a space of less than 2,000 hectares. "Combining these operations into one led to the discovery of an even larger ore body, turning the existing smaller potentials into something phenomenal," explained Muganyi.

In a more ideal operating environment, Freda Rebecca produces nearly 30 mt/y of gold; it is currently operating at around 15 mt/y.

With larger mines, economies of scale are better realized, as is the fiscal contribution back to both the community and national revenue stream. "The focus of the local mining industry is on building bigger mines with better jobs and a greater capacity to contribute to the development of the local communities and to the fiscus," argues Victor Gapare, CEO of Bilboes Gold Mines.

Though the situation is more favorable for those working in the large scale, mines are still feeling the pressure of the commodity price drop. Large-scale mines that have been producing for many years need inventiveness to combat financial stress. "The future of mining needs to grow from the bottom upwards," said Kevin Peacocke, founder and CEO of Peacocke & Simpson. "Large mines were set up at a time when favorable economics could justify their business models. The industry was in a situation of $1,137 per oz, which is no longer viable and is unlikely to ever be feasible again."

Peacocke & Simpson is an innovative engineering company that delivers mineral test-work and on-site laboratories. Originally, their clients were small-scale miners, but they have since begun to work with larger players, teaching them the art of minimalism. One of their most recent successes is the implementation of a new type of cyanidation, in which they redesigned the shape of the tanks and the physics of the system. "The chemistry is the same, but our new process results in much higher oxygen levels, which is crucial to the reaction. Quicker dissolution allows for the job to be completed in smaller tanks at a lower cost," explained Peacocke.

Creative solutions are becoming a necessity in working through the downturn, as cutting staff is not a sustainable or productivity focused resolution.

Infrastructure/Power

Rejuvenation of infrastructure is underway mostly in regards to power (many roads are still intact from Zimbabwe's era as the "breadbasket" of Africa).

"Generally speaking, infrastructure in Africa has not received the advocacy it deserves as a critical economic enabler. South Africa is an instructive example of how an economy is affected by power supply, or lack thereof, and Zimbabwe needs to learn how to overcome our shortfall by increasing capacity to fill demand.

- Thomas Zondo Sakala, CEO, Infrastructure Development Bank of Zimbabwe (IDBZ)"

The Infrastructure Development Bank of Zimbabwe (IDBZ) and the Zimbabwe Power Company (ZPC) are intervening to increase the output of megawatts (MW) from existing coal, thermal and hydropower plants, while branching out into new means of generation, such as solar. "As a former director for the African Development Bank, I can say that the Zimbabwean government was quite foresighted in creating this institution many years ago," said Thomas Zondo Sakala, the newly appointed CEO of IDBZ. "Generally speaking, infrastructure in Africa has not received the advocacy it deserves as a critical economic enabler. South Africa is an instructive example of how an economy is affected by power supply, or lack thereof, and Zimbabwe needs to learn how to overcome our shortfall by increasing capacity to fill demand."

ZPC is working to develop the Batoka Gorge hydropower plant along the Zambezi River. Noah Gwariro, managing director of ZPC plans for it to "operate in conjunction with the [already existing] Kariba plant, utilizing the same water twice."

The plant alone is estimated to cost $1.4 billion. "Realistically the project could take another two years before Batoka is started, and in 2018 we hope to reach financial closure to mobilize contractors on site," explained Gwariro. "The time is ripe for this kind of development, and clean renewable solutions are the most productive answer."

There are currently tenders available for a large solar project, with hopes of adding 300 MW to the national grid in the near future. "In the morning and evenings when solar is not viable, we will maximize on hydropower, and vice versa, creating a symbiotic system that will keep Zimbabwe's lights on," said Gwariro.

Due to the constraints of worsening power cuts, most businesses have already invested in back up power generators. Mike Kamungeremu, managing director of Tendo Electronics and Power Engineering Ltd., has experienced consistent demand for his products and services: "Those who never thought about investing in a generator or solar are realizing that in order to continue doing business, it is a necessity."

He recently spoke with the executives at ZPC about how Zimbabwe should also be buying power locally. "Tendo has been approached by some of our customers that specifically want to invest in solar in the hope of selling their excess power back to the national grid."

Surrounding countries have already established a system for resident to nation energy sales where its citizens can reap the benefits of their excess power and the state can put the surplus to use. Zimbabwe has yet to create such a system.

Conclusion

Zimbabwe's resilience and positive outlook stem from the indisputable work ethic of its people.

With the highest literacy rate in Africa—well above South Africa—deputy minister Moyo proudly highlighted that Zimbabweans have a "craving for education and resolve around hard work."

Resource exploitation is expected to be a major driver in Zimbabwe's economy, particularly with job creation. Due to indigenization requirements, coupled with the added benefit of native know-how, companies comprised of locals are undoubtedly the most attractive choice for foreign alliances. "Since dollarization in 2009," explained Lawrence Gudo, who is also CEO of Tarcon Zimbabwe, "our currency has been a major pull factor for the best talent."

Tarcon has heavily invested in both earthmoving equipment and mining expertise, strategically positioning itself for the influx of investment. "Tarcon is capable of providing the necessary surrounding infrastructure to mines, with vast experience in constructing dams, pipelines, and housing for companies such as Zimplats," explains Gudo.

Investing in Zimbabwe, Gudo says, is best done soon, as resources are at a discounted price. Many advise that there is no better time to plant roots in Zimbabwean soil, as "the growth potential of the mining sector outweighs every negative sentiment," argues Richard Chingodza, general manager of the Minerals Marketing Corporation of Zimbabwe.

A general theme throughout GBR's research in the country is that perceived risk is not an accurate sentiment of actual risk. In other resource-rich parts of the world, miners are forced to dig deeper and be content with lower grades to satisfy production needs. In Zimbabwe, the mining industry has barely scratched the surface. Deputy minister Moyo insists: "There is no dispute that Zimbabwe has a world-class geology, and we will remain with an edge above our fellow regional countries due to our favorable infrastructure and a more productive workforce."

It may be only a matter of time before Zimbabwe is a flooded market. •

Image: Mount Meru near Arusha in Tanzania.
From David Evison -Shutterstock

Central and East Africa

DRC
Republic of Congo
Tanzania

Central Africa

The region has long been home to mining ventures, and the DRC offers massive potential and steady production. Can it also serve as an example for its neighbors to how best to capitalize on their mineral riches?

Central African countries have a long-standing tradition of mining when compared to the East African region. While most countries like Chad and the Central African Republic continue to be plagued by instability and violence, the Democratic Republic of Congo's (DRC) Katanga province in the south of the country has long been viewed as a destination that welcomes mining investments and is relatively stable. While it is true that areas in the north of the DRC are conflict-prone, Katanga has not experienced instability for quite some time.

With its estimated $24 trillion of unexplored mineral deposits, the DRC is an obvious choice for one of our top 10 mining destinations in Africa. The Central African Copperbelt, rich in copper and cobalt, extends for about 450 kilometers (km) from Zambia into the DRC. While copper certainly plays a big role in the DRC, the potential for various other minerals is also immense.

"We have identified 19 target areas in various provinces that will be explored to understand the geological composition of the mineral resources in those areas, not limited to specific minerals. One cannot determine the mineral resources that these contain in one or two years. It will take four to five years for us to see the extent to which the entire nation is richly endowed. The DRC has diverse wealth, including copper, gold, diamonds, and manganese to name but a few, and there exists massive potential beyond Katanga, but before companies can begin exploring, we need to understand what is in the ground," said the Hon. Minister of Mines of the DRC, Martin Kabwelulu.

The need for transparency cannot be understated for investors interested in the DRC. With a new mining code implemented only in 2002, discussion is already underway to alter it. The governor of Katanga has spoken out against imposing measures that might potentially scare away foreign investors, but the central government is certainly interested in getting a better deal for itself with regards to both existing and new mining investments. This will create a delicate balancing act to avoid losing the international mining community's interest in the region. "The new mining code will not be very different. The major issue that we have with the current code is the fiscal-stability clause. The mining code provides a certain guarantee of stability: the existing tax, customs, exchange and other benefits applicable to mining activities remain in effect for 10 years in favor of each concerned mining title holder, in the event that the mining code is amended. Through consultation with current investors, we have agreed that the changes in the mining code, specifically to the fiscal stability clause, will not be retroactive; the ten years will apply, and we will continue with the same terms. For new investors, we will reduce the clause to five years," explained Kabwelulu.

While the DRC has about 40 km of coastline, the crucial mining jurisdiction of Katanga is without access to the sea. Other Central African countries, such as Chad and the Central African Republic, face similar challenges as land-locked jurisdictions. To help mitigate this, the DRC government is working to build roads and restore and upgrade railways. Two such lines with excellent potential are the Congo railway and the Katanga Benguela railway leading to Angola's Port of Lobito. More investment will be needed to complete this work and help streamline exports of Katanga's riches.

A final major challenge is the supply of power. The lack of access to power is a countrywide problem, made especially acute in Katanga due to the region's fast pace of development in the mining sector. Yet the DRC has tremendous hydroelectric prospects, and the government is working hard to capitalize on this potential.

If the country can overcome these challenges and continues to provide a stable political environment that is conducive to investment, the DRC's mineral wealth will translate into increasing levels of prosperity. The surrounding countries of Chad and the Central African Republic, for example, could learn a lot from their enormous neighbor and, perhaps when their own political situation becomes more stable, also benefit from the natural riches hidden beneath their feet. •

East Africa

As the competition for investment dollars intensifies, East African nations are embarking on several megaprojects in energy and transportation that will makes their nations collectively more attractive and accessible.

The diminishing pool of global capital is putting a strain on the East African mining industry. Decreased international demand and slow global economic growth are making it difficult for the region to attract new exploration and are dimming the prospects for future revenues. At the same time, governments are under pressure to redesign their mineral policies to favor foreign direct investment so that countries can the geological potential of their minerals to boost overall development. Of the three major jurisdictions, Tanzania's mining sector is the most robust, sitting at 3.5% of GDP, while Kenya's is at less than 1%, and Uganda's has averaged only 0.4% in recent years.

Mining is Rwanda's second largest foreign income earner and the sector contributes 1.5% of GDP. Metallic ore coltan harvests the most revenue, but in five years the government is expecting production of mixed tantalum, tin, and tungsten ores from the ten new concessions that were recently granted to six mining companies in July 2015. Neighboring Tanzania is known for its gold exports, but various miners are looking to invest in the nation's nickel, coal and uranium resources. Diversification has proven difficult, as Tanzania currently abides by a relatively uncompetitive tax and royalties regime. Its mining code is more onerous than the bulk of other African countries and, against popular demand, Kenya has followed Tanzania's example. Meanwhile, Kenya is revising its mining policy and existing major operations have managed the standing rates. For example, through the success of Kenya's Base Titanium project, the country is projected to break the top-ten ranking for titanium dioxide producing countries in the world within the next two years.

Though strategically positioned to access Asia-Pacific markets, East Africa is still in need of defragmentation and international collaboration within its own continent. At the Eastern Africa Mining and Energy Conference in Nairobi, Kenya's Mining Cabinet Secretary, Najib Balala, highlighted the importance of states working together to stabilize the region, unify legal regimes, and enhance transparency in the mining sector. Kenya, like most other countries in East Africa, is still considered a greenfield-exploration destination. Seeing as global capital expenditure is expected to drop to $40 billion in 2016—from a high of $140 billion in 2012—East African government leaders are realizing that stability and accessibility of the region as a whole are more valuable to long-term investors than the appeal of any single nation alone.

Establishing needed infrastructure for business growth is seen across all categories of road, rail, power, and ports. The East African Community (EAC) group has prioritized the Arusha-Namanga-Athi river-road project, paving the 240-km road connecting the Arusha Region of Tanzania up across the border into Kenya. Decreasing transit time and reducing transport costs is also seen in the joint rehabilitation of the Kenya-Uganda railway. This project was mobilized in 2013, and is expected to eventually connect with Rwanda and South Sudan. Additionally, the Africa Development Bank has granted EAC member states $360 million to create a power pool connecting Kenya, Uganda, Rwanda, Burundi, and the Democratic Republic of Congo, which would ease cross-border power exports via a common grid.

These construction endeavors are a productive means of monetary movement, but infrastructural progress is most realized through the implementation of the Lamu Port Southern Sudan-Ethiopia Transport (LAPSSET) initiative. Projects include a liquefied-natural-gas-fired power plant, an oil pipeline, six berths at a deep-water port, and a desalination unit. As stated by the LAPSSET Corridor Development Authority, the enhancement of the Lamu Port will allow for Kenya to establish itself as one of the only Transshipment ports in the Eastern and Southern Africa region, second only to Port Durban. The aim is to build Lamu to act as a logistical hub for the region, tactically timed with the widening of the Suez Canal.

At a time when profits are low and companies are cutting costs, mining operators need reliable infrastructure and pro-investment legislation. East Africa's lucrative resources remain largely untapped while the public and private sectors are busy crafting a sustainable foundation for mining behind the scenes. Balancing the interests of government, local communities, and investors remains a challenge, but if the process is undergone transparently and with cross-border collaboration, East Africa's mining industry could be worth far more than any projected price tag. •

Joseph Schwarz

General Manager,
External Affairs and Development
Base Titanium

Base Titanium is an Australian company that owns and operates the Mineral Sands Project in Kwale Kenya, East Africa. Can provide us with a brief introduction to the project?

The Kwale project, which has a mine life of 13 years, is comprised of two separate deposits: the central dune, where operations began and where we are mining now, and the south dune, which is on the other side of the dam. The central dune is a high-grade deposit compared to the south dune. At present, Base Titanium is mining around 9 million metric tons per year (mt/y), producing 360,000 mt/y of equivalent ilmenite, 80,000 mt/y of rutile, and 30,000 mt/y of zircon. The mine throughput will ramp up to 12 million mt/y: the production of ilmenite will drop off to roughly 270,000 mt/y, rutile by the same sort of proportion, so 50,000 mt/y to 60,000 mt/y and zircon down to between 15,000 mt/y to 20,000 mt/y.

The Kenyan government's hopes to stimulate investment in the mining sector are largely pinned to the Mining Bill 2014, of which Base Titanium has been vocal in its criticism. What do you believe are the overarching issues and how can they be rectified?

For a country that has long neglected minerals as a potential economic contributor, the first step is to develop a long-term strategy and policy around where the country wants the industry to be in the next 20 years. This later informs the legislation. Unfortunately, this did not happen in Kenya; legislation is nearing completion without reference to a policy.

Fundamentally, the government needs to contribute more in terms of minerals information: there is little geological data, no geophysical information, and very little available to support grassroots exploration. Miners who are inclined to explore Kenya must obtain their own basic data, but the Mining Bill 2014 would not encourage them to take that risk. A potential investor would look at the bill as is and rightly come to the conclusion that it does not encourage investment, but instead is rather punitive. The original bill was essentially the result of the most onerous clauses and provisions from various other legislations in different jurisdictions being picked out and lumped together into one bill. A mining bill can call for free carry, local listing, right of preemption or other benefits to the country, but these cannot all be amassed into one piece of national mining legislation without it being considered unattractive.

In the currently adverse commodities market environment, the government ought to rethink its approach to growing the minerals sector. The rather narrow view taken on extracting as much tax revenue as possible ignores the significantly larger direct, indirect and induced benefits to be derived from the mining economy. This can only happen in a stable and competitive environment that encourages the rapid growth of the industry, which in turn will generate increased tax revenues.

Kenya's formalized mining industry is in its very early stages, but industry participants have openly stated that when serious new mining companies enter this market, they will look to the example of Base Titanium. Why is that?

Base Titanium has an unparalleled safety record, a differentiated approach to involving the community and a commitment to complying with all international standards relating to environment, community, etc.

Looking more closely at each of these points, Base Titanium's safety record speaks for itself. We have incurred three lost time injuries, two of which were during the construction phase, in 13 million man hours worked, resulting in a cumulative lost time injury frequency rate of 0.23. The Western Australian average rate is over two and that is in a part of the world that has been mining for over 100 years. Many of our employees have never worked on a mine before, so this performance is a testament to the training, procedures, and enforcement applied to ensure a safe working environment for our employees.

Regarding the community, we have created a system that relies on a mutual exchange of benefits: the community gets from us what they want and we get from them what we want. We have already built infrastructure, schools, health centers, but the focus now is moving away from infrastructure towards self-sustaining community investment programs, such as teaching the community how to grow cotton commercially. What does Base Titanium receive in exchange? We have a loyal workforce, a supportive and protective community and a reference point for future projects.

Lastly, Base Titanium's programs comply with local legislation as well as the relevant international standards: the Equator Principles, the IFC performance standards, Voluntary Principles on Security and Human Rights, International Labor Organization standards, and others.

What are Base Titanium's future plans for its mine in Kenya and aspirations beyond the country?

In addition to operating the Kwale Mine, Base Titanium plans to explore further opportunities in the country and in other conducive jurisdictions in Africa. The Kwale Project is the launch pad for future growth of the company. •

DEMOCRATIC REPUBLIC OF THE CONGO

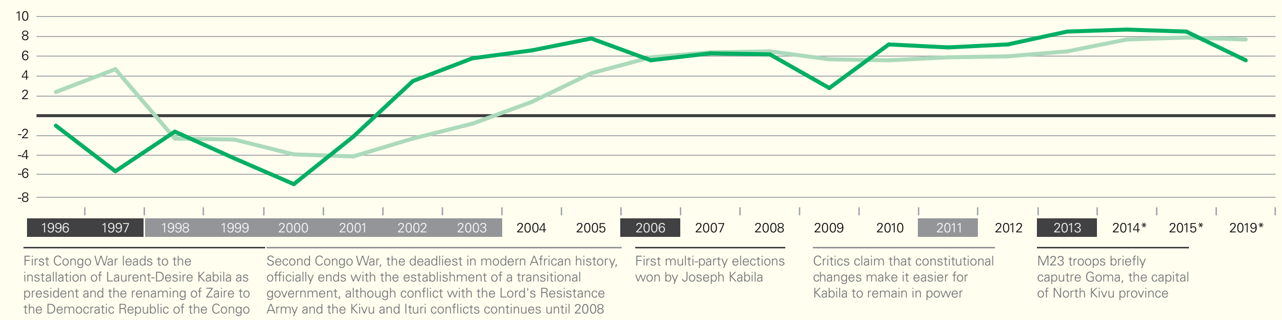
The Democratic Republic of the Congo gained infamy under Belgium's colonial rule, and the problems caused by this legacy continue to play a role in the sporadic violence that continues to this day. Despite this, there are signs that some regions are significantly improving. The mineral potential of the Democratic Republic of the Congo is among the most exciting in the world. Despite the challenges facing investors, the country is a globally significant producer of cobalt, copper, diamonds, tantalum and tin.
SOURCE: THE AFRICAN RESOURCE

Population: 79,375,136
Land Area: 2,344,858 sq km
Official Language(s): French
Capital: Kinshasa
Chief of State: President Joseph Kabila
Head of Government: Prime Minister Augustin Matata Ponyo
GDP (PPP): $57.78 billion (2014 est.)
Growth Rate: 9.2% (2014 est.)
GDP per Capita: $700 (2014 est.)
Economic Sector Breakdown: agriculture: 21.2%, industry: 33.2%, services: 45.7% (2014 est)
Exports: $12.98 billion (2014 est.): diamonds, copper, gold, cobalt, wood products, crude oil, coffee
Imports: $511.98 billion (2014 est.): foodstuffs, mining and other machinery, transport equipment, fuels
Major Trade Partners: China, Zambia, South Africa, Belgium, Italy

GDP GROWTH (%)

SOURCE: WORLD BANK, IMF, BBC

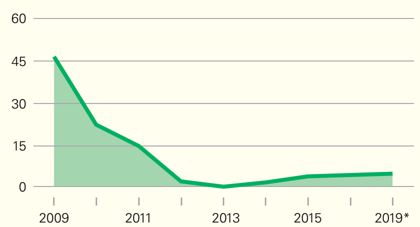
*projected



INFLATION

SOURCE: IMF

*projection



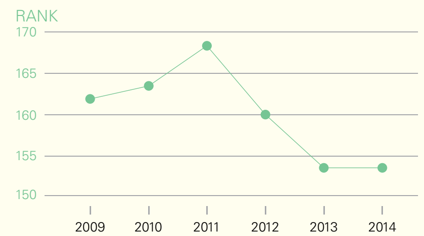
MINE PRODUCTION

SOURCE: BRITISH GEOLOGICAL SURVEY

Coal (bituminous)	132,000 mt
Cobalt	76,874 mt
Copper	914,600 mt
Diamonds	17,624,000 ct
Gold	600 kg
Silver	60,431 kg
Tantalum and Niobium	697 mt
Tin	10,175 mt
Tungsten	31 mt
Zinc	6,200 mt

TRANSPARENCY INTERNATIONAL CORRUPTION PERCEPTIONS INDEX

SOURCE: TRANSPARENCY INTERNATIONAL



STATUS OF THE MINING CODE

SOURCE: GLOBAL BUSINESS REPORTS

Corporate Income Tax Rate	30%
Royalties (Non-Ferrous Metals)	2%
Royalties (Precious Metals)	2.5%

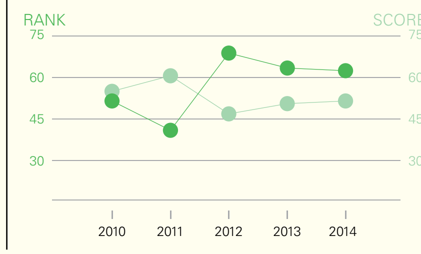
MINING SECTOR CONTRIBUTION TO GDP

SOURCE: AFRICAN ECONOMIC OUTLOOK

2009 **4.5%** 2014 **4.9%**

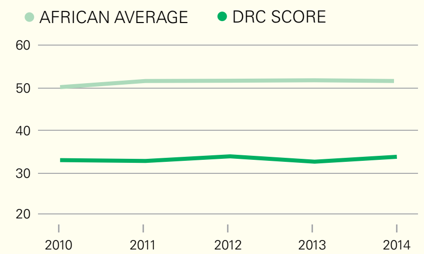
FRASER INSTITUTE INVESTMENT ATTRACTIVENESS INDEX

SOURCE: FRASER INSTITUTE



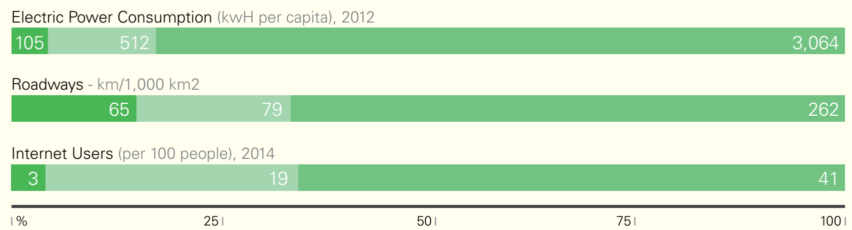
IBRAHIM INDEX OF AFRICAN GOVERNANCE

SOURCE: MO IBRAHIM FOUNDATION



INFRASTRUCTURE INDICATORS

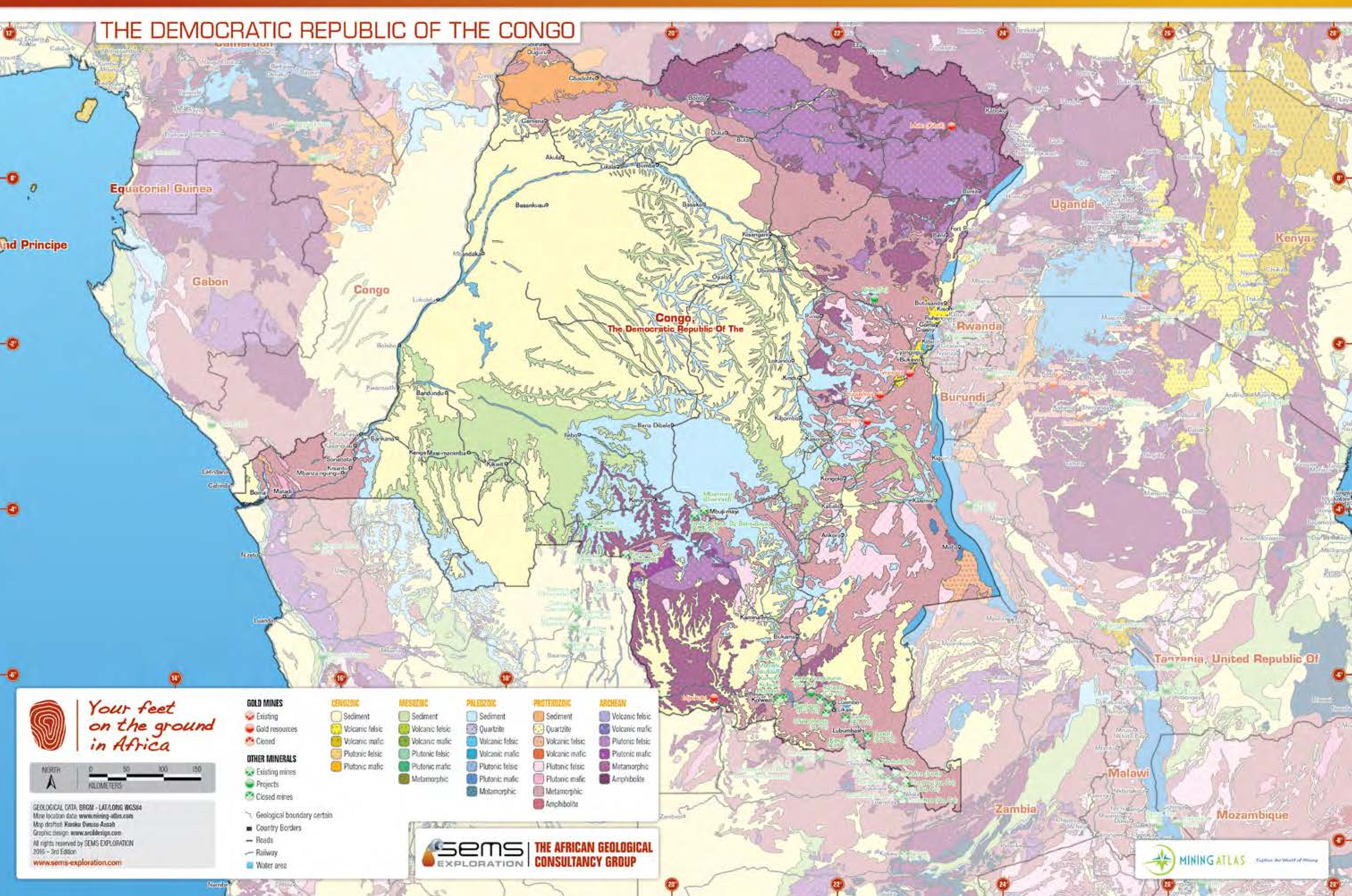
SOURCE: UIC, IEA, CIA WORLD FACTBOOK



BUSINESS ENVIRONMENT RANKING IN AFRICA (OUT OF 47)

