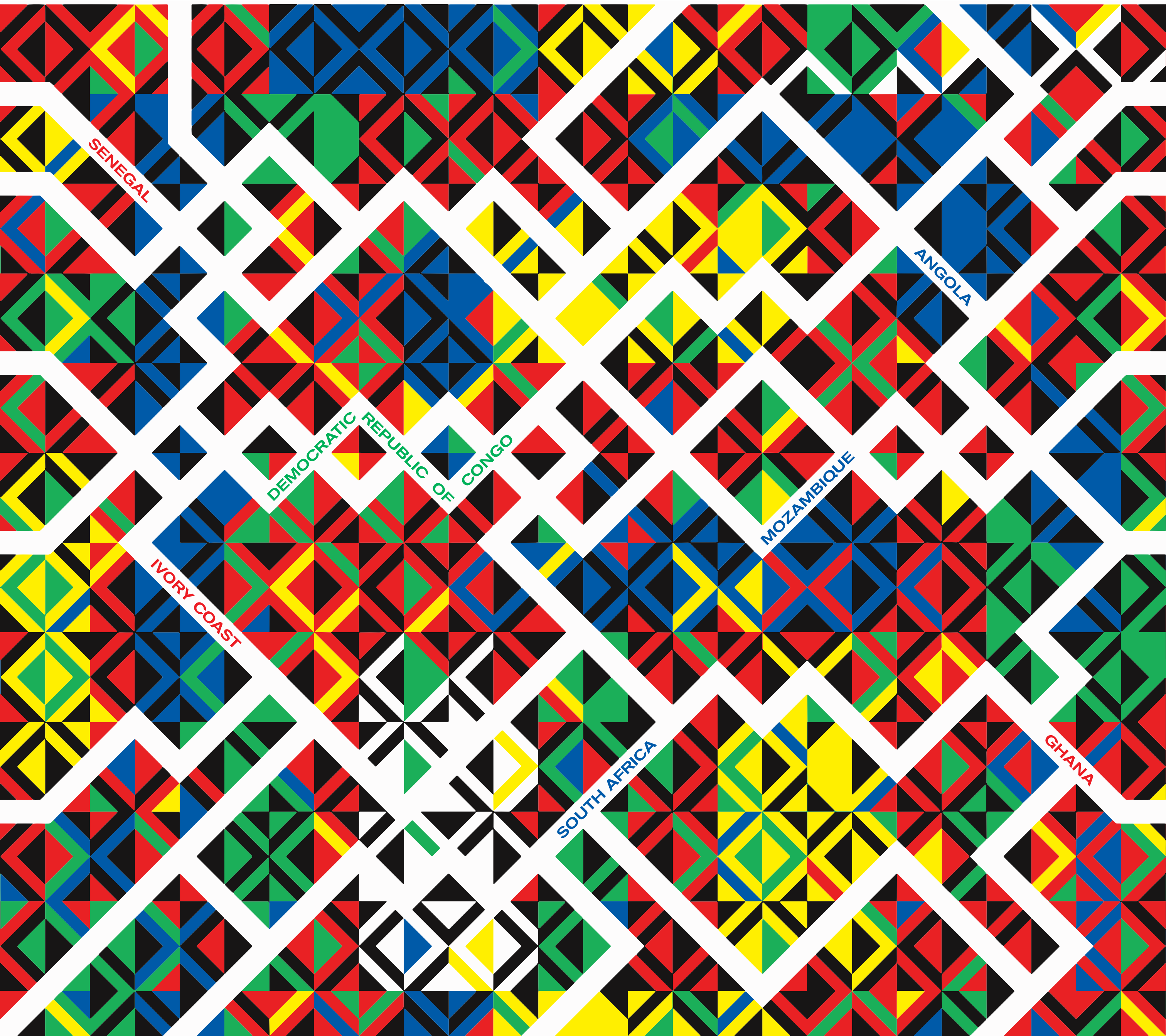
GLOBAL BUSINESS REPORTS & MINING INDABA

MACIG

THE OFFICIAL MINING IN AFRICA
COUNTRY INVESTMENT GUIDE

2020



Welcome Note

The 2020 edition of the Mining in Africa Country Investment Guide (MACIG) marks the seventh year of partnership between Global Business Reports and the African Mining Indaba. The publication will be launched in February 2020 at the event in Cape Town before being further distributed throughout the year.

Since its inauguration in 2014, MACIG has sought to fill a void in the African mining industry by providing a point of reference for governments, investors and the wider mining community requiring a comprehensive understanding of the sector. We are pleased to forecast that 2020 will offer new and exciting opportunities across the industry in Africa. A number of broad-ranging trends underpin our optimistic prognosis. Post-colonial democratization in Africa has advanced unevenly, but the continent has experienced 26 transitions of power in the last five years — the highest turnover since the 1990s — and half of these have occurred by election. Peaceful elections have played a part in stimulating both foreign direct investment and intra-African trade, with African FDI defying the global downward trend in 2018 at a growth rate of 11% following successive declines in 2016 and 2017. With expected continued acceleration of continental economic growth as well progress in the implementation of the African Continental Free Trade Area Agreement, even higher FDI flows can be expected in 2019 and 2020.

The commodity downturn has awakened African leaders to the necessity of diversifying away from over-dependence on single commodities: oil-rich countries such as Angola and Mozambique have expanded their mining sectors while established mining jurisdictions like Ghana have sought to dilute their gold-dominated portfolios. Rebounding gold prices will present an opportunity for West Africa not only to ramp up gold production but to venture into less explored minerals, while the long-awaited recovery in the cobalt price will revive the treasure hunt along the Copperbelt in the DRC.

Continued resource nationalization will remain a fundamental deterrent of mining investment in 2020. To empower local communities and grant a bigger slice of mining profits to host countries, governments across the continent are introducing or expanding localization policies. While local empowerment should be encouraged, attempts to find a good balance between investor attractiveness and host-country benefits so far offer more cautionary tales than success stories.

Despite both old and new challenges, Africa's unparalleled mineral endowment coupled with promises of continued progress towards stability ensure that the continent will be of increasing interest for mining investment as the new decade dawns. In the pages that follow, we present our readers with updates from some of the continent's most compelling investment destinations – from the tantalizing opportunities in West Africa's Birimian greenstone belts to the more developed prospects in Southern Africa and the high-reward ventures in the DRC. MACIG 2020 is intended to guide investors through the selected countries with insights formed by hundreds of conversations with key industry stakeholders as well as quantitative research. We extend our deepest gratitude to our interviewees for sharing their time and insights, and we would like to wish all of our readers a prosperous 2020. •

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AFRICA

The Official Mining in Africa Country Investment Guide, 2020

Globalization has reshaped global markets and altered the relationship between the state and the economy. In Africa, the world's second-fastest growing region and home to the largest free-trade area, state policy has recently focused on market-driven policies and structural adjustment in an attempt to modernize its emerging economies. Nonetheless, persisting challenges haunt the region's 1.2 billion-person market. Inflation, fuelled by expansionary fiscal policy in West Africa, is a challenge to the region's sustainable economic growth; state fragility stalls economic stability in Central and East Africa; and meanwhile, southern Africa is projected to experience the lowest growth rate on the continent, partly as a result of the failing economy of the areas' mining titan – South Africa.

Economic Growth and the Sino-African Relationship

Despite economic and political instabilities, Africa sidestepped the global decline in foreign direct investment (FDI) and has instead experienced a 13% increase in the last year, with South Africa as the largest investment recipient followed by Nigeria. The United States and France are Africa's second and third largest investors, injecting US$30.85 billion and US$34.17 billion in 2018, respectively according to the Africa Center for Strategic Studies.

Meanwhile, China's ubiquitous economic presence has been a topic of global controversy, portrayed by turns as an express train to continental prosperity, the making of a future Sino-African superpower or simply thinly veiled neo-colonialism. Narratives aside, with Sino-African trade reaching US$200 billion in 2019 (Chinese customs), China is now Africa's largest trade partner. The old proverb 'if you want to prosper first build roads' seems to have guided China's investment strategy, as it currently finances one in five infrastructure projects in Africa and constructs one in three. Most funded projects are in transport, shipping and ports, followed by power and real estate.

China has increased its financial influence in Africa through what is often called the "Angola Model," by which countries are granted low-interest loans with commodities as collateral. This originally Western approach has in the last decade been systemized by the China Exim Bank and has contributed to China securing 52% of cobalt production in the DRC, two thirds of all major platinum group metals sites in South Africa and 59% of global lithium resources. Examples include the 2008 infrastructure-for-minerals deal that attributed mining rights to China in exchange for substantial investment into the DRC's war-torn infrastructure, as well as a more recent agreement in which Ghana has agreed to

"If there is an already established processing capability, it can facilitate the process of attracting investment. Regional cooperation might also play a significant role in increasing processing capabilities and increasing benefit from export opportunities."

- Fred Kabanda, Division Manager of Extractives, African Development Bank

cede 5% of its bauxite reserves in exchange for a US$2-billion infrastructure investment. For African nations that typically suffer from low credit ratings and scarce national fiscal resource, China will remain an attractive source of finance. The extent to which China can play the role of a valuable strategic partner will depend on the strength of the host countries institutions and the resulting capacity to consolidate the gains from Sino-African deals.

Power and Downstream Beneficiation

Africa has enormous renewable energy potential; yet, the continent's electricity access rate sits at just 40%. For the mining industry, electricity shortages entail costly operational interruptions that have steered the sector towards increased self-sustainability. "In the past, we always assumed that the state would be the energy provider. We are now seeing a change in dynamics, and mines have to come up with their own solutions," explained Nick Holland, CEO of Gold Fields. "If you want to build a mine, you have to make sure you are in control of energy resources, which means you can control the costs better."

While partial energy self-reliance is steadily becoming the norm, not all companies have the financial capacity to install renewable power solutions and such efforts in many jurisdictions – such as South Africa – are undermined by economic protectionism aimed at empowering state-owned electricity providers. South Africa's electricity price has skyrocketed with a baffling 523% increase since 2006, ramping up the already daunting costs of tapping the world's deepest mines. According to the country's minerals council, the hike in electricity prices will cost the South African mining industry approximately 90,000 jobs in the upcoming three years. The World Bank has identified rampant electricity costs as a main driver leading to Ghana's surpassing of South Africa as Africa's top gold producer. Nonetheless, Ghana's overdependence on thermal and hydro sources of electricity has also resulted in supply shortages.

Economic development institutions have since established that the only path to omni-African electricity access is regional collaboration. Nations with stable power supply, such as Botswana – which is currently extending its grid throughout its northern region – would need to coordinate with neighbors to share excess power. "The government is well advanced to get power down to Ghanzi, which is our nearest town," said to Julian Hanna, managing director of MOD Resources. "This power will provide us with a much cheaper option for our processing in particular, thus lowering our unit costs of production."

An example is the 2,000-MW transmission line that will link the grids of Kenya and Ethiopia. The line is set for

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Nick Holland

CEO,
Gold Fields

Gold Fields has the vision to be the global leader in sustainable gold mining. Can you explain the strategy to achieve this goal?

Sustainability can be measured in a number of ways – we are here, we are profitable, and our strategy is integrated with what the society we interact with requires. We are not an isolated company, but part of a micro-economy. We want to impact our communities and the environment in a positive way. We always try and employ locally from the areas surrounding our sites and also try to procure goods and services from enterprises in these areas. Our goal is to have a positive impact on the lives of people surrounding us in terms of creating jobs, infrastructure investments and partnerships with government.

Globally, the cost of energy is rising exponentially, and this is a key issue for industry. At the same time, climate change is having an impact on business causing severe droughts and flooding, amongst other problems. We believe that we need to make our contribution to the carbon footprint reduction initiative. Gold Fields is, for example, installing 30,000 solar panels at our Agnew and Granny Smith mines in Australia.

What are the main energy challenges mining companies face from an operational standpoint?

Carbon taxes are on the rise, there are indirect imposts on energy, and there are import taxes on fuels as it is seen as a captive revenue source for government. All these aspects can impact the profitability and sustainability of mining companies. We expect that there are going to be gaps in terms of the energy availability going forward relative to energy demands. If we do not do something different, we are going to struggle to find reliable supplies of energy.

In the past we always assumed that the state would be the energy provider. We are now seeing a change in dynamics and mines are having to come up with their own solutions. If you want to build a mine you have to make sure you are in control of energy resources, which means you can control the reliability of supply as well as costs in a far more effective way. National utilities have not always been well maintained by governments in developing countries as there have been other greater social needs. If we believe that energy costs are going to increase faster than inflation, we have to manage these costs. The best way to manage them is to find cheaper sources of energy, such as gas and renewables, which are also less carbon-intensive. This is a win-win situation for both the business and the environment.

In 2019, Ghana took over as the leading gold producer in Africa. To what do you attribute South Africa's decline in this regard?

The South African gold industry has been on the decline for approximately 30 years. The ore is getting deeper, grades are declining, distances to workings are getting longer, and there is higher inherent structural inflation than other countries. Electricity costs and wages are above inflation, which is a great challenge. Innovation could save the South African gold industry, but unfortunately this reality is not around the corner. With policy uncertainty, there is also a question mark on how much time and effort companies will put into gold mining in South Africa.

Gold Fields has committed to use 20% renewables at any new mine built. Can you explain this, and will this increase moving forward?

The 20% is a minimum and will definitely increase moving forward – it is over the life of mine of these operations. At Agnew, we did 50% renewables on a retrofit, which we did not think was even possible. What we achieved at Agnew with regard to renewables has raised the bar for Gold Fields and hopefully the mining companies around us. Carbon taxes are becoming a reality which will eventually erode margins. Moving towards renewables is the way forward for the mining industry to remain profitable and sustainable. •

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transmission by April 2020 and will open more power-sharing opportunities for neighbouring countries. Larger projects have also been initiated, most notably the Grand Inga hydroelectric dam project, which would allow the DRC's roaring rivers to produce 40,000 MW of power – sufficient to power half of the continent. To be constructed in six phases, of which the Inga III Dam is the first phase, the project will cost a total of US$80 billion and generate twice as much power as the largest dam in the world – the Three Gorges Dam in China. In addition to financial contributions from the African Development Bank, South Africa also pledged to buy the excess electricity from the Inga dam. However, many have dismissed the ambitious project as a far-flung fantasy, pointing to the unlikelihood that a poor and corrupt country can handle the US$80-billion price tag – especially since the World Bank's withdrawal in 2016 and with the initial construction phase already responsible for a substantial part of the DRC's debt burden.

The lack of reliable electricity is also stalling the establishment of downstream capacity, which will be key for the continent's future sustainable development. So far, weak domestic markets have undermined development of downstream capacities. "One of the key recommendations from the studies of the Africa Natural Resources Centre is the need for regional processing centers in order to benefit from economies of scale," said Fred Kabanda, division manager of extractives at the African Development Bank. "If there is an already established processing capability, it can facilitate the process of attracting investment. Regional cooperation might also play a significant role in increasing processing capabilities and the benefits from export opportunities."

Downstream beneficiation is also necessary for augmenting the trickledown effect of mining benefits to host-country populations. In some of the fastest growing and most well-developed economies on the continent, financial gains have not considerably affected poverty and unemployment rates. In Ivory Coast, Africa's fastest growing economy, a decade of growth has only decreased domestic poverty rates from 48.9% in 2012 to 45% in 2018, and in South Africa, unemployment levels are estimated at above 35% – the primary reason for the riots in Johannesburg in 2019. In Africa, economic instability often translates to political instability; countries with the highest poverty levels – the DRC, Liberia, Guinea and Togo – also have some of the highest fatality rates resulting from armed conflict.

Above the Ground Risk and Local Content

Investors are becoming increasingly concerned with above the ground risk – incorporating everything from armed conflict, political instability and cyber threats to regulatory uncertainty, corruption and climate change – and are thus demanding presentation of tangible data before committing to a project. "There is an interplay between the mining regime, the financial viability of a given project and the country's history," stated John Welborn, managing director and CEO of Resolute Mining. "For example, if you run an underground mining operation in an unstable geological setting, you have to mitigate that risk, which will bring additional costs."

Efficient data and on-the-ground intelligence gathering as well as frequent communication with the government are ways for companies to keep their fingers on the pulse. But as risk profiles vary across the continental spectra, companies run the risk of relying too heavily on the possibility of transferring expertise from one country to another.

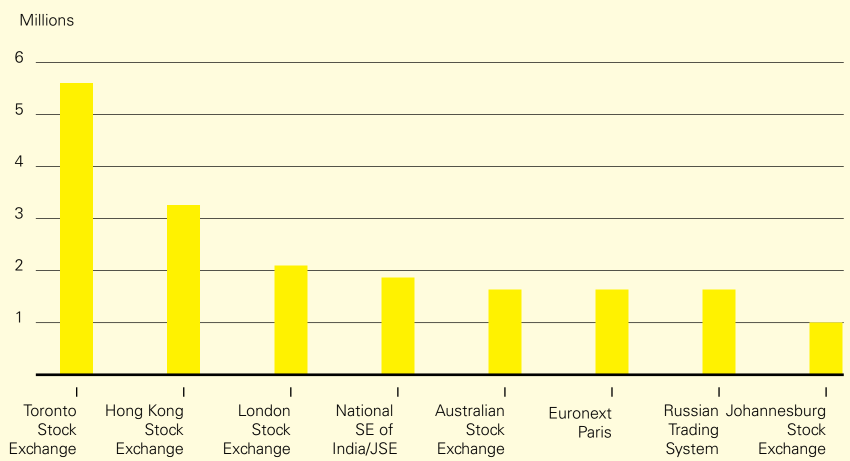
"Often, the issue is not mining companies being dishonest about the risks, but rather that they lack the appropriate experience and skill sets," Welborn continued. "My experience is that if you are honest, deliver on your promises and demonstrate that you are aware of the various risk factors, investors will trust you."

Andrew Dinning, CEO of West African gold explorer and developer Sarama Resources, further explained: "There are no guarantees, and, like many jurisdictions, the operating environment varies over time. It is important that you remain good corporate citizens and you need to be able to work through periods of flux."

As a wave of resource nationalism has swept across Africa in the last few years, regulatory changes have become the most difficult risks for mining companies to manage.

FUNDING OF MINING PROJECTS ACROSS AFRICA

Source: SNL



In addition to the regulatory uncertainty brought on by changes in leadership, African countries are increasingly adopting local content laws to guarantee host-country benefits from resource extraction through local employment, technology and skills transfer as well as procurement of local good and services. Local employment in the mining sector supports economic and political priorities for job creation, human capital development and inclusive economic growth, but, at the local level, host communities are increasingly resisting project development as they perceive the costs of mining activities as outweighing the derived benefits. Thus, incentives to increase local benefits should be encouraged, but Africa's nascent empowerment policies have so far offered more cautionary tales than viable blueprints. A common issue has been insufficient legal definitions that leave too much room for creative interpretation. In South Africa, a 2015 assessment of the mining charter led to a court dispute between the Department of Mineral Resources and the Chamber of Mines over conflicting interpretations of the ownership requirement while in the DRC, local hiring requirements for subcontractors have caused confusion as the ministry is yet to stipulate the definition of "subcontractor." Another shortcoming has been implementation gaps due to lack of enforcement mechanisms, as exemplified by George Kwatia, senior partner at PwC Ghana: "The local content law states that mining companies have to use local Ghanaian resources to transport raw material, but this regulation is not monitored or supported by industry."

However, in certain countries, such as Zambia, Senegal and Ivory Coast, local content laws have, to some extent, served their purpose in increasing citizen employment and the transfer of skills without drastically undermining investment. The common denominator is a softer policy and gradual changes, which might suggest a viable path forward. "The mining sector in Ivory Coast is currently working with the World Bank to increase national local content, and we hope that the laws will serve their purpose while not undermining business," stated Stanislas de Stabenrath, CEO of X&M Drilling. "It should be added that many companies already source from local suppliers, reasoning that domestic growth will increase local stock and supply capabilities. Due to this, my guess is that Ivory Coast will choose to stay clear of very strict local content rules."

Conclusion

The continent's core performers are continuing to attract investment on the back of rebounding commodity prices. With the fourth industrial revolution underway, a recent World Bank study inferred that the world will need to double the current volume of produced minerals and metals – a stable prospect for the world's most mineral-rich area – and new deposits of future metals will be exploited as demand for clean energy increases. Gold producing countries are also likely to benefit from the pull away from the dollar brought on by global conflict. African gold mining destinations such as South Africa, Ghana, Mali and Burkina Faso are now in a good position to develop their downstream capacities though increased regional cooperation.

The primary threats to the mining sector are synonymous with the long-standing plagues of the region; poverty, violent conflict, institutional fragility and access to power must be overcome to build a robust mining industry with the capacity to generate government revenues, employment opportunities and better access to education and stability.

In this year's edition of the Mining in Africa Country Investment Guide (MACIG), we have chosen to feature South Africa, Angola, Mozambique, the DRC, Ghana, Senegal and Ivory Coast. While each country boasts superb mineral potential, equally they must address their own unique challenges as they vie for the attention of the international investment community. In the south, Angola leverages its natural resources to accelerate the recovery from the kleptocratic leadership of José Eduardo dos Santos, while on the east coast, Mozambique has emerged to assert a more central position in the mining game. The region's long-reigning gold titan, South Africa, scrambles to revive its declining precious metals sector while Ghana, the new continental leader in gold production, loses ground to the freshman jurisdiction of Senegal. The DRC's unrivalled mineral wealth is an aberration even by African standards, but corruption, political instability and tattered infrastructure threatens the jurisdiction's long-term attractiveness. Ivory Coast has raced to the top at a back-breaking pace following its rapid post-war recovery, yet its future remains uncertain as election worries are building for 2020. •

Mines grapple with social transitioning in mine closure

By **Jeff Parshley**,
Group Chairman and Corporate Consultant, SRK Consulting

In Africa, international standards in mine closure have tended to precede national ones, but several countries have put in place national legal requirements for *social closure* as part of the closure planning process. South Africa, Ghana, Ethiopia, and Tanzania are among these. Such standards acknowledge the economic dependency a mine creates relative to its host community.[1] This is a good start. However, while the technical aspects of closure might well be understood and carried out, the *socio-economic transitioning* aspects are generally not. Because one cannot be done successfully without the other, the challenge mines face is how best to integrate socio-economic transitioning into closure.

Socioeconomic transitioning challenges

Simply put, socioeconomic transitioning is preparing a community to shift their social and economic welfare away from a dependence on mining activity. This is not an endpoint to be reached, but a process. The dependency starts early in a mine's life, and so must the response. (This is partly why the term *socioeconomic transitioning* is preferred to *social closure.*) Socioeconomic transitioning therefore requires deliberate, collaborative attention among the many technical disciplines involved in closure—as opposed to working in silos.

To break out of those silos, each discipline involved in mining must begin to understand more about the other disciplines, whether social or technical. In other words, they need to foster collaboration and the ability to constantly see past the boundaries of their own disciplines. For example, the social disciplines often bring aspirational ideas to the planning and mitigation processes. While these might not always fit immediately with what is technically viable, they are vital insights which technical disciplines need to understand relative to the demands of the social licence-to-mine. Nonetheless, there are areas where practitioners have made steady progress toward integrating socioeconomic considerations into closure, such as post-closure land use.

Socioeconomic transitioning and land use

Mine closure plans are developed to limit long-term risks and to return land to stable and safe conditions that support productive post-mining uses. This aligns with sustainable development principles that help ensure current socioeconomic needs are met without compromising the needs of future generations.[2] Closure plans must therefore consider how land will be used after mining.[3]

To this end, a land use viability assessment based on a structured, iterative decision making is required. Ideally this will include all stakeholders collaborating on which post closure land uses will contribute to socioeconomic transitioning goals while being practical for and compatible with site specific conditions. Key criteria used to define post-closure land use include soil, water quality, biodiversity, surrounding-land uses, geotechnical conditions, and socio-economic context.

There remain challenges, however. The general stakeholder engagement approach presumes, for example, all stakeholders are part of the engagement process. This is increasingly not the case, especially with the spread of artisanal and small-scale mining (ASM).[4]

Socioeconomic transitioning and artisanal or small-scale mining

ASM contributes 15–20% of global mineral production, and in many countries constitutes an important component of rural livelihoods.[5] It is most often conducted informally, outside of any legal structure. So, managing ASM through normal mine permitting processes is generally difficult, if not impossible. In addition, gold mining is in many places is considered a birth right, further blurring the lines of legality.[6]

With more than 10 million artisanal and small-scale miners globally and over 100 million people indirectly dependent on this sector[7], the disruptive effect on unplanned post-closure land use is unsurprising. Such uncontrolled land use may be partially mitigated through robust cooperation with stakeholders to honestly recognise related technical and social contexts. However, because of the in-perpetuity nature of mine closure combined with local socioeconomic pressures, creating a truly successful closure that achieves environmental and socioeconomic objectives may be difficult to achieve in these types of situations.[8]

Socioeconomic transitioning and the future

The good news is the mining industry, learning from good and bad mine closures, has come a long way over the past several decades. Responsible closure has become an integral part of the industry's culture. Good international industry practice and many jurisdictions now stipulate socioeconomic transitioning must be considered *during* project planning[9]. This is a critical step in helping host communities to shift their social and economic welfare away from a dependence on mining activity. •

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[1] 'Attractive nuisances and wicked solutions', JV Parshley and CS MacCallum, Mine Closure 2016 (pp. 228)
[2] 'Our Common Future', Brundtland Commission, 1987
[3] 'Attractive nuisances and wicked solutions', JV Parshley and CS MacCallum, Mine Closure 2016 (p. 229)
[4] 'Attractive nuisances…' (p.229)
[5] Ibid (p.229)
[6] Ibid (p.229-230)
[7] Ibid (p.230)
[8] Ibid (p.233 – Conclusion)
[9] 'Attractive nuisances and wicked solutions', JV Parshley and CS MacCallum, Mine Closure 2016 (pp. 225-226)

Mining companies pitch their projects to a panel of judges who provide instant live feedback. The judges, who are made up of high-profile investors, decide who wins in each category and the winners battle it out in the semi-finals and later the finals.

INVESTING IN AFRICAN MINING INDABA

@miningindaba

Investment Battlefield 2020

Set up to elevate the profiles of emerging companies with projects in Africa with a market cap of US$50 million or below, watch explorers and developers in battery metals, bulk and base metals, precious metals, and energy minerals battle it out in front of a panel of high-profile judges. Now in its fourth year, the battlefield is Mining Indaba's way of supporting and promoting the junior mining industry across Africa.

Richard Crookes, investment director at EMR Capital, and one of the judges, had this to say about the competition: "We think it is a fantastic concept, the whole shark tank idea is brilliant. I really enjoy judging and I think the audience enjoys the interaction".

2019 WINNER

Prospect Resources Limited
(ASX: PSC, FRA:5E8)

Harry Greaves
Executive Director

Prospect Resources

Prospect Resources took home the crown as the 2019 Investment Battlefield winner for the Arcadia lithium project. Battling it out with 22 other junior mining companies, Prospect Resources were titled "the most promising project on the continent".

The flagship project, located on the outskirts of Harare in Zimbabwe, is the only listed lithium company that will produce high quality, low iron spodumene and petalite products, and it is one of two mines in the world supplying the highly profitable ceramics industry, which is estimated to produce an average of 75,000 mt/y of spodumene and 155,000 mt/y of petalite concentrates. Since acquiring the project in mid-2016, Prospect has progressed the project from discoveries to an updated DFS in a three-year period.
The project represents a globally significant hard rock lithium resource and is being rapidly developed by Prospect's experienced team focusing on near-term production of petalite, spodumene and tantalum concentrates. Prospect won the investors over with a strong case for mining in Zimbabwe. Despite uncertainty in the country, Zimbabwe has a creditably robust mining code and government support which has helped the project grow rapidly.

2019 RUNNER-UP

Orion Minerals
(ASX:ORN, JSE:ORN)

Walter Shamu
Chief Operating Officer

Orion Minerals

Zinc-copper developer Orion Minerals was named runner-up for its Prieska project, located in the Northern Cape in South Africa. The project is the centre of Orion's asset portfolio, and one of the world's top 30 volcanogenic massive sulphide base metal deposits, with a recorded historical production over 1 million mt of zinc and 430,000 mt of copper from 4.68 million mt of sulphide ore milled.
Orion has a strong development strategy in place and is investigating the feasibility of developing a new mine in the footprint whilst using the remaining infrastructure, with the intent of extracting the unmined zinc-copper mineralisation from the deposit.

Despite being one of the largest VMS exhalate bodies known, the area around the deposit has had no exploration in 36 years. Orion Minerals now have the application of advanced modern geophysics and can vector into targets that offer outstanding opportunities for new VMS discoveries.

Southern Africa

Historically, Africa's mining sector has been marked by labor intensity, mostly due to low labor costs that have allowed the sector to largely ignore technological advances. Currently, we are at a watershed moment with increasing labor cost coupled with decreasing commodity prices. These developments have forced the African mining sector to embrace innovation in order to remain profitable and competitive.

- Wayne Sterley,
Regional Business
Line Manager/Drilling Solutions,
Epiroc

Image courtesy of
Gold Fields

Introduction to Southern Africa

Half of the world's platinum, vanadium as well as diamonds originate in Southern Africa, and the region's development has been inextricably linked to the mining sector. But Southern Africa is projected to experience slower growth than the rest of the continent in 2020, a fact driven by rising government debt, high inflation and South Africa's weak economic performance, which has been compounded by the country's high unemployment rates, economic turbulence and political instability. The impending downfall of South Africa's gold and platinum sector will be a hard knock for the region, which currently derives roughly one-third of its accumulative GDP from its southernmost member.

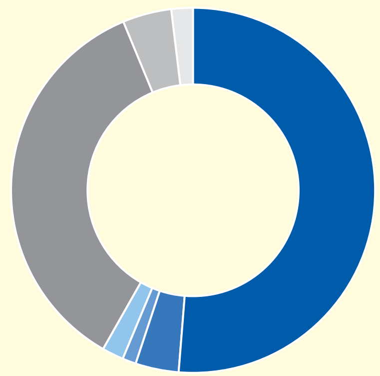
South Africa's economy, steadily declining due to poor governance, soaring electricity costs and outdated mining methods, reached a growth rate of 2.2% in 2019, down from 2.8% in 2018 – partly due to the poor performance of the mining sector, which represents 18% of GDP. The mining sectors of Angola and Zambia, Southern Africa's second and third-largest economies respectively, have seen a more stable 2019; higher copper prices and improved domestic production are expected to support Zambian sector performance in 2020, but regulatory uncertainty, tattered infrastructure and unreliable power supply are simultaneously deterring investors. Some 1,100 km west, Angola seeks to exploit its largely untapped deposits of diamonds, iron ore, copper, gold and manganese in an effort to diversify away from its historical oil dependency. Diamonds will be the focal point, with some 60% of resources still unexploited. The new president, João Lourenço, has pledged to increase production from 9.4 million carats in 2017 to 14 million carats in 2023. To bolster investments, Lourenço has pushed through anti-corruption and privatization reforms as well as implemented a new mining code – measures that are likely to increase diamond flow to the country's new affiliate, Antwerp World Diamond Centre. Perhaps most relevant, reforms include the possibility for producers to select their buyers with prices comparable to international benchmarks rather than having politically connected buyers negotiate the purchase price of diamonds at below-market value.

Meanwhile, Zimbabwean President Emmerson Mnangagwa is implementing policies to mitigate the foreign currency crisis that, if successful, will help to revive the mining sector, which is at the heart of the national development strategy. On the east coast, Filipe Nyusi has fought to overcome the "tuna bonds" scandal that crippled the Mozambican economy and was followed by devastating cyclones in early 2019. The development of the country's gas and graphite industries form the basis for hope with the IMF predicting double-digit growth by 2023.

While numerous countries in the region are making significant leaps towards better exploiting their mining potential, the perennial issues of insufficient downstream beneficiation and regional cooperation persist. After the elections of Mnangagwa in Zimbabwe and Cyril Ramaphosa in South Africa, hopes were high that the region would grow in tandem with two revived economies. Two years later, Mnangagwa still struggles to patch up an economy brought to its knees by Mugabe's 40-year reign, and each day, hope dwindles in South Africa as Ramaphosa is unable to reduce poverty rates and drive through decisions on key issues such as the redistribution of land, nor has he been able to unite his fragmented party around a set of economic principles. In Botswana, a country whose diamond mines are estimated by many to be rendered economically unviable in 40 years, the attempt to establish a domestic cutting and polishing industry has largely failed. In addition, resource nationalization brings investor uncertainty as governments attempt to increase host-nation benefits from the mining sector. In 2019, the Zambian government announced plans to increase mining royalties in 2020 as well as replace its VAT scheme with a direct non-refundable sales tax along with other tax amendments – the 10th tax change miners have faced in the past 16 years – while in South Africa, a new mining charter imposed more strict local content compliance obligations on an already fragile industry.

MINING & QUARRYING SECTORAL CONTRIBUTION TO GDP BY COUNTRY TO REGIONAL TOTAL 2010-2018

Source: SNL



Regulatory uncertainty might be especially harmful to junior explorers that already suffer from a perceived high risk profile. As investors seek lower risk and better returns from both larger players and newer industries, only a fraction of the capital flowing into the tentatively revived mining sector is received by juniors – a challenge compounded by the increasingly cumbersome process of acquiring licenses due to a more acute attention to social and environmental implications of mining activity. Part of the issue is also due to the historical disinclination among juniors to take project into production stage.

"The problem lies with a previous misuse of capital by the junior/development market, as companies were building mines with the view to sell them – rather than really building to move into sustained production," said Jed Richardson, president and CEO of Canadian exploration and development company Trigon Minerals that has copper projects in Namibia and Morocco. "The few companies that have successfully navigated the path from exploration to production, such as Osisko, are held in a rarefied air because of they are the exception rather than the rule."

Numerous countries in the region, such as Botswana and Angola, offer cautionary tales about overdependence and bolstering exploration will have to be a strategic priority as governments seek to diversify their minerals portfolios.