SOURCE: WORLD BANK

	2015
Ease of Doing Business	44
Starting a Business	11
Dealing with Construction Permits	22
Getting Electricity	34
Registering Property	23



THE DEMOCRATIC REPUBLIC OF THE CONGO
Congo, The Democratic Republic Of The
Equatorial Guinea
Gabon
Congo
Uganda
Kenya
Rwanda
Burundi
Tanzania, United Republic Of
Zambia
Malawi
Mozambique
Kisangani
Mbandaka
Basankusu
Bandundu
Kikwit
Kananga
Mbuji-mayi
Kalemie
Kindu
Bukavu
Goma
Kamina
Kolwezi
Lubumbashi
Likasi
Matadi
Boma
Banana
Moba
Kongolo
Bunia
Beni
Butembo
Gbadolite
Gemena
Bumba
Lisala
Buta
Isiro
Lodja
Your feet on the ground in Africa
GOLD MINES
Existing
Gold resources
Closed
OTHER MINERALS
Existing mines
Projects
Closed mines
CENOZOIC
Sediment
Volcanic felsic
Volcanic mafic
Plutonic felsic
Plutonic mafic
MESOZOIC
Sediment
Volcanic felsic
Volcanic mafic
Plutonic felsic
Plutonic mafic
Metamorphic
PALEOZOIC
Sediment
Quartzite
Volcanic felsic
Volcanic mafic
Plutonic felsic
Plutonic mafic
Metamorphic
PROTEROZOIC
Sediment
Quartzite
Volcanic felsic
Volcanic mafic
Plutonic felsic
Plutonic mafic
Metamorphic
Amphibolite
ARCHEAN
Volcanic felsic
Volcanic mafic
Plutonic felsic
Plutonic mafic
Metamorphic
Amphibolite
NORTH
0 50 100 150
KILOMETERS
GEOLOGICAL DATA: BRGM - LAT/LONG WGS84
Mine location data: www.mining-atlas.com
Map drafted: Kwaku Owusu-Assah
Graphic design: www.arcildesign.com
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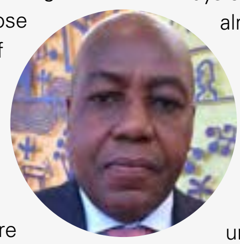
Geological boundary certain
Country Borders
Roads
Railway
Water area
SEMS EXPLORATION
THE AFRICAN GEOLOGICAL CONSULTANCY GROUP
MINING ATLAS

Hon. Martin Kabwelulu

Minister
Ministry of Mines
Democratic Republic of Congo (DRC)

Mining in the DRC is synonymous with Katanga, but there are significant developments in other provinces, such as Randgold's Kibali project. What is the ministry doing to promote exploration in other parts of the country?

In principle, there is vast mineral wealth across the Democratic Republic of Congo (DRC). We have identified 19 target areas in various provinces that will be explored to understand the geological composition of the mineral resources in those areas, not limited to specific minerals. It is a matter of time, one cannot determine the mineral resources it in one year or two years. It will take four to five years for us to see that the entire nation is richly endowed. The DRC has diverse wealth, including copper, gold, diamonds, and manganese to name a few and there exists massive potential beyond Katanga, but before companies can begin exploring, we need to understand what is in the ground. We need to know the exact reserves, which will allow us to make informed decisions before we sign new contracts with foreign investors.



Changes to the new mining code are immanent. What impact will the changes have on both new and current investors?

The new mining code will not be very different. The major issue we have at the moment with the current code is the fiscal stability clause. The mining code provides a certain guarantee of stability: the existing tax, customs, exchange and other benefits applicable to mining activities remain in effect for 10 years in favor of each concerned mining title holder in the event that the mining code is amended. Through consultation with current investors, we have agreed that the changes in the mining code, specifically to the fiscal stability clause will not be retrospective, but the ten years will apply and we will continue with the same terms. For new investors, we will reduce the clause to five years.

Infrastructure is the backbone to the development of a prosperous mining sector. What plans are being made to address the infrastructure and energy challenges?

There are two main infrastructure challenges that the government is currently addressing in the DRC. First is the issue of electricity. The pace of growth in the mining sector outpaced energy supplies, resulting in major power shortages. At the moment, there is a deficit of 400 megawatts (MW) to 500 MW in the Katanga province. However in the other provinces, they have not felt an energy crisis, as the mining activities have not accelerated at the same pace. To combat these issues we have authorized mining companies to fulfill their own energy requirements as we await the completion of some major energy projects, such as the Inga and Zongo 2 hydro power plant and Katende hydropower plant. TFM and KCC are working to finish the rehabilitation of the Koni and Mwadingusha hydropower plants. The energy potential of the DRC is comprised of significant hydroelectric resources, which will come to fruition, and we expect to be restore sufficient electricity by 2017.

Transportation infrastructure is also problematic. The movement of minerals exceeds one million metric tons (mt), demanding many trucks, which cannot carry more than 30 mt at a time, and places huge demands on our roads. As a result, we are focused on rehabilitating the Congo railway, the SMCC. The government has already purchased 18 locomotives and is rehabilitating the railways cars as well as the line. Several mining contractors have already signed agreements to utilize it.

In the south we face a similar issue. The transportation costs are very high to bring manganese to Lubumbashi, but it is possible to export through the Angolan border, past Dilolo, from on KatangaBenguela railway line. Efforts have been made to rehabilitate the railway and upgrade and improve the Port of Lobito. We understand the urgency, but it will cost more than $500 million.

The DRC's vast mineral resources will continue to attract international interest. What steps is the ministry taking to promote long-term sustainable growth?

If investors are attracted to the DRC, it is because of our mining code. The code enables the investor to establish and grow operations very quickly. We have several tax benefits in place for investors. Import duties at preferential rates for instance, before the effective commencement of exploitation work, all goods and products imported strictly for mining use are subject to import duties at the preferential rate of two per cent, as from the effective commencement of exploitation work, the import duty rate of 5% applies under the same conditions. However, fuels, lubricants, reagents and consumables for mining activities remain taxed at three per cent. There are also exemptions on export duties for mining companies.

The ministry has also developed a streamlined process to obtain mining licenses and generous timeframes to complete exploration activity. For instance, once granted your mining license, a mining company has six months to start activity and five years to confirm significant reserves for production. There is an additional five years granted if the mining company was unable to prove the viability of its asset. •

The DRC: High Grades in the Heart of Africa

The DRC has made tremendous strides to improve transparency and realize 8.5% GDP growth in 2013, but the optimistic mood is tempered by the prospect of a new mining code.

Image: Servicing the mines in the DRC. Photo provided by AEL Mining Serives DRC

The Democratic Republic of Congo's (DRC) geological wealth has long been well known. In 1892, following initial exploration of Katanga, the Belgian geologist Jules Cornet noted in his diary: "I would not dare to venture a figure concerning the enormous quantity of copper present at the sites I have recently examined: if I did, it would sound all too outrageous and unbelievable." Subsequent missions confirmed that his enthusiasm was entirely justified. While in Chile, the world's largest producer of copper, giant open pit mines are exploiting deposits with average grades of 0.5%, miners in Katanga rarely touch anything below 3%.

In more recent times, the introduction of a clear regulatory framework in the form of the 2002 Mining Code paved the way for a decade of prolonged investment in new projects. Between 2000 and 2014, total copper production rose from around 30,000 mt/y to 1 million mt/y and the country recently overtook Zambia as Africa's largest producer of the red metal.

After seven years as a candidate, the DRC became fully compliant with the Extractive Industries Transparency Initiative (EITI) in 2014. According to the most recent reconciliation report, in 2012, mining generated over $1 billion in revenue for the state and accounted for 88% of total exports. GDP growth in the country reached 8.5% in 2013 and is forecasted to rise to 8.6% in 2015, thanks in part to these increases in mining activity.

Thus far, Congolese mining has largely been a story of two minerals – copper and cobalt – with most of the action taking place in Katanga. Yet, the country has much more to offer. Artisanal miners have exploited diamonds in the two Kasai provinces for centuries, and there is great potential to mechanize some of these operations. Meanwhile, geologists are hungrily eyeing up deposits of the 'three Ts': tin, tantalum and tungsten and, more recently, copper/gold discoveries have been made in the Bas-Congo, although exploration remains at an early stage.

Many believe that it is this geological diversity that will lead the Congo to future growth. "Most of the success stories in Africa are based around the exploitation of a single commodity: gold in South Africa, oil in Angola and Nigeria, said Josh Foster, general manager of Bell Equipment (DRC). "In contrast, the DRC's wealth is based on a wide range of different minerals."

Foreign media covering the DRC tend to fixate on stories concerning military conflict and civil strife. While it would be callous to ignore the violence, to focus unduly on the fighting is to do the country a disservice. During the course of our research, not one company identified security as a major concern; the violence is generally relegated to a few areas along the Rwandan and Ugandan borders, while most mines are located in the south. From an industry standpoint, there are far more pressing issues: the lack of power, the low quality of transport infrastructure and uncertainty surrounding the new mining code.

There is also the shadow of the forthcoming general election looming over the country. President Joseph Kabila, who has overseen one of the most stable decades in the DRC's his-

"If the operating environment here were perfect I do not believe any of the producers would have a problem paying slightly higher royalty rates, but this is not the reality. The DRC suffers from some serious underlying issues so any shakeup to the regulations now will cause investors to think twice before putting their funds here."

- Chetan Chug, Chairman, Somika

tory, is obliged to step down when his second term comes to an end in November 2016. However, some fear that when the time comes, he may refuse to leave. In January, anger at proposed legislative changes that would have removed the constitutional two-term limit bubbled over into violent protests in Kinshasa, Goma, and various other urban centers. For now, the streets are calm and most are cautiously optimistic that elections will be held peacefully. However, many mining houses will be keeping a watchful eye on how the situation develops before giving the green light to new investments. If all goes well, the DRC should see a sudden surge in FDI. If not, it will be a different story.

Changing the Mining Code: A Fork in the Road for the Industry?

Since 2002, the DRC's mining code has served as a staunch reserve of stability in a country plagued by uncertainty. The combination of the country's unparalleled geology with a transparent regulatory framework proved an attractive combination for investors, and new developments poured in.

At present, miners enjoy certain advantages compared with other industries: corporation tax, which is levied on net profits, is set at 30% rather than the standard 35%. Import taxes stand at 2% for exploration projects and 5% for operational mines, compared to around 15% for general imports. Royalty payments also compare favorably with neighboring countries, at 2% for non-ferrous metals and 2.5% for precious metals.

However, plans to change the code have brought consternation to the sector.

Politicians feel that while mining has boomed over the past 10 years, tax receipts have not seen a corresponding rise. Miners complain that the politicians do not understand the long-term nature of the industry.

As the code was only introduced in 2002, several of the mines are only just starting to turn a profit and make a real contribution to tax revenues. As copper prices continue to fall, those in power seem to believe that the only way to make up for this shortfall is with a tax hike.

Proposals include an increase in state equity participation in new projects from 5% to 10%, a rise in corporation tax from 30% to 35% and a general increase in royalty payments across all minerals. "Companies already operating in DRC could probably live with the legislation although they would not make any further investment; the only real change would be a hike in royalty payments," claimed Charles Brown, chief operating officer at Tiger Resources. "However, this would have a very negative effect on future investments."

An analysis carried out by the DRC Chamber of Mines suggests that if these changes are enacted then it could set the industry back by 10 years. It has been estimated that return on gold projects would drop to virtually zero. Meanwhile, investors in copper/cobalt projects would stand to earn just 20% of total cash flow over the life of a mine, compared with the government's 80% take.

The Council of Ministers has approved a draft that will be taken forward to Parliament for further debate. This means that there is still an opportunity for miners to lobby the government before the bill is passed into law. There is a strong feeling that there has not been enough consultation with the private sector and that now is not the time to make sweeping changes to the legislation. "If the operating environment here were perfect I do not believe any of the producers would have a problem paying slightly higher royalty rates, but this is not the reality. The DRC suffers from some serious underlying issues so any shakeup to the regulations now will cause investors to think twice before putting their funds here," cautioned Somika's chairman, Chetan Chug.

Doing Business in the DRC

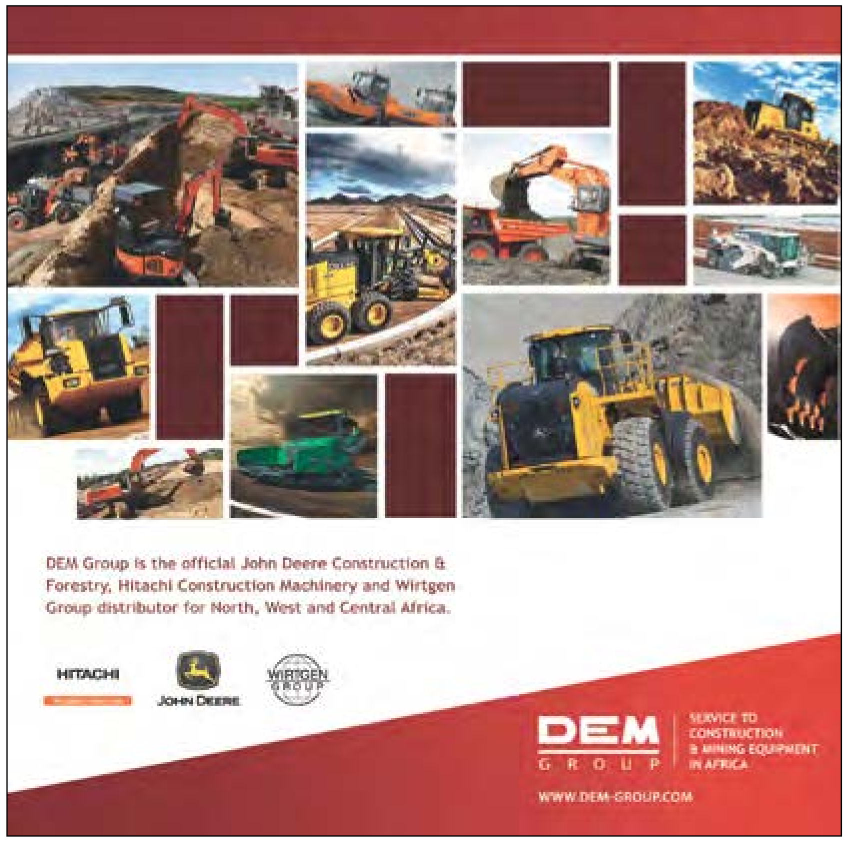
Many investors are wary of entering a country infamous for bureaucracy and corruption. Regulations are often unclear, the political situation is in a state of uncertainty and, admittedly, one still hears of payments going astray and draconian fines being levied for trumped up technicalities. Nevertheless, several reforms instituted over the past few years have helped bring more formality to the DRC.

The first and most far-reaching of these was the country's accession to the Treaty for the Harmonization of African Business Law (OHADA). In existence since 1993, the DRC joined in 2012, making it the 17th member state. The agreement consolidates nine separate aspects of the law into one universal code. In the past, legal practitioners had to make reference to a long litany of confusing and often conflicting laws, some of which date back to the 19th Century. OHADA's nine uniform acts supersede this older legislation and serve as a common reference to ensure that all parties are playing by the same rules.

Several of the OHADA acts have a direct bearing on how foreign companies operate in the DRC. The act governing general commercial law provides a framework for fundamental issues such as contracts. Clear procedures are outlined for companies looking to bring in outside financing, which explain how both investors and banks should act and what documentation is required.

The treaty has also simplified the process of incorporating new companies. Previously, there were five types of commercial companies, many of which were rarely used. OHADA introduced several more practical options. Notable among these is the Société de Action Simplifiée (SAS). While more common francophone organisational denominations, such as SA or SARL, require strict corporate structures, SAS grants a company more freedom to implement a management hierarchy of their choice. This has proved popular with Anglo-Saxon and Chinese investors who are less familiar with the French system.

In the case of dispute, there is a common court of arbitration based in Abidjan, Cote d'Ivoire, which can hear cases from all member states. "This common court facility means that there is now an established body of case law that has been built up over more than 20 years," explained Regina Ayuk, compliance manager at Tiger Resources. "If we have a case here in Lubumbashi then we do not rely solely on resolutions from the DRC, we can draw upon jurisprudence from the 17 member countries, which is of real benefit to all parties."



The second major reform was the introduction of a 16% value added tax (VAT) in 2012. "After VAT was introduced… companies were forced to rapidly become more formal. More and more SMEs are working with banks and routing their funds through the proper channels," said Louis Odilon Alauguillaume, director southern region for BCDC. While the measure has reduced the number of companies operating on a purely cash basis there have been some teething problems with the implementation.

Unsurprisingly, most of these issues seem to arise with the terms of reimbursement: VAT contributions should be repaid to companies within 30 days but the process can take several months. "In response, miners are extending the terms of payment for their suppliers; instead of paying within 30 days, they will pay within 90 days. The end result is that the companies bearing the real cost for introducing VAT are the SMEs," said Michel Schittekatte, business development manager for Trust Merchant Bank (TMB). In the long-term, the treasury should be able to organise a more robust pre-financing scheme to improve the turnaround time for the payments but for now the mines continue to complain.

In regards to taxation in general, the frequency of tax evasion made it extremely challenging for many legally complaint companies to compete. Group Sil, now the top supplier of bulk fuel for mines in the DRC, initially struggled to establish itself due to its honest practices. "Thankfully, over the past year payment implementation has been stronger, bringing competition back to a level playing field," notes Group Sil manager Clive Gisairo, "Under the last provisional administration, specifically Governor Moise Kitumbi, the government instilled systematic improvements to keep track of everyone digitally." Though that party is no longer in power, Gisairo assures that these new practices were not reliant on micromanaging, and businesses continue to reap the benefits. This kind of stability is welcomed, and is surely a positive indicator for potential investors and entrepreneurs.

However, applying for expatriate worker documents can be another headache for DRC registered companies. Local labour laws encourage the employment of Congolese workers but the lack of skills means that most companies rely to some extent on expats. The larger mining houses tend to have a dedicated department to manage the necessary documentation but this is not always realistic for new entrants or smaller companies with limited resources.

In these cases it is common to turn to local agencies that specialise in assisting new arrivals. Boutique advisory firm BFG was established in 2011 to cater to this growing demand. Since that time they have helped many foreign companies bring over personnel. "In the DRC there are many different kinds of visa and it can be difficult for outsiders to know which one to apply for," said managing director, Tuzzi Kiaku, "It is important to point out that the work visa and the work permit are two different documents. The work permit is issued by the Ministry of Labor, while work visas are the responsibility of the Ministry of the Interior."

Without assistance, it can take up to eight weeks to receive a work permit but local agencies can arrange for an interim visa to be issued in just 20 days.

Production: A New Leader Emerges

In 2013, Katanga's governor, Moise Katumbi, confidently predicted that the DRC's copper production would reach 1.5 million mt/y by 2015. The country has not quite reached these lofty heights but 2014's total output of 1.03 million mt is still respectable, and represents a 12.6% rise on 2013 levels. Approximately 84.2% of this total took the form of copper cathodes, with the remainder made up of concentrate. The government is keen to encourage more local beneficiation and add value to exports but in the current climate this seems unlikely. For the past 10 years production has increased exponentially, however, predictions for the next two years are for output to remain flat. Most existing mines are unable to expand due to power constraints, while new investments will probably be put off until there is a resolution over the mining code and the general election has concluded.

The copper price has continued to fall but, until recently, Congolese miners have tended to fare better than their peers in other countries. Grades have always been high enough to offset elevated production costs. Nevertheless, the recent news that Glencore will be suspending operations at its Katanga Copper Company (KCC) subsidiary has shaken the industry. With annual output of around 200,000 mt, the mine accounts for 20% of the country's copper. The company plans to invest $900 million in modernizing the facilities over a period of 18 months, which should see production capacity rise to 280,000 mt/y.

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Most of the success stories in Africa are based around the exploitation of a single commodity: gold in South Africa, oil in Angola and Nigeria. In contrast, the DRC's wealth is based on a wide range of different minerals.

- Josh Foster, General Manager, Bell Equipment (DRC)

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Some miners are still bucking the trend toward cost cutting and continue to invest. Chemaf is a wholly owned subsidiary of Shalina Resources that operates the Etoile mine and Usoke processing plant. In spite of the difficulty of sourcing finance they are investing heavily in expansions. "We have commissioned a heap leach plant which is already financed and under construction. The heap leach plant will be completed in 18 months. This will add 20,000 tons of copper to existing capacity," said Katembo Jo, general manager process for Chemaf.

The DRC has always struggled to attract pure greenfield exploration; most operational mines exploit deposits that were first discovered several decades ago by the state-owned miner, Gécamines. However, Canadian-listed Ivanhoe Mines has proved that it is possible to still make important discoveries in unexplored regions. In 2012, an independent mineral resource estimate ranked their Kamoa project as the world's largest undeveloped high-grade copper discovery. Construction of the initial underground section began in July 2014 and the mine is expected to come online in the next two years.

Further exploration is indeed of crucial importance for the DRC. While the price of copper has fallen, potentially affecting the Congolese production levels, one company that has had a lasting presence in the country is committed to continue exploring and building on their past successes. "Xcalibur has performed numerous surveys in Katanga in support of base metal exploration projects and has to date collected more than 850,000 line kilometers in the DRC. Our survey acquisition height varies between 30 and 40 meters above the ground depending on the terrain and vegetation. The low acquisition height significantly improves the resolution of the data," said Simon Bosch, one of Xcalibur's directors, a South African-based geophysical airborne surveys provider.

"In the Katanga province, communities are not against the way the mines are operating; the main friction arises with artisanal miners. However, this is no simple conflict over resource ownership; it is part of a much larger developmental problem."

- Susa Maleba, DRC Country Manager, SRK

Regional Diversification:
Replicating the Success of Katanga

Nowhere is the success of the DRC's mining boom more apparent than in the Katangan provincial capital of Lubumbashi. "Compared with 10 years ago Lubumbashi has undergone a thorough transformation," explained Sarah Trice, general manager for safety equipment providers North Safety. "Now the roads are paved, there are streetlights on the main avenues, the electricity supply is more stable and the business environment is far more open to international companies."

Unsurprisingly in a country that suffers from a crippling lack of infrastructure, the central government is keen to reproduce the success that Katanga has enjoyed in other provinces, many of which are largely unexplored.

The Kasai Oriental and Kasai Occidental provinces, for example, hold vast deposits of diamonds. However, exploitation remains woefully inefficient. According to data from the Kimberley Process, in 2013 the DRC was the second largest producer in Africa by volume, extracting approximately 15.7 million carats. However, total production was valued at just \$138 million. This compares poorly with other major producers, such as Angola, which produced 9.3 million carats but generated over \$1 billion in revenues. The reason behind this discrepancy is the prevalence of small-scale mining in DRC's diamond production. Artisanal miners lack the necessary technology to produce the higher quality stones that command higher prices. It is therefore necessary to attract industrial mining to the province in order to extract the maximum value from its resources.

In the northeast, Randgold and AngloGold Ashanti's \$2.5 billion Kibali joint venture in Orientale Province has served as a case study, demonstrating that it is possible to bring a world-class mine to fruition far away from the traditional hub of Lubumbashi. Fully operational since 2014, Kibali has already increased the DRC's total gold output by 213%. Work is now being carried out to develop the underground section of the mine. The pit is estimated to hold 12 million ounces (oz) and production is forecasted to reach 650,000 oz/y by 2018, which would make it one of the largest gold mines in the world.

The South Kivu province is home to another gold producer, Canadian-listed Banro Corp., which operates the Twangiza and Namoya open pit gold mines. Both sites lie on the 210-kilometers (km) Twangiza-Namoya gold belt, which straddles South Kivu and Maniema provinces. Between its two operational sites and two development projects – Kamituga and Lugushwa – the company has identified mineral reserves of 2.36 million oz and an inferred resource of 5.32 million oz. Twangiza is a relatively low cost operation, with all-in sustaining cash costs reaching \$698/oz in 2014. While power supply is problematic, the possibility of installing hydro, wind or solar plants is under investigation. Since the company first began operations in 2011, infrastructure in the local area has improved dramatically. Banro has upgraded more than 420 km of roads between Uvira and Namoya and reconstructed 10 bridges along the route. The Banro Foundation has also contributed significant amounts to community development schemes.

Aside from gold, there is great potential to mine tin, tungsten and tantalum in the North but there is a real need for

Image: AEL Mining Serives DRC

government to fast-track the validation process for new mine sites. Exploitation of these minerals carries a very negative association with conflict mining. Operations in the region are generally small and do not operate to the same standards as the larger mines in the South. As a result, western companies are reluctant to purchase from mines in these areas. To some extent, this perpetuates the situation as producers are unable to find legitimate buyers and must resort to exporting illegally.

Although Orientale, Maniema and the Kivu provinces are extremely prospective for a number of minerals, it will be some time before they are in a position to threaten Katanga's title as mining hub. The security situation, while improving, remains unpredictable. Lengthy periods of stability are often interrupted by clashes between DRC troops and rebels. On top of this, the available geological data is patchy and there are many black spots on the map. Junior explorers are unlikely to enter such a risky area without at least some data to back them up. The government understands the need for solid geological groundwork and has proposed to establish a National Institute of Geology. However, the plan has yet to become a reality.

There are also logistical issues to overcome. While the power supply may be unreliable in Katanga, the electricity shortage in the North is far more acute. Grid connectivity is severely limited and all mines operating in the region have to rely solely on their own diesel generators.

Most service providers are based in Lubumbashi but the lack of roads between Katanga and the North means that alternative supply routes will have to be established. "Transporting an excavator from Lubumbashi to Bukavu or Goma is extremely difficult. When you have an entire fleet of equipment to move around, the difficulty is increased even further," said Christodolou Christakis, general manager of contract miners Rulco "We would have to bring new machines in from Dar Es Salaam and set up new operating bases in the region."

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> **In 2014 the total production from the private sector was nearly 1 million mt/y. There is still a lot of room for growth.**
>
> **- Kazadi Kaninda, Business Development Manager, AEL Mining Services DRC**
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The railway should be a viable option but at present it can take up to a month for trains to cover the distance between Kindu and Kalemie. This is a real setback for the few producers that already export from the province. Delays in deliveries against LME contracts are a common occurrence and result in excessive fines, further hindering local development.

Recognising this supply gap, several equipment suppliers are already eyeing up opportunities to establish a more permanent presence in the region. DEM is the exclusive distributor of Hitachi and John Deere mining and construction equipment in the DRC. Previously, the company focused on mine sites in Katanga and infrastructure in Kinshasa but they are now taking steps to set up a new office in Goma. "We see a lot of potential for growth in the East," said general manager, Gaëtan Falesse. "There is a scramble to build infrastructure and demand for equipment is booming but few providers have permanent representation there."

While it may still be a gamble, early investors in the region believe that by arriving first on the scene they will reap rich rewards. "When we first came to Katanga in 2006, it took eight months to secure our first client but since that time it has become a huge success story. We are confident that some of these locations in the North will be equally successful," said Xavier Pollet, general manager for logistics and customs clearing specialists, Comexas Afrique.

Environment and CSR

As in many countries, miners in the DRC often come in for criticism from the press, politicians and certain NGOs. They are accused of acting in a purely self-interested way, extracting valuable resources from the ground without giving anything back to the communities that host them. According to mining executives, this characterization is unfair and ignores the huge contribution made by the mines towards local development.

"Compared with 10 years ago Lubumbashi has undergone a thorough transformation. Now the roads are paved, there are streetlights on the main avenues, the electricity supply is more stable and the business environment is far more open to international companies.

- Sarah Trice, General Manager, North Safety"

In 2012, total social expenditure from the mining industry reached $28.5 million. While all mines in the DRC are obliged to invest a certain amount in developing local infrastructure, most operators' contributions exceeded these mandatory payments: TFM donated $7.5 million in voluntary social payments while Boss Mining delivered $3.5 million beyond their legal obligations.

Relations between mines and communities are generally positive. There are occasional issues with striking workers shutting down production but there is little of the entrenched enmity between mines and villagers that has arisen in other jurisdictions. "In the Katanga province, communities are not against the way the mines are operating; the main friction arises with artisanal miners. However, this is no simple conflict over resource ownership; it is part of a much larger developmental problem," claims Susa Maleba, country manager DRC for SRK.

It is important to distinguish between artisanal miners, who are legally entitled to dig on land with no title, and illegal miners, who trespass on operational concessions to steal minerals. The latter have been the source of some violent conflicts taking place in the pits themselves. Besides the inherent safety issues associated with unauthorized personnel entering a mine, the practice is damaging on several levels. Illegal miners tend to take high-grade material from the surface just after blasting is conducted. This means that operators have to remove more waste material to get to the valuable ore beneath, thus driving up their costs. On a developmental level, the opportunity to make $50 per day digging lures young children away from school, exacerbating the existing skills gap.

While progress has been made in making supply chains more transparent, as attested to by the country's acceptance to EITI, a market for this illegal ore must still exist. The material makes its way back into process plants via a shady system of intermediaries known as negotiants. Most of the country's mines work to world-class standards, but it seems there are still a few that operate below the radar. "Some mines prefer to be more discrete and do their best to avoid any attention. They tend to be less interested in high-level analytical and certification services because purity is not a major issue for them," explained Xavier Jack de Longueville, director of sales and marketing at Robinson International, the DRC's only ISO certified test lab.

As the problem is not going to disappear anytime soon, some of the mines are looking at ways of cooperating with the diggers, delineating specific areas where they can work and paying a fair price for their production.

Power Supply

The Congo River has the potential to generate enough electrical energy to supply the whole of Southern Africa. Yet, only a fraction of this immense force has been harnessed. Today, it is almost universally acknowledged that the biggest setback to industrial growth in the DRC is the lack of reliable power supply.

In theory, the country's total installed capacity stands at 2,100 MW, with the most important contributor being the 1,424 MW Inga II plant. However, the dam is poorly maintained and on most days it delivers much less than its nameplate capacity. Total demand in the southern region alone has risen from 400 MW in 2008 to 1,200 MW in 2014. If all planned mining projects come online according to schedule, demand is projected to soar to 2,500 MW by 2016.

This leaves the National Electricity Company (SNEL) in a very uncomfortable position. Demand for electricity keeps increasing and it is already unable to fulfil commitments to its existing clients. In 2011, Somika came to an agreement with SNEL whereby they would receive 22 MW from the grid as their operation reached capacity. "Unfortunately, the power supply crisis of the last three years has prevented us from receiving the full amount," explained Chairman, Chetan Chug. "On average we probably receive around 7 MW from the grid."

Aside from the insufficient generation capacity, SNEL suffers from severe problems with its distribution infrastructure. Pylons, transformers and sub-stations are routinely vandalised and power outages are common. Some miners report experiencing up to nine power cuts in a single day. This has dire consequences for mines and processing plants. If a production cycle at an SX-EW plant is interrupted due to an outage it can take 45 minutes to restart the equipment. When this happens multiple times per day, downtime starts to impact seriously on production capacity and eat into profits.

To make up for the supply shortfall, mines rely heavily on diesel generators. This is a very costly means of producing electricity, increasing production costs by approximately $1,000/mt. While falling oil prices should have softened the blow somewhat, DRC fuel taxes rose throughout 2014 to the point where there has been very little real-term reduction in cost.

One might expect that in this situation some of the larger miners might have invested in larger, more sustainable generation programs, but so far this has not been the case. "Solar and wind farms as well as small hydro plants are all viable options but the cost for one mine to commit to such an undertaking would be prohibitive," explains Ruashi Mining's general manager, Marius Boates. "It will need a consortium of several mines to bring anything meaningful to fruition." Given that most of the DRC's mines are only just beginning to turn a profit, it might be premature to expect any developments of this kind right away, but it is likely to become an increasingly attractive option in the long-term.

> **"The DRC has always been seen as a country with great potential but now we are creating the conditions that will make this potential a reality."**
>
> **- Eric Kalala, General Manager, Bolloré Africa Logistics**

In an effort to remedy the current situation some big mines have started to collaborate with SNEL, lending out of their own pockets to fund infrastructure rehabilitation programs. TFM lent approximately $140 million towards the Nseke power plant, while Ruashi Mining invested $4 million in a project to strengthen Lubumbashi's urban distribution network. Tiger Resources is currently replacing approximately 240 km of overhead power lines between Lubumbashi and their site at Kipoi. "The existing lines can only handle 90 MVA but the new lines will take 120 MVA thus reducing line losses and saving 20 MW," claimed COO Charles Brown. "This will ultimately reduce our cash cost by around $0.20 / lb."

Until more capacity comes online, the industry remains stuck in a holding pattern. Mines are unable to expand, even if they have the resources, because it is impossible to predict the cost of electricity. Meanwhile, the government's long-term strategy to move away from concentrate exports and encourage more domestic beneficiation makes little sense while there is not enough power to drive the plants.

Nevertheless, there is some hope on the horizon. In 2013, SNEL and its Zambian counterpart, Zesco, signed an agreement to jointly develop a $3 billion, 1,400 MW plant, which should be operational by 2017. Output will be distributed evenly between the DRC and Zambia. Work is already being carried out on two smaller projects in the Kolwezi area – Busanga (240 MW) and Nzilo II (120 MW) – but it is unclear how long it will take before these begin to contribute to the grid.

Looking even further ahead, there is also the Inga III project, which is slated to generate an additional 4,800 MW, of which half will be exported to South Africa. The $12 billion investment is envisioned as the first phase in the development of the Grand Inga dam, which would be the largest hydroelectric plant in the world, generating some 42,000 MW and doubling Africa's total generation capacity in one fell swoop. However, with an estimated price tag of $50 billion, some analysts are sceptical that it will ever become a reality, leading to its nickname of Africa's biggest white elephant.

Logistics and Transportation

The DRC covers territory of more than 2.3 million km2. This vast tract of land is served by a coastline of just 37 km, in the far west, thousands of km from the mining centres of Katanga. As such, mines in Katanga make use of several competing ports to transport their products to market and bring in supplies from outside. Durban is currently the most popular corridor for both imports and exports. While it is not the cheapest or the nearest option, it is considered to be the most efficient. That being said, recent improvements to the infrastructure at Dar Es Salaam have made it a more attractive proposition: "A few years ago it was common for vessels to wait two weeks to berth, now the average wait is just three days," said Eric Kalala, general manager for Bolloré Africa Logistics. As a result, a growing number of businesses are choosing to route their shipments through Tanzania.

Infrastructure within the country is fairly poor, and connections between the major cities are sorely lacking. Nevertheless, within Katanga, great strides have been made to improve the roads. Whereas a few years ago, it was almost impossible for trucks to run during the rainy season, a network of asphalt roads now connects the mining outposts of Kolwezi, Likasi, Fungurume and Kakanda with Lubumbashi, and with the Zambian border at Kasumbalesa. Joe Kipangi is general manager of ESC, a supplier of electrical equipment to mining clients around Katanga. He believes that the country's transport difficulties are often overstated: "In total, it usually takes us less than one week to deliver a truck from the point of origin to our clients in Katanga… We are able to bring transformers to Kasumbalesa in just four days."

Nevertheless, the country is overly reliant on one border post, creating frequent bottlenecks. The governments of both DRC and Zambia have proposed several solutions. The first, and simplest, is to fast-track all empty trucks as

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soon as the border opens, leaving more time to process the laden vehicles. The second idea is to keep the border running 24 hours a day. However, this requires approval from the Zambian parliament and, even though political will is strong on both sides, this will probably be a lengthy process. Finally, there are plans to build a new road and a second border crossing, which would be exclusively for outbound traffic, leaving Kasumbalesa for incoming trucks.

Copper production is forecast to double over the next five years, and even if the roads are working at capacity and the border crossings are made more efficient, it will not be enough to handle the increase in traffic. It is vitally important to improve the rail network as well. The DRC's principal railway, the SNCC, covers 3,640 km and runs across five provinces, making it the fourth largest railway in Africa. However, since its heyday in the 1970s, the network has entered into a prolonged decline, exacerbated by years of underinvestment. In 2009, the rail operators entered into talks with the central government, the World Bank and representatives from the mining industry. The end result was a $700 million investment program financed by the DRC and the World Bank to restore the network's financial and operational viability. Currently in the implementation phase, the program has earmarked $180 million towards new investments in track and rolling stock.

At present the network accounts for just 2% of total mineral exports. Some operators, including ENRC and Tiger Resources use the railway to export concentrate over the border to Zambia for smelting, but for now it is considered to risky to ship more valuable cathodes. "There is great potential to expand our market share, but it is first necessary to improve our standards of service and demonstrate that we are a low-risk option in terms of safety, security and social unrest," said the chairman of SNCC's board, Nicolas Gregoir.

"In the future, U.S. dollar transactions will continue to play an important part in the economy but we would like to see maybe 40% or 50% conducted in Congolese francs.

- Yannick Mbiya, Director, Trust Merchant Bank (TMB)"

Equipment

Equipment supply is extremely competitive in the DRC. There are still relatively few mines in operation but all the major OEMs are represented. While in more developed copper producing countries, the trend is to invest ever more in new technologies that will help shave a few cents off the operating cost, this is not the case in the DRC. "Advanced technology such as remote operation, computer assisted drilling or automation is not a priority for most of the DRC market. In fact, the opposite is true. Most miners want a simple, rugged machine that will not break down and is easy to fix and operate," explained Stéphane Goupil, country manager, Atlas Copco DRC.

The one priority for the mines is to minimize downtime, which has led to a dynamic whereby suppliers must differentiate themselves through services and spare parts availability. Typically, most distributors operate on maintenance and repair contracts, keeping a dedicated team of technicians at the client's site. As mechanized mining was stopped between 1985 and 2002 the talent pool for qualified mechanics is fairly shallow. Equipment suppliers have necessarily invested heavily in developing rigorous training programs. Bell Equipment (DRC) runs a seven-year apprenticeship course, which incorporates on-the-job training and specialised modules that are given in South Africa. "At present we have around 90 people enrolled. The first group of fully qualified apprentices graduated in 2014 and we are looking forward to seeing the next batch of 15 come through in 2015," said general manager, Josh Foster.

One of the challenges faced by equipment providers is the need to send large components out of the country for refurbishment. CAT representatives, Congo Equipment are investing $25 million in a new repair and rebuild centre in Lubumbashi but it will be some time before this facility comes online. Recognising the need for high-quality local repair work, one company has chosen to relocate from South Africa to Lubumbashi, specifically to cater to this need. Yellow Metal specialises in repairing drive train components for all the major brands of construction and mining equipment. General manger, Jason Roi, believes that his operation has a distinct advantage over the more established distributors: "For a major OEM to send a transmission down to South Africa, repair it then bring it back it will take four months. Our turnaround time is just two weeks," he said.

The idea of local equipment manufacture in the DRC is attractive. An overreliance on commodity exports leaves the economy vulnerable to fluctuations in global markets. At present, it seems unlikely that any of the OEMs will establish production facilities in the country: the perennial problem of power persists and there is a lack of skilled labour. However, smaller scale production of specialised goods could prove successful. CSI is a South African manufacturer of tankhouse equipment for copper processing. Since 2011 they have run a sales office in Lubumbashi but now they believe local production could be the next step. "We are currently involved in discussions with a Chilean specialist producer Inpament to embark on a joint venture in the DRC to produce cathodes and anodes. The market is more than sufficient to support a domestic manufacturing facility. The contract should be finalized in May and we hope to start installing the equipment by July," said Arcene Ngandu, CSI's marketing manager for Africa.

While after-sales support may be a key differential, securing financing prior to making a sale is equally important. A wave of new banks have set up shop in the DRC in the past five years, but they are still very risk-averse. Miners and contractors complain that they are unable to get fair rates on loans for capital expenditure. "Although interest rates have come down in recent years, there is still limited access to credit here so alternative financing programs from Europe are growing in popularity," explained Amaury Lescaux, managing director of Volvo distributor, SMT. Volvo has a long history of working with the Swedish export promotion authority, EKN, which will assume the risk of financing large deals in the country.

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Banking and Finance:
Plenty of room for expansion

The hyperinflation crisis of the 1990s led to a severe lack of trust in the DRC's banks and its local currency. Many Congolese resorted to using US dollars and carried out most of their transactions in cash. Market penetration remains very low – less than 8% of the population has a bank account – but that number is growing rapidly. The government began paying civil servants via the banking system in 2011 and today around 1 million public sector workers have access to their own accounts, a move that has reduced opportunities for graft and saved the government an estimated $29 million per year. Seeing huge room for expansion, a swathe of new banks have set up shop in the past decade. Most recently, several pan-African banks, such as Ecobank, FBN and Standard Bank have established operations in the country.

Balance sheets at local banks remain modest and relatively underleveraged compared with other countries. Total banking assets amount to around 15% of GDP, compared to 112% in South Africa or 492% in the UK. At present, Congolese banks do not have the lending capacity to finance large investments in mining, energy or infrastructure, although working capital loans up to around $10 million are possible.

The high number of new entrants to the market should make the sector more competitive but there is a persistent feeling that interest rates are still too high. Banks claim that they themselves are only able to borrow at 7%, so when other expenses and the bank's own margins are factored in, clients can expect rates of around 12%. While high compared to more developed countries, in a Central African context, this is not unreasonable. High rates are exacerbated by the unreliability of the DRC's insurance providers. According to several earthmoving contractors, if a valuable machine is stolen or breaks down they are expected to cover the cost out of their own pockets. The government has recently opened the market to foreign insurance providers, but it will be some time before the effects are felt.

Aside from working capital loans, the banks' main involvement with miners takes the form of payroll services, and personal loans to mine employees. By working their way down the value chain from the mining houses to the suppliers and eventually to the employees, Rawbank, the DRC's largest bank by assets, has managed to capture a considerable market share within the Katanga region. They have developed specific strategies to appeal to the Congolese market. To avoid the payday rush on their branches, they introduced ATMs at the mine sites. Now workers can access their salaries without having to travel into town.

There is not a strong appreciation for savings in the DRC and many workers still withdraw their entire salary as soon as they receive it. The preference for hard cash is deep-rooted: "In the Bantu culture, there is a strong emphasis placed on a tangible presence. Rather than set up a bank account, it is more common to invest your money in building a house or another physical asset," said Michel Losembe, CEO of BIAC. He believes that the widespread uptake of mobile phones in the DRC is helping to alter this mentality. "The idea of paying for airtime, which is not a physical object, has encouraged more trust in financial services."

This cultural change bodes well for the future of more technological solutions, such as internet and mobile banking. According to Rawbank's regional manager for Katanga, Nicolas Grobelny: "Internet banking is still quite new in the DRC – as of today, less than 10% of our customers use the service – but the market has responded well to its introduction. The heaviest users are large companies that wish to automatize their operations and avoid writing cheques and orders."

The DRC is a dual-currency economy and the banking sector remains highly dollarized: 92% of Rawbank's deposits and 95% of credits in Katanga are in dollars. Most of the mines run their payroll in USD as well. However, the IMF and the DRC government want to reduce this reliance on dollars and promote the use of Congolese Francs (CDF). "De-dollarization is a program that the government is keen to pursue, as it will allow them much greater control over monetary policy. However, if it is forced through too fast, it may create economic instability. It will take years for CDF to become the dominant currency," said Célestin Mukeba Muntuabu, CEO at ProCredit Bank Congo.

The likelihood is that de-dollarization will indeed be a long and drawn out process. "There are some practical difficulties associated with tipping the balance towards CDF. For example, it is very difficult to operate ATMs in francs because the notes are of such low denominations that you need a huge amount of currency to keep just one machine stocked," said Yannick Mbiya, director of Trust Merchant Bank. That being said, some of the largest mining companies will soon begin to pay certain taxes in CDF, which should greatly increase the volume of transactions in the local currency. In parallel, foreign exchange regulation brought in in 2014 stipulates that payments made by DRC residents for house rental, short-term loans, school fees, medical expenses, water and electricity bills must be conducted in CDF.

Découpage: Redefining the Republic

On March 2, 2015, President Joseph Kabila gave a 120-day deadline for the

Image: view over Nile into DRC.
Rene Baars - Shutterstock

implementation of a process that will change the face of the DRC. Known in French as découpage, the ruling will see the country split its existing 11 provinces into 26. At present, the nation is divided unequally, with some smaller provinces marginalized at the expense of powerhouses such as Katanga.

The idea of creating a fairer division is not a new one. The first stages of the process took place under Mobutu Sese Seko in the 1980s, when the mammoth Kivu Province was split in two. The plan for 26 provinces is written into the 2006 constitution and was originally supposed to have been completed by 2010. However, given the complexity of such a scheme and the enormity of the resources required to bring it to fruition, it has been largely ignored until now.

Some believe that the president's sudden preoccupation with pushing the move through masks an ulterior motive. If the process drags on for longer than planned, which it is bound to, some fear that it will be used as an excuse to postpone the general elections, allowing the president to prolong his term in office. If the process fails altogether then the constitution will have to be amended. This would open the door to other changes, such as removing the two-term limit for leaders, a goal that Kabila has reputedly been keen to pursue.

Outside of the Machiavellian political drama there will be direct consequences for business. Katanga will be divided into four separate entities, meaning that some mines will suddenly find themselves in a different province to their operational offices. "Senior executives from all the largest companies here already spend an inordinate amount of their time negotiating with officials from local and central government," complained Gaetan Van Belle, general director of the region's largest brewery, Brasimba. "The forthcoming division of Katanga into four separate provinces will only complicate matters and further increase the administrative burden," he said. The existing local authorities are under-resourced and far from a model of efficiency. The new provinces have not been budgeted for and, so far, nobody has come up with a realistic answer as to how they will be funded. The potential for confusion over interprovincial duties and taxation is high.

On the other hand, once the inevitable teething problems have settled down, the newly defined republic should offer a more streamlined service for tax paying and many of the poorest parts of the country will have a better shot at improving living conditions for their inhabitants.

> **"Internet banking is still quite new in the DRC – as of today, less than 10% of our customers use the service – but the market has responded well to its introduction."**
>
> 
>
> **- Nicolas Grobelny, Regional Manager, Katanga, Rawbank**

High Hopes for the Future

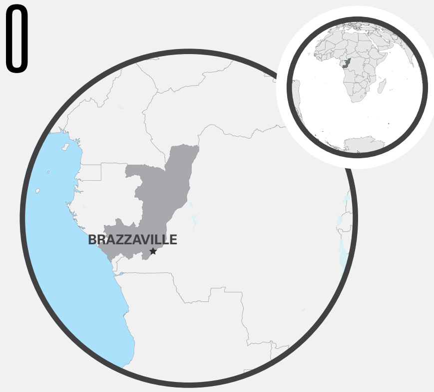
The DRC is not the easiest country to work in: infrastructure is patchy, security concerns persist and important institutions lack the sophistication of their counterparts in more developed countries. However, it is important to remember that development is a gradual process. In its present incarnation, the DRC has only been in existence for nine years, during which time it has held two general elections, with a third scheduled to take place next year. Each government cycle promotes an institutional renewal that leaves the country ever stronger.