While the dream of a fully integrated Southern African mining hub has temporarily been suspended, rebounding commodity prices will offer a window to focus on developing the industry, and the region's overall stability makes it an attractive destination for investors who are hesitant to venture into the more volatile regions of West, Central and East Africa. In addition, South Africa has the most sophisticated financial infrastructure in Africa and remains a continental center of mining expertise – both vital factors for increased regional collaboration. The relative stability of the region has also allowed stakeholders across the board to benefit from a longstanding mining tradition. In an encouraging 2019 study, the World Bank estimated the contribution of the mining sector to Southern African economies, taking into account workers, investors, government, communities and other parts of society, and found an overall positive net outcome. The study continues to suggest that when countries perceive mining as beneficial to their economies, they are more likely to develop a policy environment that attracts further investments. From that viewpoint, Southern Africa should not be counted out as the future center of mining in Africa, as stability might prove a more reliable long-term development prospect than impressive growth numbers. •

Angola

Population: 30,809,762 (World Bank 2018)
Land Area: 1,246,700 sq km
Main Official Language(s): Portuguese
Capital: Luanda
Chief of State: João Lourenço (since 26 September 2017)
GDP (PPP): 161billion (World Economics 2018)
GDP PPP Annual Growth Rate: -2.6 (World Economics 2018)
GDP Per Capita (PPP): 5725.33 (Trading Economics 2019)

Industry: Petroleum, Diamond, Agriculture and Fishing (World Atlas 2018)
Top Exports: Mineral fuels including oil: US$40.7 billion (96.8% of total exports), gems, precious metals: $972.7 million (2.3%), fish: $132.5 million (0.3%), salt, sulphur, stone, cement: $39.7 million (0.1%), wood: $33.5 million (0.1%), machinery: $31.2 million (0.1%) (World's Top Exports 2018)
Top Imports: refined petroleum ($457M), raw aluminium ($392M), aluminium oxide ($376M), chromium ore ($222M) and copper ore ($175M) (OEC 2017)
Top Export Destinations: China 61%, India 12%, US 7.9%, South Africa 4.4%, Spain 3.2% (OEC 2017)

TRANSPARENCY INTERNATIONAL CORRUPTION PERCEPTIONS INDEX

SOURCE: TRANSPARENCY INTERNATIONAL

RANK 2018
167/180

SCORE
19/100

TAXATION RATES

SOURCE: PWC

CORPORATE INCOME TAX RATE
25%

ROYALTIES
5%

BUSINESS ENVIRONMENT RANKING (1-190)

SOURCE: THE WORLD BANK (2020 EDITION)

EASE OF DOING BUSINESS
173

STARTING A BUSINESS
139

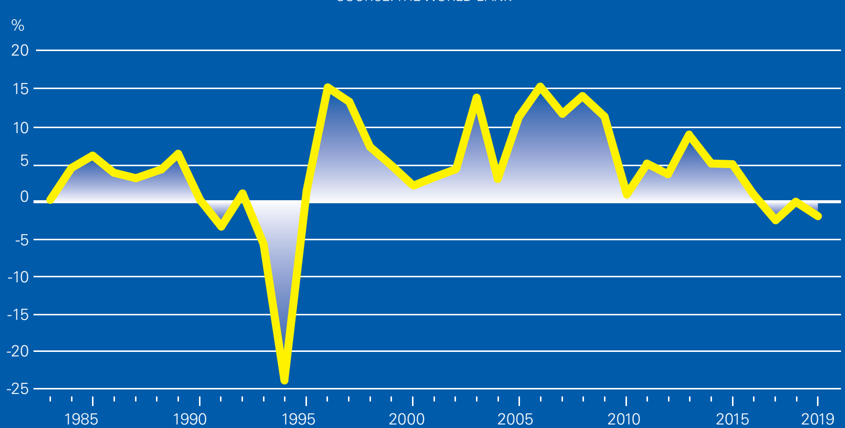
DEALING WITH CONSTRUCTION PERMITS
87

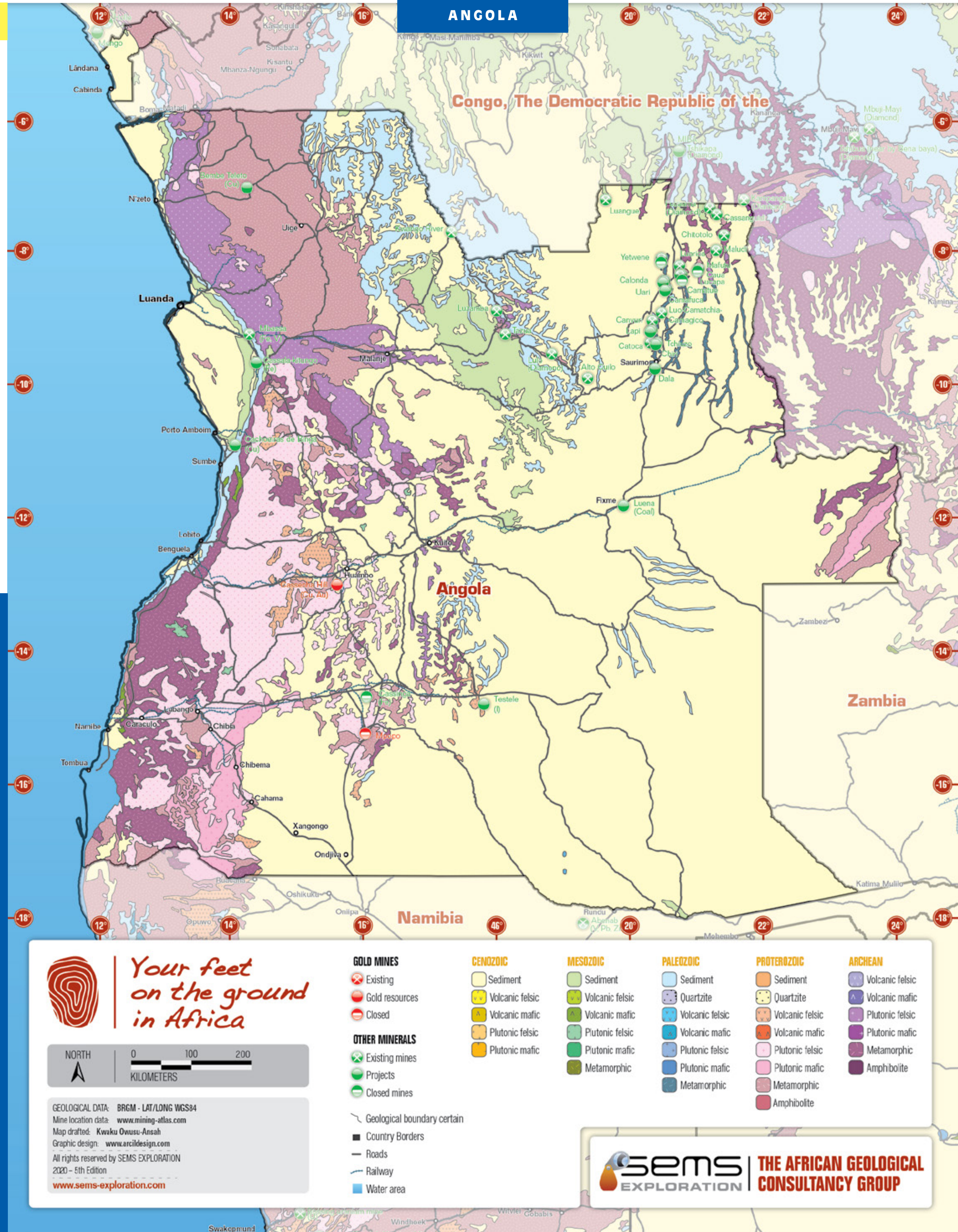
GETTING ELECTRICITY
152

REGISTERING PROPERTY
170

GDP (ANNUAL %)

SOURCE: THE WORLD BANK





Angola
Reforms open the door for private-sector investment

When João Lourenço, former defense minister in José Eduardo dos Santos' ruling MPLA party, was chosen to succeed Africa's second-longest-serving president after being singled out as the favorite by his predecessor, one would be forgiven for treating promises of reform with a certain skepticism. Nevertheless, in the two years since being officially sworn into office on 26 September 2017, Lourenço has backed up his rhetoric to an extent most onlookers would scarcely have believed considering the entrenched and endemic corruption that engulfed the previous regime. If 2018 was marked by an anti-corruption campaign and efforts to regain control of the country's dire forex situation, the prevalent themes of 2019 have been a concerted push for transparency and the subsequent opening up of a previously-closed business environment for private investment.
The share capital held wholly or partially by the Angolan state in 195 different companies will be sold between 2019 and 2022 under the privatization program published in the Diário da República official bulletin. The program states that 175 companies will be sold via public tender, 11 by public auction and nine through Initial Public Offering (IPO), with the government expected to launch public tenders in 2019 for 80 companies as well as one IPO. In 2020, 81 companies are due to be sold through public tender, six through auction and three via IPO, and in 2021 and 2022 the remainder will be sold. The most well known companies involved in this process are state oil company Sonangol, airline TAAG and diamond company Endiama.
What will the privatization of Endiama mean for Angola's diamond producers? Endiama is one of the main shareholders of Sociedade Mineira de Catoca (Catoca), the Angolan mining company that produces around 80% of all Angolan diamonds by volume. "Once Endiama is privatized, Catoca will need to realign its regenerated strategy with its new shareholders," explained Benedito Paulo Manuel, Catoca's director general, adding: "In this context, the long-term view of the company (Catoca) will depend to some extent on external factors inherent in Endiama's new path, with which we must necessarily be aligned. However, in terms of operating capacity and growth potential, Catoca is well placed to become the world's largest diamond producer." Already within the top six diamond producers in the world, Catoca's internal reforms administered since the new management team took charge in August 2018, in addition to governmental reforms to create a more transparent business environment, combine to make an attractive proposition for private sector investment. "Financers can be assured that their investments will be well applied and offer a substantial return," affirmed Paulo Manuel.
While Angola's prowess in diamond production is not in question, its perceived risk as a destination for direct foreign investment remains. This perception, however, may be due for a change. In specialist intelligence firm EXX AFRICA's 2019 Investment Risk Report, Angola ranked second behind Ethiopia in a list of the top five African countries for investment as markets opening up to structural reform and liberalization were favored over governments advocating state interventionism.
To this end, the government is being proactive in its efforts to attract private investment. In July 2019, an Angolan delegation led by the Minister for Mineral Resources and Petroleum, Diamantino Azevedo, went to Lisbon for the seminar "Investment Opportunities in the Mining Sector of Angola." Part of this delegation was Canga Xiaquivuila, director general of the Geological Institute of Angola, whose National Plan of Geology project (Planageo) – a nationwide survey of Angola's geology – is one of the key initiatives in the quest to diversify the country's economy. "The current strategy to attract foreign investment is to promote the opportunities that Angola has, as from an international standpoint our mining sector is low-profile," commented Xiaquivuila.

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Dr. Benedito Paulo Manuel

Director General
Sociedade Mineira de Catoca

Since you assumed the position of Director General at Catoca in August 2018, what challenges has the new administration had to overcome?
The first challenge was from a technological standpoint, particularly with Catoca's new mine KT42, which had gone into operation without the requisite due diligence that should have been taken to determine its viability. After further analysis by the new administration, we decided the quality of these diamonds would not be sufficient, and proposed the closure of this mine to Catoca's shareholders.
Another challenge came from the fleet of equipment, as a new line from Belaz had been introduced in 2016, but the material conditions had not been established to support this change. Therefore a dependence on a foreign third party company to assist with this equipment had created a legal issue that we had to overcome.
Furthermore, a lack of skilled human resources with technical labor leaving the industry affected operational quality and forced a restructuring and strengthening of an integrated management system. Fortunately, the measures taken to tackle these issues have produced positive results, resulting in a profit rise, a growth in the company's reserves, and a reduction in costs.

To what extent will the proposed privatization of Endiama impact Catoca's aim to become the world's largest diamond producer?
The Angolan state intends to privatize many public companies, including one of the main shareholders of Catoca - Endiama. We believe that the Government's vision will lead to boosting Endiama to seek the top spot among world producers. In this context, the long-term view of the company (Catoca) will depend to some extent on external factors inherent in Endiama's new path, with which we must necessarily be aligned. In terms of operating capacity and growth potential, Catoca is well placed to become the world's largest diamond producer. But we have to be honest and recognize that it is not enough to have the conditions, it is necessary to make a way and that is not easy.

Is Catoca actively looking for partners to advance the exploration and production of diamonds in DRC's copperbelt?
We have been thinking about the DRC copper belt, but today our priority is working on the Luaxe concession. We are looking for partners to fund this venture and have made contact with various financial institutions with this in mind.

In the context of a growing synthetic market, what would you say regarding the importance of maintaining a robust industry for traditional diamonds?
For me this is a clear question. On one hand, synthetic diamond producers have created an attractive marketing strategy that evokes an activity that is ecologically clean, transparent, void of exploitation and corruption. This, they say, is contrary to the vision of traditional diamond production and the image of "blood diamonds". However, if we analyze what each industry gives to their respective beneficiaries, the production of synthetics will never come close to offering the level of benefits that natural production does.
This question transcends the direct beneficiaries of the production, and goes to the root of politics and the direction the world is heading. I say this with respect to employment and how certain technologies are condensing wealth into the hands of a select few. In the east of Angola the diamond industry is the second biggest direct employer, with an average remuneration 13 times higher than the national average. As well as impacting the families of the workers directly involved in mining operations, this wealth has created a vast ecosystem of third party beneficiaries ranging from catering to machinery to logistics.

Do you have a final message from Catoca to the international mining community?
Lessons can be drawn from history that show the business one undertakes will impact not just the life of an individual, but the lives of whole communities and regions. Therefore, the integration and cooperation of all stakeholders in an industry fundamental to the sustainable development of a country is paramount to ensure that future generations are afforded better living conditions than they have today. •


CATOCA
SOCIEDADE MINEIRA DE CATOCA LDA
25 YEARS
OF SUSTAINABLE EXPLORATION
We are the fourth largest mine in the world operated in the open.
We use state-of-the-art technology so that the final result is reflected in the quality of out product.
Somos a quarta maior mina do mundo explorada a céu aberto.
Somos a quarta maior mina do mundo explorada a céu aberto.
We reinforce social responsibility with a focus on sustainability.
Reforçamos o impacto social com foco na sustentabilidade.
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"The Geological Institute of Angola is accumulating information about all mineral resources in the country to showcase the possibilities and make the process easier for investors," added Xiaquivuila, noting that further road shows will continue throughout 2019 and 2020.

Diversifying an Oil-Based Economy

Despite pro-business reforms implemented by the Lourenço regime that indicate a brighter future, the scale of the economic recovery that must take place in Angola should not be underestimated. In June 2019, the IMF reported that Angola's public debt stood at 91% of GDP in 2018, in stark contrast to the 26.7% figure in 2012. With over half of Angola's gross domestic product coming from the oil and gas sector, production down from a high of 1.8 million barrels per day (bpd) to 1.2 million bpd, and a global move away from fossil fuel-dependence, the need to diversify an oil-based economy is clear.
In August 2019, at the opening session of the Ministry of Mineral Resources and Petroleum's Third Advisory Council, Minister Azevedo outlined plans for the strategic diversification of Angolan industry under the motto "Restructuring of the mineral and oil resources sector: A commitment to the socio-economic development of the country." Azevedo announced that several companies had acquired prospecting licenses in Angola, including Atabamaik, which plans to explore copper; Chinese General Mining, which is seeking out rare earths; and Vig World, in partnership with Spanish company Tolsa in search of lithium.
Even within Angola's mining sector, greater diversity in the country's portfolio of mining projects in an industry traditionally dominated by diamonds is part of the government's agenda. "Angola is known as a diamond country, but has a wealth of other mineral resources to take advantage of, such as gold and copper," observed Xiaquivuila, giving the example of an Australian junior company currently in the process of completing an evaluation stage study for rare earth elements, which could start production as early as 2021. "The government of Angola is trying to diversify its dependency on oil and diamonds, as the country has vast mineral potential sitting in an extension of the copper belt that runs through DRC and Zambia, for example," he added.
On 27 August, 2019, presentations of the first public tender for granting diamond, iron and phosphate mining rights took place in Luanda, which were followed by presentations in Dubai in September, and later in London and Beijing. The process aims to bring to tender five mining concessions: two for diamonds in the Angolan provinces of Lunda Norte and Lunda Sul, one iron concession in the province of Kwanza Norte, and two for phosphates in the provinces of Cabinda and Zaire. Minister Azevedo related that the launch of the public tender is aligned with the government's strategy to provide greater transparency in the management of Angola's economy.
Success in conveying transparency to the international community will be key in attracting the foreign necessary to stimulate Angola's mining sector.

Diamonds and Transparency

In 2018, the government of Angola approved a new trading policy for diamonds, with the aim of making the entire process of selling and buying diamonds more transparent. Companies can now also sell 60% of their production through their own channels, and are no longer obliged to sell their full

> **"The temporary reduction in production was due to a lack of available equipment and a shortage of technically qualified man power, which remain serious challenges for the Angolan mining industry. The mining equipment used in Angola is still heavily reliant on imports, principally from South Africa, which can impact turnaround times and availability."**
>
> **- Helder Carlos, President, SM Cuango**

production below international market price to preferred customers.
Furthermore, "Operation Transparency" was launched by the Angolan government to combat diamond trafficking and illegal immigration, which led to 241 semi-industrial diamond mining companies and cooperatives having their licenses revoked. In Lunda Norte alone, more than 400,000 foreigners were deported, as the Angolan state pushes to formalize an industry that has struggled with illegal "garimpeiro" miners, many of which come from abroad to take advantage of the rich mineral wealth in remote areas of South and Central Africa.
"It is important to educate the population about how illegal mining practices

harm Angolan society and, where possible, it is in the country's interest to formalize artisanal miners," reflected Helder Carlos, president of Angolan diamond mining company Sociedade Mineira do Cuango (SM Cuango). "While a formalization process is an important goal that can be achieved over time, a no-tolerance policy towards criminal garimpeiros must be adopted by both the government and private companies to maintain the integrity of our industry and guarantee employee safety," he elaborated.
In July 2019, the national director of Mineral Resources, André Buta, announced the return of licenses to the 241 companies and semi-industrial diamond mining cooperatives in seven provinces of Angola that had previously been revoked. Speaking at the delivery of 31 of the 81 licenses for semi-industrial exploration planned for Lunda Norte, Buta said the aim of re-launching this process in Lunda Sul, Malanje, Kwanza Norte, Kwanza Sul and Uíge provinces was to reduce the youth unemployment rate and to allow the creation of at least 20,000 jobs.
Buta recommended that companies recruiting should focus on the youth of the neighbouring communities, a sentiment echoed by Hugo Silva Teles, executive director of Banco BIC, the private bank with the largest footprint in Angola (230 branches in 96 municipal regions): "We should start focusing on our local content and developing local supply chains to be less dependent on imports," he said, continuing: "The country should also focus on skills development to ensure that there is a workforce to support industrial development. Angola has the commodities and opportunities to stop relying on imports and start being an export country."

The HR Challenge and Reliance on Imports

The legacy of industrial neglect and the failure of the previous regime to reinvest boom-time capital to vital areas of the economy are perhaps most pronounced when one enters a supermarket or restaurant in Luanda.

> From an international standpoint our mining sector is low-profile... The Geological Institute of Angola is accumulating information about all mineral resources in the country to showcase the possibilities and make the process easier for investors.
>
> **- Canga Xiaquivuila, Geological Institute of Angola**

Angola used to be self-sufficient and one of Africa's three biggest producers of food in 1975, but now imports 90% of its food, with prices that would not be out of place in London or New York, even taking into account recent currency devaluation. The sad irony is that Angola has an abundance of water and fertile land, which are scarce commodities in countries that manage to produce considerably more.

A similar juxtaposition can be applied to Angola's mining industry, as the abundance of natural resources is unfortunately in contrast to a dearth of human resources and equipment. SM Cuango, the diamond producer constituting a partnership between Endiama, which holds a 45% stake, ITM Mining with 40% and Lumanhe with 15%, currently employs 729 people, the majority of which operate the company's mine in Cuango, Lunda Norte province. The average monthly production forecast for diamonds from SM Cuango's operations for 2019 was approximately 39,710 carats per month, but due to operational difficulties it was forced to reevaluate the production plan. The new figure was revised to between 28,000 and 29,000 carats per month for the first three months of production and then raised to an average of 34,000 carats per month for the rest of 2019.

"The temporary reduction in production was due to a lack of available equipment and a shortage of technically qualified manpower, which remain serious challenges for the Angolan mining industry," explained Dr. Helder Carlos, SM Cuango's president. "The mining equipment used in Angola is still heavily reliant on imports, principally from South Africa, which can impact turnaround times and availability," he added.

Even the largest player in Angolan mining, Catoca, has been impacted by the challenging HR situation in the country: "A lack of skilled human resources with technical labor leaving the industry affected operational quality and forced a restructuring and strengthening of an integrated management system," explained Benedito Paulo Manuel, Catoca's director general, before assuring: "Fortunately, the measures taken to tackle these issues have produced positive results, resulting in a profit rise, a growth in the company's reserves, and a reduction in costs."

Due to the difficulty in finding technical workers with the requisite level of qualifications and experience, companies with large workforces often look abroad. However, bureaucratic hurdles and high costs to bring foreign workers to Angola, particularly with regard to the work visa process, continue to cause delays: "In September 2018, SM Cuango initiated a recruitment process for the company's engineering department, which was concluded in June 2019, to give you an idea of the timeline for bringing in a well-qualified worker," related Helder Carlos.

For the mining service providers in Angola, an absence of in-country manufacturing in addition to high import taxes and slow turnaround times further complicate the challenging operational climate. "Importing remains quite expensive and the government requires a letter of credit with imports – a norm which was established by the Central Bank," explained Daniel de Faria, mining manager of Barloworld Equipment Angola, the Caterpillar distributer with an extensive African footprint.

Whilst acknowledging these hurdles, de Faria was positive about both the industry and the business-environment in Angola moving forward, commenting that the mining sector has grown in importance for Barloworld Angola as the pre-2014 construction boom slowed down: "The new government is taking steps in the right direction to formalize industries and business," he stated, concluding: "Mining operations are starting to come online again, with the difference being that everything is now 100% legal, which can only benefit the industry and Barloworld alike."

A Synthetic Threat: The Importance of Maintaining a Traditional Industry

De Beers' Insight Report of 2018 states that two thirds of diamond sales now come from consumers aged 21-39 years old: the Millennial and Generation Z age-brackets. The diamond jewelry market grew in 2017 as demand reached a new record high of US$82 billion on the back of growing popularity from a younger demographic. Having previously shunned the jewelry sector, De Beers, reacting to the evolving demands of the new demographic of clients, decided to launch its own laboratory-grown diamonds through its Lightbox brand.

In the same vein that automated equipment threatens to eliminate the need for workers inside mines, could this new external threat of synthetic diamonds jeopardize demand for the traditional market? For Benedito Paulo Manuel, the importance of maintaining a robust industry for traditional diamonds is clear: "If we analyze what each industry gives to their respective beneficiaries, the production of synthetics will never come close to offering the level of benefits that natural production does," he stated, warning of the danger of certain technologies that condense wealth into the hands of a select few.

"In the east of Angola, the diamond industry is the second largest direct employer, with an average remuneration 13 times higher than the national average," added Paulo Manuel, continuing: "As well as impacting the families of the workers directly involved in mining operations, this wealth has created a vast ecosystem of third party beneficiaries ranging from catering to machinery to logistics."

"We must continue to defend the production of natural diamonds for the benefit not just of Angola, but of all the countries and communities that rely on the creation wealth our industry plays a part in," concluded Paulo Manuel.

As Angola continues to formalize and legalize its industry, the negative connotations that surround traditional diamond production must be dispelled through sustained demonstrations of how mining can benefit all stakeholders. •

Mozambique

Population: 29,495,962 (Worldbank 2018)
Land Area: 801,590 sq km
Official Language: Portuguese
Capital: Maputo
Chief of State: Filipe Jacinto Nyussi (since 15 January 2015)
GDP (PPP): $14.46 billion (Trading Economics 2018)
GDP (PPP) Annual Growth Rate: 3.8% (World Economics 2018)
GDP Per Capita (PPP): $539.20 (Trading Economics 2018)

Industry: Agriculture, mining and tourism (World Atlas 2019)
Top Exports: Mineral fuels including oil: US$2.4 billion (46.9% of total exports), aluminum: $1.3 billion (25.1%, ores, slag, ash: $263.5 million (5.1%), tobacco, manufactured substitutes: $215.9 million (4.2%), gems, precious metals: $200 million (3.9%), sugar: $191.9 million (3.7%), fish: $69.2 million (1.3%), fruits, nuts: $66.2 million (1.3%) (World's Top Export 2018)
Top Imports: Refined petroleum ($457M), raw aluminium ($392M), aluminium oxide ($376M), chromium ore ($222M) and copper ore ($175M). (OEC 2017)
Top Export Destinations: India (35%), South Africa (14%), China (7.5%), Italy (6.5%), Spain (3.7%) (OEC 2017)

TRANSPARENCY INTERNATIONAL CORRUPTION PERCEPTIONS INDEX

SOURCE: TRANSPARENCY INTERNATIONAL

RANK 2018
158/180

SCORE
23/100

TAXATION RATES

SOURCE: PWC

CORPORATE INCOME TAX RATE
32%

RESOURCE RENT TAX
20%

ROYALTIES
DIAMONDS: **8%**
PRECIOUS METALS: **6%**
BASIC METALS: **3%**

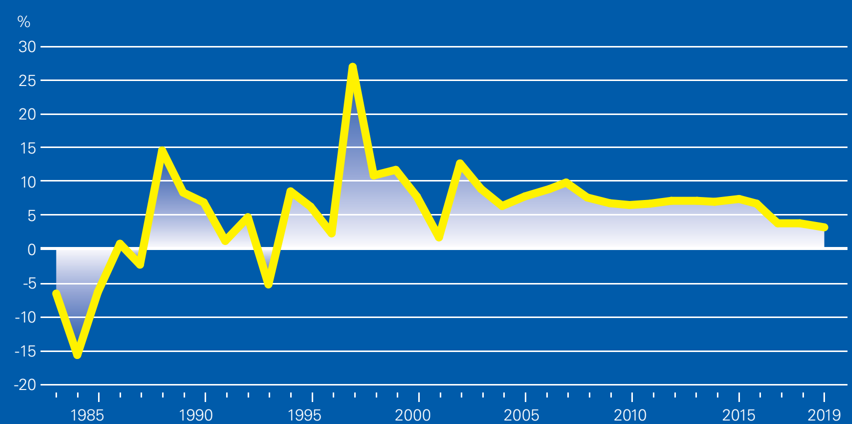
BUSINESS ENVIRONMENT RANKING (1-190)

SOURCE: THE WORLD BANK (2020 EDITION)

EASE OF DOING BUSINESS	138
STARTING A BUSINESS	176
DEALING WITH CONSTRUCTION PERMITS	61
GETTING ELECTRICITY	103
REGISTERING PROPERTY	136

GDP (ANNUAL %)

SOURCE: THE WORLD BANK



H.E. Ernesto Max Tonela

Minister of Mineral Resources and Energy (MIREME)
Mozambique

How important are the mineral resource and energy industries for Mozambique's economy?
Both industries are hugely influential for the Mozambican economy. Mozambique has a rich mineral endowment that includes significant reserves of coal, rubies, mineral sands, graphite and gold. However, the real game changer for the economy is the country's vast gas reserves.
In the Rovuma Basin, huge oil deposits of non-associated natural gas were discovered, estimated at about 180 trillion cubic feet. The findings are an important milestone not only because of the potential quantities of gas available, but also because of the possibility of developing and implementing various integrated projects, such as LNG, liquid fuels, electricity generation, fertilizers and others that will certainly put Mozambique as a reference country in the production and export of natural gas worldwide

It is estimated that Mozambique holds between 20 to 40% of global graphite reserves. However, at this moment China accounts for approximately 90% of global production. How does the country plan to develop these resources?
In order to promote the value chain of domestic primary products, including graphite, we are looking to ensure the integration of local content and its sustainable development. In recent years, significant milestones have been achieved in Mozambique's graphite industry, including the establishment of the granite slab cutting plant in the District of Manica in 2017. In addition to this, the start-up of the Ancuabe graphite mine (9,000 mt/y production) and the Balama mine (350,000 mt/y) in the Province of Cabo Delgado have been big successes. The latter being the largest graphite processing infrastructure in the world.

Mozambique's Mining Law was introduced in 2002 and is now on its 4th revision. Has the most recent revision created a favorable framework for mining to prosper?
Rather than introducing dramatic changes, the 4th revision is an evolution of the previous editions. Some of the changes aimed at fostering a favorable mining landscape include Article 62, which ensures mining holders of the transferability of mining rights.

Can you elaborate on MIREME's efforts to regulate artisanal mining in the country?
The effort to regulate and formalize the mining industry in Mozambique is for the good of the people, as well as the economy. Illegal mining can endanger lives, and the smuggling of resources such as precious gems out of the country can deprive local communities of income.

How can you strike a balance between promoting mining development and community concerns?
Mining activities, particularly the community resettlement process and environmental damage, can cause tensions between companies and communities. In order to ensure that communities are resettled with dignity and with their rights respected, the government approved the Resettlement Regulation Resulting from Economic Activities. This regulation seeks to ensure that the exploitation of mineral resources in the country results in transformational socio-economic gains, including benefits directly to the communities affected.

What are the greatest challenges facing the mining industry in Mozambique in 2019, and what is MIREME doing to help overcome them?
One of the great challenges is how to deal with the volatility of mineral raw materials prices, which are known to have severe negative impacts on the economy and the employment rate. The fall in prices of mineral raw materials reinforces our conviction that it is imperative to establish mechanisms that can withstand the volatility of mineral product prices and reduce our vulnerability to external shocks. For this purpose it is crucial to establish economic links between the extractive industry and other industries based on these resources.
An equally important challenge is to ensure the sustainable exploitation of mineral resources and safeguard the benefits expected for future generations, with a long-term vision. To this end, we must ensure the improvement of inspection and control of activities in the sector.

Finally, what makes Mozambique an attractive destination for foreign investment?
Mozambique now has tangible evidence of being an attractive destination for foreign investment after the announcement that Anadarko will invest US$25 billion into the country. While the gas sector is currently receiving the most international attention, Mozambique's mineral reserves also have vast, untapped potential. The economy has stabilized and is expected to grow, and companies looking to enter the market can rely on a clear framework that encourages mining activity, whilst promoting sustainable growth and wealth creation for all stakeholders. •

Mozambique
After the storms: Mozambique's extractive industries bring renewed hope

Mozambique has attracted international attention for contrasting reasons in 2019. The picturesque southeast African republic hit the headlines when two devastating tropical cyclones – Cyclone Idai in March followed by Cyclone Kenneth in April – ravaged the city of Beira and province of Cabo Delgado respectively, killing over 600 people and displacing over 65,000 more.
Relief efforts in the form of international donations and the provision of aid from less affected areas of the country went some way to mitigate the damage. However, the bleak consequences of the natural disasters were laid out in a UNICEF humanitarian report from July 2019, which estimated that the sobering figure of 1.7 million people facing food insecurity is expected to increase to 2 million during the lean season in October 2019.
On the back of a three-year economic downturn triggered by the US$2 billion "tuna bonds" scandal that plunged the country into its worst financial crisis since independence, many businesses in the worst hit areas were ill-prepared for such an impact. "Approximately 35% of EMOSE's business and client base was affected by the cyclone and consequent flooding. In some cases in and around Beira, there were 100% losses," commented Isaias Chembeze, director at EMOSE, the largest insurance company in Mozambique.
This observation was echoed by Edward Capel, managing director of ICE Seguros, who suggested that insurance premiums are expected to increase across all business sectors due to the losses incurred and heightened risk category that Mozambique now finds itself in. "A large amount of the affected areas and businesses were completely uninsured when the cyclones hit," stated Capel, suggesting that the tragic events could act as a wake-up call to all business sectors in the country.
If natural disasters and economic turmoil do not sound like a recipe for hope, why then, is the IMF predicting double-digit growth for Mozambique by 2023? The catalyst for this turnaround in fortunes lies in the country's vast endowment of natural resources, which include significant reserves of coal, rubies, mineral sands, graphite and gold. However, the real game-changer for the Mozambican economy is the gargantuan deposits of non-associated natural gas in the Rovuma Basin.
While the Rovuma Basin gas fields were discovered back in 2012, tangible evidence of their development eventually arrived on June 18th 2019, as U.S. energy firm Anadarko took the Final Investment Decision (FID) on the construction of a US$20 billion gas liquefaction and export terminal in Mozambique. The Anadarko-led Area 1 Mozambique LNG project is the largest direct foreign investment ever approved in Africa, with further gas-fueled riches expected on the horizon as a consortium led by ENI and ExxonMobil is set to announce the FID for the development of Area 4 of the Rovuma Basin before the end of 2019. The combined investments into Mozambique's gas sector are estimated to reach over US$50 billion, and when put into context with the country's GDP of US$14 billion, indicate transformational potential.

What will the Gas Investments Mean for the Mining Industry?

The impending foreign investments are undoubtedly positive for Mozambique but have raised some concerns from the mining community that mineral development in the country will become an afterthought with attention and resources drawn to the gas sector. As well as the potential dispersion of talent from mining to oil and gas, there are doubts as to how the Ministry of Natural Resources and Energy will be able to cope with such an expanded portfolio due to the sheer scale of LNG investment.
For Andrew Schnitzer da Silva, CEO of Ascending, the HR service provider with a footprint that covers Mozambique and Angola and supports clients in both the mineral resource and oil and gas industries, the separation of the mineral sector and the energy sector is inevitable due to the magnitude of the impending gas boom. "Once things start moving, everyone will have tremendous difficulty in keeping up," he reflected, continuing: "This is when I think the government will realize that it needs to create a ministry only serving the oil and gas industry."
Guilherme Daniel, partner at Guilherme Daniel & Associates, agreed that it would be worth considering splitting the Ministry into two separate entities. However, the Maputo-based lawyer also sees Mozambique's burgeoning oil and gas sector as having the potential to become a driver for other national industries, including mining: "For this to happen, Mozambique has to learn from the past experiences of countries such as Nigeria and Angola and fiercely attempt to diversify its economy. Such a result can be achieved through the reinvestment of a significant part of the FDI to relevant sectors, such as mineral exploration," he elaborated.
In his interview with Global Business Reports, H.E. Ernesto Max Tonela, the Minister of Mineral Resources and Energy

(MIREME), was quick to emphasize the importance of Mozambique's mining industry and its scope to expand. "While the gas sector is currently receiving the most international attention, Mozambique's mineral reserves also have vast, untapped potential," said Minister Max Tonela, suggesting that the government has worked to establish a favorable mining environment: "The economy has stabilized and is expected to grow, and companies looking to enter the market can rely on a clear framework that encourages mining activity."

Regulatory Framework:
The 4th Revision of Mozambique's Mining Law

The framework mentioned by Minister Max Tonela is rooted in a mining act dating back to 2002, currently on its 4th revision. Some of the changes aimed at fostering a favorable mining landscape include Article 62, which ensures mining holders of the transferability of mining rights. Article 83 also ensures the respect and stability of the rights acquired by the mining owners. "Rather than introducing dramatic changes, the 4th revision is an evolution of the previous editions," affirmed the Minister.
A steady evolution of mining law rather than the sudden overhauls experienced by some of Mozambique's African counterparts, such as the 35% profit-windfall tax brought in by the DRC in 2018, has been praised by mining producers in the country for the long run. One such company is Kenmare Resources, which has enough deposits to keep its Moma Titanium Minerals mine in northern Mozambique operating at current levels for up to 100 years, according to general manager Gareth Clifton. "One of the positive aspects of the updates to the mining act is the inclusion of a clause that recognizes previous agreements. This allows for stability when making agreements with a degree of certainty," explained Clifton.
While the larger mining players in Mozambique's mining sector have been relatively uninterrupted by tweaks to the tax regime, the pertinent question for smaller mining companies is whether they should opt into the new laws or not. The new petroleum and mining tax law implemented in 2015 created a transitory regime where existing companies could choose to opt into the new laws, but if they did not do so they were still treated based on the laws that were enacted at the time that they signed their concession agreements. The mineral resource rent tax was brought in, meaning that as soon as a company shows a positive cash flow, that positive cash flow is taxed at 20%. Because of this clause in the new mining tax law, smaller players in the market may be advised to opt out of the new law.