On the economic front, GDP growth tracks well above the average for Africa and some analysts predict that it may soon break into double digits. Now, the government's priority must be to consolidate the good work it has carried out by implementing a solid fiscal policy and continuing to cut down on informality. This will help to attract much-needed investments in power and transport. With this solid foundation taken care of, the potential for mining and other industries to take root is almost limitless. •

REPUBLIC OF CONGO

The Republic of the Congo (French: Rpublique du Congo; Kongo: Repubilika ya Kongo; Lingala: Republiki ya Kongo), also known as Congo-Brazzaville or the Congo, is a country in Central Africa. It is bordered by Gabon, Cameroon, the Central African Republic, the Democratic Republic of the Congo, the Angolan exclave province of Cabinda, and the Gulf of Guinea.

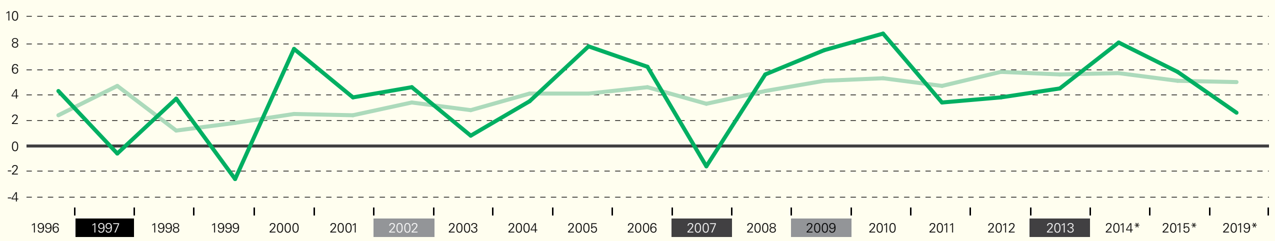
SOURCE: CIA WORLD FACTBOOK



Population: 4,755,097
Land Area: 342,000 sq km
Official Language(s): French
Capital: Brazzaville
Chief of State: President Denis Sassou Nguesso
Head of Government: President Denis Sassou Nguesso
GDP (PPP): $17.67 billion (2014 est.)
Growth Rate: 6% (2014 est.)
GDP per Capita: $6,600 (2014 est.)
Economic Sector Breakdown: agriculture: 3.3%, industry: 74.4%, services: 22.3% (2014 est.)
Exports: $8.972 billion (2014 est.): petroleum, lumber, plywood, sugar, cocoa, coffee, diamonds
Imports: $4.389 billion (2014 est.): capital equipment, construction materials, foodstuffs
Major Trade Partners: China, France, United States, Australia, Italy

GDP GROWTH (%)

SOURCE: WORLD BANK, IMF, BBC



Full-scale civil war breaks out; pro-Sassou Nguesso forces, aided by Angolan troops, capture Brazzaville, forcing Lissouba to flee.

Denis Sassou Nguesso wins presidential elections unopposed after his main rivals are barred from the contest.

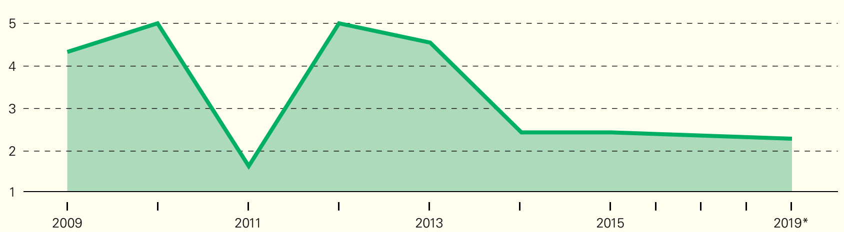
Parliamentary elections, boycotted by some 40 parties. Ruling party wins 90% of seats.

President Denis Sassou Nguesso gains another seven years in power following elections boycotted by the opposition.

Congo declared to be compliant with standards set by the Extractive Industries Transparency Initiative for the disclosure of revenues from oil.

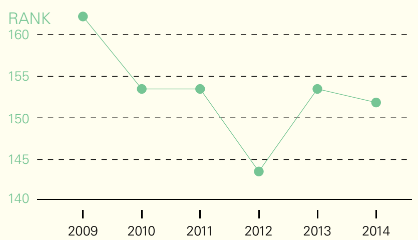
INFLATION

SOURCE: IMF



TRANSPARENCY INTERNATIONAL CORRUPTION PERCEPTIONS INDEX

SOURCE: TRANSPARENCY INTERNATIONAL



STATUS OF THE MINING CODE

SOURCE: KPMG

Corporate Income Tax Rate	30%
Royalties (Precious Stones)	4%
Royalties (Precious Metals)	2.5%
Royalties (Others)	.5%-2%

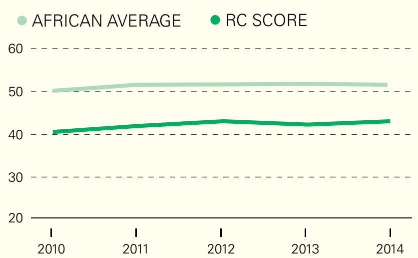
MINERAL PRODUCTION (2013)

SOURCE: BRITISH GEOLOGICAL SURVEY

Diamonds	56,495 ct
Gold	<100 kg

IBRAHIM INDEX OF AFRICAN GOVERNANCE

SOURCE: MO IBRAHIM FOUNDATION



MINING SECTOR CONTRIBUTION TO GDP

SOURCE: AFRICAN ECONOMIC OUTLOOK

2009 **0.0%** 2014 **0.3%**

FOREIGN DIRECT INVESTMENT

SOURCE: UNCTAD

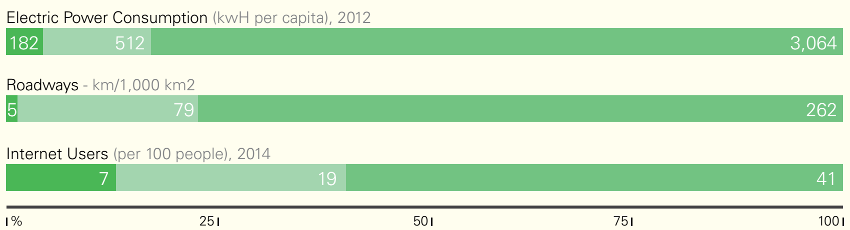
FDI, $ millions

2013 **2,914** 2014 **5,502**

INFRASTRUCTURE INDICATORS

REPUBLIC OF CONGO SUB-SAHARAN AFRICA WORLD

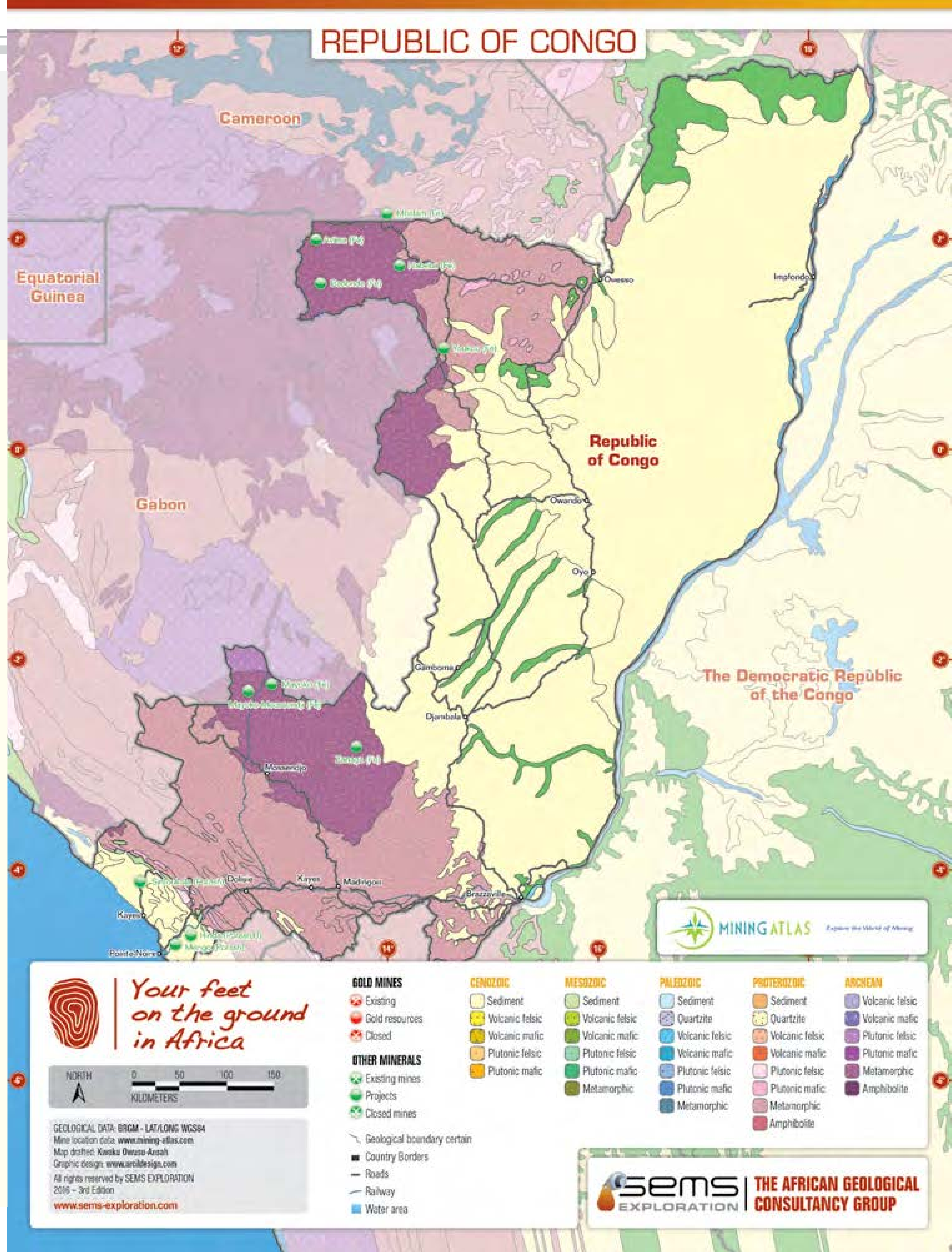
SOURCE: UIC, IEA, CIA WORLD FACTBOOK



BUSINESS ENVIRONMENT RANKING IN AFRICA (OUT OF 47)

SOURCE: WORLD BANK

	2015
Ease of Doing Business	38
Starting a Business	40
Dealing with Construction Permits	18
Getting Electricity	36
Registering Property	36



Mining: The Path to the Republic of Congo's Economic Diversification

The mining sector will provide stability to Congo's oil-dependent economy

The President of the Republic of Congo, Denis Sassou Nguesso, presides over an economy sorely dependent on the production of crude oil and gas. With 80% of the government's revenues stemming from this sector, the country's finances have been severely affected by the global downturn in oil prices. The oil industry has propelled the country's economic growth in recent decades, but this growth has not trickled down to most of the four million Congolese citizens in this small Central African nation. The President has expressed the need to diversify the economy and has devoted political capital to boost Congo's nascent mining sector. His administration led the effort to establish the 2005 Mining Code, through the Ministry of Mines, offering attractive contract terms and clearly delineated regulations that could attract substantial foreign direct investment. Since then, the country has hosted two international mining conferences and exhibitions, in 2013 and in 2015, in order to present Congo as a global mining investment destination.

Throughout its 342,000 km2 of territory, Congo possesses vast deposits of iron ore, copper, lead, potash, phosphates, graphite, nickel, titanium, gold, diamonds, and zinc. According to the Ministry of Mines, Congolese authorities granted 100 new mining titles in 2012 and 110 in 2013. Although most companies are years away from production and the global downturn in commodity prices makes production unattractive, several companies are committed to developing Congo's mining sector.

The discovery of large-scale deposits of iron ore in the Zanaga, Mayoko, Avima, and Mbalam regions prompted several feasibility studies that confirmed the regions' production potential. Zanaga Iron Ore's 2014 feasibility study for its Zanaga project, discovered in 2007, in partnership with Glencore Xstrata, projects a first-stage production of 12 million mt/y with a ramp up in production to the second stage for a total of 30 million mt/y. This represents over two billion mt in proved and probable ore reserves of high-grade ore with 66% to 67.5% Fe content. The project is slated for production in 2018, having received its mining license in 2014 and already reached agreements with Congolese port and power authorities. → 136

Patrick Stevenaert

Chairman and General Manager
Cominco SA

Cominco was established in 2007 and has been active in the Republic of Congo since that time. Please provide a brief overview of the company and its phosphate project.

MagIndustries with its interest in potash was the first company to establish a presence in the Republic of Congo. This opened up the country to other investors who believed there might be other commodities to explore in the region. Cominco Resources arrived in 2007. Although the Republic of Congo is most known for its iron ore and potash reserves, Cominco is the only company working on phosphate. The company has a vision of becoming the first producer of phosphate in the country, exporting four million metric tons (mt) per year.

Cominco's phosphate project, Hinda, is located only 40 kilometers (km) from Pointe-Noire, which is much closer to the port than most major phosphate deposits. This makes the project, which has received $600 million of capital expenditure, much simpler in terms of logistics. The project is close to power sub-station and route national 1. It has been awarded two main research permits: the Hinda and Kola Tchikanou phosphate exploration licenses, and a 25-year mining license issued in November. Drilling began in February 2011 and was completed in July 2014, which showed a proven reserve of phosphate for more than 25 years. The deposit itself is around 25 km long, 350 m to 800 m wide, 40 m to 65 m thick in a single mineralized zone and is very shallow at its southern tip.

Please outline the major milestones that Cominco's Hinda project has undergone since fieldwork began in late 2010.

Cominco spent more than $50 million on exploration, utilizing a range of high-technology methods never before used in Congo, and drilled over 900 holes. Cominco made a grass roots discovery of the largest undeveloped phosphate deposit in the world, with a measured and indicated resource of 675 million mt.

To date, at the Hinda project, the advanced pre-feasibility study was completed in November 2013, followed by the definitive feasibility study, which was completed in Q2 2015. The company is now negotiating the investment agreement with the government, which sets out substantial tax concessions and gives fiscal and regulatory guarantees.

What challenges does the Republic of Congo present to companies looking to establish projects?

The major challenge is a port solution. The existing port has been through a number of developments and improvements over the last few years, but due to its location cannot be expanded significantly. Along with other mining companies, Cominco has identified a zone between the Pointe-Noire refinery – Congolaise de Raffinage (Coraf) – and Pointe-Indienne further up the coast.

The governments of China and the Republic of Congo have reached an agreement for a project worth around $2 billion to develop a new port. This of course will take time. There is then the requirement to integrate Cominco's jetty within this large-scale port and with different stakeholders and, as yet, there are no price projections for individual areas. This obviously presents delays to mining companies. Ideally, Cominco would prefer to have a clear port solution in place and has considered this option.

The port solution has become clearer in recent months, with the government offering use of an existing storage and ship loading facility in the Pointe-Noire port. Cominco's engineers have recently completed an engineering study that shows that this existing facility could save the project some $140 million.

In brief, how does the phosphate mining industry in the Republic of Congo compare to other jurisdictions?

The Hinda phosphate project is the largest JORC-proven and undeveloped phosphate deposit worldwide with a quality grade of 32%. On average, worldwide reserve grade is around 28% of phosphate. It has dropped from 32% for a number of reasons, including the fact that many mines are maturing. Morocco is the world's largest exporter of phosphate with most countries. It is hardly surprising then that Morocco is becoming more involved and showing an interest in Sub-Saharan Africa's phosphate and fertilizer industry.

With the increase in the global population and the pressure on agriculture, fertilizers are a key method of increasing global crop production. What role will the Republic of Congo play?

The Republic of Congo is only seven days journey by ship to Brazil, so there is an immediate advantage. The country also has a unique global position in terms of fertilizer production; both potash and phosphate can be mined in the same area and at a short distance from the port. The country also has large natural gas reserves, meaning NPK fertilizer can be easily produced in large quantities. At the moment, companies are looking at just one commodity but, in the future, companies will look at all three combined and sell within the Central African sub-region to support Africa and worldwide.

Furthermore, President Sassou Nguesso has been wisely promoting agriculture in addition to mining. Central Africa, unlike other parts of Africa, has plenty of water. With a supply of local fertilizer, it will be possible to support farming on a large scale, rather than at the level of subsistence farming. •

134 ←

Substantial phosphate reserves are located near the port of Pointe-Noire, with Cominco SA being the only company with phosphate operations in Congo. This makes Cominco's project, which is worth $600 million in terms of capital expenditure, much simpler in terms of logistics. The project has been awarded two main research permits: the Hinda and Kola Tchikanou phosphate exploration licenses. The Hinda phosphate project is the largest JORC proven and undeveloped phosphate deposit worldwide with a quality grade of 32%. Drilling began in February 2011 and was completed in July 2014, revealing a proven reserve of phosphate for more than 25 years. The deposit itself is around 25 km long, 350 m to 800 m wide, 40 m to 65 m thick in a single mineralized zone and is very shallow at its southern tip. Cominco completed a definitive feasibility study (DFS) in Q2 2015 and is now negotiating the mining investment agreement with the Congolese government.

Following independence and prior to the civil wars of the 1990s, Congo's mining industry was small and capital flight was a large problem. Aside from employment opportunities for the local Congolese, mining's contribution to the Congolese economy was minor. President Sassou Nguesso's administration understands the need to diversify an economy that is too dependent on oil and gas revenues and hopes that such a move will result in a more robust economy that creates employment and entrepreneurship opportunities for its people. Similar to various African nations, Congo has not seen its wealth in natural resources transform its import-dependent economy. Yet the royalties and corporate taxes to be imposed on a promising mining sector provide an opportunity for Congo to invest in its future and emphasize infrastructure projects that provide employment and incentivize more companies to invest in the country. The 2005 Mining Code established royalties of 3% for ferrous and non-ferrous metals, 5% for precious metals and stones, and 1% for mineral and thermal waters. Corporate taxes are set at 20% for quarry operations and 30% for mining operations. An equitable distribution of profits from mining operations and a sound development plan are key to create a diversified and robust Congolese economy.

Patrick Stevenaert, Cominco's chairman and general manager points to a major opportunity for the government to translate its mineral potential into economic growth. "Congo…has a unique global position in terms of fertilizer production; both potash and phosphate can be mined in the same area, at a short distance from the port. The country also has large natural gas reserves, meaning NPK fertilizer can be easily produced in large quantities. At the moment, companies are looking at just one commodity but, in the future, they will look at all three combined and sell them within the Central African sub-region to support Africa and worldwide. Furthermore, President Sassou Nguesso has been wisely promoting agriculture in Congo in addition to mining. Central Africa, unlike other parts of Africa, has plenty of water. With a supply of local fertilizer, it will be possible to support farming on a large scale, rather than at the level of subsistence farming."

Yet additional obstacles to investment remain. Due to the country's lack of reliable infrastructure, mining companies must link their mines to the coast for the export of their mineral resources, which requires large, upfront investments in order to commercialize extracted minerals. Zanaga Iron Ore, for example, built a 366 km pipeline to transport pellet feed from its mine to the port in Pointe-Noire.

Fortunately for investing companies, unlike in other countries, the Congolese government is able to grant approval of a project without the need to conduct hundreds of negotiations with local landowners. Furthermore, the Chinese and Congolese governments have come to an agreement for a $2 -billion development project for the port.

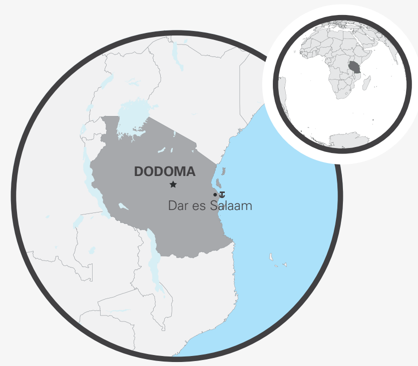
Undeniably there is the need for a new port in the vicinity of Pointe-Noire. "The major challenge is a port solution. The existing port has been through a number of developments and improvements over the last few years, but due to its location cannot be expanded significantly. Along with other mining companies, Cominco has identified a zone between the Pointe-Noire refinery – Congolaise de Raffinage (Coraf) – and Pointe Indienne further up the coast," explained Stevenaert.

The optimism surrounding Congo's mining industry has abated since 2012, when the price of commodities began to steadily decline. Several companies halted exploration efforts and shelved marginal projects in response to the downturn in the mining industry. Other companies have suffered major financial losses due to poor planning in the local environment, including Exxaro, the second largest coal producer, whose entire $407.6 million Mayoko project had to be written down, pushing the company deep into the red in 2015. Exxaro was actively working to obtain contracts with the port and did not follow internal governance procedures, according to the report produced by KPMG. •

TANZANIA

Tanzania is a country in East Africa bordered by Kenya and Uganda on the north, Rwanda, Burundi and the Democratic Republic of the Congo on the west, and Zambia, Malawi and Mozambique on the south. To the east it borders the Indian Ocean. It contains a wide variety of mineral sources, including diamonds, gold, silver, and copper.

SOURCE: CIA WORLD FACTBOOK

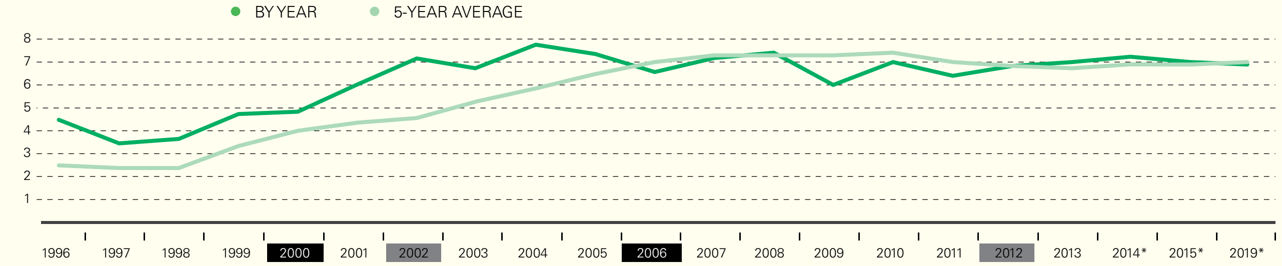


Population: 49,639,138 (July 2014 est)
Land Area: 947,300 sq km
Official Language(s): Kiswahili or Swahili (official), English, Arabic (widely spoken in Zanzibar)
Capital: Dar es Salaam
Chief of State: President Jakaya Kikwete
Head of Government: President Jakaya Kikwete
GDP (PPP): $79.29 billion (2013 est)
Growth Rate: 7% (2013 est.)
GDP per Capita: $1,700 (2013 est.)
Economic Sector Breakdown: agriculture: 27.6%, industry: 25%, services: 47.4% (2013 est.)
Exports: $5.92 billion (2013 est.): gold, coffee, cashew nuts, manufactures, cotton
Imports: $11.16 billion (2013 est.): consumer goods, machinery and transportation equipment, industrial raw materials, crude oil
Major Trade Partners: China, India, Japan, South Africa, Kenya, UAE

GDP GROWTH (%)

SOURCE: WORLD BANK, IMF, BBC

*projected



Mkapa elected for a second term, winning 72% of the vote.

Nearly 300 killed in Tanzania's worst train disaster after passenger train loses power and rolls into freight train at high speed.

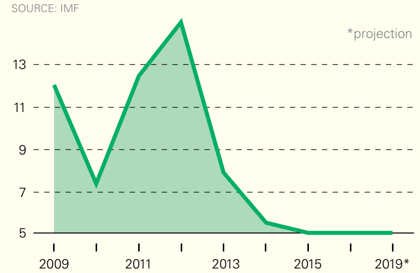
The African Development Bank announces the cancellation of more than $640m of debt owed by Tanzania, saying it was impressed with Tanzania's economic record and the level of accountability of public finance.

The Statoil and Exxon Mobil oil exploration companies make the biggest offshore discovery yet of gas reserves off the coast of Tanzania. The Zafarani field is close to the region off the coast of Mozambique where even larger deposits of gas are being developed by Anadarko and ENI.