> Even though there are major players operating in the country, the mining industry in Mozambique still remains a new industry. When we look at the commodities the country has, there is still a significant amount of untapped potential.
>
> **- Abreu Muhimua, Founder & Executive Director, ENCOM**

The Diversification Challenge: Access to Land, Attracting Investment, and Tackling Corruption

A steadily improving economy, a clear mining framework and relative political stability combined with a rich mineral endowment should make Mozambique an attractive destination for mining investment. However, there is still a lack of smaller mining producers and exploration projects, and thus the industry has lacked the vigor and vibrancy of yesteryear. This can partly be attributed to macro-factors such as the global mining downturn and previous economic turmoil, but there are also issues that must be addressed for Mozambique to begin to fulfil its undoubted potential.
"One issue in the mining industry is access to land," noted Leopoldo Amaral, partner & head of natural resource practice at Mozambican law firm Sal & Caldeira. "We have had problems with this in the past, which has created some anxiety amongst certain investors, and we need to rectify this," he commented.
After a concession has been acquired, the next challenge is financing a project. "The financial markets should be more active in providing investment for small to medium sized mining companies," stated Chivambo Mamadhusen, managing director of Grupo Videre, the Maputo-based holding company that identifies suitable investment funds to access land and licenses, and then finds strategic partners to move projects forward. Grupo Videre is currently involved in gold, coal, granite and quartz operations, and intends to expand into the graphite and vanadium, according to Mamadhusen.
This sentiment was echoed by Abreu Muhimua, founder & executive director of ENCOM, a Mozambican EPCM company that has expanded in recent years into Angola and Zimbabwe. Muhimua observed that even though there are major players operating in Mozambique, mining remains a relatively new industry with untapped potential: "We need to diversify our client base and more effort should be put into developing small to medium sized mining companies," he affirmed, concluding: "Mozambique has a lot to offer, and the country needs to change its strategy with regard to attracting mining investors."
According to the mining code, once a concession has been obtained, within a two-year period all environmental studies and resettlement plans must be completed, rights to use and develop the land must be attained and the mine must begin construction. The law then stipulates that production should begin four years after receiving the concession. This process seems clear, but requires careful attention and early engagement with local stakeholders, according to Paul O'Donoghue, Mozambique country manager for Savannah Resources. "It is essential to understand the laws in the country and how the government is structured as there is a very layered structure, starting below district level," stated O'Donoghue, who credited his company's strong relationship with local communities and government in the Inhambane province as key in the ongoing development the Mutamba Mineral Sands project. "If you are not aware of all the levels informing decision making, it is easy to miss some steps and be blindsided. Interestingly, acceptance from a local and provincial level is just as crucial as receiving federal approval," he observed.
A common red flag for investors considering involvement in African projects is a culture of corruption that seeps its way into all aspects of business and takes time to eradicate. Paulo Reis, managing partner at EY Mozambique, acknowledged that corruption is still a relevant issue in Mozambique, but measures are being taken to tackle an issue that brought the country to its knees economically in 2016. "Looking at the wider region, when compared to many other African countries, Mozambique at least has the political will to fight the issue," said Reis, citing the government creation of a cabinet for financial information that deals with anti-money laundering as an important first step on the road to compliance.
The effort to promote transparency and attract investment is being ably supported by the World Bank, whose EITI (Extractive Industries Transparency Initiative) report has been compiled by Deloitte for the past two years. Mozambique is one of the 30 countries selected for the World Bank-driven initiative, which has the principal aim of "generating revenues throughout the entire value chain, rather than focusing only on taxes," according to Mario Fernandes, partner at Deloitte, who spoke of the importance of the systematization of information: "One of the key takeaways of the EITI report is that there is no central database of the mining licenses; the government will need to establish these basic processes to manage and control tax revenues effectively."

Coal Remains the Bedrock of Mozambican Mining

The importance of fostering a diverse mining industry has been stressed by the Mozambican authorities, and the production and development of rubies, zircon, ilmenite, pig-iron and gold are testament to the country's varied mineral riches. The discovery of high-grade gold in northern Mozambique coinciding with the start of a bull market for the precious metal is a particularly promising turn of events. While this diversity should not be overlooked, the bedrock of Mozambican mining is still undoubtedly coal, the country's biggest mineral export, and graphite, for which it is estimated that Mozambique holds between 20% to 40% of global reserves.
A global drive to eliminate fossil fuels, increasingly stringent environmental laws exemplified by the impending IMO 2020 regulations and eye-catching media headlines such as Germany's decision to cease coal production by 2038, all seem to signal a doomsday scenario for the coal mining sector. However, since 2015, the production of coking coal in Mozambique has risen every year, from 3.78 million metric tons per year (mt/y) in 2015 to 8.36 million mt/y in 2018, according to statistics from the National Directorate of Geology & Mines. Despite its demonization by mainstream western media, coal remains one

of the cheapest energy sources, as well as being key to the production of steel in developing countries.

India, which overtook Japan in 2019 as the world's second largest steel producer behind China, relies on the importation of coking coal from foreign jurisdictions to support its vast industry. Among the Indian coal producers active in Mozambique is ICVL, which intends to increase its production capacity from 1.3 million mt/y of coking coal to at least 1.6 million mt/y, according to Alok Shrivastava, managing director and CEO of ICVL. Describing the impact of evolving market dynamics, Shrivastava explained: "Our first acquisition was in Mozambique when we acquired shareholding in a mine from Rio Tinto in 2014. Due to the crash of the coking coal market, ICVL had to suspend its operations in Mozambique in 2015, but in 2017, the coal prices increased again and we restarted our operations."

Another of the Indian participants in the Mozambican coking coal market is Jindal Africa, part of the Indian multinational conglomerate Jindal Steel and Power Limited (JSPL), which in turn is part of the US$18 billion Jindal Group. In a similar vein to ICVL, Jindal Africa is expanding production at its open-pit Chirodzi mine from its current level of 3 million mt/y to 5 million mt/y by 2020, according to Rajendra Kumar Tiwari, project head of Jindal Africa's Mozambican operations. Beyond this, a 10 million mt/y milestone is also a target for Jindal, along with the creation of Mozambique's first coal slurry pipeline. "Although Mozambique is blessed with significant coal reserves, it faces a challenge in poor infrastructure and logistics," stated Tiwari, explaining the viability of the potential pipeline: "In collaboration with the Mozambican government, we want to establish a long-term infrastructure solution. The pipeline will decrease some logistical challenges and is the lowest-cost transport solution."

Vale, the biggest player in Mozambique's mining industry, has also invested heavily in improving infrastructure, becoming the largest shareholder in a government infrastructure that became a private concession – the Northern Development Corridor (CDN). The CDN has gone through a large rehabilitation process to support the transport of cargo from Vale's Moatiz coking-coal mine in Tete, Northern Mozambique. As well as coal, products and materials such as fertilizers, fuel and tobacco are transported through the CDN between Moatiz, Nacala, Interland, Malawi and Zambia. Infrastructure at the Port of Nacala has also been improved to support the increased flow of cargo. "Vale is CDN's principal and most important client, but there is no exclusivity agreement and we welcome additional business partners that can help develop the economy of Northern Mozambique in a sustainable manner," commented Welington Soares, CEO of CDN.

The Graphite Boom Eating into China's Market Share

In stark contrast to coal, graphite is viewed as a mineral of the future, with a rapidly growing electric vehicle market stoking incremental demand for the crystalline form of carbon whose versatility lends itself to rechargeable batteries.

China remains by far the biggest producer of graphite, accounting for approximately 70% of global production, however, this figure has reduced from a high of 85% thanks in part to increased production from Mozambican projects.

Minister Max Tonela is bullish about the country's rapidly expanding graphite industry, listing milestones that include the establishment of a granite slab cutting plant in the District of Manica in 2017. "In addition to this, the start-up of the Ancuabe graphite mine (9,000 mt/y production) and the Balama mine (350,000 mt/y) in the Province of Cabo Delgado, have been big successes; the latter being the largest graphite processing infrastructure in the world," he added.

Syrah Resources headline a group of Australian mining companies and juniors at the forefront of the Mozambican graphite boom, taking advantage of a high-grade resource that has the ability to upgrade to a premium product through mechanical floatation. "Syrah Resources is producing approximately 95% graphite concentrate through mechanical processing without using any chemicals or acid, compared to a significant number of Chinese producers that obtain grades

> In my opinion, acceptance alone should not be the end goal for mining companies. Rather, a sustained demonstration of the benefits that a large operation can bring to a region should give tangible evidence that makes local communities want the mining and logistics operations to be present.
>
> **- Marco Froes, Director of Sustainability, Vale Africa**

of 90% by adding chemicals and alkaline treatments to the process," explained Peter Canterbury, managing director of Triton Minerals, another Australian entrant into the Mozambican graphite market, whose company recently announced a transaction with Chinese company Jinan Hi-Tech and aims to start production by early 2021.

"The demand for high purity graphite is expected to grow threefold over the next 10 years, and thus there is a need for high purity large flake graphite deposits to be developed, especially outside of China, as the country's large flake graphite deposits are diminishing," observed Cantebury.

Another company riding the graphite wave is GK Ancuabe, the Mozambican arm of German company AMG Graphit Kropfmuehl, which went into production in June 2017 and has since increased capacity. Summarizing the milestones achieved at the Ancuabe graphite mine in recent years, Geert Klok, GK Ancuabe's general manager, detailed: "Since 2016, GK Ancuabe mine has raised financing and gone through the entire investment phase of bringing in machinery, equipment and rehabilitating the run down plant. We have also expanded the capacity from 6,000 mt/y to 9,000 mt/y. The company managed the entire rehabilitation process itself."

Sustainable Development in Northern Mozambique

Balancing the development of mining projects with environmental and community care is a complex matter, especially when the regions in question are some of the poorest and least developed in the world. This is certainly true in Mozambique, where pollution from Vale's Moatize II mine drew protests from locals in Tete in October 2018, temporarily suspending the operation.

Vale has, however, achieved large-scale success in the northern development corridor, with a resettlement project that has successfully relocated over 12,000 families in northern Mozambique and Malawi. The social and environmental management project is Vale's biggest sustainability operation worldwide, according to Marco Froes, head of sustainability for Vale Africa. "In my opinion, acceptance alone should not be the end goal for mining companies. Rather, a sustained demonstration of the benefits that a large operation can bring to a region should give tangible evidence that makes local communities want the mining and logistics operations to be present," reflected Froes,.

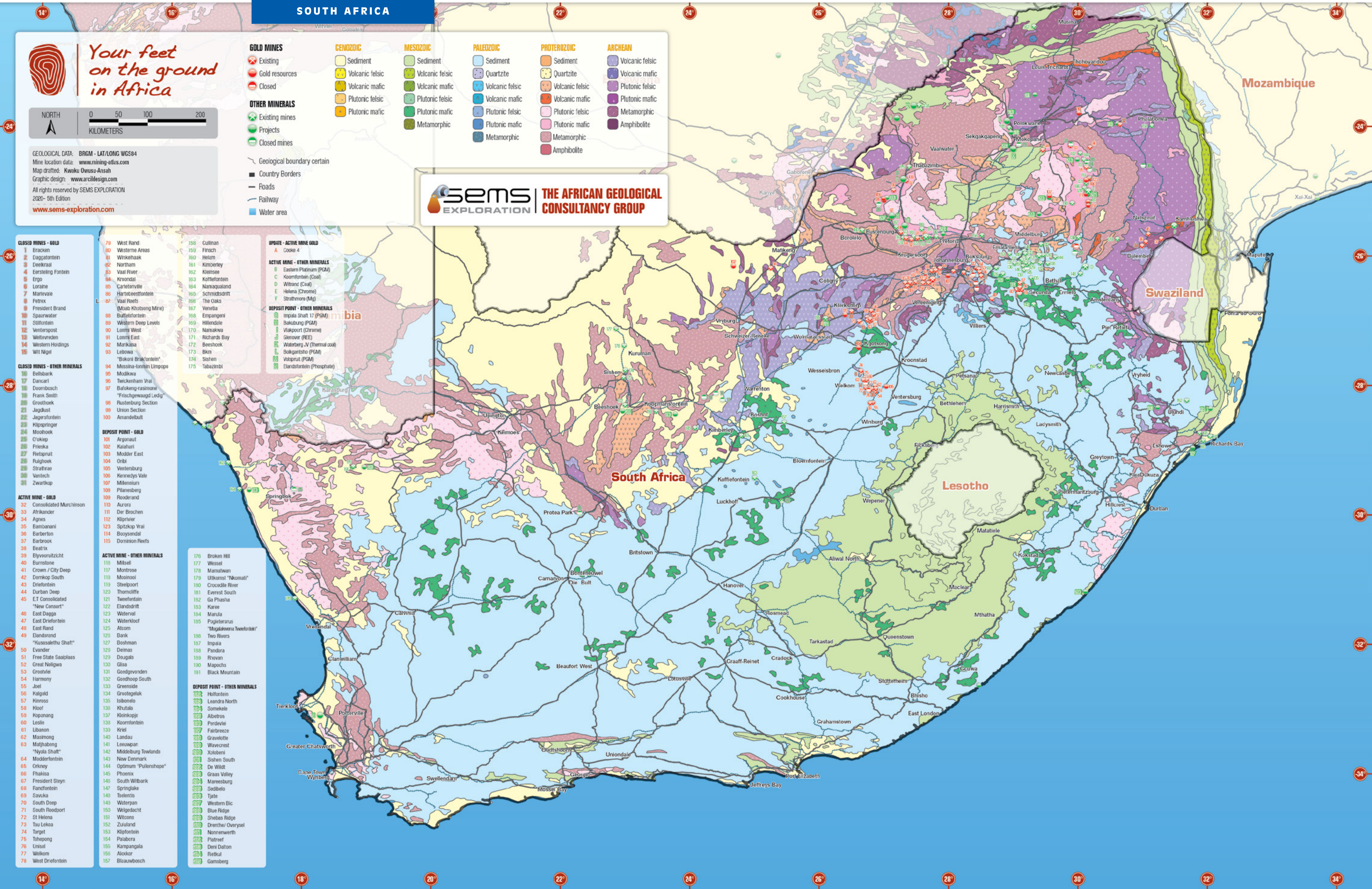
Another coal producer with operations in Tete leading a resettlement project is ICVL, which is spending approximately US$23 million on the resettlement of the Capanga community and expects to have constructed 272 houses by October 2020. Alok Shrivastava, ICVL's managing director and CEO, elaborated on the initiative: "A MoU was signed with the Ministry of Labor, Employment and Social Security, under which ICVL´s Training Centre will be used to provide vocational training to Mozambican residents in Tete to build technical skills in order to integrate them in the national workforce."

Further north, Montepuez Ruby Mining (MRM) has ring-fenced 1% of the US$500 million raised by parent company Gemfields from ruby auctions and reinvested it into the local community of Montepuez, constructing a village for the communities that were located in the vicinity of the concession, according to Samora Machel Jr., MRM's managing director.

One of the hurdles MRM has had to overcome is the legacy of illegal artisanal mining in northern Mozambique. Machel Jr. explained how MRM has worked in collaboration with the government to reduce the presence of illegal miners: "The first strategy was to disassemble the presence of illegal immigrants in the village of Montepuez. We also had to educate the communities around our concession which had become involved in the illegal activities by explaining and demonstrating the benefits of legal, sustainable mining and the importance of eradicating illegality."

The government was also keen to emphasize the importance of having measures in place to try to minimize the amount of illegal mining activities through the country's legal framework. Elias Daude, director of the National Directorate of Geology & Mines, elaborated on the government strategy for artisanal and small-scale mining: "There are incentives for the creation of associations for artisanal and small-scale miners. The associations can facilitate support from government in terms of technical and environmental aspects, as well as production. Additionally, being connected to a formal network will allow for the possibility to attain funding from banks."

Daude went on to mention the establishment of designated areas where only Mozambicans can attain licenses for mining activities, as well as the creation of commercial centers where artisanal and small-scale mining associations can sell their products formally. •


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.arcildesign.com
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GOLD MINES
Existing
Gold resources
Closed
OTHER MINERALS
Existing mines
Projects
Closed mines
Geological boundary certain
Country Borders
Roads
Railway
Water area
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
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 Groothoek
21 Jagdlust
22 Jagersfontein
23 Klipspringer
24 Mooihoek
25 O'okiep
26 Frieska
27 Rietspruit
28 Ruighoek
29 Strathrae
30 Vantech
31 Zwartkop
ACTIVE MINE - GOLD
32 Consolidated Murchinson
33 Afrikander
34 Agnes
35 Barnbanani
36 Barberton
37 Barbrook
38 Beatrix
39 Blyvooruitzicht
40 Burnstone
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 Moddertontein
65 Orkney
66 Phakisa
67 President Steyn
68 Randfontein
69 Savuka
70 South Deep
71 South Roodport
72 St Helena
73 Tau Lekoa
74 Target
75 Tshepong
76 Unisel
77 Welkom
78 West Driefontein
79 West Rand
80 Westerne Areas
81 Winkelhaak
82 Northam
83 Vaal River
84 Kroondal
85 Carletonville
86 Hartebeestfontein
87 Vaal Reefs (Moab Khotsong Mine)
88 Buffelsfontein
89 Western Deep Levels
90 Lonmi West
91 Lonmi 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
101 Argonaut
102 Kalahari
103 Modder East
104 Oribi
105 Ventersburg
106 Kennedys Vale
107 Millennium
108 Pilanesberg
109 Roodekrand
110 Aurora
111 Der Brochen
112 Klipriver
113 Spitzkop Wrai
114 Booysendal
115 Dominion Reefs
ACTIVE MINE - OTHER MINERALS
116 Millsell
117 Montrose
118 Mooinooi
119 Steelpoort
120 Thorncliffe
121 Tweefontein
122 Elandsdrift
123 Waterval
124 Waterkloof
125 Atcom
126 Bank
127 Boshman
128 Delmas
129 Dougals
130 Glisa
131 Goedgevonden
132 Goedhoop South
133 Greenside
134 Grootegeluk
135 Isibonelo
136 Khutala
137 Kleinkopje
138 Koornfontein
139 Kriel
140 Landau
141 Leeuwpan
142 Middelburg Towlands
143 New Denmark
144 Optimum "Pullenshope"
145 Phoenix
146 South Witbank
147 Springlake
148 Tselentis
149 Waterpan
150 Welgedacht
151 Witcons
152 Zululand
153 Klipfontein
154 Palabora
155 Kampangala
156 Alexkor
157 Blaauwbosch
158 Cullinan
159 Finsch
160 Helam
161 Kimberley
162 Kleinsee
163 Koffiefontein
164 Namaqualand
165 Schmidtsdrift
166 The Oaks
167 Venetia
168 Empangeni
169 Hillendale
170 Namakwa
171 Richards Bay
172 Beeshoek
173 Bkm
174 Sishen
175 Tabazimbi
176 Broken Hill
177 Wessel
178 Mamatwan
179 Uitkomst "Nkomati"
180 Crocodile River
181 Everest South
182 Ga Phasha
183 Karee
184 Marula
185 Pogietersrus "Mogalakwena Tweefontein"
186 Two Rivers
187 Impala
188 Pandora
189 Rhovan
190 Mapochs
191 Black Mountain
DEPOSIT POINT - OTHER MINERALS
Holfontein
Leandra North
Somekele
Albetros
Perdevlei
Fairbreeze
Gravelotte
Wavecrest
Xolobeni
Sishen South
De Wildt
Graas Valley
Mareesburg
Sedibelo
Tjate
Western Bic
Blue Ridge
Shebas Ridge
Drenthe/ Overysel
Nonnenwerth
Platreef
Deni Dalton
Retkul
Gamsberg
UPDATE - ACTIVE MINE GOLD
A Cooke 4
ACTIVE MINE - OTHER MINERALS
B Eastern Platinum (PGM)
C Koornfontein (Coal)
D Witbrand (Coal)
E Helena (Chrome)
F Strathmore (Mg)
DEPOSIT POINT - OTHER MINERALS
Impala Shaft 17 (PGM)
Bakubung (PGM)
Vlakpoort (Chrome)
Glenover (REE)
Waterberg JV (Thermal coal)
Boikgantsho (PGM)
Volspruit (PGM)
Elandsfontein (Phosphate)
Mozambique
Swaziland
Lesotho
South Africa
Musina
Louis Trichardt
Thohoyandou
Phalaborwa
Polokwane
Mokopane
Vaalwater
Thabazimbi
Nelspruit
Middelburg
Pretoria
Johannesburg
Boksburg
Krugersdorp
Bethal
Secunda
Ermelo
Mafikeng
Vryburg
Klerksdorp
Kuruman
Kimberley
Welkom
Kroonstad
Bethlehem
Harrismith
Newcastle
Vryheid
Ulundi
Richards Bay
Maputo
Upington
Springbok
Bloemfontein
Kokstad
Durban
Pietermaritzburg
Mthatha
Queenstown
East London
Grahamstown
Port Elizabeth
Jeffreys Bay
George
Mossel Bay
Oudtshoorn
Beaufort West
Cape Town
Swellendam
Worcester
Vredendal
Clanwilliam
Calvinia
Carnarvon
De Aar
Colesberg
Graaff-Reinet
Cradock

South Africa

Population: 58,558,270 (UN 2019)
Land area: 1.22 million sq km
Official Languages: English, Afrikaans, Ndebele, Northern Sotho, Sotho, Swazi, Tswana, Tsonga, Venda, Xhosa, Zulu
Capital: Pretoria (executive), Bloemfontein (judicial), Cape Town (legislative)
Chief of State: Cyril Ramaphosa (since 15 February 2018)
GDP (PPP): $675 billion (Trading Economics)
GDP PPP Annual Growth Rate: 0.4% (2018) (World Economics)
GDP Per Capita (PPP): $12,350 (Trading Economics 2018)

Industry: agriculture and food processing, tourism, financial services, services industry, business process outsourcing, and industrial manufacturing, mining (World Atlas 2018)
Top Exports: precious metals ($8.55 billion), minerals products ($14.6 billion), transportation ($9.99 billion), metals ($8.88 billion) (World Atlas 2018)
Top Imports: Mineral fuels including oil: US$17 billion (18.2%) Machinery including computers: $11.5 billion (12.3%) Electrical machinery, equipment: $8.6 billion (9.2%) Vehicles: $7.1 billion (7.6%) Plastics, plastic articles: $2.8 billion (3%) Pharmaceuticals: $2.5 billion (2.7%) (worldstopexports.com 2018)
Top Export Destinations: China: $6.81 billion worth of goods imported (, the US ($5.47 billion), Germany ($5.26 billion), Botswana ($3.71 billion), and Namibia ($3.53 billion) (World Atlas 2018)

TRANSPARENCY INTERNATIONAL CORRUPTION PERCEPTIONS INDEX
SOURCE: TRANSPARENCY INTERNATIONAL

RANK 2018
73/180

SCORE
43/100

TAXATION RATES
SOURCE: PWC

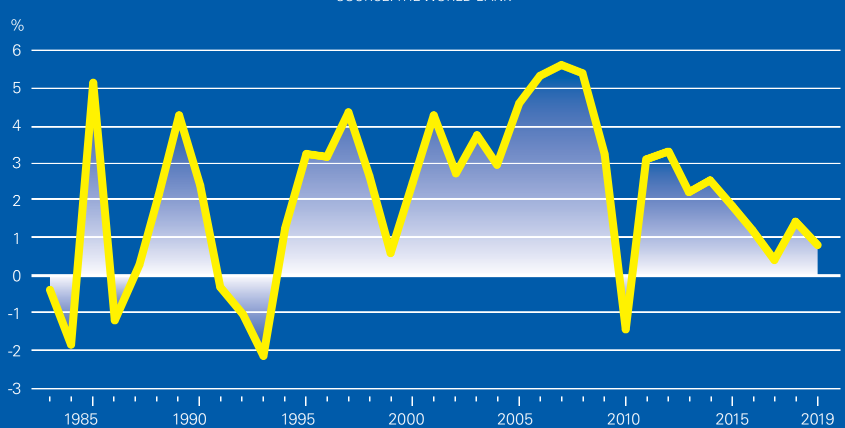
CORPORATE INCOME TAX RATE
28%

ROYALTIES
COPPER, IRON ORE, COAL: **0.5 TO 7%**
GOLD: **0.5 TO 5%**

BUSINESS ENVIRONMENT RANKING (1-190)
SOURCE: THE WORLD BANK (2020 EDITION)

EASE OF DOING BUSINESS	STARTING A BUSINESS	DEALING WITH CONSTRUCTION PERMITS	GETTING ELECTRICITY	REGISTERING PROPERTY
84	139	98	114	108

GDP (ANNUAL %)
SOURCE: THE WORLD BANK



South Africa: An Industry in Decline

A fraught sociopolitical environment threatens South Africa's once mighty mining industry

More than a quarter-century after the first democratic election, South Africa's political, economic and social landscape is still pitted with the shards of apartheid. What is worse, the current trajectory of the country – which is marked by rising inequality, staggering unemployment rates, economic decline and political instability – is a testament to the reversibility of the nation's hard-earned progress. The ANC, a coalition once unified by the necessity for resistance, today faces the challenge of mending internal fragmentation that has South Africa careening towards destruction.

Consumer Capitalism

The 1960s and the early 1970s were boom years for the South African economy. During the first half of the 1970s, foreign investment averaged 14% of gross domestic investment and peaked at 24.5% in 1975-76, while, from 1961 to 1974, average GDP growth was 5.3%. During this period, the white population enjoyed rapidly increasing standards of living, a benefit denied the black majority. International calls for the end of apartheid had been mounting throughout the 1970s and reached new heights in 1986 when the Comprehensive Anti-Apartheid Act was passed in Washington with enough votes to override a Reagan veto. By 1991, 28 states, 25 counties and 91 cities had taken economic action against corporations with investments in South Africa, at a cost to South Africa of some US$20 billion.

The socially distorting effects of the apartheid system led to calls for reformation to remedy the inequitable situation, and, in 1994, it seemed for a while that a welfare state was underway. Under Nelson Mandela's leadership, the ANC managed to overcome its internal disagreements over key economic policies and opened up the economy. Foreign investment shot up, growth slowly returned and big business was transferred to the majority through black economic empowerment.

"It was, in a way, a grand bargain," said Claude Baissac, CEO of consultancy firm Eunomix. "The ANC would stay clear of a socialist turn in exchange for economic opening, while government invested in education, housing, health and basic social infrastructure for the long-neglected majority."

The year 1994 reflected a recovery for the economy of South Africa, with a real GDP growth of 2.4%. In 1995, the government signed a new General Agreement on Tariffs and Trade (GATT) and joined the World Trade Organization (WTO), committing itself to neoliberal policies. The ANC's policies were successful in numerous areas. It implemented an extensive welfare system with free healthcare for pregnant women and children, a free-meal program for school children and access to health care dramatically improved with the construction of 500 new clinics. In addition, more than 2 million additional homes were connected to the electricity network. The reforms also resulted in a substantial increase in both imports and exports, the budget deficit fell and South Africa embarked on a period of relatively high economic growth.

The economic growth was, however, not enough to reduce the level of unemployment perceptibly. The black middle class was significantly expanded with the implementation of Black Economic Empowerment (BEE). This growth increased the demand for trained professionals, whose numbers were strained by emigration due to violent crime, but failed to address unemployment amongst the unskilled bulk of the population sufficiently. The new economic landscape – characterized by decreased low-skill employment in agriculture, mining and manufacturing and higher employment in the service industry and government – excluded those on the bottom of the social hierarchy. For example, the share of semi-and-unskilled

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Roger Baxter

CEO
SA Minerals Council

Can you give an overview of the SA Minerals Council and the organization's role in the mining industry?
The SA Minerals Council has been in existence for 125 years, but the organization was renamed, rebranded and relaunched in May 2018. We represent approximately 90% of South Africa's minerals production value, and our members include small, mid-size and major players. Our vision is to reposition the mining sector as South Africa's foremost industrial sector. In partnership with key stakeholders, the Minerals Council seeks to create a conducive environment that facilitates doubling real investment in mining by 2030.

Can you elaborate on the SA Minerals Council's relationship with the government?
SA Minerals Council's engagement with the government has improved greatly under the current Minister of Mineral Resources, Mr. Mantashe. For the first time, we have a minister with real mining experience who is passionate about the sector. Minister Mantashe regularly attends meetings with the Minerals Council and has engaged with the board on several occasions, as well as met with every single sector-specific CEO during the Council's leadership forums.
We are also engaging with the government regarding the mining charter. The Minerals Council achieved a very important judgment relating to continuing consequences. The Minister appealed the parts of the judgement that sought to question the validity of the charter, and the court process is still underway. There are also elements in the mining charter that the industry has given the Council a mandate to review as certain clauses are seen as problematic. We seek a process of engagement that we believe will be more effective than a court process.
With regards to the power situation in South Africa, the Minerals Council has also worked very closely with Pravin Gordhan as head of SOEs. During Eskom's latest crisis, there has been a massive outreach from the industry to Pravin Gordhan and his team, and the Minerals Council has allocated engineers and other staff to assist the task force that will review the power stations. We are the largest customer of Eskom, and the price of electricity is a major challenge. The minerals sector, and industry overall, should be allowed and encouraged to generate its own energy supply.

What are some of the key obstacles to reviving South Africa's mining industry?
Investors will want to have clearly outlined tax regimes and be able to predict upcoming regulatory changes. Clarity, certainty and stability are thus important factors that South Africa currently lacks.
Exploration is also a massive issue in the country, and unless we can get the processes in place to encourage juniors and explorers, we are not going to get the pipeline. South Africa spends very little money on exploration: around 1% of total African exploration spending. The country is not attracting new investment because it is an onerous process to apply for mining rights and to attain permits. In addition, it is not necessarily a transparent process, which is a key reason that exploration activities in South Africa are not happening. We need to make it easy and encourage explorers to come to the party so that we can develop a pipeline.

There are top-notch traditional mining skills in South Africa, but not necessarily the innovative technological skills that come with industry 4.0. Is this situation improving?
The Mining Precinct is an excellent example of industry and government working together, and they are doing incredible work on the process of modernization in the mining industry. It is about completely changing the way that we approach mining in an effort to make mining better, more efficient and safer.
From a safety perspective, there has been a massive improvement. Over a 10-year period, up to 2016, there was an 88% drop in fatality rates. We did take a step back in 2017, but in 2018, there was a massive intervention by the Minerals Council that achieved a great deal of success, and we have already seen a 40% improvement in fatality rates from 2018. Technology plays a significant role in safety within the mining industry. •

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labor in manufacturing employment decreased from 60% in 1980 to 54% in 1990 and 49% in 2009. As confidence in the trickle-down effect of neoliberal policies waned, the prospects of a strong South African welfare state took additional blows throughout the mid-2000s. The leftist faction of the ANC – remnants of the communist party that had been the engine of ideas during the liberation struggle – seized the opportunity to expand their influence, culminating in a transition of power from Thabo Mbeki to Jacob Zuma.

The Anc

In the last decade, South Africa has drifted further and further away from Mandela's vision of a modern country at peace with itself. Jacob Zuma's presidency was marked by seemingly endless corruption scandals, overspending, reduced private sector autonomy and plunging investor confidence. Walking backward in its footsteps, with growing inequality (especially amongst the black population), police brutality, rampant infectious diseases and failing education, South African society has reacquired many of the hallmarks of the apartheid era. This regression was not inevitable, but the unity forged by the unlikely figure of Nelson Mandela was fragile and demanded continued growth and the resolution of the stubbornly high unemployment rates. When the live-and-let-live approach to business proved inadequate to resolve these issues, the fault lines along Mandela's long struggle began to show.
"The ANC itself has never resolved the fundamental debate between its left wing and its right," Baissac said. "On one side is the conservative majority of the urban and rural middle classes. On another is the urban industrial and services working class. On yet another is the intellectual elite, mainly white and communist – mostly a dying remnant that is still influential on a vainglorious and failing industrial policy."

> The ANC itself has never resolved the fundamental debate between its left wing and its right. On one side is the conservative majority of the urban and rural middle classes; on another is the urban industrial and services working class. On yet another, the intellectual elite, mainly white and communist – mostly a dying remnant that is still influential on a vainglorious and failing industrial policy.
>
> **- Claude Baissac, CEO, Eunomix**

The resistance to apartheid was the glue that held together a political party otherwise defined by internal incoherence. While the ANC continues to function as government and opposition all at once, the noble aspirations set out in the Freedom Charter have increasingly been swapped for a political agenda characterized by government attempts to increase its power relative to the people it governs. The commodities super-cycle of 2000s, driven by a combination of strong demand from emerging nations and low supply growth, was viewed by the ANC as an opportunity to sweeten the deal for its already well-paid political constituency. Jacob Zuma soon earned more than many of his European counterparts, and in 2015, he was the third-highest paid leader on the African continent – right below King Mohammed V of Morocco.

The BEE laws, which had initially worked to expand South Africa's middle class, simultaneously created a wealthy black political elite through corporate co-opting of black former resistance leaders and heads of trade unions. Since 1996, workers employed in the public sector experienced the highest growth in median real monthly wages of all sectors. In addition to this, the public sector was one of the largest proportional contributors to employment growth over the 2001 to 2012 period. Meanwhile, the underclass – the country's largest social class and the bulk of the ANC electorate – was fed crumbs in the form of social welfare grants. The increased welfare grant spending, mounting from roughly US$450 million in 1996 to US$2.9 billion in 2008, combined with higher spending on the state bureaucracy and slashed tariff protection for South African industries, led to a consumption revolution.
The party ended in 2008. Global recession took hold, and South Africa woke up to a reality in which the country's mining industry had shrunk and manufacturing was in steep decline. While the international sanctions during the 1970s and 1980s were a knock to the South African economy, it also resulted in a certain level of self-sufficiency. "We were forced to develop even more local manufacturing capabilities, and this industry became so big that it became one of the major driving forces of the local GDP," related Ossie Carstens, CEO and program manager at manufacturing organization MEMSA. "In the early 1990s, after the release of Nelson Mandela, South Africa was exposed to the global market and the ease of doing business on a global scale. The country was welcomed back into international markets and the protected competitive edge (which was artificially bolstered with sanctions) that local manufacturers had started to disappear, and it signaled the start of the local manufacturing industry's decline."
The decline in manufacturing's share of employment accelerated from 1995 with the implementation of the government trade reform program. By 2009,

> The reason why governments implement stringent mining regulations and tax policies is to bolster revenue, however, they must not neglect the importance of investment without which it is not possible to generate any money at all. Simply put, no one benefits from mining operations shutting down.
>
> **- Eric Bruggeman, CEO, SACEEC**

Image courtesy of Maccaferri

manufacturing accounted for a mere 12.5% of non-agricultural employment, and by 2016, the manufacturing sector had shed an additional 50,000 jobs. The consumer revolution resulted in the transfer of resources from the production sector to the government and private household consumption – fueling unemployment while creating artificial economic growth. To keep society afloat, a faux capitalism was adopted driven by loans and imports. Furthermore, South Africa's trade liberalization coincided with China's rapid integration into the world economy. With manufacturing capabilities in a nosedive and technology lagging, South Africa has so far been one of globalization's casualties rather than profiting from cheaper high-quality products. In the last two decades, export growth has failed to keep pace with GDP and import growth, resulting in an increased trade deficit that reached 3.4% of GDP in 2008 and 3.5% in 2018.

The New Battle Lines and The Future of South Africa

Through self-defeating policies, corruption and self-enrichment, the South African government has effectively shed its responsibilities while retaining its rights. The ANC's internal fragmentation has rendered the party in gridlock over key issues such as fiscal policies, healthcare and land reform. More broadly, the internal contradictions and deadlocks of the ruling party are reflected in a population divided along redrawn battle lines. The economic elite, which owns the country's productive assets, is vulnerable to state power in forms of asset seizures and control over state-monopolized necessities such as power and infrastructure. Meanwhile, the political elite lacks ownership of productive assets and skills while being heavily dependent on the votes of an increasingly frustrated underclass. The minority blue collar class finds itself sandwiched between the economic and political elite: excluded from the consumption revolution, left out of communication with the state and constantly under the threat of unemployment. The result of the entailing policy congestion is the draining of public confidence, especially on behalf of the nation's most vulnerable.

A clear example of the growing tensions between the country's working class and the state was the 2012 massacre in Marikana where 34 striking mine workers demanding a wage increase were gunned down by police. The scene, which evoked memories of the country's darkest days, was a testimony to the reversibility of democratic progress and an ominous forecast for how the government might react to broader social dissent. The underclass, too, is losing patience. Save from a brief pause between 1994 and 1997, protests have been commonplace in South Africa since the 1970s – especially in townships and shack settlements – and have been rising in the last decade. Violent crime initially decreased after democratization but the downward trajectory has shown a reversal in recent years, climbing from 30 per 100,000 in 2011 to 36 per 100,000 in 2017. According to a UN report, possible drivers of the increase in homicide rates include an increase in public protest and political turmoil stemming from perceptions of state corruption and popular frustration with slow provision of resources. Since 1994, some 500,000 people have been murdered in South Africa – some 130,000 more than those killed during eight years of war in Syria.

The main question today is whether the newly elected Cyril Ramaphosa has inherited a state just broken, or broken beyond repair. The former anti-apartheid activist and businessman has pledged to revamp the economy and restore the sheen of the Mandela and Mbeki eras. The way forward: economic growth. But engineering economic recovery will firstly require pushing through policy within a party locked in an internecine zero-sum factional war. Secondly, economic growth will have to translate into reduced inequality. In 2019, unemployment officially reached a 15-year high of 27.6%, but compounding that is another 10% of the population who have stopped looking for jobs. From one end of the telescope, the elite attributes high unemployment rates and inequality to a low-growth economic trajectory, while on the other end, a majority underclass sees it as the result of longstanding systematic exclusion. This former, and widely held viewpoint on behalf of the elite is likely to make them less keen on the economic reforms needed to appease an underclass that is fed up with depending on state philanthropy.

While the hurdles are discouragingly high, South Africa does, however, have some good things going for it. The country's constitution, largely considered sacrosanct by the population, has so far passed all tests of robustness. South Africa also has the most sophisticated economic infrastructure on the continent with mechanisms in place to mobilize capital and drive economic activity. The country is globally integrated, meaning that lowered financial barriers and policy predictability is probably enough to attract substantial foreign investment.

Ramaphosa will not be able to replicate Mandela's miracle of unification, and the era when the ANC can form policy solely for electoral purposes has ended. The way forward is to leverage majority support to drive through viable economic policies. With scarce fiscal resources and dwindling popular trust, resolving inequality and unemployment will have to be a priority – otherwise, the combination of high youth unemployment, poor educational outcomes and rampant inequality will eventually result in large-scale social disorder. The tightrope march between the revolutionary redistributive pressure of the citizens and the counteracting forces of the elite will be tough to manage. But, hopefully, the ill-boding socioeconomic trajectory of South Africa has sent a clear-enough signal that all parties need to compromise for the purpose of self-preservation.

The Mining Industry's Three 'Ifs'

For many years, the mining sector has been the mainstay of the South African economy. The country's mineral riches have been a major contributor to GDP, foreign exchange earnings, employment and fiscal income. But for all its significance, the mining industry has been in decline for decades. Compounding the homegrown problems of political, social and legal struggles, low prices and soaring production costs are threats to the sector's survival. Today, mining makes up less than 7% of South Africa's economic output, a steep fall from 20% in the 1970s. Yet, the government has earmarked mining as a key component in the National Development Plan (NDP) while last year's appointment of Mineral Resources Minister Gwede Mantashe has restored some optimism about the future of the South African mining industry.

Another Mining Charter

Gwede Mantashe's appointment as mineral resources and energy minister has generally been well received by the industry. After his appointment in May 2019, Mantashe has been decisive in addressing corruption and maladministration within his department, as well as taken steps to promote regulatory certainty. These initiatives resulted in South Africa's gaining 27 places under the Policy Perception Index and also considerably improving its stands in the Fraser Institute's Investment Attractiveness Index.

> Generally gold and platinum companies that mine using conventional methods have been running very tight margins. We have experienced a time when approximately 70% of the platinum industry and 60% of the gold industry was under water financially.
>
> **- Alistair Macfarlane, Co-director, Mandela Mining Precinct**

The current regulatory regime, however, still suffers from a number of problematic aspects inherited from the initial post-1994 policy. The Mineral and Petroleum Resources Development Act (MPRDA) that came into effect in 2004 replaced the old common-law principles and ushered in a system of state custodianship of mineral resources. In an attempt at spreading the benefits of the country's mining sector, the state assumed a more intrusive presence in the life of the industry. In accordance with MPRDA requirements, a mining charter was introduced the same year. The charter stipulated that mines must achieve 26% ownership by historically disadvantaged South Africans (HDSA) within 10 years in addition to several mostly aspirational targets such as cooperating in formulating development plans for communities and ensuring greater female participation.

In 2010, new iterations of the Mining Charter were introduced. Since 2004, the racial ownership pattern of mining assets had remained largely unchanged, with only 8.9% black ownership attained by 2009 against the target of 15%. The reviewed charter – far more prescriptive than the original – sought to correct the racial discrepancy, emphasizing 26% of South Africa's mining assets being black economic empowerment (BEE) compliant by 2014. The sector's initial reaction to the new charter was worry over increased regulatory uncertainty. These concerns were amplified in 2017, as yet another mining charter was introduced, imposing new financial, regulatory and compliance obligations on an already fragile South African mining industry.

Mining Charter III stipulates that new mining rights must be held by entities with a minimum 30% shareholding by HDSAs, a hike from the previous charter under which the requirement was 26%. Further, holders of existing rights who have complied with the minimum HDSA ownership thresholds under the 2010 charter will have five years from the effective date of Mining Charter III to increase their HDSA shareholding. The new charter has been a significant source of uncertainty and controversy since a first draft was published in April 2016, including various high court applications and calls for a change in political leadership at the Department of Mineral Resources (DMR). Shortly after the charter was promulgated, the Minerals Council filed an application for a judicial review, pointing out that past deals were not sufficiently recognized.

"The Minerals Council achieved a very important judgment relating to continuing consequences," said Roger Baxter, CEO of South Africa's Minerals Council. "The Minister appealed the parts of the judgement which sought to question the validity of the charter and the court process is still underway. There are also elements in the mining charter that the industry has given the Council a mandate to review as certain clauses are seen as problematic. What we seek is a process of engagement that we believe will be more effective than a court process."

In addition to the onerous re-empowerment obligations for the renewal and transfer of existing mining rights, the industry has voiced concern regarding the procurement requirements.

"Companies are obliged to have 80% of their services provided locally and 60% to 70% local content, which is very challenging to technology providers," commented Sanjay Ahuja, managing director of Epiroc. "I do not believe the charter will be fully implementable in its current format, and we have ongoing discussions with other stakeholders in order to work out what parts of the charter need to be altered."

Perhaps the most damaging aspect of the regulatory development since 2004 is the changes themselves. While an increased equal distribution of mining benefits should be encouraged, continuously moving the goalposts creates an uncertainty that defeats the purpose of empowerment policies as overall activity in the mining sector is undermined.

"While local communities, local manufacturers, local municipalities and the government should all benefit from South African mining operations, there needs to be a balance between these policies and operational feasibility," said Eric Bruggeman, CEO of the South African Capital Equipment Export Council (SACEEC). "The reason why governments implement stringent mining regulations and tax policies is to bolster revenue, however they must not neglect the importance of investment without which it is not possible to generate any money at all. Simply put, no one benefits from mining operations shutting down."

The minister's seemingly unlimited ability to review and revise the obligations imposed under the charter has been called into question by various legal experts. According to attorneys at Webber Wentzel, the MPRDA only empowers the mining minister to "develop a broad-based socio-economic empowerment charter," but does not grant the minister the power to alter, vary and/or revise such a charter. The Minerals Council made the same claim in its application with the high court, stating that the minister acted ultra vires and purported to exercise powers that reside exclusively with parliament.

Mantashe has, however, demonstrated an understanding for the industry during his short tenure. In addition to efforts to stamp out corruption and maladministration, the minister recently announced plans to axe the proposed amendments to the MPRDA. The amendment was taken to parliament in early 2013 and re-emphasized the commitment to beneficiation and expanded the minister's discretion over the mining sector. The bill was referred back to parliament in January 2015 by the president due to lack of public consultation after it was passed. The withdrawal will be welcomed by the industry and has further repaired the relationship between the Minerals Council and the ministry, which was damaged after the passing of the 2010 charter.

"SA Minerals Council's engagement with the government has improved greatly under the current minister of mineral resources, Mr. Mantashe," commented Baxter. "For the first time, we have a minister with real mining experience who is passionate about the sector. Minister Mantashe regularly attends meetings with the Minerals Council and has engaged with the board on several occasions as well as met with every single sector-specific CEO during the Council's leadership forums."

Creating an environment with less policy and regulatory uncertainty should go a long way towards attracting investment. The scrapping of the MPRDA amendment will be a step in the right direction. But with the original MPRDA still in place, administrative law based on conditional state licenses has essentially replaced the principles of private law, based on rights of ownership. When asked what changes he would make if granted full authority, Peter Leon, partner and co-chair of the Africa practice at Herbert Smith Freehills, offers concrete suggestions: "I would scrap the mining charter in its current form, I would reform the mining code, and I would also make the grant of rights objectively determinable to eliminate back door discretion in the legislation. I would introduce a proper online mining cadaster and take away the licensing function away from the Department of Energy and hand it over to an independent regulator in the form of a minerals or mining commission modeled on that in Brazil and Ghana."

Digging Deep

With vast deposits of gold, diamonds, platinum, coal, chrome, vanadium and titanium, South Africa boasts a bounty of mineral riches. Although gold and platinum group metals "PGMs" productions are well down from their peaks, they continue to dominate the market. Paradoxically, these minerals – especially gold – are those that struggle the most.

> The mine was not sustainable and transformation was required to set the mine on a path of value. We thus framed a strategy to reconfigure the operating model, reduce the fixed cost base, drive cash-flow and build the foundation to become a modern, efficient and profitable operation.
>
> **- Sven Lunsche, VP Corporate Affairs, Gold Fields**

"The reason why many predict the demise of the SA gold mining industry – apart from South Deep – is that gold mining is costly due to the underground nature of mining," said Sven Lunsche, VP corporate affairs of Gold Fields. "Going beyond two kilometers to dig for gold is costly and raises significant safety concerns. If the rand/gold price goes beyond a certain level, it makes it viable to mine, but at its current level, we are not seeing any new gold mines coming into operation."

While bulk commodities such as iron ore, coal, manganese and chrome have been performing fairly well over the last few years – with steel-making ingredients increasing its share of capitalization from 13% in 2017 to 20% in 2018 – the South African mining industry is more exposed to precious metals that have not enjoyed the same price increase. For the gold industry, however, a price hike will not be enough to ensure sustainability. Mainly characterized by deep-level hard-rock mining, inherent technical constraints combined with persistently declining ore grades are pushing the industry towards cost-saving initiatives.

"Generally gold and platinum com-

Image courtesy of Gold Fields

panies that mine using conventional methods have been running very tight margins," said Alistair Macfarlane, co-director of Mandela Mining Precinct, an industry-government partnership organization aimed at fostering growth, transformation, investment and employment preservation in the mining sector.

"We have experienced a time when approximately 70% of the platinum industry and 60% of the gold industry was under water financially. We are now at a stage where we have to look at how we can modernize hard rock mining operations in South Africa, but there are limited technologies that are appropriate for these environments."

The apartheid system provided cheap labor and minimal safety standards. The result was less incentive to invest in innovation, resulting in today's largely antiquated mining technology with methods harking back to the 1950s. "South Africa has some of the richest ore bodies in the world, which resulted in new mines being built next to the existing ones," said Errol Smart, managing director and CEO at exploration company Orion Minerals. "Following mine closures, the labor forces were moved to the newer sites and, in the process, transferred the sins of their fathers – meaning, they did not build new mines but rather new operations based on superannuated processes."

In a race for survival, miners will have to adopt new technology or fade into the sunset. While the specific technology needed for deep-level, hard-rock mining is limited, solutions are available. Anglo American Platinum Limited and Vedanta Zinc International have successfully mechanized some of their operations to help them exploit the full potential of their assets. Another example is Gold Field's South Deep mine, which has experienced a challenging period in recent years. "The mine was not sustainable, and transformation was required to set the mine on a path of value," said Lunsche. "We thus framed a strategy to reconfigure the operating model, reduce the fixed cost base, drive cashflow and build the foundation to become a modern, efficient and profitable operation. The restructuring was also aimed at reducing the workforce and mobile equipment levels in alignment with consolidating mining activity."

While modernization will be imperative for the country's remaining deep-level mines, mechanization needs to be combined with the development of new skills to avoid widespread loss of jobs. Some 110,000 people are employed in the nation's gold mines alone, which means that around one million people are dependent on the subsectors, according to the Minerals Council. New technology translates into a need for new skills, and the transition period that lies ahead will be crucial for avoiding a catastrophic impact on South Africa's socio-economic fabric.

"Operators are still necessary, but need to be retrained for operating modernized equipment," said Macfarlane. "The operators are now doing much more value added work instead of only manual labor. We want to allay the fears of organized labor about modernization and industry 4.0 taking away jobs from the human work force. Once we have communicated with and educated the labor force on what industry 4.0 is, we can start looking at the re-education and retraining initiatives needed to implement modern processes in mines."

The Power Crisis

The viability of mechanization will also depend on the government's ability to resolve the ongoing power crisis. Throughout 2019, state electricity company Eskom imposed the worst power cuts in several years, conjuring up memories of the 2008 crisis when the grid nearly collapsed and cost the mining industry billions of rands in lost output. The mining industry currently consumes about 15% of Eskom's annual output. So far, 18,300 jobs have been lost as a direct result of the growing costs of powering operations, of which one third have been cut from gold mines, according to a 2019 statement by the Minerals Council.

"In the 1970s, South Africa was the world's number one gold producer by a large margin but has since dropped to number five on the list," said Roger Dixon, corporate consultant at SRK Consulting South Africa. "The power costs for deep-level gold mines currently in operation are horrendous, with power costs having risen 523% since 2006."

Total energy self-generation is still not an option for any project in South Africa, but mines are increasingly turning to alternative power sources such as solar and hydro to undermine overdependence on Eskom that currently supplies about 90% of power in the country.

"The challenge is that renewable energy sources are still far from being able to accommodate the scale of electricity needed for mining operations," said Henning Opperman, director of audit for energy and natural resources at KPMG. "There are discussions about the power grid becoming more privatized for the benefit of the country, but the challenge is to find the right balance between government control and privatization."

Service providers are also increasingly realizing the necessity to become more energy sustainable. Brelko Conveyor Products, a Johannesburg-based conveyor-spillage control company, implemented a solar panel project in 2017. "This is a three-phase project with the first phase being installing solar panels on our existing building," said general manager Jay Pillay.

"After phase one, we were getting approximately 30% of our electricity from solar panels. We then constructed a new factory where we also installed solar panels as phase two and now operate with about 70% of our electricity coming from the solar panels," he elaborated.

Fortunately, the present ANC policy formulators seem to view renewables as a viable path away from a dated coal-based economy. The question is whether Ramaphosa – in the face of resistance from coal and nuclear lobby groups – has the political will, and space within a fractious ruling party, to blaze a bold new path for Eskom. Meanwhile, regulatory barriers undermine mines' ability to increase self-sufficiency. "Since the last elections, the Energy Department has been merged with the Minerals Resources Department, and there is still regulatory uncertainty," said Lunsche. "Gold Fields wants to invest in a 40 MW solar plant at South Deep, which would take care of 65% of our energy needs at the mine, but the regulations stipulate that anything above 10 MW has to be approved by the minister."

Beyond Gold

While mechanized operations are associated with higher power costs, innovative mining techniques can also offset electricity consumption. London-listed Ironveld, which has a high-purity iron, vanadium and titanium project located on the northern limb of the Bushveld Complex in Limpopo Province, South Africa, initially planned to use what is called the "Highveld" process, which separates the vanadium from the ore while producing a titanium slag. While the Highveld process was once at the cutting edge of metallurgical technology, the company reasoned that – 50 years later – there must be more modern options. Based on existing data from a government-sponsored research facility, Ironveld developed what they call the modern Highveld process, which uses more efficient metallurgical technologies and techniques. Yet, the company needed 300 MW of electricity for its targeted 1 million mt/y iron project, and, in 2015, their request was rejected by Eskom, which could only provide 20 MW.

"Fortunately, we realized that the in-situ ore resource was so good and the contaminants so low, that the actual iron we produced ahead of adding carbon matched the product used to make water atomized iron powders that are utilized extensively in the motor industry," said CEO PJ Cox. "This meant that we suddenly had a viable project at a much smaller scale as these iron powders sell at an excess of US$1,000/mt. We were able to make a titanium slag and a va-

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- Roger Dixon,
Corporate Consultant,
SRK Consulting

There is no listed base-metal production project in South Africa and there is currently only one copper producer and one zinc producer in the country. Orion Minerals will be the country's next copper and zinc producer with the Prieska project being a copper-predominant project.

- Errol Smart, MD and CEO, Orion Minerals

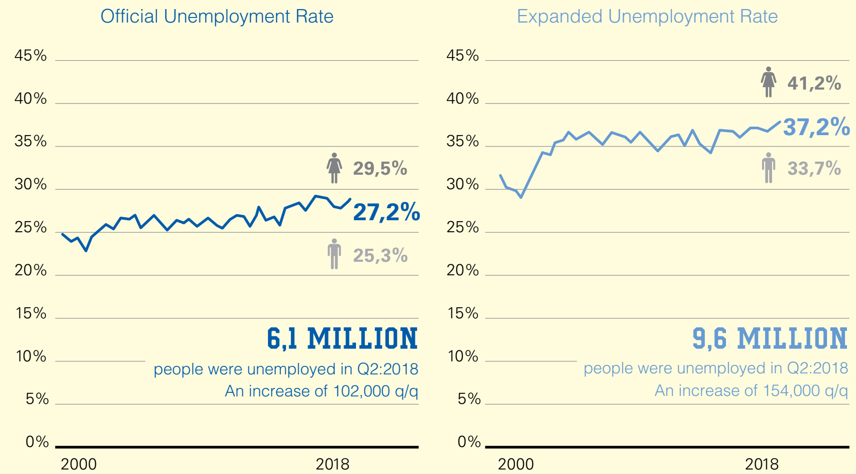
nadium slag that were marketable and a very high-value iron powder."
Ironveld has been granted a 30-year mining license for a resource containing sufficient vanadium to supply to 30% of the world's vanadium requirements for the next three decades.
Meanwhile, ASX and JSE-listed Orion Minerals is advancing its flagship Prieska copper-zinc project in South Africa's Northern Cape Province. Prieska is one of the world's top-30 volcanogenic massive sulphide (VMS) base metal deposits, with a recorded historical production of over 430,000 mt of copper and 1 mt of zinc from 46.8 mt of sulphide ore milled.
"There is no listed base-metal production project in South Africa, and there is currently only one copper producer and one zinc producer in the country," Smart said. "Orion Minerals will be the country's next copper and zinc producer with the Prieska project being a copper- predominant project."
The project will require a capital investment of approximately AU$400 million, including
contingency to build the mine. Orion's funding strategy will be majority debt as the company seeks to take advantage of South Africa's well-developed debt market.
However, South Africa remains highly dependent on its gold, and it is safe to say that the country's gold sector is down for the count – but not counted out yet. If the government can establish stable and predictable mining regulation and resolve the energy crisis and if the country's deep-running gold mines can be mechanized without causing grand-scale job losses, then South Africa's mining industry still stands a chance.

Leveraging Industry 4.0

South Africa's mining sector faces obstacles more daunting than perhaps that of any other country on the continent. Short-term financial sustainability must be aligned with long-term objectives amid soaring labor and energy costs compounded by growing and often conflicting demands from unions, government and shareholders. While the resolution of the country's fraught political situation appears out of sight, and the normalization of electricity rates retains its question mark, the modernization of South Africa's mines must be the priority.
Beyond the practical challenges of successfully optimizing operations, talk of innovation and new technology is always accompanied by the question of job losses. This concern is not unfounded. South Africa's gold-dominant mining sector has always relied on a cheap and largely low-skilled workforce, and more mechanized operations would replace that demand with one for trained operators. While the optimization/job-loss conundrum is ubiquitous, it has been argued that the urgency of South Africa's situation – with the predicted death of gold mining scheduled for 2035 if it continues on its current track – would grant decision makers the right to temporarily disregard the human collateral damage of optimization. After all, mine closures will certainly entail job losses, too. However, champions of this argument tend to neglect another one of South Africa's peculiarities: that economic risk translates to political risk due to the ANC's fraught relationship with its electorate.
In South Africa, balancing employment retention and mechanization thus remains as important, or even more so, than in mining sectors with more stable economies.
"There is a fear that automation will be a driver for higher unemployment rates, which is not necessarily the case," said Matimba Mahange, executive head of mining at Caterpillar equipment distributor Barloworld Equipment. "Introducing automated vehicles and equipment into an operation must not be viewed as negative, but rather as a way to free up employees to do something else within the company where they can be upskilled and empowered."
For modernization to not be a euphemism for job losses, the sector will be forced to accelerate the transfer of skills to local communities.
"Re-education needs will be extensive," said Macfarlane. "We are having as many conversations as we can with organized labor unions and various government departments to demystify the industrial revolution of industry 4.0. The truth of the matter is that nobody really understands what industry 4.0 means and what it is going to do."
For this purpose, Mandela Mining Precinct is collaborating with MEMSA and the Minerals Council to establish a dedicated test mine where local manufacturers' newly developed equipment can be tested and showcased while also providing training to operators. But Macfarlane also stresses the importance of research to develop these technologies.
"We need to reestablish capacity and capability in universities for applied research, which we aim to do through the establishment of centers at the universities that match our programs. The challenge is that the funds that we currently have available are nowhere near the target. Funding has to increase approximately tenfold and increasing investment into research is part of our strategic journey."
R&D will not only increase understanding for the possibilities of Industry 4.0, but also better equip miners to make accurate cost calculations.
"In South Africa, mines are legally required to initially set funds aside for rehabilitation planning," said Dave Capstick, business development manager at global consulting and technology company Deswik. "A study was done on miners' awareness of funds required for rehabilitation, concluding that none of the participants had put away more than 20% of what their liabilities were."
This sentiment was echoed by George Olivier, director at engineering consultancy VBKom: "Approximately a decade ago, the mining industry was very much on its own when competing for capital. Today, the mining industry and projects within the mining industry are competing with all other industries. This puts a significant amount of focus on the financials and returns of the projects. The market has changed, and today techno-economic studies are becoming a focus."
One of the institutions filling the void of university research is national minerals research organization Mintek, which also does research for many private sector funded initiatives.
"Almost all the large mining companies have closed their mining research units," said Leon Krüger, manager for hydrometallurgy. "If someone wants to do metallurgical research, Mintek is about the only place where they can do it. The challenge is that although we have a means to attract talent to our company, the pool of talent is getting smaller."
Despite the lack of research and inadequate skills transfer, there are plenty of service providers and institutions that already offer innovative solutions to the mining industry. These, however, are not always possible to implement within existing operations.

UNEMPLOYMENT RATE

Source: STATS SA



Expanded Definition includes the following:
- Official unemployment (6,1 M)
- Available for work but are/or: Discouraged work seekers (2,9 M) / Have other reasons for not searching (0,6M)

"I do not believe that South Africa lags behind in innovation, and the country has introduced innovations such as electronic ore sorting, resin-in-pulp processes and carbon-in-pulp processes," Krüger said. Rather he believes that tech providers "are fighting a battle of the acceptance of new technologies in the mining industry."
The mining sector is conservative by nature. For example, spending within the global industry on hi-tech solutions was just 1% of revenue in 2015 – five times less than most industries. Compounding that is an amplified skepticism fueled by already daunting unemployment rates.
Another issue is that the development of new technology must be coupled with modernized mine structures.
"In my opinion, the biggest limitation is having the necessary mine infrastructure to support the charging of electric equipment fleets," said Mike Adendorff, CEO of AARD Mining Equipment. "EVs are an exciting development within the mining industry and can produce significant benefits, but the infrastructure to charge EV's has yet to be developed and installed in the African mining industry."
There is no doubt modernized mining techniques can reestablish the profitability of South African gold mining. The country still holds some of the largest reserves in the world. The issue is how to reconcile the necessary changes – including massive investment into research, training and mine infrastructure – against scarce financial resources, pushback from unions and lack of collaboration between the government, mining sector and organizations. If the gold sector's domestic challenges are already discouraging, global factors such as a shift away from coal and China's decreasing steel consumption might deal a future blow to other segments of the mining industry. With each passing day, solutions become less feasible. The way forward is not to dwell on each issue but to realize the urgency of the situation and forcefully drive through change. •

Central & East Africa

We are current playing catch up as developments have occurred very fast, but the nature of opportunities for local communities are changing rapidly. If a mine becomes automated, some jobs will disappear, but other types of jobs will be created. The challenge will be to equip local communities with the skills required to perform these new types of jobs.

- Tom Butler,
CEO,
International Council on Mining and Metals (ICMM)

Image courtesy of Barrick Gold

Introduction to East and Central Africa

With average economic growth of 5.9% in 2019, East Africa is topping the continental chart. Agriculture and industry remain the key drivers of the economy, but governments are increasingly taking steps to better exploit mineral resources to support the future demand of a population predicted to nearly double in the coming three decades. While the majority of East African countries boast economic growth well above the sub-Saharan average – lead by Ethiopia with predicted 8.2% growth in 2019 followed by Rwanda with 7.8% – mining is generally a small contributor to GDP. Border disputes, state fragility and regulatory uncertainty have all undermined the development of the sector.

Up until 2016, Kenya's 75-year-old mining code and outdated geological data had the country missing out on the last commodity boom. The modernized regime of 2016 sparked optimism about a mining industry that was previously limited to only two projects – soda ash and sand – but investors were soon deterred when talks of revision surfaced the following year due to fundamental flaws surrounding tax policy and the securing of land rights. In addition, a recent turn towards resource nationalism in countries across Africa has added to investor uncertainty. It was primarily the large profits made during the commodity boom that brought the imperative of greater benefits for host communities, and stakeholders are still scrambling to resolve how to best establish regulation that is conducive to a specific country's level of development, sector maturity and mineral endowment. There are, however, cases almost universally considered to be useful in their function as cautionary tales. Tanzanian President John Magufuli has run a populist line on the mining sector since his inauguration in 2015, starting with an export ban on unprocessed gold and copper that resulted in a dispute with the nation's largest gold miner, Acacia Mining, which halted operations in 2017 following a hefty US$190 billion tax bill. The following year, a new mining code forced companies to cede a 16% share in assets to the state, which was, in the case of Acacia, confiscated without compensation.

In Central Africa, the DRC also introduced modifications to its mining code in the same year that had investors both sweating and scratching their heads. The main concern for investors was the steep royalty hike as well as the slashing of the stabilization clause from 10 to five years. The code also caused widespread confusion by compelling the use of local subcontractors but failing to clarify which entities should be regarded as a subcontractor. Both Tanzania and the DRC have since been elevated to the top of numerous risk indexes.

Yet, there is compelling evidence that mining will come to play a bigger part in the growth of both the Central and East African region. A possible opposition win in Tanzania's 2020 election could reverse some of the regulation while the mining sector in the DRC has proven robust enough to tackle the challenges of its amended code, which had initially sparked threats of legal action on behalf of numerous major mining companies such as Glencore, Ivanhoe and Randgold. In Rwanda, the government recently established The Rwanda Mines, Petroleum, and Gas Board (RMB) tasked with redesigning the minerals sector into a flywheel for the Nation Strategy for Transformation. The country is already a global leader in 3T minerals production and also holds untapped resources of gold, gemstones and rare earth elements, as well as a broad portfolio of industrial minerals. In Uganda, the government is in the final stages of developing new mining laws aimed at combating environmental destruction, corrupt licensing processes and illicit cross-border gold flows. To further bolster investment, the African Resource Geoscience Initiative – a digital platform making geoscientific data freely available – was launched in 2019 through a public-private partnership between government, industry and commercial organizations under the auspices of the African Union Commission.

Overall economic growth in both regions bolsters the mining sector as both domestic and international infrastructure is extended. Governments have on average allocated roughly a third of their budgets to infrastructure

Image courtesy of ConnexAfrica

projects, with spending in the largest East African economies – Kenya, Tanzania and Ethiopia – expected to increase from US$25.9 billion in 2017 to US$98.8 billion in 2022. Improved infrastructure will be an important contributor to trade as Tanzania and Kenya are vital gateways to their landlocked neighbours in the Lake Victoria Basin region.

Power outages have been a major issue in both regions since the early 2000s, but the finalization of a transmission line between Kenya and Ethiopia has the potential to change the regional electricity game drastically as it opens the opportunity for more extensive future power-sharing. The 1,055-km line, with a 2,000 MW capacity, has been built by China Electric Power Equipment and Technology (CET) and is set for transmission by April 2020. The project is funded by the World Bank, which provided a loan of US$684 million, while the African Development Bank and the French Development Agency are providing US$338 million and US$118 million, respectively.

Predicting the future of these regions by merely looking to growth numbers can be an erroneous exercise; without exception, economic gains have not sufficiently been matched by political and social progress. Poverty levels are stubbornly high, with five of the 10 African countries hosting 70% of the continent's poor located in East Africa. Political instability remains the norm in a number of countries such as the DRC, where between 70 and 120 armed groups operate in the country's North and South Kivu provinces alone and violent uprisings are recurring realities in the cities of Goma and Kinshasa. In the Horn of Africa, the end of a two-decade border conflict between Eritrea and Ethiopia was predicted to usher in a new era of stability and openness. A year on, with the border once again closed and the air filled with uncertainty and suspicion, the euphoria of the Eritrea-Ethiopia peace deal has evaporated. In Somalia, armed conflict and worsening climatic shocks have displaced over a million people while Burundi has been haunted by on-off violent internal conflicts, ethnic tensions and communal fighting ever since independence in 1962.