INFLATION

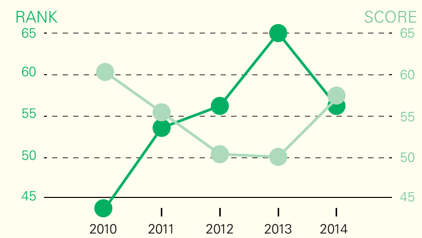
SOURCE: IMF

*projection



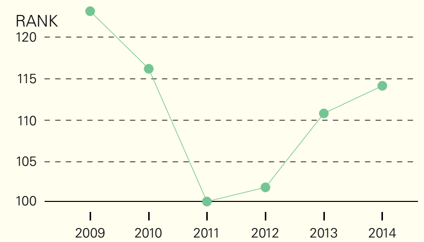
FRASER INSTITUTE INVESTMENT ATTRACTIVENESS INDEX

SOURCE: FRASER INSTITUTE



TRANSPARENCY INTERNATIONAL CORRUPTION PERCEPTIONS INDEX

SOURCE: TRANSPARENCY INTERNATIONAL



FOREIGN DIRECT INVESTMENT

SOURCE: UNCTAD

FDI, $ millions

2013 **2,131** 2014 **2,142**

MINING SECTOR CONTRIBUTION TO GDP

SOURCE: AFRICAN ECONOMIC OUTLOOK

2009 **3.0%** 2013 **4.6%**

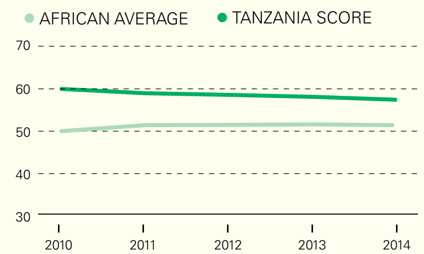
MINERAL PRODUCTION (2013)

SOURCE: BRITISH GEOLOGICAL SURVEY

Bauxite	49,952 mt
Coal (bituminous)	84,772 mt
Copper	5,740 mt
Diamonds	179,633 ct
Gold	43,390 kg
Gypsum	171,567 mt
Kaolin	907 mt
Phosphate Rock	23,020 mt
Salt	36,032 mt
Silver	11,014 kg

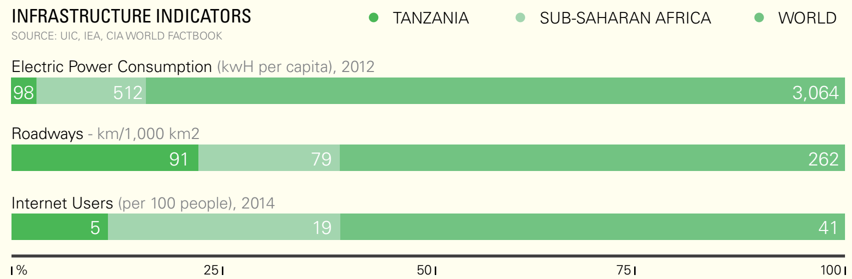
IBRAHIM INDEX OF AFRICAN GOVERNANCE

SOURCE: MO IBRAHIM FOUNDATION



INFRASTRUCTURE INDICATORS

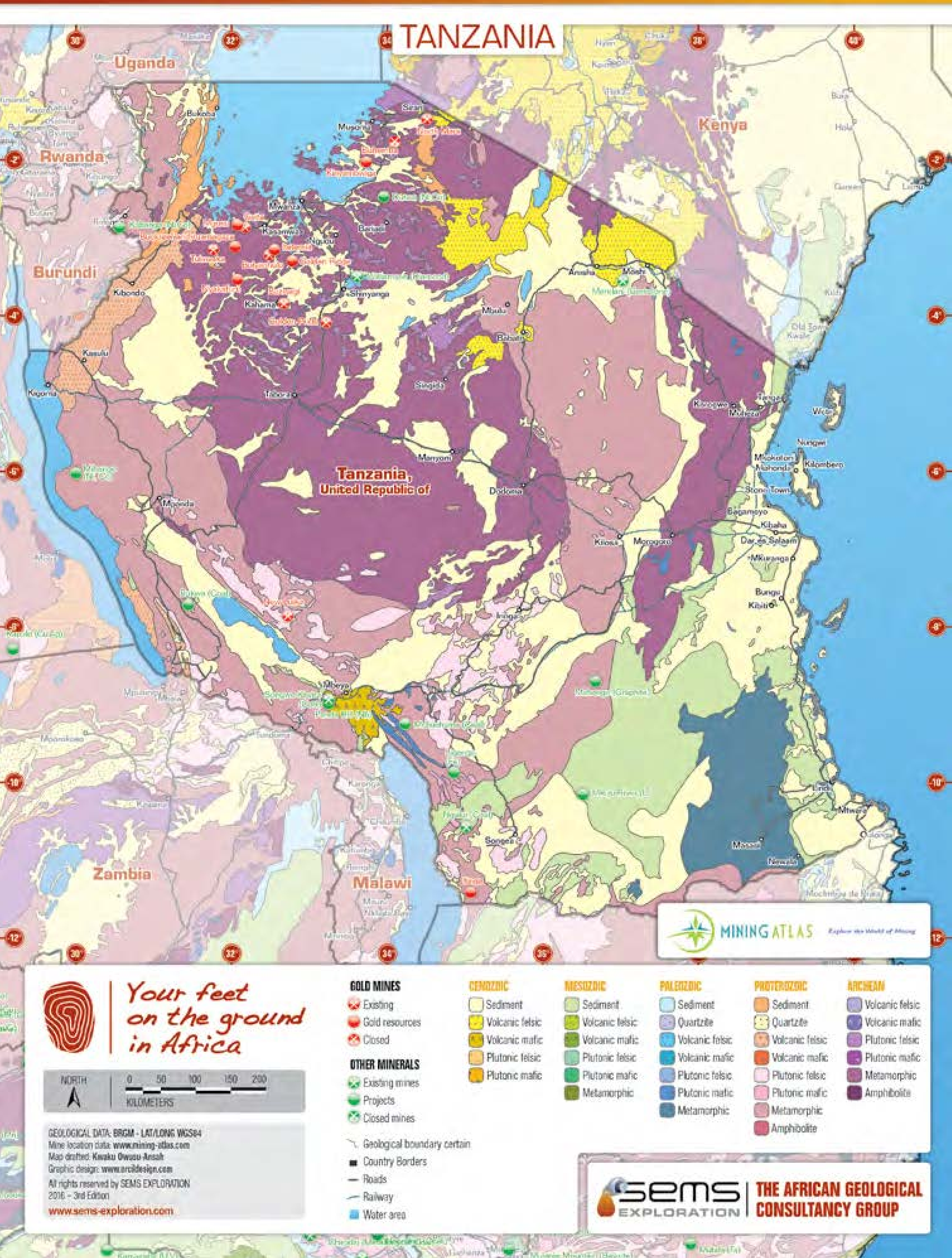
SOURCE: UIC, IEA, CIA WORLD FACTBOOK



BUSINESS ENVIRONMENT RANKING IN AFRICA (OUT OF 47)

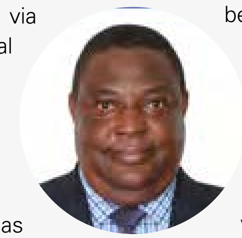
SOURCE: WORLD BANK

	2015
Ease of Doing Business	15
Starting a Business	21
Dealing with Construction Permits	21
Getting Electricity	3
Registering Property	22



Eng. Paul M. Masanja

Commissioner for Minerals
United Republic of Tanzania



Despite global commodity-price volatility, investors are increasingly interested in Tanzania's vast mineral potential. What are the ministry's key objectives in further developing that potential?

As a result of the ministry's efforts, 95% of Tanzania has been mapped through Geological Survey of Tanzania. Of the country's territory, 11% has been analyzed via high-resolution survey and 17% via geo-physical survey. All of the results are posted online for easy access at www.portal.mem.go.tz. The portal can be used to scout vacant areas for potential miners, and it is where active miners electronically submit their reports.

Tanzania has also revamped the licensing process, as the ministry is working to ensure that issuance occurs in an expedited time frame. Starting in September 2015, mineral-rights applications can be completed and paid for online. Licensing should now take a matter of minutes, as once the geographical area is cleared and payment is complete, the area is theirs. The new landowners need only wait for the paper copy of the applied license to arrive in the mail or collect it in person at the licensing office on the same day as the application.

Tanzania's online licensing and reporting system is an additional means of our efforts towards increasing public to private sector communication and transparency. Tanzania has been EITI-compliant since 2012, and on August 4, 2015, our President signed into law the Transparency and Accountability Act, which made reporting mandatory for all operators involved in the extractive industries. This, as mentioned, is easily completed in our new online system. Tanzania also aims to become a member of the Voluntary Principals on Security and Human Rights Initiative, as spurred by the UK government. Movement towards this is already underway.

As the fourth largest gold producer in Africa, how has the gold sector evolved in Tanzania?

If we were able to include the data from small-scale miners, Tanzania would be the third largest gold producer in Africa. As far as we know, the large-scale operators are producing roughly 50 metric tons per year (mt/y) of gold per year, and the small-scale miners produce an average of 20 mt/y of gold, but a large percentage of data from small-scale miners is not captured in our records due to the existing informal nature of their operations. Most of that business is conducted on the black market, which is an issue that the ministry is working to resolve. The World Bank recently ascribed $45 million towards supporting the development of the mineral sector in Tanzania and also formalizing and increasing the productivity of Tanzanian small-scale miners. This money will also help in capacity building for government officials to administer the mining industry, including the small-scale sub-sector. There are over 2 million small-scale miners operating in Tanzania, with only 26 regional mines offices equipped to service. Empowering more mines officials to advise and regulate the respective zones will better ensure that small-scale miners in the country are legally and sustainably expanding.

In regards to overall mineral trade, the ministry is advocating for the Value Addition Act, which is currently at the cabinet level. When this act is approved, all minerals are subject to required beneficiation before export, which will create jobs and help ensure local economic growth.

What plans are in place for infrastructural advancement to support present and future operations?

So far, Tanzania has over 87,000 kilometers of roads, which the Ministry aims to improve as a means of opening up the country and ensuring remote mining projects have the foundation they need. Constructing more roads will reduce their capital investment and subsequently benefit the economy. Tanzania is also modernizing its port and power capabilities. Our present installed capacity is 1,516.24 megawatts (MW) of power, but we are targeting to add 3,000 MW through projects of natural gas and other means. The gas pipeline has already been constructed and is ready for use. The additional wattage should be fed to the national grid within a few years.

How does the ministry aim to further increase its mining output in the coming years?

Mining is currently contributing 3.5% to Tanzania's overall GDP, and indirectly speaking that percentage is larger. In regards to Tanzania's national exports, mining accounts for around 50%. A majority of Tanzania's mining projects are quickly developing into the advanced stages, and there are about ten projects waiting for the stock market to pick up. Generally, the sector is growing very quickly, at a rate of 16% per year, as a result of the improvements that the ministry has put in place. The ministry is resolute on a win-win mindset, creating policies that are a win for government and a win for investors. Expect to see a lot of positive results. •


Image: View of La Falaise, Dogon Country.
From Ricardo Canino - Shutterstock

West Africa

Burkina Faso
Ghana
Mali
Niger
Senegal

West Africa

Ghana has long been the go-to destination in West Africa, but up-and-coming neighbors Burkina Faso, Cote D'Ivoire, Mali, and Senegal are now also receiving serious attention. Progress on developing mineral assets across the region is slow but resolve is evident.

In 2003, the Economist labeled West Africa "a region in flames." At the time, this seemed a fair characterization; civil war raged in Liberia, Sierra Leone was struggling to maintain an uneasy peace, Guinea was fighting off Liberian-backed rebels, and Cote D'Ivoire was split in two, with French troops maintaining the division between north and south.

Twelve years later the situation has improved across the board. The wave of civil war that engulfed the region has mostly come to an end and peaceful handovers of power have taken place in countries previously known for their autocracy, notably in Nigeria and Cote D'Ivoire.

While the general trend of the last decade has been towards peace, stability, and greater prosperity, the past two years have not been kind to West Africa. The Ebola crisis in 2014 stretched fragile health infrastructure to its limit, destroyed communities, and scared away droves of foreigners. Civil wars may have come to an end, but religious violence in Mali and Northern Nigeria has become commonplace. Meanwhile, the global fall in commodity prices has left a dent in government budgets across the region.

Despite these difficulties, regional mining investment remains surprisingly resilient. Although global exploration expenditure has fallen, West Africa has not suffered as badly as other areas. According to figures from SNL, in 2013 the region received 6% of global non-ferrous exploration funds. In 2014, this dropped only slightly to 5%.

Explorers are also looking outside their traditional prospecting grounds. Long seen as the go-to destination in West Africa, Ghana is starting to lose out to its up-and-coming neighbors in Burkina Faso and Cote D'Ivoire. Most ascribe this exodus to an uncompetitive tax regime and an inefficient bureaucracy. While Ghana is not likely to lose its title as Africa's second largest gold producer anytime soon, politicians need to examine how they can make regulations more competitive so as to ensure a healthy pipeline of new projects for future growth.

2015 marked an important milestone for Cote D'Ivoire, as President Alassane Ouattara was peacefully elected to serve a second five-year term in office. This will offer the opportunity to consolidate reforms that he initiated during his first term and should mark a new period of opportunity for the country. Investors that had been sitting on the fence are now prepared to set up permanent offices.

"With abundant opportunities and a government eager to capitalize on the country's mineral wealth, Ivory Coast is set to experience an increase in mineral exploration and production projects," said Simon Meadows Smith, managing director of SEMS Exploration. "The country's original president placed an emphasis on developing the agriculture sector and other parts of the economy, whereas the current president has highlighted the relevance of the mining industry to boost economic growth."

Further east, Nigeria also underwent a landmark election in 2015, as incumbent Goodluck Jonathan tranquilly ceded power to reformist Muhammudu Buhari. Long overshadowed by its mammoth oil industry, Nigeria's mining industry could be poised for a renaissance. "The president has signaled that he wants to see a greater contribution to the economy from the

→ 145

Senegal: One to Watch

Often overshadowed by its more golden neighbors, Senegal, West Africa's economic center, has entered the minds of miners in recent years.

"Developed in 2009 on an emerging gold belt that straddles the border of Senegal and Mali, Sabodala is the country's only commercial gold mine. Since its initial public offering in the fall of 2010, Teranga has produced over 1.2 million oz of gold there."

- Richard Young, President and CEO, Teranga Gold

Senegal, a mineral-blessed country that until recently was somewhat overlooked, is today another important player in West Africa's mining industry. Edging its way up the World Bank Group's "Doing Business Index" from 178th place two years ago to 156th last year and qualifying for 153rd place this year, Senegal is making reasonable strides. Although, when compared to the region's top mining jurisdictions – Ghana, Cote d'Ivoire, Mali and Burkina Faso – it is outperformed. Nonetheless, in terms of performance, having leapt up a noteworthy 25 places it is still the best achiever among its peers.

Historically, the Senegalese mineral production has been centered around phosphates and industrial minerals owing to the abundance of phosphate and heavy minerals sand deposits that cover most of the country. More recently, a country that was once alleged to hold little in the way of mineral diversity, has unveiled its mining potential for more sought-after commodities such as gold, iron ore, and base metals, which are found in the country's far eastern parts near to the Mali-Senegal border. One of the largest and most prolific gold belts in the world, the Birimian gold belt, runs from Mali into Senegal, where it is still vastly unexplored. Mother Nature knows no national boundaries and, along a mineralization corridor, the same favorable geological environment exists either side of the border.

Toronto-based Teranga Gold has been pioneering the way for more than six years. "Developed in 2009 on an emerging gold belt that straddles the border of Senegal and Mali, Sabodala is the country's only commercial gold mine. Since its initial public offering in the fall of 2010, Teranga has produced over 1.2 million ounces (oz) of gold there," explained Richard Young, president and CEO. "Arguably, over the next five to 10 years, the 40 million oz of gold discovered in Mali to date could be surpassed by Senegal," suggested Young.

During the next five years the company plans to ramp up production at Sabodala.

Teranga has inspired and paved the way for other gold companies to pick up their shovels and march west to Senegal, hoping to duplicate its success. One company in particular that has all its African assets in the continent's western region, IAMGOLD, declared a resource at its Boto project in 2013, four years after Teranga's arrival. In 2016, the company aims to submit a feasibility study to the Senegalese government. Boto is projected to become a significant contributor towards IAMGOLD's overall African gold portfolio.

Other contenders looking to take advantage of what the Senegalese portion of the Birimian geological gold belt has to offer include veteran mid-tier mining company Randgold Resources and to date, only a mere handful of juniors. Randgold initially discovered its Massawa gold deposit in 2007, located approximately 90 km west of Randgold's sister properties in Mali. Hailed as a major project for the company, Massawa is at feasibility stage and has recently revealed promising results.

While these are undeniably quiet times for juniors, largely due to limited access to capital to fund exploration programs, both Bassari Resources and Toro Gold are making inroads in Senegal's prolific Kenieba Window, a highly prospective geological area that hosts a number of world-class deposits. Bassari promises to devote its undivided attention to developing

Image: Teranga Gold

and taking the company's Makabingui gold project into production. Meanwhile, Toro Gold, which has multiple gold assets in Africa, is focusing its efforts on its Senegalese flagship project Moko that is already at feasibility stage.
Teranga is not only leading the way in terms of owning and operating the country's first industrial and large-scale gold mine and mill, it is also setting the corporate social responsibility benchmark for responsible mining. "Teranga strives to maintain its social license by working in partnership with the local communities and making a positive and lasting social and environmental impact," explained Young.
With the full support of the Senegalese government, which cites Teranga as a "model company," Teranga is helping to shape the future of Senegal's mining industry. To date, the company accounts for half of the 12 million oz of gold discovered in Senegal and it is thanks to Teranga that Senegal is now on the world's international gold mining map. Although off to a slow start in comparison to other West African mining jurisdictions, Senegal's ambition to become one of Africa's leading gold producers is becoming more of a reality.
Since post-World War II, Senegal's phosphate production has been a key pillar of the country's mining industry and has helped support the economy for several decades, especially since independence in the 1960s. Fast-forward to the modern day, and Senegal is set to graduate as one of the world's top ten phosphate producers. Historically, the country's phosphate sector has been dominated by the Taiba mine and Lam-Lam mine in the Thiès region. However, in recent years the appeal of the country's phosphate sector has captured foreign interest. Avenira, formerly known as Minemakers, has just been given the green light to commence mining at its Baobab project.
Another cornerstone of Senegal's traditional mining industry has been the abundance of commodities derived from its heavy mineral sands that have rapidly gained international attention. TiZir's Grande Côte Operation project commenced mining in Q1 2014 and has been crowned one of the world's largest zircon mines.
Phosphate, industrial minerals, and gold aside, the Senegalese government needs to be aware of the importance of economic diversity. A very fair and attractive mining code adopted in 2003 coupled with a newly appointed President in 2012, who is a devoted advocate of the mining sector, should inject more vitality into its mining industry, particularly the coveted resources that have yet to be properly explored and exploited. Whether it is developing the country's known iron ore deposits, uranium potential or base metals such as copper and nickel, the government is intent on luring foreign investment to harness the country's resource potential and propel growth for the Senegalese economy.
With its highly prospective geology that in parts is identical to Burkina Faso and Mali, strategic location, and stable political landscape, it is hard to see why foreign investment will continue to bypass Senegal to neighboring countries. Senegal is definitely one to watch. •

142 ←

sector and would provide the necessary support to spur on development", said Abiola Ajayi, managing director of Energy and Mineral Resources, a local consultancy.
The recent appointment of Kayode Fayemi, a highly esteemed politician, as Minister for Solid Minerals is emblematic of this new policy direction. Until the 1970s, Nigeria boasted a thriving mining sector but, after joining OPEC in 1971, most resources were diverted to oil and gas. Now that crude prices have sunk below $50/barrel, the Nigerian government is desperate for diversification.
The country holds substantial reserves of coal, lead, zinc, columbite and an estimated 3 billion metric tons (mt) of iron ore. Mining law is well established, and there are clear incentives in place for explorers and producers, with streamlined processes for license requests.
Unfortunately, several factors hinder development. Iron deposits are spread out across sites in Kogi, Kaduna, and Enugu. Beyond the capital costs associated with proving up and developing a mine, transporting the product to market would require heavy spending on infrastructure. Nigeria's rail network is in better shape than most of its neighbors, but bulk transport of iron ore would require considerable improvements.
In the past, a handful of Australian Securities Exchange (ASX)-listed juniors showed interest in developing some prospects in the country, but subdued iron prices and the unstable security situation have served as a strong disincentive. Until Boko Haram is eradicated, foreign investors are unlikely to consider anything north of Abuja. In the long-term, the government will look to encourage these investors to return, but in the short term, smaller investments in industrial minerals and aggregate production look more likely.
Crossing the northern border into Niger, the situation is rather different. Routinely placed last on the United Nations Human Development Index, 70% of government earnings come from mining. Most of the rest is foreign aid. Although the country is extremely poor, it is relatively peaceful compared to its neighbors in Mali, Libya, and Nigeria.
The country is the fourth largest producer of uranium in the world, with the largest miner being the French nuclear energy giant, Areva. After two years of negotiations with the government, the company recently announced that it would be pushing ahead with its Imouraren mine, which will double total uranium output to approximately 9,000 mt/y.
Remoteness and lack of infrastructure has made Niger one of Africa's last frontiers for modern mining. Largely unexplored, geologists see huge potential for gold, particularly in the southwestern corner, close to the border with Burkina Faso. As of 2015, there is only one producing industrial gold mine, Samira Hill, which is operated by Société des Mines de Lipatko, a subsidiary of the Canadian Semafo.
In an effort to encourage more foreign investment in the sector, the government has introduced several incentives for miners, including exemptions from import duties and value-added tax. New entrants can also expect stability agreements, ensuring that their operations will be unaffected by any subsequent changes to the mining code. Since the legislation was passed in 2008, the Ministry of Mines and Industrial Development has issued more than 100 exploration licenses. However, drilling activity has dropped off substantially since the collapse in gold prices.
Rounding off the pack of future West African heavyweights, Guinea is perhaps the most exciting jurisdiction in the region, but it has so far been unable to convert its astonishing mineral wealth into actual mining projects. The country is home to one quarter of the planet's bauxite reserves and some of the highest grades of iron ore ever seen, but political instability and flagrant corruption have stood in the way of development.
"After the DRC, Guinea is probably the richest country in Africa in terms of mineral wealth. However, it is not an easy country to operate in," said P. Ampon-sah-Mensah, director of Pamicor, a drilling contractor and consultant with operations across the region. "Transporting equipment over the border is problematic and communication between remote outposts and centralized authorities is not good."
At Simandou, Guinea hosts the world's largest known iron ore deposit. With grades from 66% to 68% and estimated reserves of 2 billion mt, it stands to produce 200 million mt/y for 25 years. Preliminary studies have put forward a tentative figure of $20 billion to make the project – which would include a 650-km railway and port – a reality.
Rights to Simandou have changed hands several times over the years. In 2008 the blocks were removed from Rio Tinto by former president Lansana Conté and passed, free of charge, to BSG Resources, which subsequently sold 51% of its stake to Vale for $2.5 billion. The transaction generated enormous amounts of money, a bewildering web of lawsuits and federal racketeering prosecutions in the United States. But, ground has yet to be broken on the megaproject.
Ten years ago, this situation would have been seen as representative of West African mining as a whole: enormous geological potential with projects mired in corruption. Thankfully this is no longer the case, and Guinea is the exception rather than the rule. Across the region, institutions are maturing and policymakers are increasingly aware of the benefits that a thriving mining industry can bring. As such, they are competing with each other to offer the most favorable terms to new investors.
Once commodity prices turn the corner, West Africa is set to be the next major destination for major miners. •

Burkina Faso: A Golden Promise

Over the past decade, gold grew into the country's most important commodity. As the political dust settles from the past two years, gold is set to have a promising future.

Ranked fourth among the continent's gold-producing nations, Burkina Faso boasts a star-studded cast of mid-tier gold mining companies and hopeful juniors. Over the past decade, gold has quickly become the most important commodity for Burkina Faso's economy, overtaking cotton and, since 2009, it has been the country's leading export product and biggest source of income, accounting for approximately 15% of national GDP in 2014 that is expected to climb to 20% in 2016.

Home to a wealth of past-producing and current-producing mines, landlocked Burkina Faso has spawned seven new gold mines over the last decade, with two more currently under construction. "No other small country in the world can boast of a similar achievement in the last decade…this is only the start of the mining industry in Burkina Faso and there are many more deposits waiting to be discovered," said Ron Little, president and CEO of Orezone Gold.

Both of the projects currently in construction phase are on budget and ahead of schedule. Out of the two, True Gold Mining's Karma mine is the most advanced; mining commenced in October 2015, and the company's first gold pour is expected in Q1 2016. "Karma will be True Gold's foundational asset to propel [the company] to a mid-tier gold producer," explained Christian Milau, president and CEO.

With construction having commenced at Yaramoko in 2015 on what will be an underground gold mine with a predicted first gold pour due in Q2 2016, Roxgold, another aspiring mid-tier gold producer, is not that far behind.

As a result of an improved mining code and fiscal policies in 2003, intermediate gold producers including SEMAFO, Nordgold, Endeavour Mining, IAMGOLD and B2Gold have established themselves in Burkina Faso. Although there seems to be a degree of ambiguity as to which mid-tier player was the first to arrive, High River Gold Mine's Taparko mine was Burkina Faso's first commercial gold mine that was constructed and managed by a foreign company in 2007, which Nordgold gained control over the following year. SEMAFO was also one of the first to arrive. In 2007 the company initiated its Mana mine with its first gold pour in 2008. With another commercial gold mine added to Burkina Faso's mining portfolio, this sparked interest from other mid-tiers. Endeavour acquired Etruscan Resources in 2010, granting the company full control over the Youga mine that had already commenced production in 2008. IAMGOLD acquired Orezone Resources along with the company's Essakane gold project in 2009, with commercial production beginning the subsequent year – the Essakane mine is now the largest mine in the country. B2Gold arrived slightly later in 2013, succeeding the acquisition of Volta Resources and its Kiaka gold project.

Although Burkina Faso shares the same Birimian gold belt as Cote d'Ivoire, Mali, and Ghana, it does not necessarily enjoy the same grade. While there are some high-grade anomalies in comparison, such as Roxgold's Yaramoko gold deposit that enjoys a grade of 15.8 g gold/t, other companies have found a way to exploit the lower grades cost effectively. The process by which the gold is mined makes all the difference: both True Gold and Orezone adopt heap-leach technology, which does not require the additional power, crushing, drilling and blasting that is needed for a carbon-in-leach (CIL) process method. "Although grade at Karma is half of that of the CIL gold projects in the region True Gold's costs are lower than higher-grade gold mines…[this] generates more cash flow per ounce than its peers," explained Milau.

Gold is crucial in sustaining and stimulating a decent growth trajectory for the country's economy and given today's weaker gold prices, this does not bode well. Although other metals have been discovered in Burkina Faso, including zinc, manganese, copper and molybdenum, these have not been developed on the same scale and continue to be outshone by the country's gold sector. However, Glencore has made some progress; the company took its Perkoa zinc mine into production in 2013, albeit not substantial enough to diversify the economy.

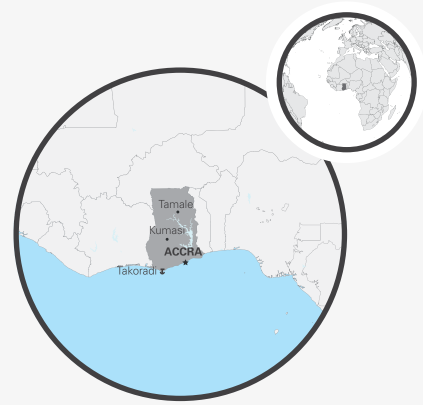
A weak gold price aside, another blow in 2015 to Burkina Faso's mining sector was its revised mining code, as stipulated by the World Bank. In response to a growing mindset among CSOs and NGOs, it was decided that mining companies must give revenue back in the form of local development funds and the government will reinvest taxed mining revenues into wider national development. Thus far, the abolition of a 10% tax break on mining company profits and 1% requirement on monthly revenue has not been overly detrimental, leaving most companies relatively unfazed. It is unclear if the revised and less attractive code will deter future investment.

Another headwind that Burkina Faso faces is the recovery from the political unrest of 2014/2015. While it was business as usual for some, since October 2014 several mining companies bore the brunt of the tumult; share prices fell, Roxgold's permitting was delayed by about four months. and True Gold were forced to temporarily suspend operations between January and May 2015. Stability, perhaps the single most important consideration for investors, may yet be maintained. There is no reason why Roch Marc Kabore, the new President of Burkina Faso, will not support the mining industry and cultivate foreign investment. Once the political dust settles, with sensible management, Burkina Faso's future as a gold mining hot spot should be promising. •

GHANA

Ghana, a former British colony, is seen by many as the success story of West Africa. Multiparty democracy has been functioning well since John Rawlings reintroduced it to the country in 1992. Sensible macroeconomic policies combined with an oil-and-gas boom has seen the country enjoy consistently strong economic growth for the past 30 years. In the mining industry, Ghana is a globally significant producer of gold and diamonds (by volume), and also produces bauxite, manganese, and silver.

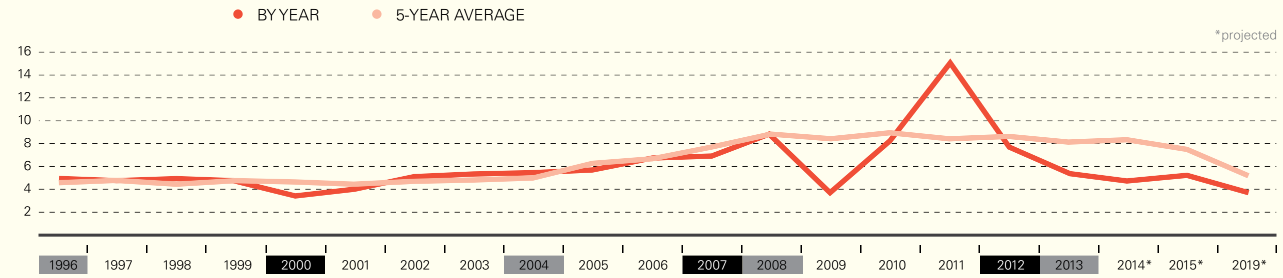
SOURCE: CIA WORLD FACTBOOK



Population: 25,758,108
Land Area: 238,533 sq km
Official Language(s): English
Capital: Accra
Chief of State: President John Dramani Mahama
Head of Government: President John Dramani Mahama
GDP (PPP): $90.41 billion (2013 est)
Growth Rate: 7.9% (2013 est)
GDP per Capita: $3,500 (2013 est)
Economic Sector Breakdown: agriculture: 21.5%, industry: 28.7%, services: 49.8% (2013 est)
Exports: $13.37 billion (2013): oil, gold, cocoa, timber, tuna, bauxite, aluminum, manganese ore, diamonds, horticultural products
Imports: $18.49 billion (2013): capital equipment, petroleum, foodstuffs
Major Trade Partners: China, France, United States, Italy, Nigeria, Netherlands

GDP GROWTH (%)

SOURCE: WORLD BANK, IMF, BBC



Jerry Rawlings is reelected president with 57% of the vote in an election described as free and fair by observers.

John Atta-Mills, vice president of Rawlings, is defeated by John Kufuor in the presidential elections.

Kufuor, again running with the New Patriotic Party, wins a second term in presidential elections.

A major offshore oil discovery is announced by Tullow Oil, promising an economic boom for Ghana.

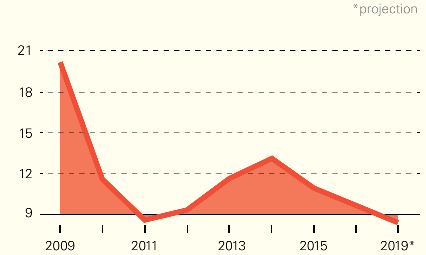
John Atta Mills of the National Democratic Congress wins a close election to become president.

John Atta Mills dies. His vice president, John Dramani Mahama, wins the election later that year.

A legal challenge to the election is resolved in favor of Mahama in an admirably transparent and peaceful process.

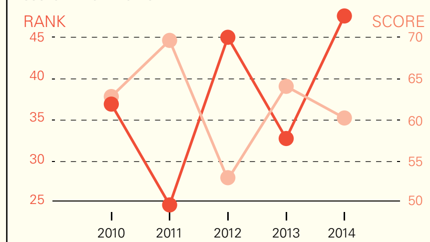
INFLATION

SOURCE: IMF



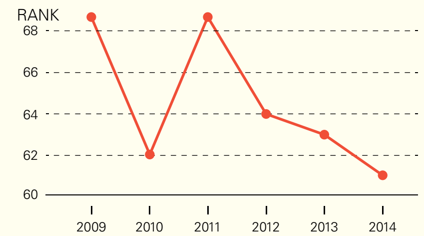
FRASER INSTITUTE INVESTMENT ATTRACTIVENESS INDEX

SOURCE: FRASER INSTITUTE



TRANSPARENCY INTERNATIONAL CORRUPTION PERCEPTIONS INDEX

SOURCE: TRANSPARENCY INTERNATIONAL



STATUS OF THE MINING CODE

SOURCE: GHANA CHAMBER OF MINES

Corporate Income Tax Rate	35%
Royalties (Precious Stones)	5%
State Participation*	10%

* Government owns a 10% free carry in all mining companies

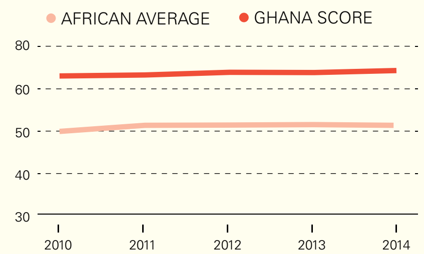
MINERAL PRODUCTION (2014)

SOURCE: GHANA CHAMBER OF MINES

Diamonds	10,700,962 ct
Gold	108.2 mt
Manganese Ore	91,147,458 mt

IBRAHIM INDEX OF AFRICAN GOVERNANCE

SOURCE: MO IBRAHIM FOUNDATION



MINING SECTOR CONTRIBUTION TO GDP

SOURCE: AFRICAN ECONOMIC OUTLOOK

2009 **6.9%** 2013 **4.9%**

FOREIGN DIRECT INVESTMENT

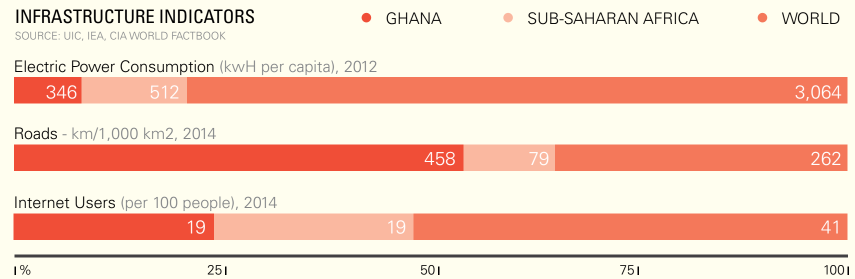
SOURCE: UNCTAD

FDI, $ millions

2013 **3,226** 2014 **3,357**

INFRASTRUCTURE INDICATORS

SOURCE: UIC, IEA, CIA WORLD FACTBOOK



BUSINESS ENVIRONMENT RANKING IN AFRICA (OUT OF 47)

SOURCE: WORLD BANK

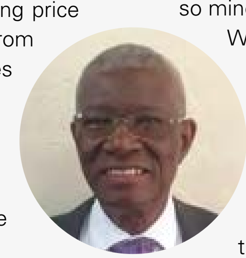
	2015
Ease of Doing Business	11
Starting a Business	13
Dealing with Construction Permits	23
Getting Electricity	9
Registering Property	5

Hon. Nii Osah Mills

Minister
Ministry of Lands and Natural Resources
The Republic of Ghana

Ghana is well known for its mineral endowment, and economic stability is highly dependent on mineral resources. After approximately 13 months in office, what are your key priorities to develop and address some of the challenges in the sector?

One of the key challenges in the sector is the falling price of commodities. Ghana relies heavily on revenue from gold exports. We recognize that commodity prices are cyclical and this is not a challenge unique to Ghana. However, as government, we are working with the mining companies affected by the dip in the gold price to revamp and redevelop their operations, cut costs and take other measures to continue mining.



For example, AngloGold Ashanti could not maintain prior production levels, and needed to reduce its workforce. Through negotiations with the company we were able to ensure that the staff who were let go were adequately compensated. Similarly, AngloGold Ashanti requested an amendment on their mining operations to mine at a reduced rate while they redevelop their mine to create a leaner operation. As government we are willing to negotiate and work with the mining companies and we reached an appropriate agreement. They will undergo a maintenance period of two years and ramp up in two years time with an increased workforce and production.

We are also encouraging new investments in the mining sector. Asanko Gold is currently building a new mine in the Ashanti region and by 2016 will be pouring gold. This is extremely encouraging for the sector; an international investor is able to operate bullishly and profitably in a time of a downward trend. There is light at the end of the tunnel. Clearly the policies in Ghana are attractive for new investments.

What incentives are in place to promote investment and diversification into other minerals?

We are looking to promote investment in other minerals, including bauxite. At the moment we only export bauxite with no value added in the country. We need to create a value chain in Ghana and increase employment opportunities for Ghanaians. There are huge opportunities to produce aluminum, salt, manganese, lead and iron ore. We are actively seeking new investors to reduce our reliance on gold.

The Minerals Commission welcomes new investors and has large quanti-ties of geoscientific data available for the investor.

What can investors expect to see with regards to changes to the mining code?

Royalties are pegged at 5% and there are no plans to change this. We allow for the export of gold and the retention of large sums of money overseas to be used for the purchase of equipment.

However, one major change to the mining code will be to control illegal artisanal mining. The government needs to have the legal backing to confiscate the equipment and proceeds from illegal mining activities. The revenue generated from small-scale mining equates to 34% in the gold sector, but Ghana does not receive tax from these operations.

In Ghana, illegal mining activities are facilitated by the use of heavy equipment. A bill to amend the Minerals and Mining Act is currently being considered by Parliament, which when passed will give legal backing for the seizure and confiscation of all equipment used for illegal mining, as well as the product so mined.

We have created a special task force to flush out illegal miners. We are empowering authorities at the local and district level to take charge of these issues. Our approach is two pronged: firstly, we are looking broadly at the underlying reasons why people engage in illegal mining. Secondly we are creating alternative opportunities to attract people away from the-se activities. Furthermore we are working to group together illegal miners to create a formalized mining activity.

Power remains a key constraint in the mining sector in Ghana. What steps are being put in place to increase generation capacity?

Ghana has load shedding and power issues. Currently, water levels at the two main electricity-generating dams are low, impacting on the total generation capacity. We are encouraging the private sector to invest in power. We have a number of diesel-generating plants owned by private players. Diesel generators are currently facing challenges with maintenance, which has decreased the power available, but total installed capacity of about 2,800 megawatts (MW), which is higher than the demand. In approximately one year, we will see a very different situation in the power sector. The government is bringing in two power barges to add approximately 500 MW of additional supply. Secondly the maintenance of the existing diesel plants will have been completed. Lastly, Ghana will have access to its local gas supply and will reduce our dependence on diesel. Therefore, investors can rest assured that they will have access to adequate electricity.

The mining sector in Ghana will continue to grow and, therefore, this is the time to invest in the country and our mining sector. •

MACIG 2016

Ghana's Gold Still Glistens

Mining is the largest source of income for the government, but a slowing economy and volatile currency have prompted companies to relocate to other jurisdictions and investment to recede.

Since the days of the great 13th century Ashanti Empire, gold has been central to Ghana's economy. So great was the quantity of yellow metal encountered by early Portuguese sailors travelling in the area that they named it Costa d'Ouro, or Gold Coast in English. The name stuck for another four and half centuries until the country was renamed Ghana, following independence in 1957.

About 40 years later, in 1996, the Ashanti Goldfields Corporation became the first African company to list on the New York Stock Exchange, cementing Ghana's reputation as West Africa's modern mining hub. Its long-term stability, respect for democracy and high levels of education made it the darling of international investors.

Projects poured in and the country quickly became the continent's second largest gold producer after South Africa. By the mid 2000s, Ghana was celebrated as a true African success story: a nation that had successfully harnessed its mineral wealth to the benefit of its people, without falling into the trap of the resource curse.

> **"As part of the Ghana committee responsible for drafting the regulations, Maxam worked with industry leaders and policymakers to come up with efficient regulations that enact strict rules regarding storage, transport, and surveillance systems.**
>
> **- Emmanuel Ofosu-Asante, Managing Director, Maxam"**

Today, Ghana plays host to three of the world's largest gold companies: AngloGold Ashanti, Gold Fields and Newmont Mining Corporation. These are joined by a healthy range of mid-tier producers, including Kinross, Golden Star and Endeavour.

Yet over the past two years the prevailing mood of optimism has started to give way to something far more negative. After posting GDP growth of 15% in 2011 (the highest of any country that year), the economy has steadily lost momentum. Growth forecasts for 2015 have been slashed to just 3.9%. The Ghanaian cedi continues to experience severe volatility and several companies speak of relocating their business to other jurisdictions. In the last quarter of 2014, the government was forced to approach the International Monetary Fund (IMF) for an emergency credit line.

In parallel, investment in exploration projects and existing mines has tumbled.

Mining is the leading source of income for the treasury, with 98% of mineral revenues coming from just one commodity, gold. The country's other major exports—oil and cocoa—are also down. This leaves the country with little to fall back on when prices are low. Efforts to diversify have not been particularly successful. Manganese and bauxite are produced but both are exported in their raw form, adding little value to the economy.

Where did it all go Wrong?

The main reason for this sudden reversal in fortunes is, of course, the collapse in world commodity prices. But this is a global trend. No mining countries had particularly good years in 2014 or 2015, so why has Ghana been so acutely affected? The answer likely lies in a multitude of factors.

When it comes to the paucity of new projects, the country's maturity may actually be part of the problem. The fabled Ashanti Belt has been explored for a long time and there are plenty of big mines already active in the region. Junior explorers see more potential to make large discoveries in unexplored provinces, so are channeling their resources into countries like Burkina Faso and Cote d'Ivoire, which also offer more favorable incentives.

Unfavorable taxes are frequently identified by explorers as a further disincentive to investment. With a corporation tax at 35% and mineral royalties at 5%, Ghana definitely falls within the bracket of a high tax environment. Concessions formerly granted to juniors, such as VAT exemption on capital equipment imports, have been repealed. The chamber of mines is currently working with the Ministry of Finance to create a more attractive set of policies. The first results of this consultation are set to appear in 2016.

Operational mines face another set of problems. Chief among these is an on-going power supply crisis. In 2014, all mines were forced to install devices on their transmission apparatus that immediately cut supply in the event of a country-wide deficit. This is a frequent occurrence, which can result in damage to expensive equipment and interruptions to critical processes. In the face of increasingly frequent blackouts across the country, the government brought in a 225 megawatts power barge in December with plans for a second, larger vessel to be delivered in early 2016.

While this should go some way towards alleviating the current acute situation, it is not a sustainable solution. Power from the barges comes at a premium. Given the state of government finances, the less time spent relying on these ships the better. New thermal stations are due to come online towards the end of 2016 but, until then, the government will have to come up with a more coherent distribution strategy.

According to Sulemanu Koney, CEO of the Ghana chamber of mines: "The government must decide when it is necessary to transmit hydroelectric power to industries to reduce costs, while boosting production and employment, and when to transmit it to residential customers."

Inevitably, one group or another is going to lose out.

Power is not the only aspect of infrastructure that is working against Ghana's

> "In today's market, it is not about just selling machines. You have to sell the application and you have to sell your expertise. As such, we have dramatically boosted our after-sales support, hiring many new skilled technicians and, with DEM Group and the OEMs, developing dedicated training for our mechanics and customers' operators"
>
> **- Patrick de Bantel, Managing Director, DEM Ghana**

Image: DEM Ghana

mines. The road network is also in need of serious investment. Poor maintenance has led to an unreliable transport system that drives up costs for all. Alhaji Abdulai is managing director of AT Logistics, a local transportation specialist that caters to a range of clients within the mining industry. "Road conditions in Ghana remain unsuitable for industry, with most surfaces insufficient to support heavy equipment. This entails higher repair costs and extended downtime for trucks, with around 50% of our revenues going back into maintenance. Limited lanes in major highways across the country produce congestion levels that force a large portion of our operations to be conducted at night," he said.

A final issue stifling mining investment in Ghana is a general perception that the current government is not doing enough to support the industry. Ministers have brought in some questionable policies that have negatively impacted investors who are based overseas. For example, foreign companies are no longer able to invoice in foreign currencies, which leaves them exposed to the violent fluctuations of the cedi. For an importer of heavy-duty mining equipment, this can wreak havoc with profit margins and makes long-term forecasting next to impossible.

In a similar vein, legislation was recently brought in that bans foreign companies from clearing items through customs. All foreign-owned customs clearers must now contract out their work to locals or sell a majority stake in their operation to Ghanaians. One European logistics company chief claimed that this was "the thin end of the wedge" and that, if left unchallenged, similar restrictions could be introduced for a wider range of services.

Producing Mines

It comes as no surprise that the drop in gold prices has hit Ghana's mines hard. Operators are adopting a range of different strategies to meet the challenges of this new environment. "Existing mines are expanding to increase volumes and achieve economies of scale. Some mines have opted to concentrate on their stocks to decrease the costs of exploration and drilling to compensate for lower revenues," explained Emmanuel Ofosu-Asante, managing director of Maxam's Ghanaian operation.

The biggest news of 2015 was that a proposed joint venture between Randgold Resources and AngloGold Ashanti to renovate the venerable Obuasi Mine will not be going ahead. The two miners have collaborated successfully on operations in the DRC and Mali and a similar deal was envisioned for Obuasi, with both companies working together to finance the estimated $1 billion necessary to rehabilitate the mine. AngloGold, however, has been unable to turn a profit at the operation in over a decade and after three months of due diligence, Randgold backed out, claiming that the proposal did not meet its investment criteria.

This follows on from several years of cost cutting programs, including retrenching the entire workforce and reducing the operational footprint from over 8 kilometers (km) to around 2 km.

Obuasi's future is far from clear. Given current market conditions, securing funding for any major investments is highly unlikely, and a deal with Randgold seemed like the only way out.

Nevertheless, AngloGold's former managing director in Ghana, Frederick Kwesi Attakumah, who worked on the mine for over 20 years, believes that this is not the end of the road for the aging pit.

"In spite of its turbulent recent history, Obuasi is still important to us as it holds around 6 million ounces (oz) reserves and 20 million oz in resources. You cannot find deposits like this in many other countries," he claimed.

Similar uncertainty hovers over Goldfields' Damang mine in Ghana's Western Region. A study is underway to determine the viability of a recapitalization program at the central pit. Damang is a high-grade, low-volume operation but extraction at the main pit has been suspended since 2013. Renewed operations, focusing on the high-grade sweet spot at the center of this pit could prove highly lucrative but would require extensive excavation and waste removal that could command a price tag of up to $100 million. Goldfields expects to hear the results of the study by the end of first quarter 2016. Yet even if the results are positive, a green light is not guaranteed. The company has been negotiating with the Ghanaian government for several years in an effort to secure a "stability agreement," which would effectively insulate them from any future changes to the tax code. Without

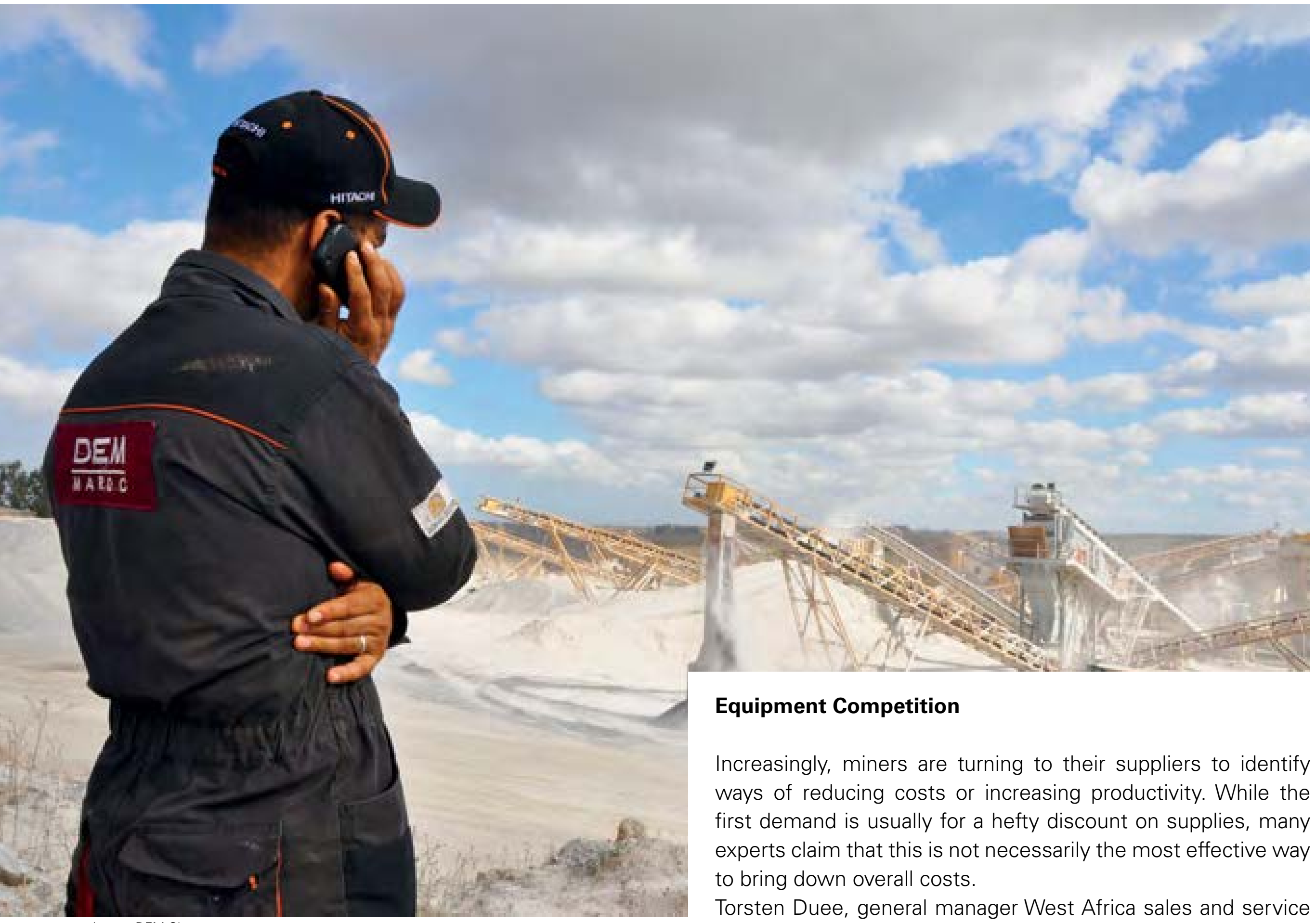


Image: DEM Ghana

this agreement, the company is reluctant to commit to further spending campaigns.