Although East and Central Africa have miles to go to match the continent's more mature jurisdictions, regulatory regimes keep developing and the mining industry will play a vital role in strengthening intra-regional trade dependency, establishing an increasingly integrated supply chain and developing a regional market for downstream products. With the ongoing formalization of the sector in countries such as Rwanda and Uganda, illicit cross-border trade will hopefully be replaced by regulated trade successively through the inclusion of artisans into the formal economy and transfer of modern mining skills to the local population. •

Democratic Republic of Congo

Population: 84,068,091 (World Bank 2018)
Land area: 2,344,858 sq km
Official language: French
National languages: Kituba (called Kikongo), Lingala, Swahili, Tshiluba
Capital: Kinshasa
Head of Government: Félix Tshisekedi (since 25 January 2019)
GDP (PPP): $78,365,921 (World Bank 2018)
GDP per capita: $561 (World Bank 2018)
Growth rate: 5.8% (World Bank 2018)

Exports: diamonds, copper, gold, cobalt, crude oil, wood products and coffee
Export partners: China($3.26B), Zambia ($1.78B), South Korea ($591M), Italy ($263M) and Indonesia ($235M)
Imports: Packaged medicaments, human or animal blood, refined petroleum, poultry meat, excavation machinery
Import partners: South Africa ($976M), China ($968M), Zambia ($497M), Belgium-Luxembourg ($460M) and India ($204M)

TRANSPARENCY INTERNATIONAL CORRUPTION PERCEPTIONS INDEX

SOURCE: TRANSPARENCY INTERNATIONAL

RANK 2018
20/180

SCORE
161/100

TAXATION RATES

SOURCE: ICLG

CORPORATE INCOME TAX RATE
Notable: new 'super profits' tax introduces 50% tax on profits exceeding 25% of those forecast in the mine feasibility study
30%

ROYALTIES
NON-FERROUS METALS: **3.5%**
PRECIOUS METALS: **3.5%**
PRECIOUS STONES: **6%**

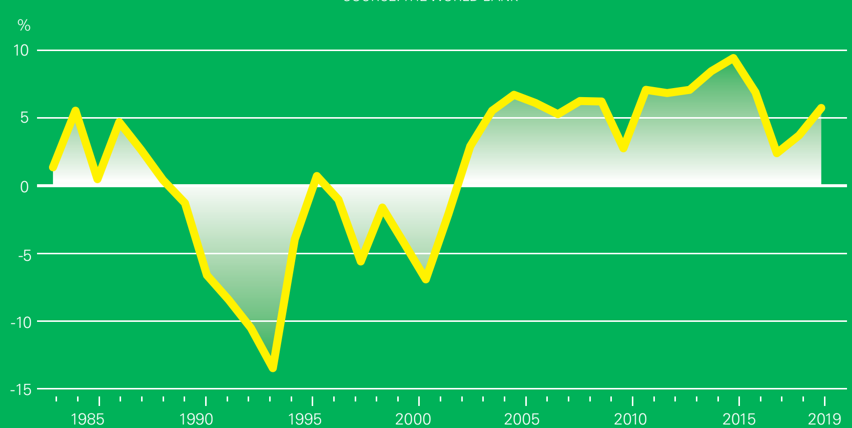
BUSINESS ENVIRONMENT RANKING (1-190)

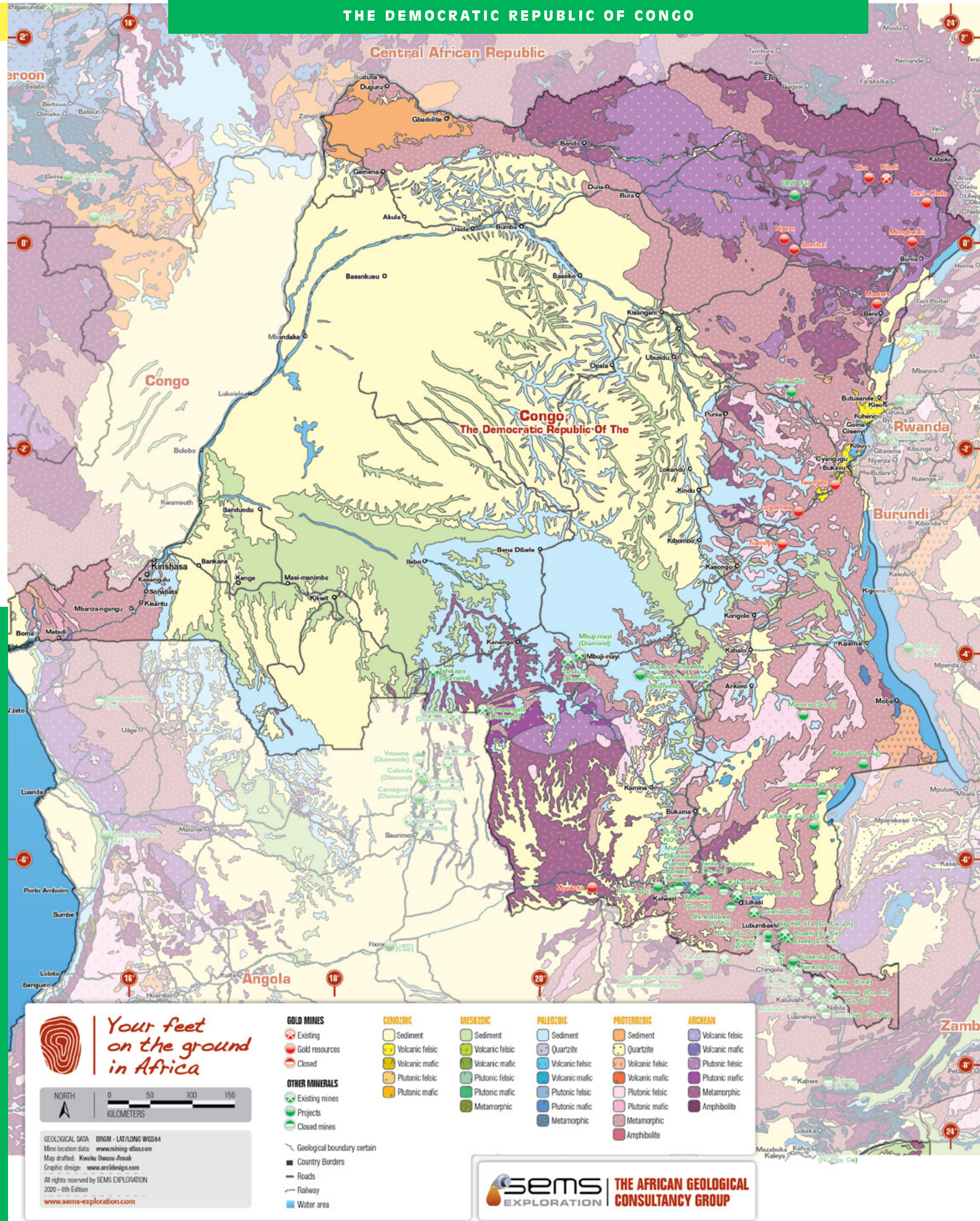
SOURCE: THE WORLD BANK (2020 EDITION)

EASE OF DOING BUSINESS	183
STARTING A BUSINESS	54
DEALING WITH CONSTRUCTION PERMITS	144
GETTING ELECTRICITY	177
REGISTERING PROPERTY	159

GDP (ANNUAL %)

SOURCE: THE WORLD BANK





Joseph Ikoli Yombo Y'Apeke

General Secretary
Ministry of Mines, DRC

In 2018, there were some prominent changes that impacted the mining sector in the DRC – most notably the revisions to the mining code and the election. What is your current mandate with regards to the mining sector?
2018 was a very proactive year for the mining sector in the DRC. In March, we published the revisions to the 2002 mining code, updating the previous code and regulations.
We have four main strategies for the sustainable growth of the sector: dissemination of the new mining code review, which will enable better execution; implementation of the mining code revisions across areas such as mining administration and technical services; effective implementation of the revisions to strengthen performance capacity across the private and public sectors; and finally, promotion of transparency to fight against corruption.

What is your response to companies' reaction to the mining code revisions, and can we expect further revisions at this point?
As with any change, we saw some resistance within the industry at first, but, since the revisions are now the law, companies are adapting to the new state of affairs. The previous mining code was detrimental to the country and did not establish a good balance. The motivation behind the revisions was to counter the unsteadiness in the DRC with a more balanced framework that brings more benefit to the country, the mining industry and also the local community. Now, the new President wants to promote the mining code and clearly communicate the advantages brought by the revisions. There will be no further revisions for the time being. The revised mining code is still attractive and contains many incentives to attract new investment. There were not many changes to the tax system and customs regime, although some of the taxes were increased. The stability clause was reduced from 10 years to five years, which will allow us to see the benefits of mining investment more quickly. There is also the opportunity to review the mining code at more regular intervals to ensure the balance remains fair as the industry progresses. Some of the main focal points of the law include greater stringency in maintaining transparent operations and greater potential penalization for mining operators that do not promote transparency and meet the government's expectations, plus a greater focus on local communities and local development.

What is your view on the DRC's current relationship with China?
The DRC is open to all investors worldwide, and we welcome all investors that will respect our regulations. We would like to have investors from around the world and plan to build stronger relationships with other geographies, such as the United States and Europe. One reason that we see many Chinese investors in the DRC is that they have more capital at this moment in time, and mining is a very capital-intensive industry. Many other countries in the world do not have the same strength in their economies to make the sizeable investments necessary to support a mining operation from exploration through to production.

As the DRC's mining industry develops, what is the government's strategy for the future?
One of the main goals for the government is to encourage more in-country transformation of the resources we produce. We want to process our minerals into finished or semi-finished products in the DRC itself, so we can capture greater value and the associated benefits. For this, we will need to build a processing industry – we are therefore looking for partners to help us reach these goals, and we will create a special economic zone to support this development.

What is your final message to the mining sector, both in the DRC and for international companies that might consider investing in the country?
We are open to investment from any country, and we present an attractive destination for investors around the world – we have peace, stability and a new political leadership that has a mandate to fight against corruption and therefore make the operating environment easier to navigate. We have a lot of minerals, and there are many areas of the DRC that have not yet been explored. There is room for everyone still. Going forward, we will strengthen our geological studies in order to give companies a resource to guide their exploration efforts. •

The Democratic Republic of the Congo

Mining in the DRC: Increasingly a geopolitical game

Halfway into the year of 2019, it appears that the DRC has finally reached the end of a very bumpy road. After a delayed election result, outsider Felix Tshisekedi was finally sworn in as president in January. Despite disputed election results and allegations of a back-room deal between former President Joseph Kabila and Tshisekedi, the country experienced its first election undertaken without widespread violence. For the mining sector, opposition leader and former Exxon Mobil director Martin Fayulu was the preferred choice as anticipated to revise the new mining code signed into law by former President Joseph Kabila. In March, Tshisekedi agreed to form a coalition government with Kabila whose FCC party holds an absolute majority in Parliament. While the union of the two leaders should suspend any hopes of regulatory alterations, it will allow the mining sector to establish a foothold after a long period of tension. Investors are still likely to approach the DRC with a certain degree of trepidation until the dust settles, but the country's mining sector has demonstrated resilience in riding out a long storm of political and regulatory uncertainty, in addition to plummeting commodity prices. Cobalt prices are expected to continue to recover in 2020, and the battery market will keep relying on the DRC as the world's dominant producer of the metal. New projects, such as AVZ Mineral's lithium project in Manono — recently confirmed as the world's largest measured and indicated resource — should blaze a trail for future development in the country. Automation has also made a grand entry into the DRC mining arena in the form of Barrick Gold's highly advanced underground operation — presenting an opportunity for the country's service and equipment sector while bolstering the transfer of crucial skills to the Congolese population.

The perennial characteristics of the DRC as a fragmented and dysfunctional state, however, remain an impediment to the sector's development. The disparity between the DRC's stupendous mineral wealth and the state of the country verges on the absurd, although the term should not be used as to cloak the tragic dimensions of the comic: the country is beset by corruption and poverty – a reality that, as goes for most of the African continent – was engineered by the West. The debate over what the West's role in Africa ought to be today is perhaps one of the most emotion-laden contests of international relations. The many failings and atrocious deeds of Western mining companies throughout the DRC's history are well documented, at the same time, there is a peril in viewing the sector through the prism of the past. With the DRC's history in mind, opting for a protectionist approach is emotionally appealing, but considering the catastrophic examples of anti-foreign tactics, such as the uncontrolled inflation, national debt and massive currency devaluations that resulted from Mugabe's protectionist regime in Zimbabwe, resource nationalism must remain on our list of anxieties. The DRC is in desperate need of foreign capital, both for the purpose of trickle-down profit and for the transfer of skills to the local population. The issue then becomes to attract foreign investment while also managing equitable distribution of wealth between the external private sector and the host country. In that sense, the modifications made to the mining code, although far from striking a balance on every level, might just work to serve all involved parties in the long term by undermining the risk of more drastic changes in the future.

Compounding the high-voltage debate of foreign influence in Africa is now the question of the East. It has been diligently argued that the norms and regulations developed to ensure sustainable practices on behalf of Western companies will not restrain Chinese enterprises which operate under the scrutiny of a more unscrupulous government – putting more ethically oriented companies at a disadvantage. The evidence at hand indicates that whether to label these as warranted or preconceived ideas depends on where you look. As an example, local hiring has been the norm in Chinese factories in Ethiopia, while statistics – to the extent that they exist – suggest a different situation in the DRC. Accordingly, as this report will outline, there are documented cases of human rights abuses in Chinese-operated mines in the DRC but also evidence pointing to increasing sustainable Chinese practices. If nothing else, this should license the cautious conclusion that China is capable of acting both ethically and less so depending on the robustness of the framework within which it operates. Moreover, located between Europe, Asia, and the Americas, Africa is at the center of international trade and, with an expected population of 2.4 billion by 2050 (of whom one billion will be under 18 years old), the continent is bound to eventually become a destination for investors from all corners of the globe. From a minerals perspective, the DRC – a geological aberration even by African standards – could well become the center of this future trade hub. Thus, as foreign investors with different agendas will inevitably turn their eyes to the DRC, the guarantee of ethical practice in the mining sector will ultimately depend on the country's ability to enforce domestic and international laws independently. If the president-elect stays true to his pledge to stamp out corruption and tackle the issue of infrastructure, the DRC will already be much better equipped to consolidate the gains from its mineral wealth. However, following an independence mutilated by subsequent foreign economic and political interference, coupled with the weight of the country's history, what has passed for leadership has so far been unable to solve the DRC's underlying structural issues, and it is unclear how much stock one should put into the nascent coalition government. It is likely that only a collaborative approach between the government, the private sector and the international community will manage to tip the scale towards efficient state building.

Such trilateral efforts have already set to country on a path to taming its unruly business landscape. The signing of the OHADA principles in 2012 provided the country with a framework of modern business laws, while the 2002 mining code was the first to include regulations for sustainable practice. On an international level, a multitude of more narrow-focused organizations, such as the International Council on Mining and Minerals (ICMM), are working towards improving the sustainable practices of mining companies, and mounting international demand for ethical sourcing of minerals has led to the emergence of bodies imposing fair-treatment standards on individual markets, such as the London Bullion Market Association (LBMA) – the standard-setting body for the global wholesale market for precious metals, which has some 150 members across 30 countries. The emergence of increasingly stringent fair-practice standards has also opened the door for the corporate sector to provide tracking and blockchain solutions for the mining industry. While the technology has so far mainly been adopted by the diamond sector – most notably by De Beers that has launched a platform allowing tracking of gemstones throughout the whole value chain – blockchain's presence in the extractive industry is predicted to be near-total within two decades, which will severely undermine the ability of unethical companies to pollute the wellspring. Meanwhile, the Infrastructure-for-Resources deal with China has — even if not to the aspired extent — contributed to the repairing of the nation's war-torn infrastructure.

While the pendulum of history might still be pulling back from the DRC's long civil war, these incremental improvements – although too often overlooked by the international community – are a testament to the upward climb of both the DRC and the mining sector with which it travels in tandem. •

Image courtesy of Congo Equipment

Resource Potential

Unparalleled opportunities in the heart of Africa

The DRC is widely considered the resource-richest country in the world, with vast deposits of copper, cobalt, zinc, iron and uranium in the south, diamonds in the west and gold in the north. The largest mines in the country are situated in the Katanga province from where the majority of the world's cobalt is extracted. While the use of the metal can be traced back as far as 2,600 years ago as cobalt-containing glazes have been found in Ancient Egyptian tombs, the word cobalt was coined a couple of centuries ago by superstitious German miners who feared the deadly fumes arising from the processing of metals like silver and copper. Although the vapors actually came from the arsenic also contained in the ore, the word "kobold," which means goblin, has stuck ever since.

In the DRC, the history of cobalt started in 1914 with the discovery of the world's biggest deposits in the Katanga region. Cobalt is not a particularly rare metal; ranked at 32 in global abundance by the Cobalt Institute, it can be found in the soil, in mineral deposits and even in crusts on the seafloor. However, the metal is always combined with other elements like nickel, copper, iron or arsenic, and it is primarily extracted as byproduct of mining for other metals —especially nickel and copper. Cobalt in the Katanga region is especially attractive as centuries of copper mining have left significant resources in easily exploited old mine tailings and workings.

Mining companies are, however, scrambling to find cobalt elsewhere. In 2018, production and processing company Lithium Australia announced discovered cobalt mineralization at mines in Eichigt, Germany; Perth-based Europan Cobalt is exploring for cobalt at two sites in Slovakia and one in Finland; Hatsola-based FinnCobalt is looking to extract cobalt from the Hautalampi cobalt, nickel and copper mine in Finland while Canadian Boreal Metals is also looking to Scandinavia for cobalt extraction. Despite this, Benchmark Mineral Intelligence has estimated that global cobalt supply coming from the DRC is set to go up from 66% in 2017 to 73% by 2023.

The sheer size of the deposits in the DRC, and with massive projects like those of Glencore and Eurasian Resources Group, these mostly early-stage projects in Europe – in addition to a number of impending operations in Canada and Australia – are likely to pale in comparison. In addition, Katanga still holds some of the world's highest-grade copper deposits, many of which are estimated to have an average ore grade of over 3%, far higher than the global average of between

> The range of minerals found in the DRC can be compared to the mineral wealth of Russia. Cobalt, copper, lead, tin, lithium and other commodities such as gold, uranium, industrial minerals, rare earths, limestone, gravel aggregate as well as additional need for the construction industry can all be found in the DRC.
>
> **- Tobias Posel, Director, GeoQuest**

0.6% and 0.8%, and some as high as 5%. The source of the cobalt-copper riches is the Central African Copperbelt, which straddles the border between Zambia and the DRC. Following the DRC's independence in 1960, the existing mines in the Copperbelt region were nationalized, but minimal scientific work was conducted in the following decades. It was not until the country opened up for international mining companies in the late 1990s and early 2000s that the Copperbelt was studied. "From a geological perspective, the Copperbelt has the following composition: There is one central elevated area with steep sides to the north and the south, which is located north of the Zambian Copperbelt," said Tobias Posel, director of consultancy and contracting company GeoQuest. "This belt hosts mineralized deposits, mainly copper-cobalt as a stratiform unit, with associated manganese that companies do not necessarily want, as well as iron that is not economical to mine. There are also contaminants such as cadmium and uranium that exploration companies struggle to separate from the copper." Yet, by Posel's estimate some 50% of the Copperbelt remains unexplored, the result of low levels of exploration work coupled with the high exploration expenses brought on by the lack of organized historical data. However, a combination of corporate and governmental efforts to map out more of the country's resource potential will contribute to more exploration work in the future. The government has launched a World Bank-funded program to digitally capture some of the country's geology while mining and exploration companies are using increasingly advanced techniques to identify potential resources. "Modern exploration techniques such as airborne magnetic and electromagnetic surveys are an easy and a very successful method to make discoveries," said Peter Ruxton, principal at Tembo Capital Management. "Artificial intelligence systems are now being used to identify key fingerprints that you can then match against your existing database to aid discovery." In addition, advances in mining technology will increasingly enable beneficiation of byproducts of the target metal, such as uranium and manganese, opening new markets for the DRC's largely untapped resources.

In addition, technological innovation has the ability to bolster profits and undermine human rights violations in the DRC's gold industry. Companies are increasingly investing in blockchain and other tracking technology to ensure ethical sourcing of commodities. For example, the Kampene Gold Pilot – which is part of a German-Congolese technical cooperation project – is an ongoing initiative aimed at ensuring legal gold supply chains in the northeast of the DRC. Eastern DRC is home to an estimated 200,000 artisanal gold miners who work across approximately 1,000 mine sites. While the country's annual artisanal gold production is estimated at between 10 mt and 20 mt, the vast majority of the commodity is smuggled across the border to Rwanda, Uganda and Burundi. The pilot initiative – focused on artisanal production sites around Kampene town in the Maniema province – uses GPS-backed electronic registration of individual gold supply chain participants and transactions, with automatic transmission to an online database.

More than anything, the unlocking of the DRC's full resource potential will, for the foreseeable future, depend on the ability of government and the corporate and international communities' ability to create an attractive business environment in the country. •

> An advantage of being able to take on smaller projects is the ability to build the capacity of local engineers. We operate small projects with only local employees and if they perform well, we will promote them to work on bigger projects. When an expat is employed, we tell them that the best way of keeping his job is to up-skill and train locals.
>
> **- Samuel Opare, Managing Director, NB Mining**

Doing Business in DRC

Questions about the controversial new mining code persist

After a century of Western oppression followed by the most broadly-encompassing civil and interstate war in African history, it should come as little surprise that the DRC is not yet a functioning democracy. The nation is rife with corruption, poverty and failing infrastructure. However, it also holds half the world's cobalt and vast copper deposits, in addition to some 1,100 other mineral resources as estimated by the World Bank. The tremendous mineral wealth of the DRC has kept the operations of mining powerhouses such as MMG and TFM running despite the challenging environment, but few new players have entered the market in recent years. For investors, the situation is a high-risk, high-reward dilemma in which the feasibility of doing business in the DRC constantly hangs in the balance. The latest potential tipper of the scale is the new mining code.

Regulation

The new mining code is the result of a turbulent legislative saga. Following popular demand for reform, the previous mining code was introduced in 2002 with the objective of invigorating the mining sector in the aftermath of a long civil war. The law – offering universally applicable tax rates, a first-come, first-served licensing system and a stabilization clause guaranteeing 10 years of maintained provision after permitting – achieved its goal of attracting foreign investors and the ramping up of cobalt and copper production. However, the real gains of the Congolese people were difficult to detect, leading to the initiation of a reform process in 2012 that would aim to allow the DRC to capture a bigger slice of the pie. In 2015, the suggested changes were submitted to parliament, but the process was suspended due to crashing commodity prices. After a lengthy reform process, marked by predictable deadlocks between the government and mining companies, former President Joseph Kabila finally signed the modifications into law in March 2018.

The major mining houses were concerned less over the profit tax provisions as they were by the steep royalty hike as well as the slashing of the stabilization clause from 10 to five years. "The amendments to the stabilization clause frustrated many of the big companies as the 10-year stability clause had formed the basis of many investment decisions in the country," said Louison Kiyombo, partner at global auditing firm KPMG. "This period of stability resulted in over US$10 billion in direct investments by the mining industry and created some 20,000 full-time jobs."

While sudden regulatory changes will always cause a certain outcry from the mining sector, the DRC mining code was bound for change as the previous version was tailored to the country's immediate post-civil war situation. Today, as the near-laissez faire regulation of the previous mining regime has served its purpose, there are likely long-term benefits for not only the country, but also the mining sector in granting the DRC a more generous chunk of the profits. "Often, resource nationalism is driven by a combination of lack of state revenue and government perception that the country is not obtaining a fair share of resource rents ," said Peter Leon, global co-chair Africa at London-based law firm Herbert Smith Freehills. "When commodity prices increase, a significant number of African countries do not have the mechanisms to benefit as long term concession agreements often contain fiscal stabilization provisions. Resource nationalism is cyclical as much as it is contagious."

In a country like the DRC, where some two thirds of the population live below the poverty line, popular discontent can rapidly degenerate into dissent and force the leadership towards extreme legislative measures. Thus, Kabila's triumph in the government-industry showdown might just work to undermine the risk of more drastic future changes, such as the recent protectionist regulation enacted in Tanzania. Moreover, the new regime does not position the DRC as a regulative outlier. Both Ghana and Cameroon collect the same 35% profit tax, and neighbors such as Zambia, Tanzania and Ghana impose copper royalty taxes within the same range. A more controversial part of the mining code, however, is the subcontracting law. Entered into force in March 2017 with a one-year transitional period, the law establishes incompletely – and rather confusingly – that subcontractors must be Congolese and owned by Congolese shareholders. The confusion is born of the inadequate specification of "subcontractor," which in French – "sous-traitance" – is used generically for all contractors rather than just "subcontractors," which would otherwise be interpreted as a contractor hired by another contractor. Whether this is true in a Congolese context is yet to be explained by the government that has limited the definition to "a service contract, consensual, onerous and written." The law, meant to "promote small and medium-sized enterprises (SMEs) with Congolese capital, to protect the national labor force," is commonly accepted – although without certainty – to compel majority Congolese ownership of contracting firms.

Definitional issues aside, the legislation brings both possibilities and potential issues, the chief ones encapsulated by Samuel Opare, managing director at mining contractor NB Mining Africa, who stated: "The new subcontracting law will create additional capacity for local companies which have lacked sufficient capital to take on projects. As a consequence of the new law, these companies can now find a foreign partner willing to fund a project while they act as a local partner to meet legal requirements." He continued to explain that there is a risk of the local owner does not contribute in other ways than ensuring requirements are met on paper. Therefore, Opare suggests, "the new laws should be coupled with government financial support to local companies which would allow them to level with foreign competition."

Weighing in on the issue, Freddy Kitoko Nyembo, chairman at sustainable investment platform Investissement Du-

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Olivier Duterme

Regional Director
Banque Commerciale du Congo (BCDC)

Can you please provide a brief overview of BCDC and some recent company milestones?
BCDC has existed for 110 years and is likely the oldest company in the DRC. We are also the second largest bank in the country measured by balance sheet. The bank is jointly owned by a Belgian family owned group having been active in Congo for almost 100 years now and the Congolese state. Historically, the bank has been very active within the corporate sector. Retail banking is something quite new in the DRC as banks only started to develop a strategic approach to retail clients in 2011. Today, we have a significant foothold in the retail sector which does not only encompass individuals but small to mid-size companies as well. Yet, the majority of the DRC population does not have bank accounts and banking in the DRC has a long way to go.
One of the main challenges for the domestic banks is stable funding and therefore the diversification into the retail sector was necessary. Although it is improving, the sources of funding in the country are scarce and highly volatile. At this stage, it is still difficult for us to provide long-term credit to clients. This is why it is essential for us to develop all the possible sources of funding.

With regards to BCDC's earnings, the company has been performing well, even when the economy was not at its best. What is BCDC's strategy?
BCDC's continuous good performance is due to a key feature of the bank – very tight risk management. We consider ourselves as prudent and we never forget that our deposits are not our money but the money of our clients. Both our credit risk management and operational risk management are central and we do our best to prevent accidents and exceptional events with potential to harm the bank.

What is BCDC's role in the mining industry?
Mining is crucial to the DRC's economy. Traditionally, our clients are the major players within the mining industry but we also address small to medium-sized companies as well as contractors. We are always looking for new mining clients with the only criteria of them being registered.

What is BCDC's perception of the new mining code's effect on the sector?
The new legislation proved to be a real challenge to some of the mining companies operating in the DRC. What we can do as a bank is to educate and assist clients in adapting to the new code. Banks are not only a financial provider to clients, but rather a partner as we work hand in hand.

Digital banking is growing in emerging economies. What is the importance of digital tools for BCDC and what are some recent digital developments?
Digital banking is not as advanced in the DRC compared to western countries, especially because of the absence of a real digital payment ecosystem so far. Currently, we have tools such as phone banking, home banking and computer banking. In terms of the retail sector, banks in the DRC have developed good solutions for phone banking to provide clients with an easy way to communicate. From our corporate clients, there is increasing demand for efficient, safe and practical online banking solutions and we are adapting to these changes. Another field where digital banking is becoming more important is in trade finance reporting. We utilize tools, some even set up by authorities, to digitally report activities.

Is there any collaborative approach to funding major mining operations in the DRC?
The banking sector should increase collaboration to better their capacity for funding major projects. Some banks are active with financing programs with international banks, but there is still a significant amount of room for improvement.

What is the most crucial element for the country's financial growth?
One of the greatest challenges in the region is the diversification of the economy. There is still great potential in terms of mining developments, but the country needs to diversify to grow its economy and spread risk. •

The amendments to the stabilization clause frustrated many of the big companies as the 10-year stability clause had formed the basis of many investment decisions in the country. This period of stability resulted in over US$10 billion in direct investments by the mining industry and created some 20,000 full-time jobs.

- Louison Kiyombo, Partner, KPMG

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rable au Katanga (IDAK), described the issue as bilateral, where many Congolese citizens are willing to take a backseat while collecting profit, and many expat companies are willing to exploit the situation. "For the law not to be rendered futile, we need proper enforcement mechanisms where companies claiming to follow the subcontracting laws are scrutinized by independent inspectors," Nyembo said.

In addition, Djo Moupondo, CEO at human resource management firm Sodeico, said that while he believes the regulation could significantly benefit the development of the country, the transition period of one year is too short: "The issue primarily lies with the difficulty to acquire skilled technical labor in the DRC. Companies are now using local providers to be on the good side of the law, but these local providers often lack the appropriate expertise, which undermines safety in the mines. If the government implemented an adequate transition period, there would have been the possibility for the necessary transfer of skills and to form partnerships."

In the absence of clarification of the law, the Congolese may simply perceive subcontracting as a too complex and rigid process that would render the law counterproductive. However, should the regulation be adequately explained and properly enforced, it could benefit both the Congolese population and international mining companies as it would produce local expertise in the long term.

As the dust settles after the mining code scuffle, mining companies – some that initially threatened legal action against the government – have no better alternative other than to conform to the new legislation if they wish to continue their operations. In an act of strategic muscle flexing, former President Kabila invited leaders of major mining houses to discuss the bill, after which he immediately declared nothing in the code was subject to change. While mining companies could still challenge the decision in court, lengthy legal processes are likely to render them disinclined to such decisions. Perhaps more importantly, companies' decisions to stay operational will always depend on profitability. Considering the mining code largely conforms to regional standards, while the more immoderate aspects such as the 50% super tax are offset by the high quality of the country's mineral deposits, the likely outcome for the foreseeable future is business as usual.

Finance

The lack of depth in the financial sector is a perpetual headwind to the country's sustainable and diversified growth. The DRC, a nation that spans the equivalent of two thirds of Western Europe, has less than 20 licensed banks, lacks a domestic stock exchange and, with a mere US$5 billion in aggregate bank assets, could not fund a major mining operation. "Although it is improving, the sources of funding in the country are scarce and highly volatile," said Olivier Duterme, regional director at Banque Commercial du Congo (BCDC). "At this stage, it is still difficult for us to provide long-term credit to clients, which is a necessity for the economy to grow."

The lack of credit capacity is partly linked to the country's tattered road and power infrastructure that makes opening a bank a costly affair. Without ATMs, local branch offices and cash delivery – all dependent on reliable road and power access – the number of bank account holders is unlikely to climb considerably higher than the current 7% of the population. To increase the domestic bank capacity, the DRC needs more international investment as well as greater popular participation in the banking sector. However, investments over the last years have been scarce, and from a mining perspective, as pointed out by Gaëtan Munkeni, regional director of First Bank Nigeria (FBN): "The growth you see at production level is contributed by the same players that have been in the market for years […]."

"The overall growth is further undermined by the size of the informal market that constitutes approximately 65% of the national economy," added Yannick Ngandu, regional director of TMB.

The result of the weak banking system is higher national banking costs as payments in U.S. dollars are done through American banks for a commission. Accordingly, much of the overall urban economy uses U.S. dollars as its default currency, which brings exorbitant costs for withdrawals.

With bank assets to GDP sitting at 7% – one of the lowest numbers in the world – domestic banks are forced to think outside the box and look beyond the corporate sector to grow their capacity, which is why BCDC and FBN alike have turned their eyes to the country's growing retail sector. "Retail banking is something quite new in the DRC, as banks only started to develop a strategic approach to retail clients in 2011," Duterme said. "Today, we have a significant foothold in the retail sector that does not only encompass individuals but small to mid-size companies as well."

Despite the majority of the DRC's population still living below the poverty line, the increase in ATM usage since the first installation a little over a decade ago is a testament to the population's growing purchasing power. According to the World Bank, the DRC had 0.1 ATMs per 100,000 adults in 2009, which increased to 1.31 ATMs per 100,000 adults in 2015.

Munkeni elaborated on FBN's strategy to serve the retail market, stating: "We need to increase our transactional banking and microloan volumes. The banking industry is moving towards the digitization of transactions, which includes cards, ATM's, mobile banking apps, internet banking and various loan products designed for specific sectors of the retail market such as students, workers etc."

Many companies have an aspiration to go public at some stage, and a part of that process is working out the right entry point. Considerations include at what stage they need capital, readiness for public markets, when they will be best received by investors in order to achieve the optimal valuation and the broadest investor attention. Our model is to provide early- stage guidance on some of these matters and help them think through the resources they would need to achieve a London listing.

- Tom Attenborough, Head of International Business Development, Primary Markets London Stock Exchange

In the last few years, internet banking has caught up with the DRC's telecommunication boom, which is likely to keep accelerating after the government's decision in 2018 to grant 4G licenses. While the country's telecom penetration remains low even by African standards, the DRC's 79 million inhabitants hold 48 million SIM cards, according to the mobile operator association GSMA, which leaves plenty of room for operators to follow the entry of major players like Orange and Vodacom. Thus, mobile banking, which has steadily grown since the government's decision in late 2011 to pay civil servants through banks, will help to overcome problems of poor infrastructure and a dual currency regime by extending saving and payment alternatives to rural and urban-peripheral areas. Domestic banks across the board are investing in mobile platforms, such as TMB's Pepele Mobile that was launched in 2015 and has since become one of the most popular banking tools in the country available on all platforms and in five languages. "The service is powered by cutting-edge, fully secure technology, and customers can complete a range of banking activities such as withdrawing cash, making deposits and transferring funds, as well as making payments in shops, restaurants and other commercial establishments," Ngandu said.

However, while digitalization of the economy will pave the way for improved personal savings and increased credit access in the long term, mining companies will, for the foreseeable future, have to look to overseas funding options such as raising capital on foreign exchanges with strong connections to Africa. "The London Stock Exchange has more than 110 African companies listed in London representing a US$200 billion total market capitalisation," said Tom Attenborough, head of international business development primary markets at London Stock Exchange. "In terms of market cap, this puts us second only to Johannesburg in terms of African securities."

Some companies turn to private equity firms such as London-based Tembo Capital Management, which focuses on supporting junior and mid-tier mining companies in emerging markets. "Tembo is a private equity mining firm with a 10-year tenure, with a potential two-year extension, which allows us to hold investments for a longer period," said Tembo principal Peter Ruxton.

While most short-term investors such as unit trusts or pension funds prefer to be involved in a selected part of a project's development cycle, typically looking for investment returns of 8-10% per annum plus, Tembo aims to make multiple times its initial investment over a three to five-year period or longer. "We support companies from as early as the initial pre-production stage, including pre-feasibility studies, basic engineering and geological work, to construction of a cash-generating mining project," he continued.

Another available finance option is to turn to banks with backing from larger international groups. "After reconsider-

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> The issue primarily lies with the difficulty to acquire skilled technical labor in the DRC. Companies are now using local providers to be on the good side of the law, but these local providers often lack the appropriate expertise, which undermines safety in the mines.
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> - Djo Moupondo, CEO, Sodeico

Mark Bristow

CEO
Barrick Gold Corporation

Following the recent merger between Randgold and Barrick Gold Corporation, what is the strategy of the new entity, particularly with regard to Africa?

We want to be the most valued gold business in the industry, with a focus on discovery, developing and operating Tier One or Tier Two assets for the benefit not only of our shareholders, but all our stakeholders. This strategy is based on three legs: having the best assets, the best management teams and the best re-turns, which is a product of the first two factors. Soon after the merger, we con-cluded the Nevada Gold Mines joint venture, a combination of the Newmont Goldcorp and Barrick assets in Nevada.

In terms of mine operations, will Randgold's contract miner-led model be mi-grated to Barrick's assets or vice versa?

Randgold's assets have migrated to owner mining on the underground mines, although we continue to work with contractors on the open pit mines. In fact, Kibali is one of the leading automated mining operations in the portfolio – the bottom end of the mine and the entire ore-handling system, including hoisting, is fully automated, and operated from surface. We are now transitioning into hav-ing one operator mining multiple levels in the mine. This has been an amazing success and opens up our workforce to women as operators. We have proved that it is not necessary to be in a highly developed country to introduce these technologies.

The introduction of DRC's new mining code received a negative response from mining companies operating in the country. With the new government elected in December 2018, do you expect a degree of flexibility or possibility of bilateral agreements?

A new government generally brings new rules, and the new President spoke re-cently in Washington about attracting investment. His supporting advisory team is very pro-business. The DRC has a long way to go and there is an understanding that some of the amendments to the mining code have been damaging. The DRC's mining industry has constantly been tied up by the restating and changing of fiscal legislation.

Doing business in the DRC is costly. Its infrastructure is not well developed and needs to be made more attractive to investors. The 2002 Mining Code worked well as it shared the net economics roughly 50/50 between investors and gov-ernment and allowed government to participate in fast-moving revenue growth and at the same time did not kill projects. The 2018 Mining Code is still far from striking a good balance. We are committed to continue to engage on improving the legislation as well as seeking new investment opportunities in the DRC.

What is your view on the benefit and sustainability of Chinese investment into DRC and across Africa?