Both AngloGold Ashanti and Newmont have such arrangements with the state but so far Goldfields' campaign has been unsuccessful. "Quite a number of mining companies are seeking to sign Stability Agreements with the government but it does not look like the government intends to sign one soon because Parliament has taken a serious view towards giving tax breaks to mining and other companies," explained Kimathi Kuenyehia, Sr., of Kimathi Partners Corporate Attorneys.

Historically, they have been used to lure new investors to the country, rather than as a carrot to placate existing producers.

Elsewhere, Newmont's Ahafo and Goldfield's Tarwka mines both saw output plunge as the operators scaled back operations in response to depressed gold prices. However, this was tempered by the positive announcement that Newmont had managed to ramp up production at its Akyem mine by 265% and achieve all-in-sustaining costs of just $647 per oz across its Ghanaian operations.

Looking forward, while there are relatively few mine developments on the horizon, TSX-listed Asanko Gold is soon to commence production at its mine and expects first gold to be poured in January 2016. Located on the Asankrangwa belt, Asanko's deposit hosts reserves of 2.5 million oz at a grade of 2.15 grams per metric ton. The developers predict an operational life of just over 12 years, with output hitting 190,000 oz per year by the middle of 2016.

Equipment Competition

Increasingly, miners are turning to their suppliers to identify ways of reducing costs or increasing productivity. While the first demand is usually for a hefty discount on supplies, many experts claim that this is not necessarily the most effective way to bring down overall costs.

Torsten Duee, general manager West Africa sales and service at Metso Mining & Construction explained: "While discounts may imply a small saving, life-cycle production costs will remain the same. The correct strategy is to overhaul your mine plan or process plant and make a difference to your overall cost per ounce."

The good news is that, as miners scrambled to expand as quickly as possible over the boom years, they paid little attention to costs, meaning that there is plenty of low-hanging fruit and simple changes to systems can have a sizeable impact on cost. One of the most effective is to reduce the use of expensive inputs such as electricity and water by tweaking the performance of process components or investing in more durable wear parts.

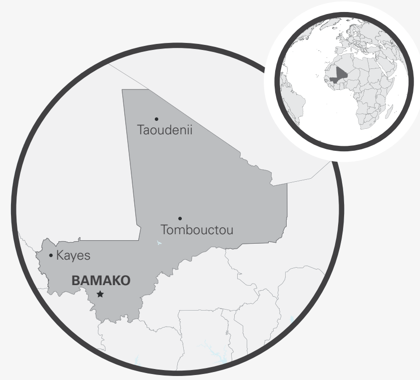
One of the most costly aspects for any mine is fleet maintenance. As such, equipment providers are vying to offer the best possible solution to their customers. Until recently, the market was fairly static, with Liebherr as the market leader in provision of excavators and CAT as the major supplier of trucks. Now there is a new player on the scene.

DEM Ghana has been supplying Hitachi mining and construction machines for several years but since 2013, the company has altered its business model and has been investing heavily in its staff. Managing director Patrick de Bantel explained: "In today's market, it is not about just selling machines. You have to sell the application and you have to sell your expertise. As such, we have dramatically boosted our after-sales support, hiring many new skilled technicians and, with DEM Group and the OEMs, developing dedicated training for our mechanics and customers' operators." •

MALI

Mali is a country of outstanding history: it is the site of the legendary Timbuktu, a centre of Islamic learning. Successful elections in 2002 marked a period of political and social stability for the country, however in 2012 Tuareg rebels briefly took control of northern Mali. Mali's mining industry produced gold as a principal commodity, and also phosphate and semiprecious stones. Vast undeveloped resources include bauxite, chromium, copper, gypsum, iron ore, lead, lithium, manganese, nickel, niobium, silver, titanium, uranium, and others.

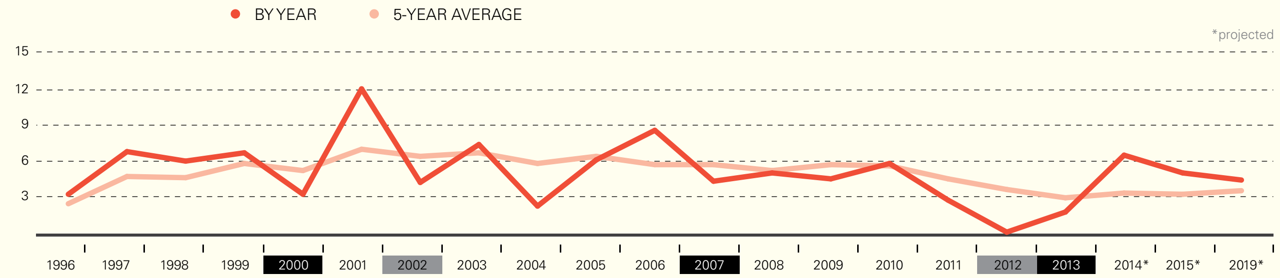
SOURCE: CIA WORLD FACTBOOK



Population: 16,455,903 (July 2014 est.)
Land Area: 1,240,192 sq km
Official Language: French
Capital: Bamako
Chief of State: President Ibrahim Boubacar Keita (since September 2013)
Head of Government: Prime Minister Modibo Keita (since January 2015)
GDP (PPP): $27.5 billion (2014 est.)
Growth Rate: 7.2% (2014 est.)
GDP per Capita: $1,700 (2014 est.)
Economic Sector Breakdown: agriculture: 38.3%, industry: 23.2%, services: 38.5% (2014 est)
Exports: $2.253 billion (2014 est.): cotton, gold, livestock
Imports: $3.14 billion (2014 est.): petroleum, machinery and equipment, construction materials, foodstuffs, textiles
Major Trade Partners: China, India, France, Indonesia, Senegal, Bangladesh, Ivory Coast

GDP GROWTH (%)

SOURCE: WORLD BANK, IMF, BBC



Konare appoints former International Monetary Fund official Mande Sidibe prime minister.

Amadou Toumani Toure elected president by landslide. Poll is marred by allegations of fraud.

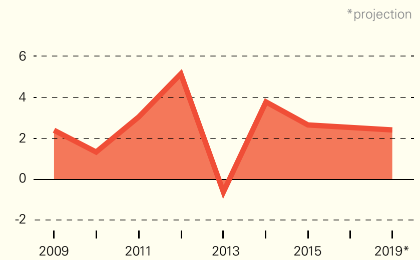
The ruling coalition, Alliance for Democracy and Progress (ADP), strengthens its hold on parliament in elections.

Military officers depose President Toure ahead of the April presidential elections, accusing him of failing to deal effectively with the Tuareg rebellion. African Union suspends Mali.

Islamist fighters capture the central town of Konna and plan to march on the capital. President Traore asks France for help. French troops rapidly capture Gao and Timbuktu and at the end of the month enter Kidal, the last major rebel-held town.

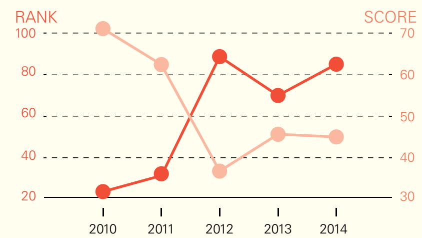
INFLATION

SOURCE: IMF



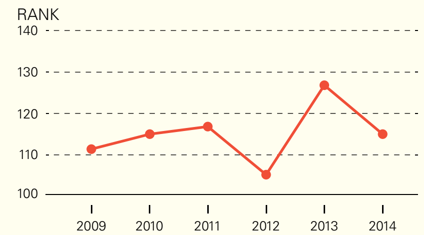
FRASER INSTITUTE INVESTMENT ATTRACTIVENESS INDEX

SOURCE: FRASER INSTITUTE



TRANSPARENCY INTERNATIONAL CORRUPTION PERCEPTIONS INDEX

SOURCE: TRANSPARENCY INTERNATIONAL



GOLD EXPORTS

SOURCE: REUTERS

2013 67.4mt	2014 53.2mt

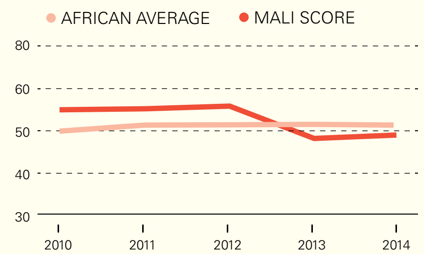
MINERAL PRODUCTION (2013)

SOURCE: BRITISH GEOLOGICAL SURVEY

Gold	41,751 kg
Salt	6,000 mt

IBRAHIM INDEX OF AFRICAN GOVERNANCE

SOURCE: MO IBRAHIM FOUNDATION



MINING SECTOR CONTRIBUTION TO GDP

SOURCE: AFRICAN ECONOMIC OUTLOOK

2009 7.2%	2014 5.9%

FOREIGN DIRECT INVESTMENT

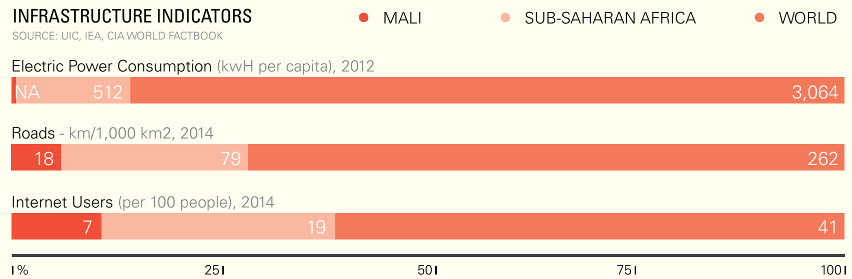
SOURCE: UNCTAD

FDI, $ millions

2013 308	2014 199

INFRASTRUCTURE INDICATORS

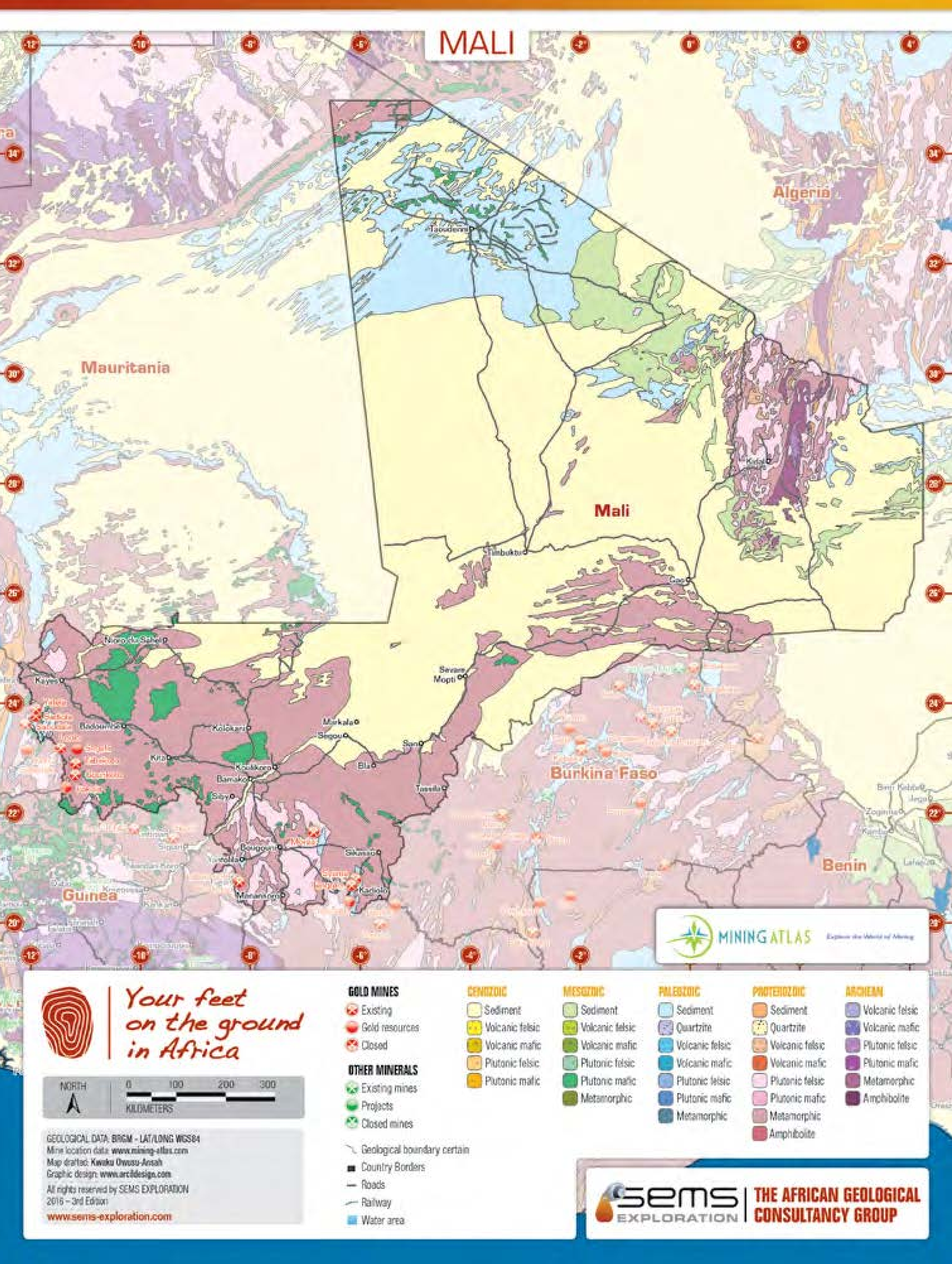
SOURCE: UIC, IEA, CIA WORLD FACTBOOK



BUSINESS ENVIRONMENT RANKING IN AFRICA (OUT OF 47)

SOURCE: WORLD BANK

	2015
Ease of Doing Business	19
Starting a Business	38
Dealing with Construction Permits	29
Getting Electricity	21
Registering Property	24



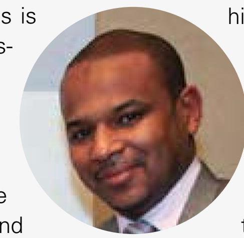
Hon. Dr. Boubou Cisse

Minister
Ministry of Industry and Mines
Republic of Mali

A key objective of the ministry is to increase the contribution of the mining sector to the national economy. Since your term in office what has been done to achieve this long-term goal?
For the past 20 years the government has used the financial contribution of the mining sector from taxes and royalties to finance salaries and operating costs. While this is important, local communities could not see visible benefits. Currently, we are maximizing our financial contribution at the macroeconomic level and trying to do much more at the local, microeconomic level to increase opportunities for local community businessmen to partner with the mines and provide services, including security and supply of goods and services. Our objective is to integrate the mines into the local communities, through the right policies and legal frameworks.
It is unfortunate that only gold has taken off in Mali, but we are working on regional projects to export iron ore. We are inviting new investors to look at other minerals and are seeing increased interest, especially to develop the iron ore deposits.

Last year Mali revoked over 130 mining licenses and about 30% of existing permits, completing an inventory of mining contracts. What was the rationale for this action and how has this laid the foundation for transparency in the industry?
Mali came out of a major crisis that threatened the country and its unity. During this coup, the mining sector was heavily impacted; mining licenses were granted without any process and revoked unnecessarily from titleholders. Many events negatively affected the business environment and the image of the country.
A new government was installed and tasked with restoring economic growth. The president announced that good governance, transparency, and the fight against corruption would be the hallmarks of his tenure. This has to translate through all economic sectors in Mali, including mining. The first point of entry in the mining sector is through the process of granting licenses. Therefore, the ministry made a decision to go back to where it was before the crisis, which means that all licenses that were issued without due process during this time were cancelled. This sends a signal to Malians and the rest of the world that if ever this were to happen again, people would refrain from taking this opportunity to do things in a way that they are not supposed to be done. We need to follow the processes and procedures that were in place before the coup, and this resulted in 130 cancellations.

Although Mali is one of the top gold producers in Africa, your neighbors have access to ports and, in some cases, have more developed energy and infrastructure. As investment dollars tighten, what distinguishes Mali as an investment destination for limited capital?
Mali is landlocked and has notable issues with energy and infrastructure. In these regards, we cannot compete with countries such as Senegal or Cote D'Ivoire, but we have a comparative advantage in other ways. Firstly, in terms of mineral resources, we are blessed to have some of the highest quality gold, iron ore and bauxite in Africa.



Secondly, from a historical point of view, Mali has proven legislative stability and honors established agreements, an important consideration for investors. We have shown this through political cycles, through a military coup and the major crisis in the north. For instance, companies currently in production are still adhering to the 1991 mining code due to the stability clause in their agreement. No matter what happens, the fiscal conditions that we fixed 30 years ago will be adhered to despite the new 2012 mining code. This stability is extremely important to investors and Mali offers this operating advantage and creates a favorable business environment.

In partnership with the World Bank Mali is investing heavily in developing the skill base of local Malians in mining. Can you highlight some of the key initiatives in place?
The lack of skills in the Malian workforce is a bottleneck to expanding the mining industry. We are working on this through our existing systems, such as a program we have put in place to develop skills by 'training the trainers.' We currently have a few trainers in South Africa and France being trained at the Ph.D. level by reputable institutions in the industry. They will return to Mali and train the local trainers.
We also have a major project to develop a regional mining school in Mali, which is supported by the World Bank. The project started in 2015, and the first students will enroll by the middle of 2017. We plan to train 1,500 students per annum, 50% Malian and the other 50% from Africa. This is a regional school of excellence and an exciting step for Mali.
Alongside the school of mines, Mali is also investing in a first class geological laboratory in partnership with the Chinese. •

Mali: Maintaining its Golden Reputation

Terrorist attacks have brought negative press, but Mali still has world-class deposits and good governance. Mineral deposits, moreover, are focused in the southern and western parts of the country, away from the unrest.

Mali has certainly had its fair share of bad luck in recent years. Setbacks include the uprising of Tuareg nomadic separatists destabilizing a previously secure northern region in 2012; Islamic militants seizing control of parts of the country and capturing a town in Mali's center, also in 2012; concerns over the 2014-2015 Ebola outbreak spreading northwards from Mali's southern neighbors; and the hotel siege by Islamic extremists in Bamako in November 2015. Each could easily tarnish the country's reputation as an investment destination.

Fortunately, the French military has intervened in the north, causing the Islamic insurgency to recoil and partially subside. Nonetheless, because Mali's mineral wealth predominantly lies within the southern and western parts of the country, the volatile and tense north does not pose too much of a direct threat for exploration and mining companies. "Mali is misunderstood by investors due to alarming media reports of unrest in the northern parts of the country. What investors fail to realize, however, is that the country is peaceful in the southern parts, where the mining sector thrives," observed Declan Franzmann, president and CEO of African Gold Group Inc.

Clearly the events of Islamic insurgence in 2012 and 2013 had only a minimal lasting impact. According to the Fraser Institute Ranking 2014, Mali was rated the seventh most attractive investment jurisdiction in Africa, placing it above Cote d'Ivoire and just below Burkina Faso and Ghana, ranked fifth and sixth respectively. More recent quantitative data also presents Mali in a relatively good light. Although not top of the class among its West African counterparts, according to the World Bank Group's "Doing Business 2016", Mali only slipped a mere place from the previous year and is on par with Burkina Faso in 143rd place (out of 189). These results may come as no surprise to those who understand the irresistible allure of Mali's mineral wealth, while also appreciating the challenges that the country faces.

Present-day, landlocked Mali was once part of three great West African empires that controlled the trans-Saharan trade in gold and other precious commodities; the country's mining sector, however, has only been functional at a noteworthy pace since the early 1990s. After it gained independence in 1960 from France, Mali took more than 30 years of droughts and rebellions, over two decades of a military dictatorship and a coup, before it formed a democratic, multi-party state in 1992. The Malian government then relaxed the enforcement of rigid protectionist mining codes, which led to foreign interest and investment and the arrival and formation of two of today's key mining companies – IAMGOLD and Randgold Resources. "IAMGOLD's name originates from King Mansa Musa of Mali, who mined and traded gold with the Egyptians under the name of 'I am gold' during the late 14th century. Originally attracted by a property in Mali, which became the company's

MACIG 2016 EDITORIAL

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The company is focused on having a low total cost of production, i.e. low capital intensity and low operating and sustaining costs per ounce of gold. The goal is to design a mine that is robust enough to have a payback period of less than two years.

- Howard Miller, Chairman, Avnel Gold Mining

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Sadiola mine in 1995, IAMGOLD was established 25 years ago," explained Bob Tait, vice president of investor relations at IAMGOLD.

Today, Mali is host to a number of other gold producers, including AngloGold Ashanti, Resolute Mining, Endeavour Mining and B2Gold, as well as hopeful juniors, including Avnel Gold Mining and Africa Gold Group that have followed in IAMGOLD's footsteps.

Since the late 1990s, Mali's emergence as a gold-producing nation has given the Malian economy a new lease of life. Gold accounted for approximately 80% of the country's mining activity by the mid-2000s, and has helped to alleviate the country's dependence on its cotton industry as its main form of revenue. Mali currently ranks as the third highest gold-producing nation in Africa (after South Africa and Ghana), with gold accounting for 12% of the country's GDP in 2014, and is home to eight commercial, currently producing mines. Even though gold has given the Malian economy a much-needed boost over the past two decades, relying heavily on gold leaves the economy vulnerable to fluctuations in commodity prices.

Avnel Gold has already prepared for further deterioration of gold prices and is exercising the necessary diligence to ensure its Kalana gold project will be profitable. "Avnel Gold adopted a conservative view on gold pricing of $1,110 for its PEA 18 months ago, when the market price of gold was closer to $1,300. This allowed for a sufficient buffer should the price of gold continue to deteriorate," said chairman Howard Miller.

With 35 years mining experience and a veteran of restarting mines, Miller knows too well the volatility of commodity prices and so has a simple but effective formula to ensure the company's historic mine, located in southwest Mali, is a success. "The company is focused on having a low total cost of production, i.e. low capital intensity and low operating and sustaining costs per ounce of gold. The goal is to design a mine that is robust enough to have a payback period of less than two years," added Miller.

Avnel Gold expects to be in position to consider a construction decision of what will be a high-grade, new open-pit mine by mid-2016, with production anticipated two years thereafter.

Comparable to the size of South Africa or Angola, Mali is also home to phosphate, iron ore, bauxite, manganese, lithium, uranium, tungsten, tin, lead, copper and zinc deposits, as well as kimberlites, eight of which have been confirmed as diamondiferous. Nevertheless, limited exploration coupled with a lack of infrastructure and poor access has curtailed further development of any known deposits. Although there is some small-scale phosphate mining in the country's Tilemsi Valley in the southeast, as well as diamonds being recovered from artisanal gold miners in the Kéniéba region near the Mali-Senegalese border, Mali's commercial mining commodity diversity stops there. Because the country's fiscal status mirrors the behavior of its export commodity prices, as one of the world's 30 poorest countries, it is essential that the country diversify its commodity portfolio. Developing the country's iron ore extraction sector will diversify foreign exchange earnings away from dependence on gold. Additionally, Mali's phosphate sector will help the Malian economy and people in more ways than one.