There are big, responsible Chinese resource companies that we work with shoul-der to shoulder in the DRC. These are real, long-term, committed investors that are clear about returns and valuation, and want to participate alongside the gov-ernment in the value they create just as we do. At the same time, there are some that are more entrepreneurial in their approach to business at the expense of a significant spectrum of stakeholders. This approach, however, is of course not limited to Chinese companies.

There is a natural partnership to be had between the emerging Asian world and the Western capital base and the DRC is a perfect destination for that. The DRC is the axis of the future Africa in many ways – it is central, it is endowed with a large array of natural resources and has the potential to be the energy flywheel of the African continent, with hard working and entrepreneurial people.

How do you expect the mining industry as a whole to evolve with respect to large mergers like the recent transaction between Randgold and Barrick?

Niche investors are becoming scarce; investing mechanisms are much more global and significantly larger than they were 10 years ago. Consolidation needs to continue at different levels and we as an industry need to ensure that we re-main relevant and offer investors the opportunity to reap rewards. Even with the price adjustment in 2012, gold has outperformed all other metals in that period and as the equity component of that industry, we have not done a good job in transferring that strong gold price into a higher return for our investors. •

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ation, we decided to pull out of personal banking less than a year ago, closing the Goma and Matadi branches, and giving our full attention to corporate clients, which are primarily MNCs and their core value chain," said Serge Bilambo, head of mining and metals at Standard Bank DRC.

As part of the larger Standard Bank Group, the bank is able to support larger investments for clients in individual countries. "From a regulatory perspective, we have to consider the single obligor limit which is the maximum that we, as a legal entity, are permitted to credit to any single customer," Bilambo said. "This is limiting the capacity of banks in the DRC to fund larger investments, but as part of Standard Bank Group, we can lend much higher sums with a risk participation from the Group."

Thus, funding options are available for quality projects in the DRC, but the high-risk environment brings a selectivity to foreign investors, which undermines chances of additional tier-one discoveries as well as the necessary diversification of the economy. As juniors struggle to raise enough capital to turn their discoveries into a mine, South Africa-headquartered African Mining and Crushing (AMC) saw an opportunity to assist juniors with limited access to capital to de-risk their profiles.

"Upon reflection on the last 10 years, a considerable portion of our work involved assisting clients with designing plants to help get their mining operations started with much lower capex and far lower opex costs," said marketing director Trevor Garden. AMC realized it was filling a market gap Fand decided to start a new company, Evolve Mining of which Garden is managing director.

"Evolve Mining has developed great strategic partners from geologists to metallurgists and together we use conventional and innovative alternative mining methods and build mining process plants. Through AMC we guarantee these mining methods and process plants at a guaranteed cost per tonne."

Image courtesy of Congo Equipment

Provincial governments are also tackling the issue by pushing for alternative investment opportunities in their respective regions, with agriculture and tourism earmarked as the key sectors in the Copperbelt region. The cost of eggs, milk and chicken in urban areas of the DRC is almost double that of neighboring countries. Bringing down retail prices by investing in agriculture will considerably ramp up consumption and spread risk to areas outside of mining.

In addition, the liberalization of the formerly state-controlled insurance sector in 2017 could work to slash interest rates for domestic loans and strengthen the national market.

On the corporate side, domestic banks have discussed a collaborative approach to increase credit capacity. "If the economy and corporate banking sector continues to grow at the current pace, we will have to collaborate to satisfy market needs," said Munkeni.

This sentiment was echoed by Duterme: "The banking sector should increase collaboration to better their capacity for funding major projects. Some banks are active with financing programs with international banks, but there is still a significant amount of room for improvement." •

> Today the main issue in the DRC is lack of infrastructure. Operating a business in the DRC costs a substantial amount of money due to power shortages and lack of road access. A second issue is the size of the informal market that constitutes approximately 65% of the national economy. The digital evolution of the banking sector in the DRC is crucial for increasing the numberof clients which in turn makes banking more affordable for everyone.
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> **- Yannick Mbiye, Regional Director, TMB**

EDITORIAL

The Chinese Power Grab

Tracking the complicated evolution of Sino-Congolese relations

Although Sino-Congolese relations dates back to the mid-1960s when the Chinese Communist Party encouraged and offered support in the Congolese struggle against capitalism and American imperialism, China's more palpable influence was marked by the 2008 infrastructure-for-minerals deal that attributed mining rights to China in exchange for substantial investment into the DRC's war-torn infrastructure. In late 2007, a joint venture was set up to execute the terms of the agreement. It was named Sino Congolaise des Mines (Sicomines) and established with a Chinese majority shareholding of 68%. The Chinese US$6-billion investment was to be evenly divided between mining projects and the development of roads, railways, schools, hospitals and dams. While the publication of the deal, which was initially cloaked in secrecy and brought outcries from Western media and NGOs alike, raising the red flag of neo-imperialism and exploitation, it is easy to understand the Congolese government's perception of China as an appealing trade partner. China has a perhaps unparalleled track record of rapid modernization, a process perfectly aligned with then-President Joseph Kabila's model of "La Modernité." Adding to the appeal was the absence of the ideological motivation that scarred the country during the United States' involvement, as well as the permanent memory of the purely exploitive quest of King Leopold, eloquently described by author Joseph Conrad as the "vilest scramble for loot that ever disfigured the history of human conscience […]". Thus, the framing was, as expressed by the Chinese government, a mutually beneficial relationship, absent of political conditionality where China would get access to the much needed minerals to supply its energy products, and the DRC would benefit from the building and repairing of its shattered infrastructure as well as the elevation of its productive capacity.

While the DRC's estimated US$24-billion worth of minerals should in theory enable the country to replicate China's economic miracle, the deal, confidently labeled at the time of its signing as "the deal of the century," has not yet lived up to expectations. Under the agreement, China will receive 10 million mt of copper and 600,000 mt of cobalt at an estimated value of US$50 billion over a 25-year period. In 2016, domestic sources estimated that US$1.2 billion had been spent on infrastructure and mining credits combined.

In addition to the conspicuous disparity between the financial gains of the two parties, the projected positive impact of the deal rested on the false assumption that the DRC would have the ability to consolidate the Chinese investment efficiently. However, as the deal was purely framed in financial terms and omitted any guarantee of the actual benefit of the Congolese population, delays and unexpected costs due to tattered infrastructure and political volatility undermined the fairness of an already skewed agreement. This was further fueled by the neglect of good practice criteria when quality control was assigned to the same Chinese companies responsible for execution; the China Railway Engineering Company (CREC) and Sinohydro, which led to inadequate studies of environmental and social impact. Chinese contribution to infrastructure was also agreed to be considered a debt until equal financial mining gains were made; thus the deal won tax exemption until infrastructure and mining loans were fully repaid. With a fair wind from politics and commodity prices, it is forecasted that revenues from the mining projects will cover the full infrastructure loans by 2026, or by a more pessimistic estimate, eight years later.

Yet, while certain aspects of the Sicomines deal could have been modified to better benefit the DRC, much of the blame for the so far suboptimal outcome lands at the feet of the country's poor institutions and lack of infrastructure – a reality that would have negatively impacted any deal that could have replaced the one with China. In addition, as expressed by Mark Bristow, "There is a natural partnership to be had between the emerging Asian world and the Western capital base and the DRC is a perfect destination for that.The DRC is the axis of the future Africa in many ways – it is central, it is endowed with a large array natural resources and has the potential to be the energy flywheel of the African continent, with hard working and entrepreneurial people."

Undoubtedly, the Sicomines deal has stimulated the entry of Chinese investors into the Congolese mining sector, injecting capital into the economy and providing much-needed work for the region's millions of mostly impoverished residents. In 2013, six years after the signing of the deal, as many as 15 out of 143 firms reporting to the Extractive Industries Transparency Initiative (EITI) were Chinese; copper production increased from 200,000 mt/y in 2007 to

Image courtesy of Forrest Group

1.2 million mt/y in 2018, while cobalt production increased from 30,000 to 90,000 mt/y over the same period. Due to this development, the DRC's macroeconomic performance has improved drastically, with total world trade balance in goods evolving from a deficit of US$783 million in 2007 to a surplus of US$208 million in 2017.

Thus, alluding to King Leopold-style imperialism as practiced ad naseum in Western media is a simplified narrative offering little guidance in determining China's potential role as a valuable strategic partner in building a better future for the DRC. The most valid part of skeptical analysis is perhaps DRC's growing dependence on China. Already in 2010, 80% of mineral processing plants in Katanga Province were owned by Chinese companies, and 90% of minerals extracted from Katanga mines were exported to China – the country's main trade partner that received a total of 26% of exports in 2018. Considering the dysfunctionality of the Congolese state, an asymmetrical power relationship will, however, be the basis of any larger trade arrangement with the eventual potential to lift the DRC out of its historic role as a source of cheap resources serving the narrow interest of foreign capital.

Another critique, the basis of which is harder to validate, is concerning Chinese ethical conduct in the DRC's extractive sector. Some evidence suggests that Chinese influence in the DRC has reversed a positive trend. While Congolese mining practices have been in a positive trajectory since the end of the civil war, the Lubumbashi-based NGO Premicongo released a report in November 2018 documenting environmental and socially unscrupulous conduct by China Non-ferrous Metal Mining Corporation Huachin, which operates in Mabende in the Haut-Katanga region. The report lists issues such as deforestation, land pollution by wastewater, contamination of drinking water and restricted movement of the local population. Similarly, a 2017 Amnesty report documented children and adults mining cobalt in narrow man-made tunnels at DRC mine sites linked to the Chinese processing company Huayou Cobalt. The report assesses the progress that Huayou Cobalt and 28 companies potentially linked to it have made since the risk of child labor was revealed to them in January 2016, concluding that none of the companies named in the report are taking adequate action to comply with international standards.

On the flipside, there are indicators of China making advances in responsible sourcing and production across several areas. The China Chamber of Commerce of Metals Minerals and Chemicals Importers and Exporters (CCCMC) launched the Chinese Due Diligence Guidelines for Responsible Mineral Supply Chains in 2015 and was instrumental in launching the Responsible Cobalt Initiative (RCI) in 2016. According to RCS Global, an increasing number of Chinese producers and processors are also striving to bring company practices in line with international standards.

In the absence of adequate data offering a holistic understanding of Chinese conduct in the DRC, the only resort at hand is the vague speculation that the China story is nuanced. Moreover, if granted the same international scrutiny attributed to Chinese operators in the wake of the mammoth trade deal, the conduct

of non-Chinese companies would likely be subject to the same muddy assessment of being a "mixed bag." As stated by Bristow: "There are big, responsible Chinese resource companies that we work with shoulder to shoulder in the DRC. These are real, long-term, committed investors that are clear about returns and valuation,and want to participate alongside the government in the value they create just as we do." He continued, "At the same time, there are some that are more entrepreneurial in their approach to business at the expense of a significant spectrum of stakeholders. This approach, however, is of course not limited to Chinese companies."

The sentiment is echoed by Stephane Goupil, country manager at Epiroc.

"It is very difficult to make a generalization on the Chinese business attitude in Africa since there are as many approaches as there are management teams. In terms of the approach towards operational efficiency and lowering costs, there are very focused and proactive Chinese companies that care about the overall cost of the operations, and equally others that only have a short-term vision and care more about the immediate cost and advantages."

The controversy continues down the supply chain, with equipment providers losing a share of the market to Chinese brands. According to Amaury Lescaux, managing director at Lubumbashi-based equipment provider Service Machinery and Trucks (SMT), "The industry has traditionally demanded two things; firstly, construction equipment and trucks with common components; and secondly, reliable production machines adapted to the heavy-duty usage of the sector," He continued, "In the heavy duty range of mining equipment, the situation still remains the same but we do see a shift where mining companies and contractors would choose Chinese-made equipment for utility work and similar."

Meanwhile, Patrick Thema, CEO of Groupe Thema that supplies trucks for Chinese company Sinotruk, sees Chinese machines as a way of benefiting the DRC by providing cheaper options at an increasing quality. "Our objective in the extractive industry is to spread the use of Chinese trucks that traditionally have been a secondary choice after European and American brands," Thema said. "Today, Chinese trucks are becoming increasingly popular as the quality has been improved over the years. So far, China has sold more than 1,500 trucks in the different sectors in the DRC."

Samuel Opare further voiced concerned over the potentially detrimental effect on local hiring. "Chinese companies are eating the market by buying major companies, and soon they are likely to mostly employ their own people on-site. The reason I say this is because most of these companies are financed by the government, which has the ability to compel Chinese staffing."

To what extent a transfer of skills to Congolese workers has been adequately bolstered by the Sicomines deal is hard to asses as few reliable employment statistics are available. According to news reports, some 75% of the 3,000 workers employed in the mining JV were Congolese as of 2015. On the infrastructure projects, around 4,000–5,000 Congolese were working for CREC and Sinohydro in 2011, which at the time added up to about 17 Congolese per 235–275 expat Chinese workers.

The successfulness of the Sino-DRC relations must be judged on the merits of holistic improvements for the DRC as a country. By such measures, 10 years after its inception, the "deal of the century" has improved the DRC's macroeconomic performance while also bolstering infrastructure developments, most notably the construction of roads in Kinshasa, the erection of a 450-bed hospital and a 240-megawatt hydroelectric power station planned to come online in 2021. Yet, the deal still has much to live up to and the future gains of the DRC will depend on both the country's ability to consolidate the available benefits as well as the government's resoluteness in ensuring that promises are kept. •

Above the Ground Risk

The greatest obstacles to success in the DRC

Regulatory Uncertainty and Resource Nationalism

While mining in Africa was never a venture for the faint-hearted, this might be even more true in the DRC. In addition to the more perennial challenges of corruption and conflict, mining companies have as of late had to add political uncertainty and regulatory changes to the tally of stumbling blocks. While the worst political turbulence is hopefully in the country's rearview, the appointment of Felix Tshisekedi has done little to calm the nerves of mining executives as the political track record of the president-elect offers little for miners and investors to judge. Tshisekedi pledged while still on the campaign trail to have a second look at the new mining code signed into law by his predecessor, but after the decision to form a coalition government with Kabila that is unlikely to happen. In addition, the government might be hesitant to turn back a move so widely supported by the population.

Regulatory changes are one of the risks most difficult for mining companies to manage. Efficient data and on-the-ground intelligence gathering as well as frequent communication with the government are ways for companies to keep their fingers on the pulse. Nonethless, at times changes happen suddenly and unpredictably. "Resource nationalism tends to rear its head when commodity prices are surging and goes hand in hand with windfall tax," said Duncan Bullivant, CEO at London-based Henderson Risk. "Yet, the latest resource nationalism in Tanzania came when commodity prices were not surging but rather depressed." In the case of the DRC, most aspects of the new mining code were predictable, long-impending changes that graduated to reality. Rather, it was the amputation of the stabilization period coupled with the governments unilateral decision-making process that brought the air of unpredictability and inconsistency. "The DRC has a long way to go, and there is an understanding that some of the amendments to the mining code have been damaging," said Mark Bristow. "The DRC's mining industry has constantly been tied up by the restating and changing of fiscal legislation – it is true that the country is well-endowed with minerals, but if the investment is not attracted to discover and develop these deposits and with them roll out and improve the necessary infrastructure, the true value of the natural resources and associated sectors will never be unlocked for the benefit of the Congolese people."

This balance between government prerogative to capture revenue from the private sector and maintaining favorable terms for mining companies operating in a high-risk, high-cost jurisdiction is above all a matter of consistency and reliability. As expressed by Peter Leon at Herbert Smith Freehills: "In the medium-to-long term, the African countries that will perform best from a mining perspective are those with the strongest institutions and stable, predictable policies."

What the union of Kabila and Tshisekedi will mean for the mining sector remains to be seen. Meanwhile, what mining companies can hope for is a long period of regulatory stability where the government understands that the massive mineral potential of the DRC will only offset so much investor risk.

Supply Line Due Diligence and Reputational Risk

The mining environment today is more complex than ever. Disruptive technologies, increasingly complicated supply chains and rising public pressure are some of the factors that are changing the sands of the mining landscape. Add to that the potential complications specific to emerging economies – corruption, civil unrest, terrorism, poor infrastructure and unreliable regulatory frameworks – and you get a supercharged risk environment. "There is still a significant amount of opportunity in Africa, but the truth is that the investment risk is very unpredictable," said Peter Leon. "On the other hand, there are outlier countries such as the DRC where the resources are so important that it is worth the risk." For companies that deem the opportunities greater than the hazards, risk management becomes a vital part of operations. Currently, it is the big players that drive the development towards more integrated and elaborate risk management. "Major mining companies are highly organized and will already have an intrinsic security capability," said Liam Morrissey, CEO at London-based MS Risk. "When these majors enter a new market or jurisdiction, they will bring these security measures with them."

Managing reputational risk has moved from the periphery of operational challenges to becoming increasingly central. Higher expectations of shared value outcome force companies to manage the expectations of investors, but also governments, communities and employees – all of which have the potential to undermine the social currency of the company. "The moral positioning of mining needs to be enhanced by making the environmental and social community impact propositions more robust and aligned with SDG as well as millennials' expectations on their companies," said Tom Butler, CEO at the International Council on Mining and Metals (ICMM). "The biggest challenge facing the sector is societal (everyone) and community (people in immediate vicinity of the mine) acceptance."

The chief threats to reputational risk along the supply chain include negative environmental impact, human rights abuse and occupational safety and health issues. While due diligence risk occurs in every mineral supply chain, the complexity and multiplicity of battery metals supply chains makes the process particularly challenging. It is predicted that there will be 140 million electric cars on our roads by 2030, causing the wider lithium-ion battery market to more than double by 2025. With few other cobalt-producing countries looking to ramp up production, mining companies in the DRC face the issue of meeting much of the global demand while ensuring ethical sourcing.

For mining companies to navigate the increasingly complex risk environment, it is crucial to have a holistic risk management strategy that is implemented early in the planning of a mining operation. "We have been involved with major mining companies who do everything right," said Anton Wallis, senior director and head of crisis management at global risk consultancy company S-RM "They have used us to thoroughly assess the threat environment and then build robust security risk management frameworks prior to commencing operations in a region. On the other hand, there are less mature companies—often smaller—that only start thinking about things like risk, corporate social responsibility (CSR) and security management once key business decisions have already been made."

Bullivant elaborated on the lack of internal security capability among smaller companies: "Willingness to invest in security and risk management often depends on the phase of asset development. No company wants to spend more capital in the exploration phase given the fact that it might not lead to anything, and the costs will not necessarily benefit the operation."

While the risk awareness and strategy of mining companies increase, efforts on a governmental and organizational level to ensure supply-chain due diligence will also work to limit risk exposure. The DRC has come a long way in strengthening regulation that protects local communities and the environment since the end of its civil war. The mining code adopted in 2002 integrated clauses dedicated to environmental measures that were omitted in the previous code. "Companies are obliged to restore their concession to its original condition upon mine closure and are required to provide guarantees of how the restoration will be carried out and funded before receiving a license," said Benoit Eeckhout, founder of consultancy company Falcon Resources Development.

In addition, the signing of the Organization for the Harmonization of Business Law in Africa (OHADA) treaty in 2014 provided the DRC with proper outlines for modern business laws and regulations. "One factor that entails both corruption and honest mistakes is lack of awareness among employees," said Elisee Kiluba, senior manager at auditing firm PwC. "Complying with DRC accounting standards is not easy, especially for foreign companies that lack knowledge of the system… There is still a disconnection between existing business laws, the regulation outlined in the OHADA and domestic tax policies," stated Yves Madre, partner at auditing firm Deloitte.

The treaty equips companies with a regulatory framework that undermines the risk of legal non-compliance. The government is also increasingly collaborating with domestic organizations to solve environmental and labour issues — one of which is that of the artisanal mining sector. "The lack of formalization and oversight in the artisanal mining space has led to the occurrence of children, pregnant women, soldiers and unauthorized security personal on artisanal mine sites," said Freddy Kitoko Nyembo, chairman at dialogue platform Investissement Durable au Katanga (IDAK).

Although the numbers are disputed, The DRC Chamber of Mines estimated in 2015 that 2 million artisanal miners operate in the DRC, 40,000 of who UNICEF reports to be children. According to the London-based cobalt specialist firm Darton Commodities, artisanal miners accounted for between 14 to 16 percent of the 80,800 mt of cobalt mined in the DRC in 2017. "We created a strategic plan to help children get out of mines sites in Haut-Katanga and Lualaba as well as to clear the sites of unauthorized personnel," Nyembo said. "This plan was ultimately adopted by the government as a nation-wide strategy."

While the DRC still holds a prominent position on mining risk indexes across the board, reports of misconduct on individual mine sites tend to draw focus away from the positive long-term incremental changes. The government has laid more emphasis on social and environmental sustainable practices over the last decade and, as the synergy between the corporate, governmental and international organizational sphere increases, companies' ability to integrate environmental management practices into the planning and design phase will improve while simultaneously undermining the risk of drastic regulatory changes. "If the overall deal is fair, both financially and otherwise, there is going to be less of a political imperative for the government to change policies, taxes and regulation," said Greg Mulley, UK and EMEA head of mining at Herbert Smith Freehills. "Giving the government some sort of carried interest and agreeing to local beneficiation are some ways in which companies can seek to mitigate risks. So too are local content investments."

Security Threats

A robust security plan is a way for companies to protect themselves from immediate threats on the ground while optimizing the efficiency of their operations. Simply put by Morrissey: "A car has brakes to allow the vehicle to go fast – the better the braking system, the faster you can go."

Armed conflict, pandemics and election turbulence are some out of the plethora of impediments to efficient and safe mining operations in the DRC. It is estimated that between 70 and 120 armed groups operate in the country's North and South Kivu provinces alone – constituting a profusion of sectarian, ethnic and politically motivated fractions driven by various grievances. Election turbulence and rapid urbanization amid economic stagnation have spurred outbreaks of violence in the country's usually peaceful south, and a tenacious outbreak of Ebola has put an estimated 35% of the DRC's gold mines at risk of being directly or indirectly affected. In addition, the first ISIS-claimed attack near the DRC-Uganda border coupled with the recent killing of a mining company executive in Burkina Faso have further drawn attention to the risks resource firms face in unstable regions.

The high risk profile of the DRC has entailed a substantial establishment of both domestic and international security firms in the country offering services ranging from on-site security personnel, cyber security, asset protection, transport and data analysis, to name a few. "Securico was one of the first Congolese security firms in the country, and we have seen much of our Congolese competition go out of business as foreign companies have entered the market," said the company's provincial manager, Michel Kabangu. "To give you an idea, there were about 10 security firms in the country in 2008. Today, that number is around 100, and most of them were established in the last four years."

The multitude of available security firms brings the problem of picking a firm with the right profile and expertise. As expressed by Philippe Coleau, general director at Lubumbashi-based Royal Force Security, "There are both national and international companies operating in the DRC. These include both qualified companies working on site with well-organized and professional teams but there are also companies who lack the adequate skill to carry out their work."

While a company may have previous experience operating on the African continent, skills are not always transferable from one country to another. "I believe that there is a limitation to what customers can expect from local companies or international companies claiming that they have a presence in a region," Morrissey said. "Customers should make sure that the security company that they employ has experience in the region and that they have the capabilities and services that will meet their requirements and expectations of their leadership and shareholders."

In addition, dynamic situations such as those of crisis response require an ability from the responder to carry certain skills that cannot always be precisely set out ahead of the event. Bullivant categorized this as emotional intelligence in crisis response, meaning "the ability to analyze and assess the cultural needs of the organization. You first have to fully understand the company or individual before applying your experience and expertise."

Similarly, Indigo Ellis, research analyst at Verisk Maplecroft, pointed out the danger of a sense of control stemming from experience, stating: "Many companies have operated in high-risk or developing areas for decades and believe they know the risks and the stakeholders. But investors are becoming increasingly concerned with risk exposure and have tougher investment requirements. They want to see tangible data before coming onboard […]."

While data-driven risk management companies like Maplecroft rely on a multitude of sources such as in-country contacts, local and international media as well as mines and production data, the internet in particular has opened the door to improved data-gathering capabilities to companies across the board."One of the services that S-RM provides is access to a platform that alerts our clients to reputation threats that might be coming their way, Anton Wallis said. "Specifically, the tool picks up on negative sentiment in social and news media allowing companies to respond pre-emptively before a crisis hits."

On the flipside, the internet has also brought issues such as the ability to quickly whip up discontent and the risk of cyber threats. Wallis explained: "Mining companies are known to make quite regular and large payments and are therefore targeted by hackers seeking to intercept money transfers. The hackers typically rely on human error in order to intercept transactions, and therefore both technical and human resource security procedures are of utmost importance."

Infrastructure and Energy

With only 2,794 km of paved road – half of which are in need of rehabilitation, and a mere 4,000 km of existing railways – the DRC faces what is likely the most daunting infrastructure challenge on the continent. From a mining perspective, the situation is a catch-22 in which the shattered infrastructure hobbles the mining development needed to solve the issue.

With no paved roads connecting the country's regions, mining companies are – depending on the locations of their operations – sometimes forced to allocate a substantial part of their budgets to infrastructure. "If we were right next to Dar es Salaam port, we would likely be the lowest-cost producer of lithium concentrate in the world, by a margin of at least 50%," said Nigel Ferguson, managing director at AVZ Minerals. "Since we are much further inland than

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> **- Rodolphe Kembukuswa, General Manager, Bolloré**

anyone else, we have to transport the product a considerable distance, resulting in this significant 62% of our operating costs. Currently, we are trucking because the railway infrastructure is so poor, and trucks are at least reliable. We will be investing a significant amount in road and railway rehabilitation, handling warehouses and things of that nature to reduce these transshipment costs."

While AVZ's plans for infrastructure funding demonstrates the potential of the private sector to contribute to socioeconomic development, not all mining companies have a substantial enough resource to take on such additional costs. Similarly, the government has rolled out plans for improving all aspects of the country's infrastructure but even smaller projects bring massive expenses. For example, as stated by Rodolphe Kembukuswa, general manager at logistics company Bolloré: "To exit from western DRC is a huge problem as it is an old river port, meaning large vessels cannot enter. There has been talk of refurbishing other exit points such as the Banana high-sea port, but nothing has been done so far. The issue is that the renovation would require extension of rail networks, port infrastructure, roads and electricity, all of which would mean a sizeable investment."

To overcome issues that are too costly for one stakeholder group to tackle, a collaborative approach between the government, the private sector and international entities is likely the only way to lift the DRC out of its infrastructural crisis. "Each individual logistical issue must be viewed from a global development perspective where all parties and countries collaborate," Kembukuswa continued.

The government could draw greater use of private logistics companies as the intercontinental nature of their business could bring both already established connections and vast knowledge. "We have an agency agreement with a regional partner called Access World, and our offices are located in Zambia, South Africa, Zimbabwe, Botswana, Mozambique and Tanzania," said Daniel Tyloo, managing director at freight forwarding company Cargo Congo. "This means we provide service in all of the key corridors going in and out of the DRC."

While the challenges of operating in the DRC will deter the fainthearted, companies having chosen to enter the market are pushed to new levels of innovation to work around the challenges. Logistics company Connexafrica has focused on developing advanced IT systems to compensate for external obstacles.

"Due to the unique customs regulatory requirements and processes in the DRC, we created our own platform to give us the flexibility needed to keep up with the constant changes and the specific needs of our clients," said company director Fanon Beya. "We have designed the system to detect any discrepancies in customer documents at the pre-alert stage; this early detection helps to avoid any potentially costly mistakes."

In the absence of adequate road and rail network, most goods in the DRC are transported by air. The Congo has six major airports located in Kinshasa, Lubumbashi, Kinsangani, Goma, Mbuji-Mai and Gbadolite, as well as hundreds of smaller landing strips scattered across the country, making it a lucrative place

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for airline companies. "Congo Airways was created in August 2015, and in October of that year, we commenced operation with four aircraft – two Airbus 320s and two Bombardier Dash8-Q400s," said Congo Airways stations manager Alain Kabwe. "When the airline first began operating, we were flying from Kinshasa to Lubumbashi, Goma, Kindu and Kisangani. Today, we fly to 17 destinations within the DRC, plus a number of regional destinations like Johannesburg (South Africa), Douala (Cameroon) and Cotonou (Benin)."

Adding to its 17 destinations within the DRC, the company plans to expand internationally, starting with Paris, Brussels and Dubai, and is also looking to partner with mining companies. "From 12th June 2019, we will be flying passengers to Kolwezi from Kinshasa, Lubumbashi and Johannesburg. Since the road to Kinshasa is dangerous, this will be an excellent alternative for individuals that need to get to and from Kolwezi for work."

A position indicator is that the government has earmarked infrastructure as a priority, issuing a memorandum regarding lack of energy and infrastructure last year, and has demonstrated a willingness to collaborate with mining companies such as AVZ in improving roads and railways. "We have had some productive conversations with the government officials and others invested in the country's infrastructure," Ferguson said. "We are also hearing from the international community in terms of possibly committing funds for infrastructure development within the Tanganyika province. This would be a win-win situation for all parties involved, and it would allow us to expedite our project timeline."

A number of international projects have in fact been initiated in the last few years. In November 2018, the African Development Bank and infrastructure investment platform Africa50 signed an agreement with the DRC and the Republic of Congo to develop and finance the first road-rail bridge project connecting their capitals, Kinshasa and Brazzaville. The project consists of a 1,575 km toll bridge over the Congo River that will include a railway track, a double-lane road, sidewalks and a border checkpoint at each end. In 2017, The World Bank invested US$147 million in improving the DRC's access to electricity and critical services. The project is scheduled for completion by October 2022. The infrastructure deal with China has also brought improvements to roads, mainly in Kinshasa, and a 240-megawatt hydroelectric power station planned to come online in 2021.

With half of Africa's forests and water resources, the DRC has a hydropower potential of 100,000 megawatts – equivalent to 13% of the world's hydropower potential – and enough to meet domestic needs in addition to generating export revenue. DRC's mammoth hydropower project on the Congo River, Inga 3, has been frequently delayed but is back on track thanks to a joint bid by Spanish and Chinese companies, Actividades de Construccion y Servicios SA and China Three Gorges. The South African government signed a treaty in 2014 pledging to buy 2,500 MW of Congolese hydropower per year once the project comes online. The deal requires South Africa to directly invest 5% of the total project cost which, according to the World Bank, will be around US$80 billion. However, doubts have been expressed as to whether South Africa will live up to the deal, and experts have stated that the estimated construction cost is much too low.

Raphael Khalifa, founder of Tembo Power elaborated on the overall difficulty in funding hydro project.

"Firstly, from the outside, investors' perception of DRC as a place to invest is yet to improve, partly due to the country's history. Secondly, investing in hydropower means locating suitable and economical sites. Such mapping is an expensive exercise, even more in a country as wide as DRC. Independent Power Producers ("IPPs") like us would look for project financing structures (where lenders would have the project as the only guarantee against the loan they would supply), which is challenging given the creditworthiness of the jurisdiction and the national utility, and although credit enhancement instruments exist, they come at a cost which needs to be reflected in the tariff."

Benoit Eeckhout suggested: "Mining companies could commit to the purchase of renewable energy which would allow the funding of such projects. The deterrent for such scenarios is that the commitment to purchase the renewable energy has to be included in companies' financial statement and companies do not like this as this disturbs their financial ratios." He continued: "For companies to be motivated to drive positive change, such behavior needs to be encouraged by the government as it often incurs a certain cost for the company. Few will be willing to become an activist company if the only result is lesser financial performance than the non-activist competitor."

The sentiment was echoed by ICMM's Tom Butler, stating: "Mines need sufficient reserve lives (typically 15 to 20 years) to anchor long-term renewable energy projects otherwise the financing does not work. Sometimes the renewable energy resource is far from the mine, in which case mines need to be able to wheel the electricity across grids and government involvement is required to facilitate those types of contracts." •

Production and Exploration

Battery metals continue to rule the day

Copper, Cobalt and Lithium Highlights

After the price of cobalt hit a record high of US$90,000/mt in May 2018, oversupply and limited investor stockpiling set prices crashing over an extended period that intensified throughout the first half of 2019. The fact that the ramped up production was due to faulty predictions of supply shortage made investors wary of the difficulty of predicting the battery prices and the volatility brought on by industry frenzy. Adding to the depressed sentiment is the rapidly changing nature of the battery industry in which technological advances entail additional investor risks. However, with cobalt prices having steadily recovered since the July 2019-record low, there is reason to hope for a bullish 2020.

Predictions of cobalt becoming obsolete are another fear born of unsubstituted speculation. "While companies are probing into the possibility of partly replacing cobalt, I do not see this new technology entering to the DRC within the next two or three years," said Wouter Jordaan, partner and principal environmental scientist at SRK Consulting. "Companies have invested in the current technology, so they must repay any existing loans or debt before being in a position to invest in new technologies. In addition, research is being conducted into new potential uses for cobalt and new areas of usage are likely to emerge."

With an anticipated 140 million electric cars on our roads by 2030 and the wider Li-ion battery market expected to more than double by 2025, investor confidence is likely to recover quickly, and DRC will remain in the spotlight as the world's largest producer of cobalt. The country's cobalt output increased to 90,000 mt/y in 2018 and is likely to remain high with major producers advancing their operations and new projects in the pipeline.

Eurasian Resources Group's flagship Metalkol RTR project – a hydrometallurgical facility to decontaminate historic copper and cobalt tailings from previous mining operations – is nearing completion and is the driver for the group's plans to increase cobalt production by approximately four-fold in 2019. The multi-billion-dollar project located in the Haut-Katanga province is expected to produce 24,000 mt/y of cobalt, making it one of the world's leading cobalt producers.

London-listed Glencore has had a rough time since the end of 2017 when the company was slapped with U.S. sanctions due to its affiliation with Israeli diamond Gertler, a setback closely followed by the initiation of a U.S. Department

of Justice investigation. Adding to the growing list of headaches, the company announced in April 2019 that the U.S. Commodity Futures Trading Commission is investigating it for possible corrupt practices. Yet, Glencore resumed shipments of cobalt from its Kamoto mine in the Katanga province in April after being forced to halt sales in late 2018 after discovering traces of uranium in the cobalt hydroxide that exceed the acceptable levels. Kamoto – that is 75% owned by Glencore subsidiary Katanga Mining and DRC state-company Gecamines – reported in April 2019 to have produced approximately 930 mt of contained cobalt that complies with regulations since the beginning of the year.

The Swiss miner has also decided to cut some of its expatriate staff at its Mutanda copper and cobalt mine to lower costs before a possible shift in production methods. In total, the company expects a copper output of 1.54 million mt and 57,000 mt of cobalt in 2019.

Meanwhile, Hong Kong-listed MMG is nearing the end of its feasibility study for its Kinsevere expansion project. 2018 marked the company's third consecutive year of stable and consistent copper production above 80,000 mt/y with mining set to continue through 2021 and production through 2023. The expansion project will add a sulfide processing plant to run in tandem with the existing oxide plant – increasing production to a total of 90,000 mt/y and extending the project's lifetime to approximately 2031. MMG's major shareholder is China Minmetals Corporation (CMC), one of China's major multinational state-owned enterprises. CMC's subsidiary China Minmetals Non-ferrous Metals Co (CMN) was formed in 2001 and currently owns approximately 74% of the total shares of MMG, with the remaining 26% owned by public shareholders including global resources and investment funds.

Ivanhoe Mines is ready to finish the construction of its much anticipated underground copper mine in the Kolwezi District of Lualaba after its largest shareholder, China's state-owned CITIC Metal, injected an additional US$454 million into the Canadian company. A PFS released in February 2019 indicates that the Kamoa-Kakula mine will average 6.8% copper over the initial five years and 6.4% in the first decade. Scheduled to come online in early 2021, the mining complex could produce 382,000 mt/y during the first 10 years, followed by 700,000 mt/y of copper after 12 years of operations.

In another display of Chinese investment capacity, China Molybdenum — the largest molybdenum producer in Mainland China and top five in the world — which bought the Tenke Fungurume copper and cobalt mine from Freeport-McMoRan in 2016, is buying a holding company for US$1.14 billion that will up its stake from 56 to 80 percent in the Katanga-based operation. The asset, in which Gecamines holds the remainder of the stake, has an expected mine life of another 10 years and produced 168,309 mt of copper and 18,747 mt of cobalt in 2018.

Barrick Gold Corporation to Boost the DRC's Gold Sector

The US$18 billion super-merger of Barrick Gold and Randgold Resources in 2018 was an earth-moving moment for the sector. The consolidation created the world's largest gold-mining enterprise, with Barrick – already the world's largest gold miner by reserves – being active in 10 countries, and London-listed Randgold contributing five active gold mines spread across three African nations – including the DRC.

The Kibali gold mine, located in the north-eastern part of the DRC, is operated by Barrick and owned by Kibali Goldmines SA – a JV company effectively 45% owned by each Barrick and AngloGold Ashanti, and 10% by Société Miniére de Kilo-Moto. "Kibali is one of the leading automated mining operations in the

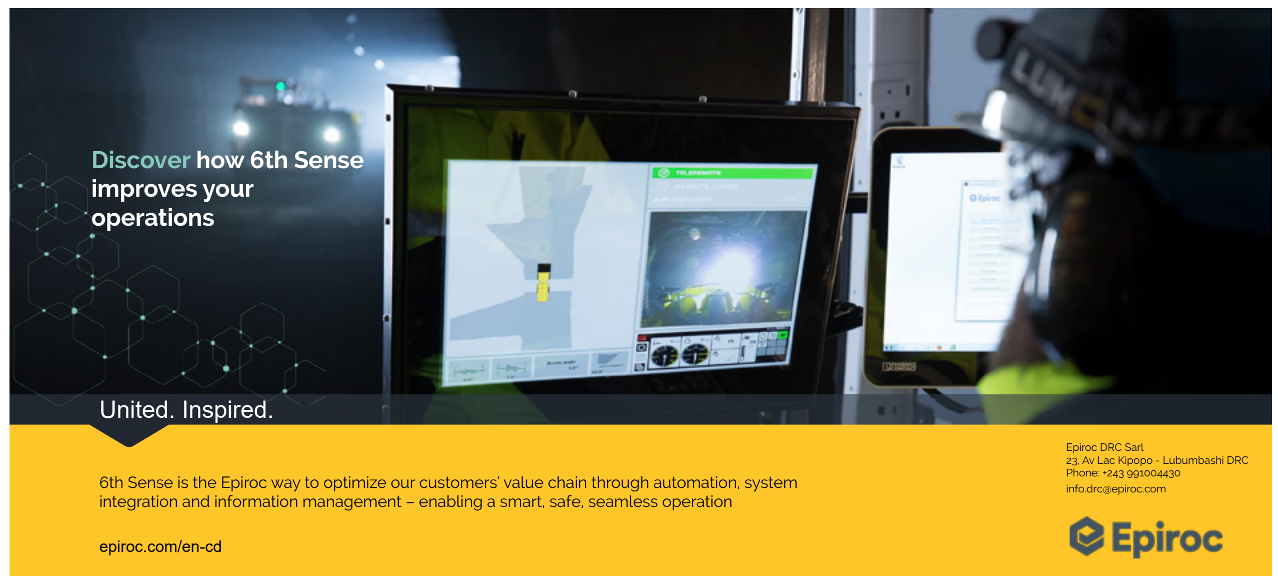


Image courtesy of Forrest Group

The new mining code, which may still be reviewed by government, will pose challenges for the development of new mining companies. Although business in the DRC can be challenging, it is possible and profitable. Investors should give the government a chance – they have positioned themselves as pro-business and eager to promote investment into the DRC.

- Malta Forrest, CEO, Groupe Forrest International

portfolio – the bottom end of the mine and the entire ore-handling system, including hoisting, are fully automated, and operated from surface," said Bristow. "We are now transitioning into having one operator mining multiple levels in the mine. This has been an amazing success and opens up our workforce to women as operators."

Developed in an area of 1,836km², Kibali is one of Africa's largest gold mines with an expected average annual output of 600,000 oz/y for the first 12 years following its commission in 2013. In 2018, expected output was exceeded with a total of 807,251 oz produced.

Barrick Gold's executive chairman John Thornton and President Tshisekedi struck an agreement in Washington D.C. earlier this year to partner in order to develop the DRC's gold mining industry. Following the meeting, Thornton stated he was encouraged by the president's vision of attracting foreign investment and supporting the development of the DRC's mining industry in a spirit of partnership. In addition to bringing technical and financial support through the Kibali mine, Bristow elaborated on the company's outlook on its role in the DRC: "We did not come to DRC just to develop Kibali, although it has been an outstanding success by any measure. It has taken us nine years of investment to get to a stage where we can start to repay the capital. We are continuing to invest in new opportunities in the DRC. For the DRC to take a leadership place in Africa's mining industry, it will need to attract significant investment. It is the place for majors such as Barrick, and it will be a big milestone when additional multinationals arrive."

Barrick's presence in the DRC has the potential to introduce a higher level of automation and technical innovation to the country's gold sector. In addition, it could work to bring increased stability to a volatile region, opening up the country's north to exploration. Banro Corporation had to suspend operations in its two mines located in the northern region after a series of security incidents brought on by local militia groups in 2017 and 2018. The Canadian gold producer is now planning on reviving the two operations while bringing into production an additional two mines in the DRC in the upcoming five to seven years. If successful, Barrick' and Banro's operations will demonstrate the potential of DRC's northern region as a lucrative gold district.

Exploration

While a limited availability of funds coupled with the inherently challenging environment of the DRC have hampered exploration activity in the country, a few companies can testify to the possible rewards for those willing to face the risks. AVZ Minerals' Manono project, located 500 km north of Lubumbashi, was confirmed in May 2019 to be the largest measured and indicated lithium resource in the world, with a 269-mt reserve and grades of 1.65% Li2O. "We

have started the preliminary meetings and site works required for the feasibility study, and we have engaged a mining engineer to complete a two-stage gap assessment plus scope of works, so we are making good progress," said managing director Nigel Ferguson.

The Manono project is 60% owned by Perth-based AVZ, 30% by state-owned La Congolaise d'Exploitation Miniere and 10% by the private company Dathomir Mining Resources. Currently, a feasibility study for the 400,000-mt resource is scheduled for completion in Q2 2020. AVZ's plan is to build a partly self-funded hydroxide plant to generate capital for going into larger production. "While self-funded to a certain degree, as a hydroxide plant comes at a significant cost, the idea is to build a 2-million mt/y plant," Ferguson said. "We expect this to produce 440,000 mt/y of concentrate, which we will then ship by road or rail, or a combination of the two. We will use the free cash flow from this to first repay any debt associated with the initial costs, and then, by the second or third year into production, we will begin to accumulate the war chest and possibly expand to a 5 million mt/y operation."

Following the finalization of the PFS, construction is expected to begin in mid-2020 and production will commence in 2021.

AIM-listed Red Rock Resources controls several licenses in the Katanga segment of the Central African Copperbelt prospective for copper and cobalt, as well as one further North near Kibali with gold potential. Three of these licenses are held through a joint venture with Gécamines.

"On the surface, our joint venture is with a local company and another foreign group, but the underlying structure is a research agreement with Gécamines which we can convert into a license holding once the first feasibility study has been completed," said chairman and CEO Andrew Bell. "We are still at the scoping stage where we try to establish the parameters of the mining project. If – probably when - the decision is made to start developing the mine, we will agree on a price per ton and a royalty rate to Gécamines."

Currently, Red Rock has an initial resource target of 200,000 mt of copper at nearly 3% and 50,000 mt of cobalt at between 0.5% and 1%. Bell commented on the company's vision in the country, stating that "The DRC is rich and diverse in mineral resources but mining companies tend to focus on the Copperbelt alone. Our goal in the future is to diversify into a broader range of the DRC's largely untapped commodities. We intend to make the DRC a major focus and as part of that, we want to discuss with the authorities ways in which we can promote the DRC's image internationally and bring in more investors." •

Services

A maturing industry fosters a more sophisticated services sector

Despite the difficult conditions that have haunted the DRC's mining sector in the last few years, diversification into new industries, technological developments and growing demand from larger, well-established mining houses has allowed the DRC's mining service sector to prosper. As competition increases, service providers are pushed to deliver more complete and tailored services. "When Minequip started our operations in DRC in 2008, there was nearly no competition, but with the development of road infrastructure and improved public image of the DRC, we now see many new national and international entries into the market," said Adry Nzonzimbu, director of mining equipment provider Minequip Technical Services. "I would say that the key demand from the mining industry is to have their distributors and repair maintenance facilities on or near site," he continued.

Shortening turnaround time by local repair companies is a challenging task for service providers due to the lack of infrastructure as well as the relatively high operational costs in the DRC. DRC-registered repair company African Mining Services has solved the problem by having their workshops in Lubumbashi and in Zambia, placing them in proximity to Katanga's mining sector while enabling them to lower service costs. "We specialize in the full repair of all hydraulic cylinders, motors and pumps for the mining and earthmoving sectors," said manager Oliver Dallaway. "We are rather unique in offering this service as the standard procedure is to buy new cylinders once they break which brings unnecessary costs to companies. We are a relatively small team that works well together and our facilities allow us the capacity to service, repair and or rebuild up to 100 cylinders per month should the need arise."

The country's tattered infrastructure compounded by the demand for more all-encompassing solutions puts pressure on logistics companies put also presents opportunities for business expansion.

"(…) many mines in the Copper Belt today are built with the EP (engineering, procurement and construction management) delivery models, which has led to a shift in the way logistics are procured," said Craig Mynhardt, general manager of Impala Terminals. "Materials for each build need to be transported from different parts of the world, leading to project cargo opportunities for Impala Terminals to balance import and export flows. Once a mine has been commissioned, we have the opportunity to provide import logistics solutions for materials used for infrastructure maintenance and various chemicals that are used in the mine's production as well as exporting the mined products."

As demand for timely repairs and spare-part delivery increases, service companies are holding themselves to higher standards.

"In order to ensure that we live up to these goals, we have established a supply-chain system which streamlines the import process," stated Adrian Pambwe, general manager of local processing and engineering company Geprip Service. "For example, we have deposit contract that allows us to acquire equipment via KPM Logistics and DHL which assists us with imports from China and South Africa."

In addition to increasing demand for one-stop-shop solutions, the relatively low number of small-to-medium-sized mining companies entering the mining arena, coupled with the overall volatility of the market, poses a challenge for service providers with a smaller full-time workforce. Mining Contracting Services (MCSC) had to quickly up its staff by some 500 employees after securing a contract for work at MMG's Kinsevere mine in 2017.

"For the MMG project we mostly sourced locally but also brought in expats from South Africa and other neighboring countries," said general manager Cécile Amory. "We had to acquire the adequate skilled labor rather quickly and launched an advertising campaign from which we received a lot of applications. Then followed an extensive screening process where the top candidates were shortlisted, interviewed and selected."

Market volatility also brings challenges in sustaining adequate cash flow and permanent hiring. As such, service providers in the DRC are increasingly partnering with companies in neighboring countries. Site-service company Kilakitu teamed up with a neighboring firm in Zambia to better its capacity to take on major projects and expand its portfolio.

"I was particularly interested in forming this partnership as Zambesi Site Services had experience in flat pack containers, which is a capability we wanted to add to Kilakitu's portfolio," said managing director Jean-Sylvère Duga. "We tend to concentrate our efforts on big tenders as we have the capabilities to take care of big operations. With large tenders, we will often make use of expertise from South Africa or Mozambique, but for smaller operations all expertise is from the DRC."

Similarly, companies with backing from international groups are better equipped to ride out financial downturns and commodity price plummets such as the financial crisis in 2016 and the drastic fall in cobalt and copper prices that started in 2018.

"We are part of the Somika group, which gives us a competitive edge by allowing us to maintain staff throughout economic downturns," said Gordon Barkhuisen, consultant at drilling and water management company Solutions for Africa. "Often, exploration is the first thing that suffers when commodity prices drop or there is some glitch in the economy. Having the Somika group as a base allows us to maintain our turnover in the downtime and gives us the

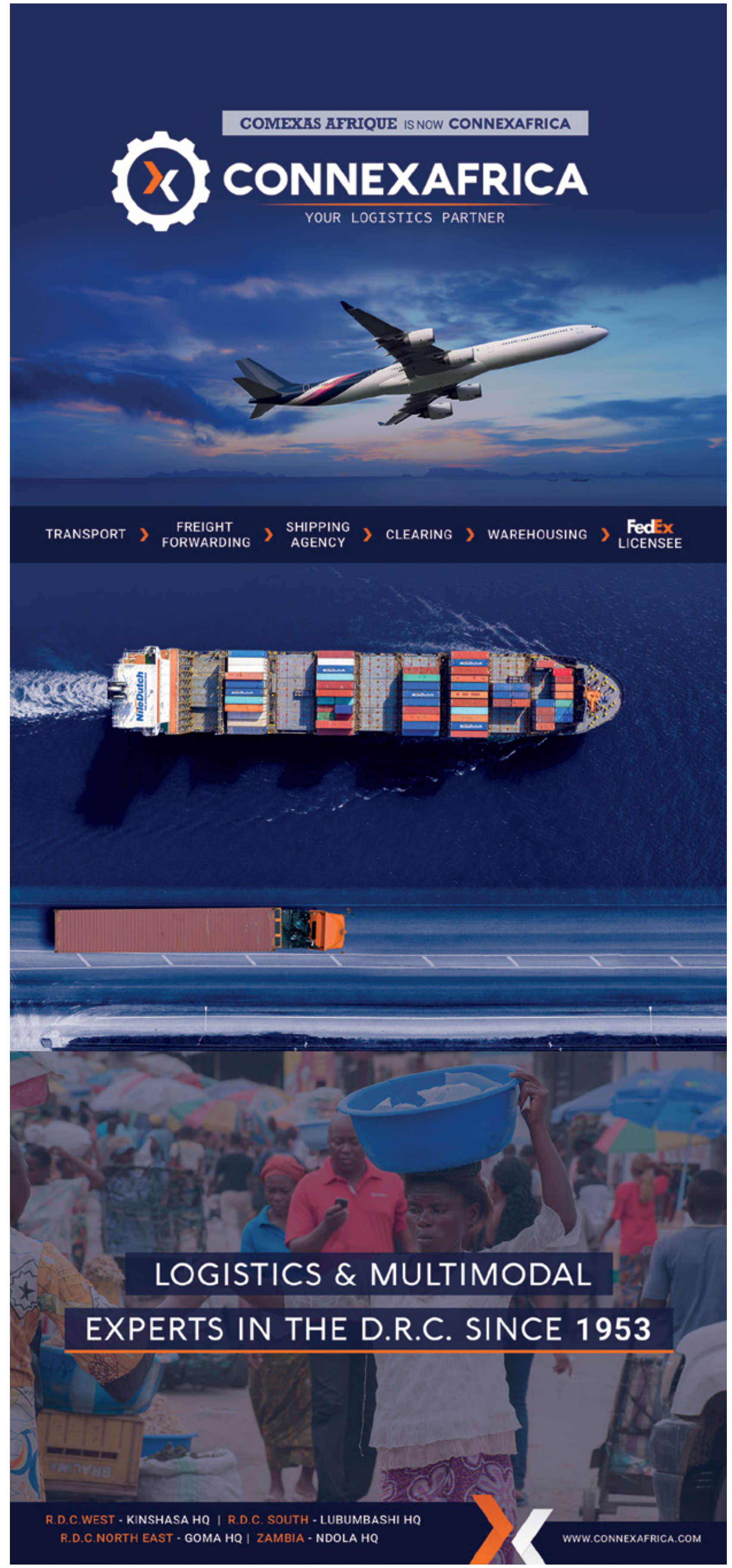


Image courtesy of Forrest Group

ability to react very quickly when we see an opportunity. It also facilitates the process of acquiring equipment and up-skilling our workforce, which is one of our core strengths."

Skills Transfer

The DRC's long history of conflict and foreign exploitation has rendered the country largely incapable of transforming its resource wealth to human resource capacity. The lack of domestic skill is detrimental to mining service companies that are forced to manage a workforce both unfamiliar with the domestic environment and that usually operates at a higher cost. For the DRC, low skill levels both dissuade investments in industrial development and cause a brain drain when workers who aspire to careers in skilled fields tend to pursue education abroad.

While the current transitional phase will demand a continuing import of skilled labor, service providers across the board are engaging in educational initiatives to empower the local workforce. "The skilled labor force in the DRC is significantly smaller than in other Southern African countries," said Deon Heyns, CEO of Congo Equipment. "There is no accredited institution in the DRC to train technicians and provide them with proper qualifications. Congo Equipment has developed a program starting with basic training such as reading, writing and computer skills followed by Caterpillar-specific training programs. The three-year program does not provide the participants with institutional accreditation, but they will be certified to carry out work for customers on Caterpillar equipment."

With a mere 10% of the company's 900 employees comprised by expats, Congo Equipment demonstrates the possibility of operating successfully with a local workforce, and the company seeks to further reduce the number of expat workers within the next three to five years. "We launched a specific training and localization plan in 2018 and already in 2019, there are 14 local employees who will fill positions previously occupied by expatriates," Heyns continued.

Similarly, material analysis and testing company Robinson International operates a workforce of 95% locals. "The Congolese are highly driven and work hard as long as they believe they are paid fairly and, as importantly, are well respected," said DRC general manager Xavier de Longueville.

However, acquiring technically-skilled, certified labor remains an issue in certain areas. As expressed by Barkhuisen: "The DRC has a well-established mining tradition so the drilling labor is not an issue, though technical labor like mechanics and safety personnel can be harder to acquire. Often, the situation is paradoxical as you have people with experience but no qualifications, or you have people with qualifications but no experience. From a safety aspect, however, it is hard to find properly certified personnel."

The skills gap also creates opportunity for companies specializing in training, such as training and personnel management firm ITM Africa that was launched in 2011 and has since expanded from DRC to South Africa, Rwanda, Nigeria, Angola, Tanzania and Germany.

"We seek to assist our clients both in increasing their profits and efficiency, but also to empower the local communities," said Duppie Du Plessis, mining solutions manager at ITM Africa. "The goal is to ensure that a mining operation transforms the local population into self-sufficient and qualified professionals. In this way, the mining sector and the population of the DRC can grow in tandem."

As mines in the DRC go underground and automation becomes an increasingly integral part of mining operations — marginalizing the need for traditional positions in drilling, blasting and truck driving — companies along the mining value chain will be in a position to transfer increasingly advanced skills to the local population and put the country in a pool position for industry 4.0.

Innovation

Increased demand for automation and innovative solutions testify to a maturing mining sector in the DRC. Major mining companies in particular see automation as a way to increase productivity and safety while also adopting a more inclusive approach to staffing – as exemplified by Barrick Gold's highly automated Kibali mine in the country's north.

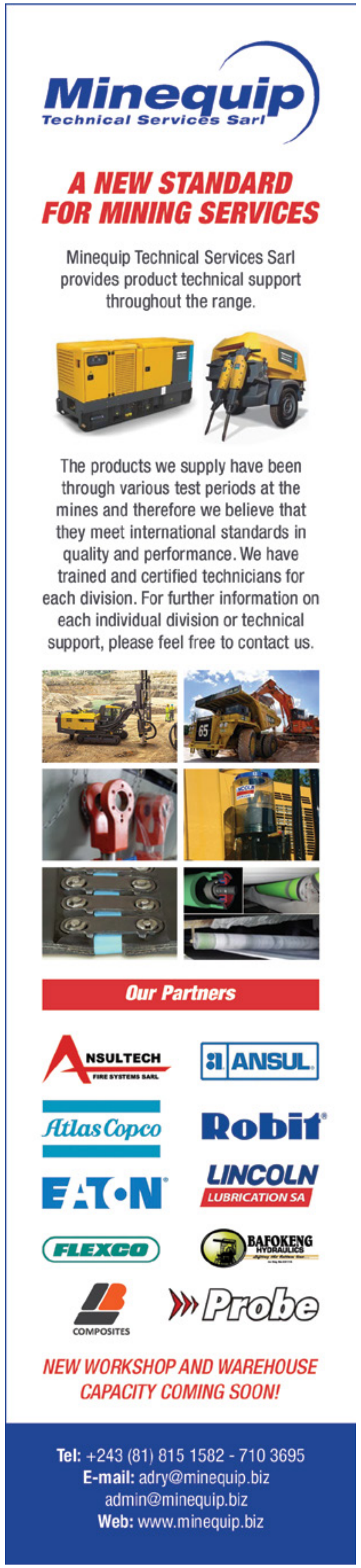
From a safety perspective, innovation reduces risk by automation limiting the need for people underground and also through advanced monitoring technology such as Congo Equipment's MineStar products that increase safety through tracking and accident avoidance technology. "We have also been very successful in implementing driver safety systems in the country through a technology that surveilles the eyes of the operator. If the driver starts to fall asleep, the seat will start to vibrate and an alarm will sound. The frequency of these events are monitored remotely, and we will contact the mine's control room. These safety systems are fully automated and no training is required."

Over the last decade, monitoring technology at mine sites has developed from requiring trained supervisors to becoming easily integrated with existing systems and remotely operated. Data-driven responsible sourcing company RCS Global has developed a smartphone-based mobile application to capture data at mine sites. "With this mobile application, clients are able to recall incidents, which will help to identify the different risks on the mining site, the community surrounding the site and across the supply chain," said country director Robert Bitumba. "The traceability and due diligence information is stored in a dashboard where there is contextual, economic and demographic data as well as a record of risk incidents. Our clients can monitor exactly what happens in their supply chain and on-site in near real time."

As production of cobalt and copper is set to increase over the next five years, so is the demand for responsible-sourcing due diligence. Eurasian Resources Group (ERG) is piloting a blockchain-based solution built on the IBM Blockchain Platform at the Group's Metalkol RTR operation. The technology

"The skilled labor force in the DRC is significantly smaller than in other Southern African countries. There is no accredited institution in the DRC to train technicians and provide them with proper qualifications. Congo Equipment has developed a program starting with basic training such as reading, writing and computer skills followed by Caterpillar-specific training programs. The three-year program does not provide the participants with institutional accreditation, but they will be certified to carry out work for customers on Caterpillar equipment."

- Deon Heyns,
CEO,
Congo Equipment



will be used to record the provenance and movement of cobalt throughout the supply chain. Currently, blockchain is more widely used for payments and transactions, but the mining sector has largely introduced the concept of supply chain traceability that is predicted to have a deep penetration across the extractive industry within the coming decade. Large companies are increasingly adopting the technology, both as a powerful marketing tool and as a way to ensure due diligence.

Early this year, car manufacturer Ford, tech giant IBM, South Korean cathode maker LG Chem and China's Huayou Cobalt joined forces in a project overseen by RCS Global to monitor cobalt supplies. "We generate data about the most complex part of the supply chain through two distinctive products: Better Sourcing and Better Cobalt," Bitumba said. "Better Sourcing is an RMI-recognized upstream assurance mechanism that validates supply chains and exports through the digital and continuous collection, verification and reporting of data on production, trade and socio-economic conditions from source to market."

Robinson International, which mainly deals in cobalt, tin, manganese, copper and tantalum, has also adopted blockchain technology to ensure best practices. "In the past, companies could assign any value to the load without consequence. At Robinson International, we have decided to go with a full source-compliance process where the value of the cargo is irrelevant and we charge the same amount per load – the only priority being honest and accurate analysis," de Longueville said.

Renewable energy is another vital part in greening the mining supply line and a viable choice in the DRC where the national electrification rate is estimated between 10 and 15 percent. Lubumbashi-based Panaco specializes in electrical installations and has launched a department geared towards solar power.

> Technological advancements in heavy equipment are only as valuable as the skills of the operator. The challenge is finding local skilled labor and training them to international standards. The Kanu commitment to support is tailored to our clients. We offer operator and maintenance training for our client's employees so they can maximize value in our machines and parts. We have seen a shift towards internalizing maintenance programs at the major mines, we are prepared to help clients through this transition whilst continuing to support them with world class equipment and spare parts.
>
> **- Russell Cleminshaw, Managing Director, Kanu Equipment**

"The company has ventured into solar installations, and we did a small solar project for Metalco in which we succeeded very well," CEO Samir El Masri said. "The first thing mining companies do is to bring electricity to their sites, and they ought to take greater advantage of the renewable energy potential in the DRC. Panaco has the ability to provide quality equipment in solar energy, but we are waiting for the mining industry to catch up with these developments." •

Conclusion

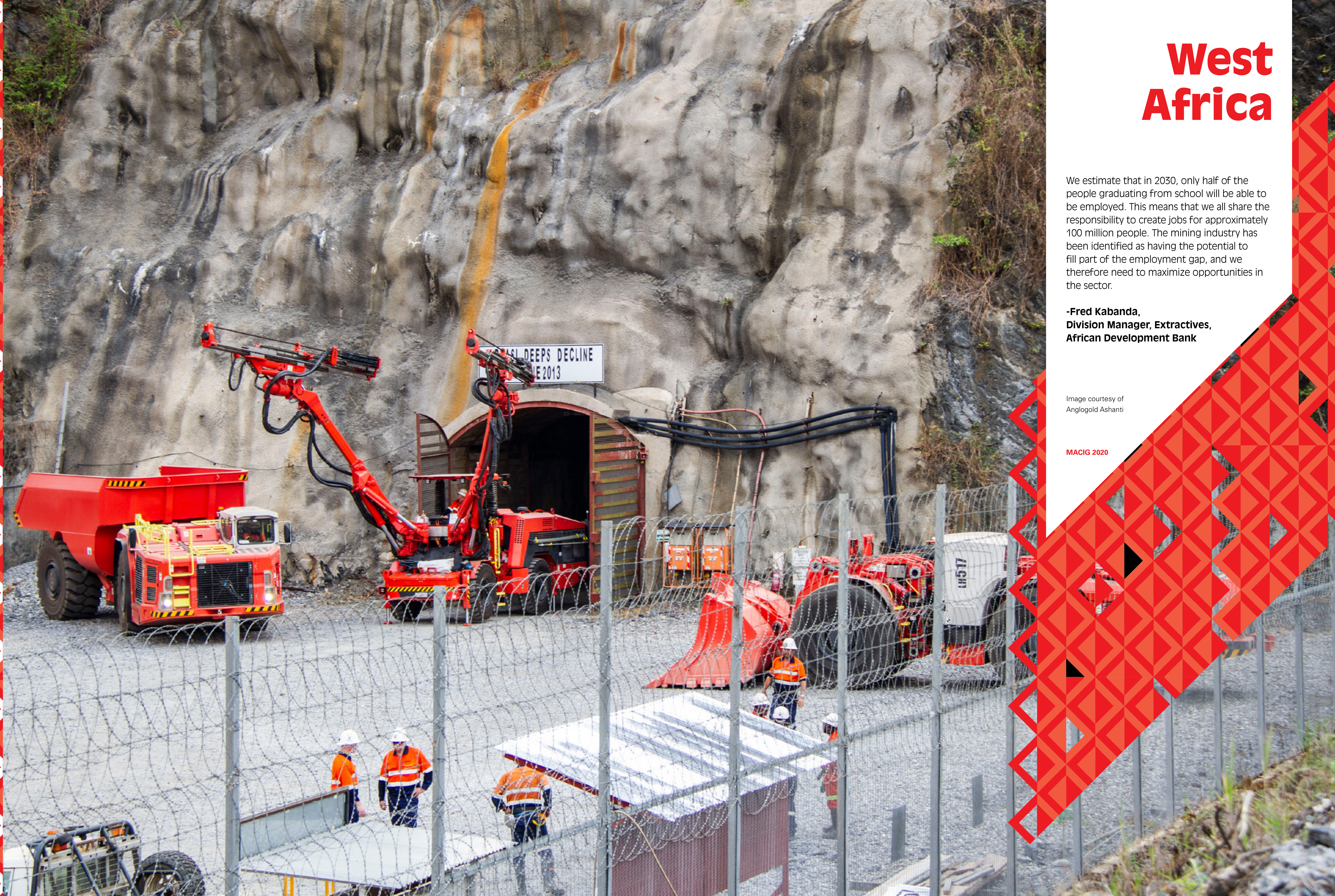
Weary yet determined, miners look forward to a period of relative stability

After the forming of Joseph Kabila's and Felix Tshisekedi's coalition government, the mining industry is left with little choice but to settle in with the new mining code. Some questions remain: Will more metals be categorized as strategic? And what real effects will the subcontracting law have after the necessary clarification? It is also uncertain how the power will be divided between the leaders – Kabila, who held presidential office for 18 years and refused to step down after a constitutionally determined second term, and Tshisekedi, who has stated that he will "not accept being a president who reigns but does not govern." Too much daylight between the leaders risks putting a brake on Tshisekedi's declared ambitions to stamp out corruption and lift the country out of its infrastructure crisis – initiatives crucial for the DRC's mining industry.

Regardless, the coalition was inevitable as Tshisekedi had to end the stalemate that blocked him from naming a government. Most importantly, the immediate risk of the country descending into chaos has been diverted, and the mining industry can finally exhale after holding its breath through the turbulence of the last two years. With a fair wind, what now lies ahead is a period of relative stability and rebounding commodity prices during which new deals can be made and new projects can come online.

While the Chinese influence is met with varying levels of enthusiasm, the Sicomines deal has injected much-needed capital into the country while bringing other Chinese companies to the market. The majority of the promised Chinese investment is still to be allocated towards mining credits and infrastructure, which, if managed correctly by the government, has the potential to lower costs considerably for companies across the mining value chain. In addition, the fact that most mining companies operating in the DRC are major players with substantial financial backing – a lot of which comes from China – has contributed to a robust mining sector desensitized to the inevitable political and regulatory tremors of emerging economies.

The DRC has a long way to go in becoming an investor destination par excellence. Yet, incremental improvements towards fair practices, adequate skills transfer and increasingly advanced mining operations should progressively tip the scale towards prominence. By enduring as well as growing its way through the turbulent times, the DRC's mining sector has sent the message to investors that its tenacity matches the daunting risk aspects of the environment in which it operates. With the streak of tranquility that hopefully lies ahead, investment viability should finally lose its question mark. •



West Africa

We estimate that in 2030, only half of the people graduating from school will be able to be employed. This means that we all share the responsibility to create jobs for approximately 100 million people. The mining industry has been identified as having the potential to fill part of the employment gap, and we therefore need to maximize opportunities in the sector.

-Fred Kabanda,
Division Manager, Extractives,
African Development Bank

Image courtesy of
Anglogold Ashanti

Introduction to West Africa

The sun rises over a booming jurisdiction

With the sun thought by many to be setting over South Africa's mining industry, investors are turning their eyes to the continent's West. Shallow deposits and investor-friendly regulation are the main reasons for the attention attributed to countries such as Mali, Burkina Faso, Ghana, Senegal and Ivory Coast. West Africa is now the continental center for gold, bauxite and iron-ore mining, with ongoing and upcoming projects across the region while future metals such as lithium, manganese, vanadium as well as copper and uranium are being widely explored and already produced in a number of countries.

"The precious and base metals markets remain robust, and currently, anything related to batteries such as lithium, copper and nickel are receiving a lot of attention," said Aaron Green, director of Australasian Operations at CSA Global. "Although nickel prices have not increased as much as we expected, a significant number of explorers are again entering this market. The demand for lithium is continuously growing, and we believe that demand will increase for some years to come."

Gold remains the mainstay of the region's mining sector as the boom spreads from more mature jurisdictions such as Ghana and Mali to neighboring countries with similar host geology. With a bullish gold price and diverted investor dollars from the South swelling the sails, West Africa is poised to become one of the top five gold-producing regions in the world.

But a gold boom does not guarantee the longevity of West Africa as a mining hub. The region's long list of challenges, including political and regulatory volatility, terrorism, failing infrastructure and illegal mining are all investor deterrents whose continuance could spell the end of the optimistic consensus. Terrorist attacks claimed by extremist groups such as Al Qaeda, ISIS and Boko Haram have been mounting in Ivory Coast, Mali, Benin, Burkina Faso and Togo in the last year. The prevalence of extremist groups is often a testament to a weak social contract between the state and its citizens and resolving these issues will partly depend on the extent to which the growing wealth of the region is translated to a better life for its people.

The mining sector has the potential to be a primary driver for this transformation, but – paradoxically – the geopolitical risk is what could come to hamper investment.

"The biggest challenge Perseus Mining faces in terms of attracting new investors is a combination of geopolitical risk and historic attitudes to the ability of companies to perform in Africa," said Jeff Quartermaine, CEO and managing director.

Quartermaine also pointed out that its peer group of Australian companies operating domestically sell their product in local currency, resulting in a substantial Australian-dollar cost margin, while the cost base and revenues of Perseus Mining is USD-denominated.

"As a result, the company has not been perceived to have done as well as some Australian companies have done in recent times. However, when analyzing our metrics relative to Australian operators, ours are just as good – and in some cases better. We have bigger reserves, better organic growth prospects and production as well as cash-flow levels that are comparable with our Australian focused peers."

So far, low-cost reserves and favorable tax regimes have been sufficient to attract substantial foreign investment. West Africa must now take advantage of the momentum to implement legislation that ensures investment predictability, the proper harnessing of mining benefits, environmental sustainability and overall accountability. The region has already benefitted from the migration of expertise from more mature jurisdictions such as Ghana, but to effectively tax large multinational mining companies, revenue and mining administrations must increase collaboration between countries through existing regional platforms such as Economic Community of West African States (ECOWAS) and the West African Economic and Monetary Union (WAEMU).