Mineral exploration company, Great Quest, plans to contribute towards Africa's growing agricultural industry by developing its advanced phosphate project, Tilemsi, in eastern Mali. Since most mined fertilizer is processed into a finished product in chemical plants in other parts of the world, it is expensive

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[The Fekola gold project] is one of the most promising underdeveloped gold deposits in the world and is set to become one of B2Gold's chief flagship assets.

- Clive Johnson, President and CEO, B2Gold

"

to transport the product into the agricultural areas of Africa because of distance and inadequate infrastructure. Great Quest's pledge to undercut imported fertilizer by cutting out the middleman has two aims: not only will it create employment opportunities but it will make fertilizer more affordable for local farmers. "Great Quest's exceptional deposit in Mali is some distance from the coast and so to sell fertilizer internationally will not be competitive. The company's strategy will be to set up a small production facility locally and sell to local farmers, saving them high transportation costs from importing fertilizer from the coast," reasoned Jed Richardson, president and CEO.

"Great Quest can apply its strategy of home-produced fertilizer across Africa servicing the land-locked heartlands and growing agricultural markets," concluded Richardson.

Although, historically, mining companies have not always recognized their moral obligation to interact with local communities and preserve the environment, today, companies are more proactive than ever before and less corporate social responsibility (CSR) complacent. One of the industry's CSR pioneers, B2Gold, is constantly striving to find ways to maximize environmental stewardship and optimize community relations. "For a company devoted to doing the right thing, CSR is paramount. Ultimately transparency, accountability, responsibility and delivering on CSR promises have been key ingredients to B2Gold's success," revealed B2Gold's president and CEO, Clive Johnson.

B2Gold intends to apply its signature CSR blueprint, involving local communities and incorporating them into the company's workforce versus employing foreign workers at its Fekola project. "B2Gold employs many people from the local population near the Fekola property in Mali to work on construction and ultimately at the mine," added Johnson.

Undeniably CSR is paramount; observing CSR as a natural, vital ingredient to any prosperous mining project will help guarantee optimum levels of production, stimulate foreign investment, boost company profitability, and erode the negative stigma still associated with mining. "Providing CSR initiatives are implemented by pairing with local communities and governments, the future will be brighter for mining companies," concluded Johnson.

Avnel Gold has been in Mali 11 years longer than B2Gold and shares a similar positive experience in local community relations. "In January 2003, the company had the only underground mine in Mali. At the time, the skill set was not available, so the company invested considerable time in training a workforce of 400 to 500 locals, which has remained stable - so much so that today, the majority of department heads are Malian. [Avnel Gold]…has not witnessed a strike or unrest at its operations," recounted Miller.

However, mining-company community relations in Mali in recent years have not been completely smooth; AngloGold Ashanti, operator of the IAMGOLD-AngloGold Ashanti Sadiola mine and nearby Yatela mine also in the Kayes region of Mali, witnessed a unionized strike in 2014 of more than 2,000 employees for a period of five days.

With the natural progression of the mine life cycle comes the typical out with the old, in with the new. IAMGOLD/AngloGold Ashanti's Yatela mine is coming to the end of its mine life and the same duo's joint venture Sadiola mine is soon to deplete its supply of soft rock, meaning production will rapidly decline. Combined, these mines will only account for 70,000 ounces (oz) gold of IAMGOLD's annual projected production for 2015. However, IAMGOLD has another joint-venture interest, for which it has just increased its ownership percentage share. "The current drill program at the Siribaya property in Mali, a joint venture partnership with Merrex Gold, looks promising. Arguably by year-end 2015, IAMGOLD will have assay results to support the declaration of a maiden resource," said Bob Tait, vice president of investor relations.

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Mali is misunderstood by investors due to alarming media reports of unrest in the northern parts of the country. What investors fail to realize, however, is that the country is peaceful in the southern parts, where the mining sector thrives.

- Declan Franzmann, President and CEO, African Gold Group Inc.

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A relative newcomer to Mali, B2Gold acquired Papillion Resources and its Fekola gold project in the Kayes region, close to the Senegalese-Mali border, in October 2014. "[This] is one of the most promising underdeveloped gold deposits in the world…and is set to become one of B2Gold's chief flagship assets," stated Johnson.

For a property that has tremendous exploration upside, it will surely enrich Mali's gold industry. Mali will also benefit from being able to add a key player to its ever-growing portfolio. "The Fekola mine is scheduled to commence gold production in late 2017…The current average annual production for the first seven years is approximately 350,000 oz/y gold at an average operating cash cost of $418/oz gold and for the life of mine plan approximately 276,000 oz/y gold at an average operating cash cost of $552/oz," predicted Johnson.

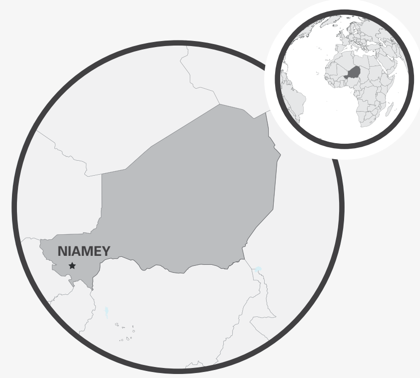
To what extent the recent terrorist attacks in the country's capital will reduce Mali's appeal to foreign investors and companies hangs in the balance and will arguably unfold in 2016. While companies are bound to exercise caution and heightened levels of vigilance, it is unlikely that this will alter their plans and commitment to the country. Furthermore, Mali's world-class deposits, decent fiscal regime, attractive mining code, fair tax treatment, plus a transparent, supportive and pro-mining government, will offset a potential unprecedented political crisis coming from the country's north. For now, Mali's golden reputation remains bright. •

Image: Cows around a dam in front of the Main de Fatima rock formation. Trevor Kittelty / Shutterstock

NIGER

Niger, officially the Republic of Niger, is a landlocked country in Western Africa, named after the Niger River. It borders Nigeria and Benin to the south, Burkina Faso and Mali to the west, Algeria and Libya to the north and Chad to the east. A former French colony, Niger is among the world's top five producers of uranium, but also produces coal, silver, and tin, as well as some petroleum.

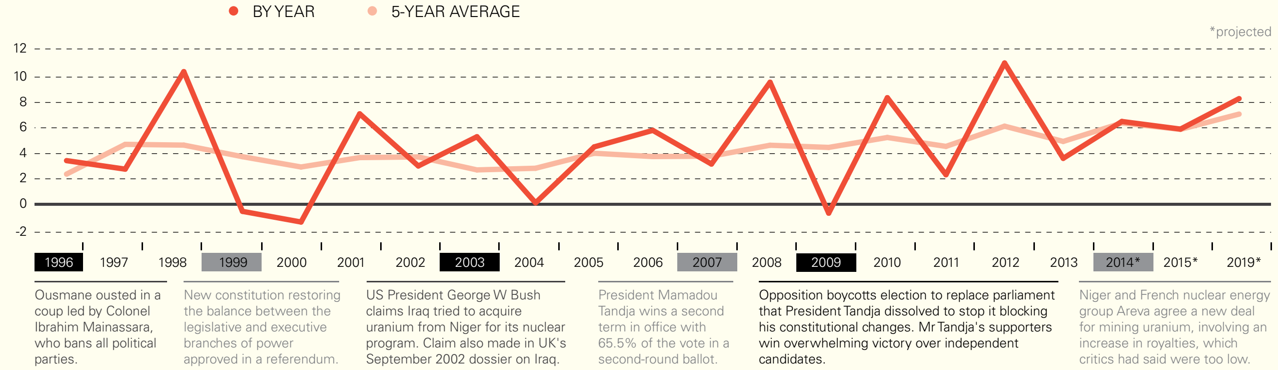
SOURCE: CIA WORLD FACTBOOK



Population: 18,045,729 (July 2015 est.)
Land Area: 1,266,700 sq km
Official Language: French
Capital: Niamey
Chief of State: President Issoufou Mahamadou (since April 2011)
Head of Government: Prime Minister Brigi Rafini (since April 2011)
GDP (PPP): $18 billion (2014 est.)
Growth Rate: 6.9% (2014 est.)
GDP per Capita: $1,100 (2014 est.)
Economic Sector Breakdown: agriculture: 37.7%, industry: 18.6%, services: 43.7% (2014 est)
Exports: $1.469 billion (2014 est.): uranium ore, livestock, cowpeas, onions
Imports: $2.158 billion (2014 est.): foodstuffs, machinery, vehicles and parts, petroleum, cereals
Major Trade Partners: Nigeria, France, China, French Polynesia, Ghana, Togo

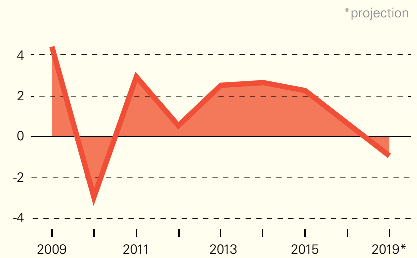
GDP GROWTH (%)

SOURCE: WORLD BANK, IMF, BBC



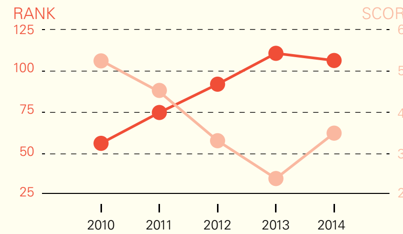
INFLATION

SOURCE: IMF



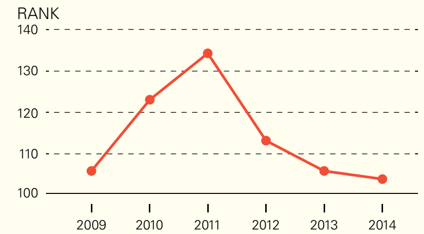
FRASER INSTITUTE INVESTMENT ATTRACTIVENESS INDEX

SOURCE: FRASER INSTITUTE



TRANSPARENCY INTERNATIONAL CORRUPTION PERCEPTIONS INDEX

SOURCE: TRANSPARENCY INTERNATIONAL



FOREIGN DIRECT INVESTMENT

SOURCE: UNCTAD

FDI, $ millions

2013 **719** | 2014 **769**

MINING SECTOR CONTRIBUTION TO GDP

SOURCE: AFRICAN ECONOMIC OUTLOOK

2009 **6.9%** | 2013 **10.2%**

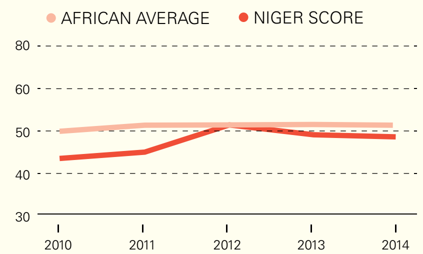
MINERAL PRODUCTION (2013)

SOURCE: BRITISH GEOLOGICAL SURVEY

Coal	241,792 mt
Gold	1,151 kg
Silver	300 kg
Tin	10,175 mt
Uranium	4,237 mt

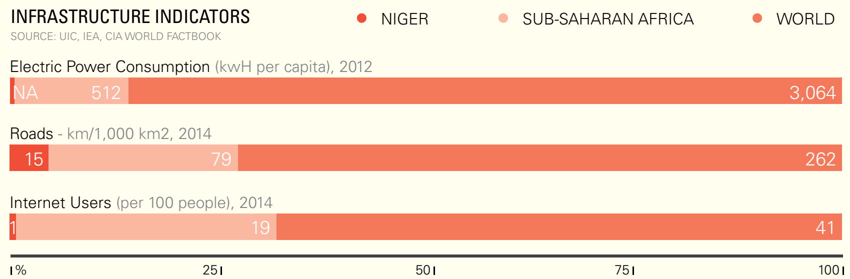
IBRAHIM INDEX OF AFRICAN GOVERNANCE

SOURCE: MO IBRAHIM FOUNDATION



INFRASTRUCTURE INDICATORS

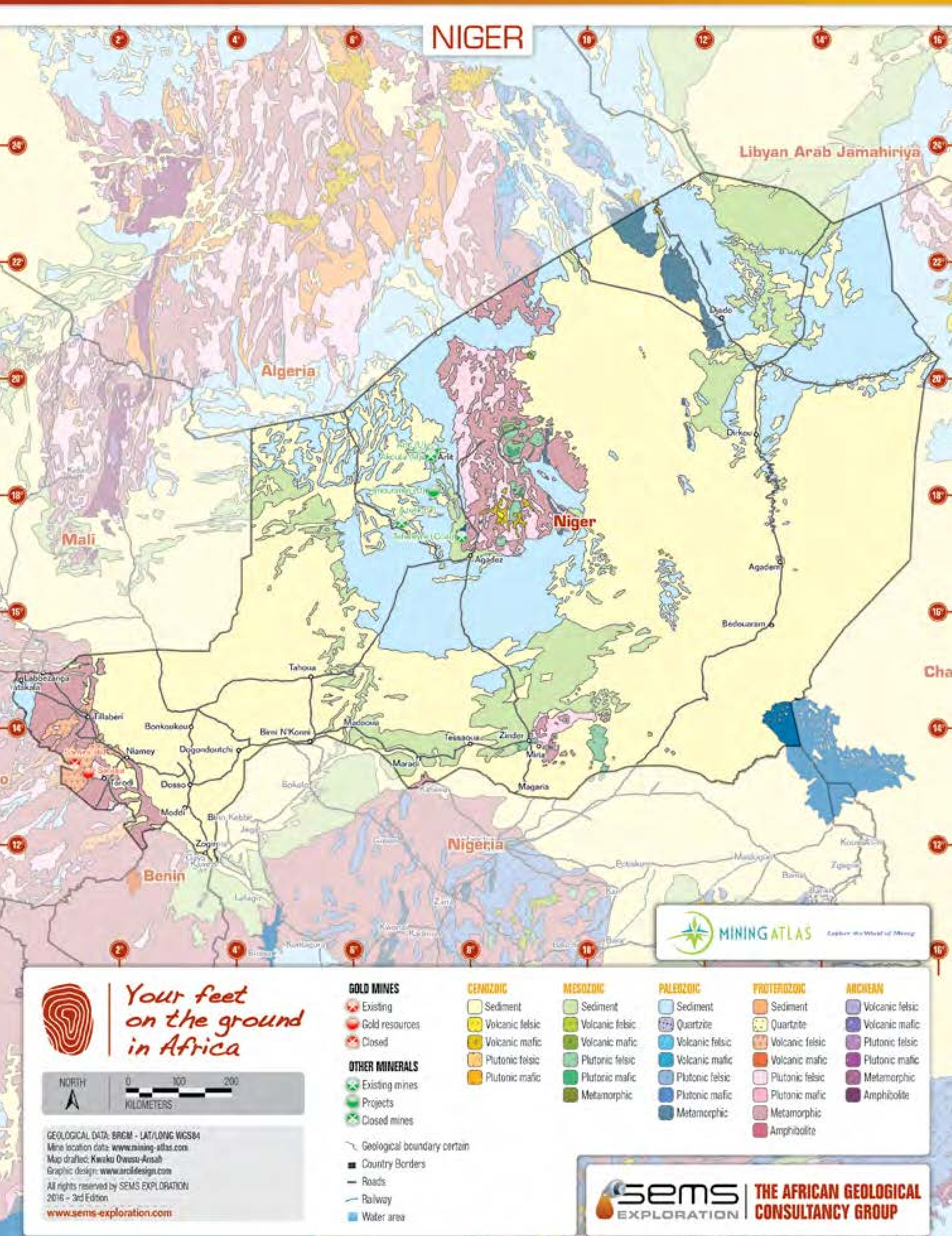
SOURCE: UIC, IEA, CIA WORLD FACTBOOK



BUSINESS ENVIRONMENT RANKING IN AFRICA (OUT OF 47)

SOURCE: WORLD BANK

	2015
Ease of Doing Business	30
Starting a Business	24
Dealing with Construction Permits	42
Getting Electricity	32
Registering Property	21



Hon. Omar Hamidou Tchiana

Minister
Ministry of Mining and Industrial Development
Niger

Niger has an old and developing mining sector and is currently the fourth largest uranium producer. What makes Niger uniquely appealing as a destination for investment capital?
Niger has large deposits of uranium and has been exporting for the past 50 years. Niger is among the top five countries in the world in exploitation and production of uranium. In 2011, with the new election we took the decision to place further emphasis on our mineral resources and seek to develop win-win partnerships with the private sector. We have undergone a political transition period back to democracy and for two years we have been negotiating with Areva to create this type of partnership. Areva will invest more than €100 million in local content. For the past 50 years, we have imported skills and expatriates but now we have the local expertise to development our uranium sector. We also have partnerships with other countries, including Canada, South Africa, China, Australian, and Britain for the development of our resources.

The Government of Niger has made a concerted effort to enhance the availability of geological data. Are investors aware of the mineral diversity in the country?
We are attending road shows to present the information at key events across the globe.
Niger has a wealth of minerals including gold, phosphate, coal, iron ore and limestone to name a few. We are seeing greater investment in Niger, including a new cement plant with a capacity to produce 2.5 million metric tons per year. Niger is the only country in West Africa to have limestone, gypstone, and coal cement plants. Our aim is to export cement to neighboring countries.

In terms of the legal and regulatory environment, what incentives are in place to promote investment into Niger?
Niger once had the best mining code in West Africa. Today we have some issues, but we are reworking the code to solve some of the key constraints that investors are unhappy with. Africa has many raw materials, but without capital and expertise they will remain in the ground. Therefore we recognize the importance of working with the community, private sector, and government to realize Niger's potential. We are striving to make Niger the best investment destination for mining in Africa, which will be achieved through our new mining code.
For instance, we have significantly improved our license-granting procedures, with a quick and simple process that grants licenses within three months. We will implement many in-centives including exemptions, tax holidays, and special conditions for large-scale mines and companies are asked to commit themselves to local development in return.
We are also reviewing the current license regime. After three years, companies must relinquish their licenses. We can grant extensions for one to two years to complete their feasibility studies if need be, but we need to see serious investment for this to happen.

Niger aims to strengthen ties with other uranium-producing African countries, including Namibia and South Africa. What is the impetus for this and what implication will it have on the uranium sector?
The impetus behind the strategy to strengthen ties with other uranium-producing countries in Africa is based on the principles of OPEC. OPEC governs the price of oil. For uranium, the producing countries do not have any influence on the price of uranium. For this reason we are talking with African countries that are interested in uranium to set up and begin discussions on price structure. There should be a consortium to share resources and, at the same time, fight against corruption.

Infrastructure and power shortages plague the mining sector across the continent. How do you placate investors concerns about entering Niger and deal with these concerns?
Infrastructure and power are a necessity for the development of a sustainable mining sector. In Niger we have made significant progress to deal with these issues. For instance, we are partnering with Americans to produce a power plant of 600 megawatts. Secondly, we have started building a new railway to improve the country's infrastructure and demonstrate to investors that we want to develop our mining sector. We know that without enough energy, roads, and railways, we cannot export anything. Therefore, the government is making significant investments in this area.

As the Minister of Mines, what legacy would you like to leave the sector?
I want to leave a legacy of transparency in the mining sector and to show the world that Niger can work cohesively with the private sector to develop win-win partnerships. We will deliver the best mining code for investors, which will keep Niger alive as an attractive investment destination.
Uranium contributes more than 70% of Niger's exports. We have exports in uranium, coal, and gold. However, we need to beneficiate in the country and add value to our minerals. We are looking to transform the uranium industry, which will be key to the development of the country. One day we hope to have our own nuclear power plants. •

Image: Panorama of Luanda, Angola.
Anton Ivanov / Shutterstock

Into the Future

Africa and the
Global Mining Industry

"A big challenge is educating African companies and investors active in that region about the culture for raising public equity capital on TSX and/or TSXV. There are certain requirements needed prior to pitching for investment funding, a formula that consists of a compliant technical report under NI 43-101, as well as having an effective management, board and corporate governors."

- Orlee Wertheim,
Head, Global Mining,
Toronto Stock Exchange and TSX Venture Exchange

"Africa is the most important emerging mining destination globally. The continent has immense natural resource prospects and is the second-highest continent for growth potential. This therefore presents a very important growth market for Tetra Tech."

- Max Beck,
Head of Business Development EMEA Markets,
Tetra Tech

"Namibia is an attractive jurisdiction for foreign investment: it is a democratic state, is safe and secure, has a fair tax and mining code, good infrastructure, and an eager local workforce. Plus, it is a proven uranium district, ranked as the world's fourth-largest uranium producer."

- Marcel Hilmer,
CEO and Executive Director,
Forsys Metals Corp.

"Globally, there is a rekindling of investor confidence in the mining sector. The African continent is now perceived as a more attractive mining destination, and the historic risk concern for working in this region is diminishing."

- Kari J. MacKay,
Partner,
Goodmans LLP

"After having successfully operated in the copper market in Namibia, expansion to the Copper Belt only seemed natural. We are aware of the challenges associated with operating in this market and have demonstrated, across our African operations, the resilience necessary to succeed here."

- Eddie Ennis,
Projects Director,
LogiMan

"There is a perception that the DRC, especially in the east, presents considerable risk; Banro's experience has been that this view is seriously exaggerated. There are certainly disruptive groups, i.e. small pockets of militia, usually operating in isolated areas, but what we mainly see is a country of good-hearted people who just want what people everywhere want, jobs and economic opportunities and better educational and health care opportunities."

- Martin Jones,
Chairman, Banro Foundation,
Banro Corp.

"Last year, Franco-Nevada was very active adding to its interests in West Africa. $135 million was provided to Teranga Gold to help consolidate the Sabodola district in Senegal, which is currently in production. Franco-Nevada also provided up to $90 million in mine financing to fund the construction of True Gold's Karma project in Burkina Faso that should begin producing in 2016. Both these projects cover large geologically prospective districts with the potential for the discovery of many more gold deposits."

- David Harquail,
President and CEO,
Franco-Nevada Corp.

"The gold mining industry is in a three-year bear market correction in a long term bull market, however no matter what the market conditions, the right projects will always achieve the required financing. In the current price environment, investment will only come to projects that boast high grade and high margins. The grades that the Kubi mine enjoys are within the top ten percentile, meaning in a low price environment these are the projects that are able to seek funding, as they will generate a healthy profit margin."

- Douglas MacQuarrie,
President,
Asante Gold Corp.

"Today, given a conservative and cautious investor and mining community, the key to the development of mining projects is scalability. The ability to commence a project at a relatively small scale with growth funded partially from cash flow not only mitigates risk but may enhance the project's overall return to shareholders through lower reliance on equity, debt and royalty financing. The challenge for the mining industry and investors will be to determine which projects merit development during a period of difficult funding, but provides the development timeline to take opportunity of anticipated strengthening metal prices in 2016 and 2017. AGG's Kobada project will do just that."

- Declan Franzmann,
President and CEO,
African Gold Group Inc.

"In spite of volatility in some parts of Africa, it only requires small improvements to open up certain jurisdictions as attractive mining destinations. It is essential to keep abreast as to what is going on in the mineral-rich continent of Africa and where to deploy funds for resource opportunities. The African continent holds tremendous mineral potential."

**- Michael F. White,
President and CEO,
IBK Capital Corp.**

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Regional overviews were written by Sharon Saylor and Meredith Veit (Southern Africa), Lubo Novak (Central Africa), Meredith Veit (East Africa), and Nathan Allen (West Africa). "Senegal: One to Watch" and "Burkina Faso: A Golden Promise" were written by Katie Bromley.

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Additional copies of this book can be ordered through Elif Ozturk (elif@gbreports.com).

THANK YOU

We would also like to sincerely thank all the governmental bodies and associations that took time to share their insights into the market.

ANGOLA
Ministry of Mining and Geology
ENDIAMA

BOTSWANA
Ministry of Minerals, Energy and Water Resources
Okavango Diamond Company (ODC)
Botswana Chamber of Mines

DEMOCRACTIC REPUBLIC OF CONGO (DRC)
Ministry of Mines
Federation des enterprises (FEC)

NAMIBIA
Namibia Chamber of Mines

ZAMBIA
Chamber of Mines of Zambia
First Quantum Minerals Ltd.
Ministry of Mines, Energy and Water Development
Zambia Development Agency (ZDA)
Zambia Environmental Agency (ZEMA)
ZCCM Investments Holdings

ZIMBABWE
Chamber of Mines of Zimbabwe
Ministry of Mines and Mining Development
Zimbabwe Investment Authority (ZIA)

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