> Through refurbishing the infrastructure the country already has, we will be able to support the influx of new companies into Ghana. The government is setting itself up for the future and they are building an industrial city in the Western region of the country to service the oil industry and new oil companies entering the market.
>
> **- Soraya Anglow, Executive Director Greenline**

This year, we feature Ghana, Senegal and Ivory Coast in our Southern Africa section of MACIG. With all three countries predicated to experience substantial growth in the upcoming years, Ghana – the regions gold titan – provides a blueprint for emerging jurisdictions in the region but must bolster exploration and diversify its portfolio amid stiff competition from its younger neighbors, while Senegal – that is sprinting to become one of the world's top gold producers – faces the challenge of remedying its skills and infrastructure shortage to support a growing mining sector, and lastly, Ivory Coast that is currently experiencing its second economic miracle, will be put to the test in the 2020 election as the country's institutions go through their first real trial of robustness. •

Ghana

Population: 30.42 million (worldpopulaitonreview.com 2019)
Land area: 227,533 sq km
Official Language: English
Capital: Accra
Chief of State: Nana Akufo-Addo (since 2016)
GDP (PPP): $130.2 billion (CIA World Factbook 2017)
GDP (PPP) Annual Growth Rate: 6.3% (countryeconomy.com 2018)
GDP per Capita (PPP): $4,211 (Trading Economics 2018)

Industry: mining, lumbering, light manufacturing, aluminum smelting, food processing, cement, small commercial ship building, petroleum (CIA Fact Book 2017)
Top Exports: Gems, precious metals (35.6%), Mineral fuels including oil (30.6%), Cocoa (19%), Fruits, nuts (3.5%), Ores, slag, ash (2%) (OEC 2018)
Top Imports: Total $12.68 billion; capital equipment, refined petroleum, foodstuffs
Top Export Destinations: India (21.5%), China (11.9%), South Africa (10.2%), Switzerland (9.5%), Netherlands (7.2%), Malaysia (6.5%), United States (3.6%), United Arab Emirates (3.5%), Spain (3.4%) and United Kingdom (2.9%) (worldstopexport.com 2018)

TRANSPARENCY INTERNATIONAL CORRUPTION PERCEPTIONS INDEX

SOURCE: TRANSPARENCY INTERNATIONAL

RANK 2019
80/180

SCORE
41/100

TAXATION RATES

SOURCE: ICLG

MINERAL INCOME TAX RATE
35%

ROYALTIES
5%

BUSINESS ENVIRONMENT RANKING (1-190)

SOURCE: THE WORLD BANK (2020 EDITION)

EASE OF DOING BUSINESS
118

STARTING A BUSINESS
116

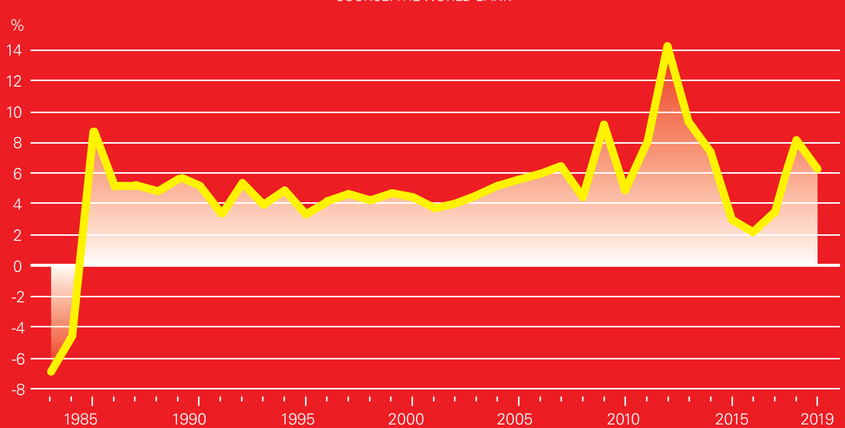
DEALING WITH CONSTRUCTION PERMITS
104

GETTING ELECTRICITY
79

REGISTERING PROPERTY
111

GDP (ANNUAL %)

SOURCE: THE WORLD BANK



Hon. Kwaku Asomah-Cheremeh

Minister of Land and Natural Resources
Ghana

Can you elaborate on the Government's plans to establish an integrated aluminium project?
Bauxite was first discovered in Ghana in 1914 in the Atewa Range in the Eastern Region. Yet, the refining of bauxite into alumina is still conspicuously outstanding and mining is only undertaken at Awaso though deposits exists at Kibi, Nyinahin and Ejuanema.
In 2018, the government established the Ghana Integrated Aluminium Development Corporation (GIADEC) under an Act of Parliament to ensure the establishment of a fully integrated aluminium industry in Ghana.
GIADEC is far advanced with undertaking verification/confirmatory work to upgrade confidence in and certify the bauxite resource/reserves position by November 2019. The process of investor-identification which started with 40 investors who expressed interest in the broad range of opportunities across the whole value chain has been screened down to eligible ones.

What is the government's strategy for formalizing the small-scale mining (ASM) sector?
Ghana provided a formal framework for ASM in 1989 that included legislation as well as identifying suitable lands, establishing markets and even providing capacity building support for such operations. But operations outside the framework of the law have still persisted. However, government still recognizes that the ASM sector has huge potential to contribute to employment generation and poverty reduction, often in rural areas.
Government has decided to bring together measures previously adopted along with others being considered under a five-year project; the Multi-Sectoral Mining Integrated Project (MMIP) for curbing illegal mining and sanitizing the ASM sector. Government is also collaborating with the World Bank to implement a Ghana ASM Formalization Project (GASMFP), which plans to implement the takeover aspects of the MMIP.

Autonomous mining systems are increasingly deployed to increase safety and productivity, but with AMS comes also the issue of potential job losses. What is the government's approach?
As noted, transition towards automation is generally aimed at improving mine productivity, safety and efficiency. These are certainly positive developments and the regulatory framework should support the trend towards these improvements.
However, there are potential negative impacts that need to be recognized and managed; among these is job losses. It is noted, however, that job loss impacts can be very different. The more highly skilled are less likely to be negatively impacted since they are generally in a position to move to other mines locally or internationally or even to be integrated into other sectors which require analogous skill sets.
As global studies have shown, this is especially the case where, in addition to hard skills, they also have soft skills. In the empirical case of the redevelopment and modernization of the Obuasi mine, the requisite re-training and re-orientation of staff appears to have helped in this respect.
It is lower skilled personnel who are likely to be most impacted by job losses. In Ghana, these have tended to migrate into the small scale mining sector.
Government efforts to manage the sector through enhancing access and governance, along with the facilitation and development of complementary and alternative livelihoods are meant to ease the impacts, among other measures adopted.

Will increased output and a higher gold price bolster exploration?
These factors alone will hardly translate into increased exploration but will give Ghana some added visibility as an investment destination.
In addition, the government is currently enhancing the governance framework and taking measures to reduce the cost of doing business. This includes strengthening the rule of law, reduced turnaround time for mineral rights applications and overall improving the country's infrastructure base and security for citizens.
As Ghana is a reasonably mature mining jurisdiction, our expectation is that most increased exploration would be of brownfield nature through the reinterpretation of existing data. A few areas may still be amenable to greenfield exploration, especially with respect to minerals which have not been traditionally explored.

Do you have a final message?
To all mining investors, both our old friends and those considering venturing into West Africa for the first time, Ghana is still your preferred partner. We invite you not only to come and explore opportunities along the whole value chain of gold and the other traditional minerals, but also expand your horizon into the lesser known minerals such as the base metals (copper, zinc, nickel, chrome and lead) and industrial minerals deposits which include sand, gravel, granites and salt which have nonetheless bright potential. •

Ghana
Newly crowned Africa's top gold producer, Ghana must adapt to maintain its title

Ghana's winning the crown as Africa's top gold producer was long coming. The former champion, South Africa, left the title vacant after succumbing to an ever-growing list of impediments, including political instability, rampant electricity costs and the geological challenges of tapping the world's deepest mined deposits. A bullish gold price and extensions of Ghana's existing mines are now likely to cement the country as the dominant producer for some time. But as younger jurisdictions in the region gain investor attention, Ghana will have to play its cards right to maintain a long-term presence on the podium.

Lessons From South Africa's Decline

South Africa's gold ore grades are said to have declined steadily for decades. Yet, it was the combination of deep-rooted political issues and industry mismanagement that set the sector on a downhill path, rendering some 70% of the nation's gold mines marginally profitable or loss-making in 2018. South Africa's political past does not map on to that of Ghana, where the norm for the last decades has been stability and predictability. Instead, it is the long gold-mining tradition and the dependency on the yellow mineral that often has the two countries mentioned in the same breath. Recently crowned the new king of gold, Ghana now has the opportunity to learn from the mistakes of its predecessor, namely a high gold dependence, lack of skills development as well as insufficient technological innovation.

Exploration, Diversification and Downstream Beneficiation

Some 98% of Ghana's minerals production is comprised of gold and, for the time being, big players like Newmont, Gold Fields, Kinross and AngloGold Ashanti are well positioned to benefit from a bullish consensus on the future gold price. But Ghana has so far failed to exploit its basket of other commodities such as bauxite, iron ore, diamonds and manganese, and it is unlikely that the handful of greenfield exploration projects currently underway will perceptibly impact the sustainability of the sector. Currently, Ghana has 14 large-scale mining operations, of which 12 are gold mines, and the vast majority of ongoing exploration is brownfield projects carried out by major players. The absence of greenfield exploration is largely due to a mining code that was penned with the country's dominating large-scale projects in mind; for example, prescribing a GH¢500-million (US$100 million) minimum investment for companies wishing to enter into a project development agreement. The code stipulates a 15-year stability agreement for all companies but the opportunity to renegotiate benefits is reserved for those meeting the minimum investment requirements. Adding to this deterrent is an unfavourable tax regime.

"Holders of large-scale mining licenses are subject to corporate tax (35%), capital gains tax (15%), withholding tax for foreign residents (15%) and royalties (5%)," according to Yofi Grant, CEO of the Ghana Investment Promotion Center.

"Most of the mines in Ghana started as small exploration projects that grew into commercial mines," said Innocent Akwayena, managing consultant at Rem Law Consultancy. "These developments lead us to overtake South Africa in gold production. However, the taxes on exploration in Ghana are already high compared to other West African countries, and Ghana may find itself in a hard position when existing mines run out of commercial deposits".

The presence of international mining powerhouses in Ghana makes the comparatively high mining tax rate of 35% a lesser issue than the costs associated with exploration. A 2019-industry assessment by the Chamber of Mines revealed that Ghana is losing potential mining investors to emerging min-

> "The aim is to promote local capacity building by granting more opportunities to companies with local content. If a company has significant local content and demonstrates technical and financial capability, they have a better chance of winning a bid."
>
> - Zoë Phillips Takyi–Appiah, Senior Partner, JLD&MB Legal Consultancy

ing destinations in the West African sub-region, particularly Burkina Faso, as a result of the Value Added Tax (VAT) on exploration inputs. "The government needs to reduce the taxes on exploration, especially the VAT tax," stated Eric Asubonteng, managing director of Anglo Gold Ashanti and president of the Ghana Chamber of Mines. "If the exploration projects result in production then the taxes should be implemented of course. However, if not, then the input costs of explorations are higher which discourages investors and pushes them to other African countries in the long run."

While companies can get reimbursed for exploration expenses, this can be a frustratingly slow process. "It takes a long period of time for mining companies to get refunds in respect to the input VAT they incur in the course of their operations," affirmed Priscilla Gyasi, partner at EY Ghana, concluding that there is need for a more robust refund system.

While there is broad industry consensus regarding the need to adjust the VAT on exploration, Peter Amponsah-Mensah, director of drilling company Pamicor, suggested that the absence of reform is due to a structural issue where university-trained professionals are not adequately funnelled into policy positions. "Ghanaians need to be adequately trained commercially and strategically to inundate the corporate level within the mining space and then move into the policy space to then make a positive impact on the industry."

Incentivizing greenfield exploration would also bolster indigenous ownership without the extension of existing nationalization laws. "Ghana has a very long mining tradition, yet not one operational mine is fully owned by a Ghanaian," related Joseph Titus-Glover, managing director at international man-

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Sulemanu Koney

CEO
Chamber of Mines Ghana

Larger companies benefit from the fiscal regime in Ghana due to the US$500 million investment threshold. Does the Chamber favor a change to the law?

The law prescribes a US$500 million minimum investment for companies to enter into a project development agreement. Unfortunately, this law has not been revised. The Chamber has had conversations with authorities and we understand that if the investment is large, the potential impact on the country is also greater. The challenge is that when things are quiet, smaller companies are negatively impacted. We are in discussions with the government, but until the law is changed, it will be difficult for much to be achieved. The authorities need to consider what can be done to ensure that smaller mining companies are able to survive.

Currently, there is almost exclusively brownfield exploration in Ghana and major players dominate the overall industry. Why is this cause for concern?

We need to branch out and have a diverse portfolio of investments in the mining industry. Even if there is a significant amount of brownfield exploration, we should also be looking at the greenfield pipeline of projects potentially coming online in the future. Furthermore, we must look at diversifying into different mineral resources and not only have a focus on precious metals.

Can you elaborate on the minerals currently dominating the mining industry in Ghana?

The essential minerals in Ghana include gold, diamonds, bauxite and manganese with gold being dominant in terms of production. Over the last few years, there has been a lot of talk about leveraging the bauxite resources for infrastructure development. There have also been conversations around manganese to some extent. The Ghana Integrated Aluminum Development Corporation (GIADC) has been tasked with taking charge of the process of developing the aluminum industry. Ghana is set to exploit its vast bauxite and iron ore deposits as part of a larger strategy to establish this integrated aluminum industry, and there are discussions around also establishing the Ghana Integrated Iron and Steel Development Corporation.

Currently, Ghana has one bauxite mine and the government essentially sponsors the operation. There is also exploration being done on iron ore deposits. We want to diversify our mineral production in the country as approximately 98% of mineral production comes from gold.

Is there a case for ramping up downstream capacities in Ghana?

Increasing refining capacity is a major priority for the country. The government has revised its policy in terms of value addition prior to exportation. We continue to have conversations within the industry and with government as to what would be the best way to ramp up downstream capacity. We are also engaging with local refineries to identify if there is any appetite for them to become certified as the refineries in country are not certified.

With the country's mines going deeper, how far is the Ghana from a reality where gold mining is no longer economically viable?

Ghana's gold resources are still relatively shallow compared to the likes of South Africa. Mining houses are starting to move underground, but there is still significant underground potential to extend life of mine. In combination, we are using traditional mining methods and innovative technological solutions to go underground. Mining houses are taking advantage of technologies where it this becomes economically feasible, and we are seeing more digitization and automation within the industry.

We believe that if the gold price keeps increasing as predicted, it will have a positive impact on the greenfield exploration investment in Ghana – it depends on how competitive the country can be in terms of attracting investment. Ghana used to be the star investment destination in West Africa, but today, most of our neighboring countries have learnt from us and are now also attracting investment. Investors will look at legislation, policies and the stability of the country to inform their investment decisions. The government should put in the efforts to optimize as much as possible to become more competitive as an investment destination in West Africa. •

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agement firm Quantum Group. "In certain mines, mining contractors carry out 60-70% of the work on site, such as drill and blast and haulage of ore and waste, while the mines supervise."
The difficulty in competing with foreign companies is further expressed by Wilfred Obengsackey, managing director at Sackson Logistics: "Multinationals are being favored due to their access to capital, where we, the local companies, function as a third-party service provider."
Five decades ago, most Ghanaian mining production was state owned. In 1983, the government implemented the Economic Recovery Program aimed at reversing a protracted period of serious economic decline characterized by lax financial management, inflation rates well over 100% and extensive government involvement in the economy. Ghana has since attracted foreign investments and pushed towards privatization and state divestiture.
While the sector is now largely foreign owned, the government still holds a minority 10% free carried interest in most of the main active large-scale mines and the small-scale mining industry is reserved for Ghanaians. Ghana has a softer local content approach than South Africa, whose more broad-based and stringent policy has exacerbated monitoring and reporting costs, but it has still achieved a certain level of empowerment of local companies. "Wileb Mining has a long history in the mining industry, and the local content regulations have brought on more opportunities for the growth of the company," said managing director Wilson Krofah.
The law also requires mining companies to use local contractors or form local partnerships to license their operations. This has benefitted local players such as Rocksure International, which specializes in mining, construction and related support services. The company's CCO, Fabian Limberger, has seen a perceptible increase in companies approaching them for partnerships and joint ventures since the law's implementation.
Local content policy does, however, need to be tailored to the unique situation of each jurisdiction. Ghana's lenient model would likely be insufficient in less mature mining destinations that lack the local availability of skills. As stated by Federico DeSimone, director of Ghanaian-owned DeSimone: "There is a large database of in-house resources that are highly qualified and competent in their disciplines. We send our Ghanaian employees all over West Africa."
Accordingly, Bernard Kaninda, regional director of global technology firm Maxam, related: "There are excellent mining schools in West Africa such as the ones in Ghana. We recruit mostly West African managers and technicians due to the ease of transfer of skills and technology."
Nevertheless, as both the country's energy and mining sectors keep expanding, the need for expats workers will initially increase to fill the knowledge gap. Ghanaian business advisory firm Alfreg Company has experienced considerable growth since its establishment in 2006 due to the increased need for immigration support services. "Alfreg assists with immigration support, personnel hiring and other human resource services," said managing consultant Regina Ofori-Twumasi. "Once operations commence, we also provide payroll, tax and accountancy support services and other secretarial support services. We also ensure that our clients are compliant with the necessary statutory returns."
As of June 2019, 26,425 people were directly or indirectly employed by Ghana's mining sector. In a press conference held in September 2019, Minister Kwaku attributed the increase from last year's 23,894 employees to local content initiatives. Employment numbers will be further boosted as mining giant Anglo Gold Ashanti edges closer to achieving full-scale operations at its Obuasi mine. "We made an investment development decision last year and we aim to pour first gold by the end of 2019 and reach full capacity in 2020," said managing director Eric Asubonteng. "We will hire 2,000-2,500 workers in total – including our direct employees and those hired via our contractors for production."

Ghana has seen large railway projects underway over the last few years, and there are plans to extend these further. The rail network will help to reduce congestion on the roads and there is a large project underway to connect Tema with Burkina Faso.

- Serigne Ndanck Mbaye,
CEO West Africa and
Country Head Ghana,
DHL

Currently, Obuasi's mine life is expected to be 21 years, during which the production will reach a total of 8.6 million oz of gold with current reserves sitting at 5.8 million oz. "Our reserves account for about two thirds of the life of mine ounces projected, Asubonteng continued. "That is significant, since the reserves usually only constitute a fraction of the expected total output. We will be conducting drilling activities to further convert the resources into reserves."
With new projects coming online, international service providers will bring both jobs and new skills to Ghana. Kanu Equipment, one of the largest dealers for Liebherr and Bell equipment in West and Central Africa, has identified Ghana as an area for future growth. "We want to support local procurement and development in the countries where we have a presence," said CEO Stephen Smithyman. "Every country is unique, however, and changing laws present ongoing challenges. We are always conscious of how we are adding value to local communities through skills training and a strong focus for us in 2020 will be local talent development. Liebherr and Bell have agreed to send technical trainers to sites every quarter to develop the skills of our local employees."
Meanwhile, the government seeks to attract explorers to the southeastern Volta region as well as the country's north that remain largely unexplored. In the north, Perth-based Azumah Resources has already blazed a trail for future exploration through its Wa Gold project for which a feasibility study is scheduled before the end of 2019. Another Australian company operating in the far north, Cardinal resources, is advancing the feasibility study for its flagship Namdini project, which has proven and probable ore reserve of 5.1 million oz. The Volta region attracted attention in January 2018 as lithium was discovered during a nationwide exploration exercise. The government has earmarked mining as a potential economic driver of the relatively poor area that is mostly covered by water. Lithium has also been discovered in the Western and Ashanti region, but national production will most likely start in the Central region where Australian company Iron Ridge Resources has an exploration and production license in a concession covering 684 km squared. Drilling commenced in 2017, and the company announced in September 2019 that, with approximately a third of the planned RC and diamond drilling program remaining, new pegmatite zones had been discovered along the known Ewoyaa deposit footprint.
A possible impediment to diversification is the lack of geological data, as stated by Samuel Torkornoo, vice president of junior gold explorer Pelangio: "It is important for locals as well as international investors to have access to key role players and areas. The Mineral Commission does not have access to key data that is often in the possession of companies."
Ghana has been conducting geological mapping of the country since 2001, however, the maps available to the public have not been updated since 2010, according to Joe Amanor, consultant geologist at SEMS Exploration Services.

Other avenues for diversification include tapping the country's bauxite, iron ore and manganese deposits. Ghana has substantial deposits of bauxite mainly found in the Awaso and Atewa regions. In 2018, the government signed a memorandum with China to explore Ghana's deposits of bauxite in exchange for infrastructure. Under the deal, Ghana will cede 5% of its bauxite resources to the Chinese while Beijing will finance US$2 billion worth of projects including rails, roads and bridge networks. The agreement is part of a larger government plan to leverage more of the country's mineral resources to fund infrastructure development. "Outside of the main cities, the road infrastructure in Ghana is not very good," said Soraya Anglow, executive director of Greenline Logistics. "It sometimes takes us a significant amount of time to reach a mine site due to the lack of adequate and well-serviced road networks."

As of 2017, Ghana had approximately 72,000 km of roads, out of which 23% were paved, 39% deemed in good condition and 61% classified as fair or poor. In the face of an growing economy, the government has realized the need to rapidly refurbish and extend the road network while also installing new rail capacity. "Ghana has seen large railway projects underway over the last few years, and there are plans to extend these further," said Serigne Ndanck Mbaye, CEO West Africa and country head Ghana at DHL. "The rail network will help to reduce congestion on the roads and there is a large project underway to connect Tema with Burkina Faso."

But most funds will be allocated towards the road network that is estimated to account for 96% of passenger and freight traffic. The government recently formed the Ghana Integrated Aluminum Corporation (GIADC) to maximize the benefits from the industry. The end-goal is to leverage the country's bauxite deposits to create a domestic, integrated value chain. The project includes the construction of a refinery for alumina production, as well as raising output of the Volta Aluminium Co. smelter – that currently operates at a fifth of its capacity – from 200,000 mt/y to 350,000 mt/y. "Increasing refining capacity is a major priority for the country," said Sulemanu Koney, CEO of Ghana Chamber of Mines. "We are engaging with local refineries to identify if there is any appetite for them to become certified. Otherwise, we will have to turn elsewhere."

Creating downstream beneficiation will be key to create job opportunities and generate domestic skills, but such efforts risk being hampered by the country's power situation. According to the Ghana Investment Promotion Center, the total installed capacity for existing plants in Ghana is 4,420 Mw, consisting of hydro 36%, thermal 64% and solar less than 1%. In the past decade, Ghana has experienced severe electricity supply challenges costing the nation an average daily production loss of US$2.1 million. The power capacity has, however, increased dramatically from a mere 1,730 Mw in 2006. Yet, actual availability usually sits around half of capacity due to obsolete distribution equipment, outstanding payments as well as overdependence on thermal and hydro sources.

Another challenge is balancing ramped-up mineral output with environmental preservation. "Population growth, the rising standard of living, urbanization, industrialization in emerging markets, increased mobility, global trade, and the digital revolution are all generating huge need for power infrastructure, energy, and buildings," said Eric Waldner, CEO of cable manufacturer Nexans Kabelmetal. "Meeting these growing needs with minimal impact on the environment and climate change is a challenge we share with our suppliers and customers."

The Ghanaian government has courted some international opprobrium through its bauxite deal with China, as the resource sits in the scenic Atewa forest that provides the habitat for a major collection of Ghana's biodiversity. Ghana has a bad environmental track record, with the persisting issue of illegal mining rendering a majority of water bodies polluted and vast swaths of land destroyed. GIADEC's CEO, Michael

Ansah, has made assurances that his organization along with partners are dedicated to responsible mining that will ensure the preservation of the forest and that mining activities will only take place in a limited portion of the area while leaving the larger reserve intact.

If ramped-up bauxite production can be achieved within the existing environmental framework, establishing an integrated aluminium value chain will lower costs for infrastructure extension while creating job opportunities for Ghanaians currently dependent on the revenue from illegal gold extraction. Minerals deals with China have a mixed performance history in Africa, and Ghana – especially as China increases its dominance in the country's manganese sector – would be wise to compare notes with the DRC where inadequately detailed contracts and a dysfunctional oversight committee drastically warped the balance of an already skewed minerals-for-infrastructure deal. As for overall diversification, a slightly perceptible widening of the minerals portfolio will not be enough to alter Ghana's dependence on gold, and a few scattered gold exploration projects will not guarantee the country's place as the continental leader in production. Rather, the government must resist complacency amid high gold prices and take measures to bolster aggressive exploration. Such measures include scrapping the GH¢500-million minimum corporate investment requirement, abolishing the VAT on exploration input, minimizing administrative bureaucracies in granting of mining licenses as well as decreasing the annual licensing holding fees.

Ghana's Push Towards Modernization and Innovation

At the 10th WaCA Mining Summit & Expo in Ghana, 2019, the Minister for Lands and Natural Resources, Kwaku Asoma-Cheremeh, urged mining companies and service providers to adopt appropriate technology to improve the performance of the sector, emphasizing how innovation will optimize operations and promote sustainable development for the host community and the country at large. "Currently, most of the mining in Ghana is on surface and we are only now starting to transition to underground mining," said Bashir Amed, VP production and development at Asante Gold. "Compared to a country such as South Africa, Ghana still has a long future in mining. I believe that mining will become more challenging compared to what we are used to, but the technologies to efficiently mine underground are already available. Ghana still holds significant mining opportunity and there are a lot of areas that have not yet been explored."

A handful of mines, such as Newmont's Subika mine and AngloGold Ashanti's Obuasi mine, have already gone underground and mechanized part of their operations. However,

> Currently, most of the mining in Ghana is on surface, and we are only now starting to transition to underground mining. Compared to a country such as South Africa, Ghana still has a long future in mining. I believe that mining will become more challenging compared to what we are used to, but the technologies to mine underground efficiently are already available. Ghana still holds significant mining opportunity, and there are a lot of areas that have not yet been explored.
>
> **- Bashir Amed, Vicepresident Production & Development, Asante Gold**

mining innovation is driven primarily by safety concerns in deep-level operations and, with some 70% of Ghana's operations comprised of open-pit mining, there has not been a lot of incentive to innovate. Thus, it is easy to imagine a scenario in which innovation is not perceived as a priority until the majority of surface reserves are exhausted. This would likely be a mistake. The short-term benefits of modernization include increased safety and, in some cases, higher profit margins. But Ghana should look beyond the upcoming decade and instead consider the long-term benefits of establishing itself as a hub for innovation. Firstly, early-stage adoption of new technology will facilitate large-scale remodeling of mines in the future. The problem in South Africa is not the unavailability of technology but that the mines' infrastructure often does not allow for the implementation of innovative solutions. Secondly, a more pressing future need for innovation will raise the issue of job losses as multiple mines mechanize and automate concurrently. A 2019 study published in Resources Policy assessed the preparedness of mine stakeholders in Ghana for the adoption of automated mining systems (AMS). The study found that respondents generally had knowledge of the technologies but expressed unwillingness to accept AMS into Ghanaian mines due to fear of increased unemployment. It was also revealed that 48% of undergraduate and 75% of postgraduate mining courses in Ghana were focused on outdated technologies.

Lastly, Ghana has long held the position as the region's hub for knowledge and expats from Ghana are hired as operators and managers all over the continent. "In my opinion, Ghana is still the country with the most expertise and experience as well as a conducive environment for any investor," said Enoch Kusi-Yeboah, general manager, West Africa of Metso Minerals that provides equipment and services. "Other countries in Africa, such as Senegal and Côte d'Ivoire, are significantly developing expertise within the mining industry, but they are not there yet as they look up to Ghana in their quest to build a sustainable industry."

With Ghana as a blueprint, neighboring countries such as Senegal, Burkina Faso and Ivory Coast are rapidly advancing their mining skills. As these competitors offer more competitive taxation regimes, it is crucial for Ghana to retain its reputation as a source of expertise in West Africa. Thus, an increasingly integrated mining cycle should be accompanied by increased innovation in mines, refineries, smelters and exploration ventures. "We see a lot of new developments and innovation in mining operations today – especially with the government putting a significant amount of emphasis on trying to maintain a good standard of safety." said Rami Hamui, managing director at safety equipment distributor R-CO.

Ghanaian-owned Asante Gold Corporation sets an example with its green-gold Kubi project as it plans to implement the untested technique Sustainable Mining by Drilling (SMD), with potential to reduce the extraction costs by 50% compared to conventional mining methods. "The new SMD mining technique is a two-stage drilling method that enables direct mining of narrow deposits," Amed said. "The SMD method is being developed and commercialized by Anaconda Mining in collaboration with Memorial University of Newfoundland. The proposed SMD method has apparent huge advantages over conventional narrow underground mining techniques and appears well suited to the +5 g/mt Kubi project mineralization."

Asante announced in November 2019 that field crews had exposed the Kubi main gold mineralization in preparation for locating the initial SMD pilot hole collars.

Galamsey

In April 2019, Minister Kwaku Asomah- Kyeremeh announced at a news conference that regular media reports of deaths related to illegal mining or, galamsey, were now a thing of the past. At the time of the conference, the ministry had confiscated 300 excavators nationwide and placed a ban on further importation. The ministry ensured that those still engaging in illegal mining would be arrested or deported if lacking Ghanaian citizenship.

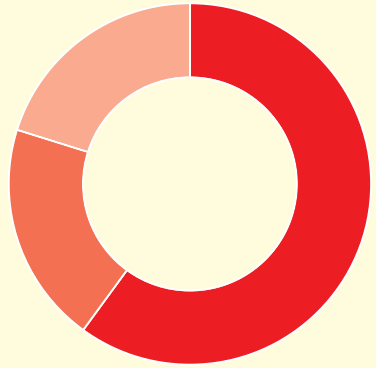
The taming of its unruly mining landscape has been a long struggle for Ghana's authorities. Following a decade of intensified illegal mining, authorities issued a ban on small-scale mining (ASM) in 2017. At the time, an estimated US$2.3 billion had been lost in government revenue the year prior in addition to the widespread destruction of farmlands, forests and water bodies. The ban was eventually lifted in late 2018, after mounting pressure from the National Association of Small Scale Miners that pointed to the US$551 million of lost profit during the period of interrupted operations. A long-term ban was never an option as some 30% of gold revenue is estimated to come from the ASM sector, but the government has been adamant in pointing out that the ban still applies to illegal mining.

While the 1,200 arrests recorded in early 2018 have had a temporary effect, the bare-knuckle approach to illegal mining has been tried in numerous other countries, including DRC and Zimbabwe, and consistently failed. Without a proper plan for large-scale formalization of the sector – meaning the training of, and granting of mining rights to, small-scale operators – the estimated 200,000 illegal miners in Ghana will recommence activities as soon as the most forceful government efforts cease.

"The ban on small-scale mining was the correct initial approach but not a long-term solution," said Asubonteng. "That is why the government followed up with the training of 4,500 illegal miners at the specialized mining university in Ghana while also launching a community mining program. Nonetheless, the key to the success of any policy is its implementation. If a person is illegally mining in a remote area claiming to have the right to a permit for community mining, the locals would not be able to stop him. Therefore, a monitoring mechanism by the government is crucial to stop this from happening."

DIRECT INVESTMENT TO THE MINING SECTOR IN GHANA 2017-2018

Source: Ghana Investment Promotion Center



Exploration	60%
Mining Support Services	20%
Other	20%

Image courtesy of Anglogold Ashanti

This sentiment is echoed by Peter Quarm, director of lubricant solution company Dutylex who stated that the government has put regulation in place to ensure, for example, environmentally friendly mining practices, but the problem has rather been "their implementation and enforcement."

The government's attempt at a long-term solution is the Multi Sectorial Mining Integrated Project (MMIP). Launched in Tarkwa in February 2018, the legal framework is based on statutory enforcement, social interventions and technological adaptations in the mining industry. Largely, its objective is to regulate and assist ASMs and to improve the efficiency of their operations. The MMIP is a more comprehensive document compared to the more broad-stroked roadmap the Inter-Ministerial Committee Against Illegal Mining initially presented. But critics have raised concerns about the reliance on stakeholder funding -- such as the US$50 million donation approved by The World Bank in 2018 -- which risks undermining the autonomy of the government. To formulate and implement measures to effectively address the problem there is a need to understand the scale, scope, the locational and operational attributes of illegal mining, and whether the MMIP will be sufficient remains to be seen. Meanwhile, the overall sustainable development of the country's mining sector will inherently work to undermine the need for locals to engage in illegal extraction. Community engagement has become an increasingly integral part of mining operations and, with the right type of practices, explorers and miners could constitute a reckonable force in providing lawful employment in local communities. If formalization becomes the norm, SMEs will also benefit from the expertise and innovation of service providers who have so far exclusively worked with registered entities.

> The mining industry in Africa has realized the benefits that come with innovation and the industry is starting to become more open and willing to adopt technologies. It does take a while longer for these advancements to reach West Africa, the mines are willing to adapt, and the digitalization movement is on its way to the region.

- Enoch Kusi-Yeboah, General Manager Mining Sales-West Africa, Metso Ghana Limited

"We have made a strategic decision to not to focus on supply of drilling solutions to small scale mining now due to its illegal elements and lack of compliance with Environmental Protection Authority laws," said Ernst Nsiah, managing director of EDM African Resources. "We prefer to deal with registered mining companies such as Newmont, Golden Star Resources, Gold Fields Ghana limited etc. We will however support properly registered and law-abiding small-scale mines with, for example, our portable energy solutions." •

Senegal

Population: 16,296,364 (UN 2019)
Land area: 192,530 sq km
Official Language: French
Capital: Dakar
Chief of State: President Macky Sall (since 2 April 2012)
GDP (PPP): $42.21billion (World Economics 2018)
GDP (PPP) Annual Growth Rate: 7% (2018) (African Development Bank)
GDP per Capita (PPP): $3,356.30 (Trading Economics 2018)

Industry: agricultural and fish processing, phosphate mining, fertilizer production, petroleum refining, zircon, and gold mining, construction materials, ship construction and repair (CIA World Factbook 2017)
Top Exports: Inorganic chemicals: (20.2%), Gems, precious metals (19.6%) Fish (19.3%) Ores, slag, ash (7.3%), Vegetables (3.9%) Fruits, nuts (3.3%), Mineral fuels including oil (3.3%) Salt, sulphur, stone, cement (3.2%) (worldstopexport.com 2018)
Top Imports: Refined Petroleum (11.3%), Crude Petroleum (6.02%), Rice (5.6%), Packed medicaments (2.6%), Cars 2,5%) (OEC 2018)
Top Export Destinations: Mali (19.8%), Switzerland (10.1%), India (5%), Ivory Coast (4.7%), United Arab Emirates (4.5%), China (4.4%), Gambia (3.6%), Spain (3.6%), Guinea (3.5%), United States (3%), Netherlands (2.9%) and Italy (2.6%). (worldstopexport.com 2017)

TRANSPARENCY INTERNATIONAL CORRUPTION PERCEPTIONS INDEX

SOURCE: TRANSPARENCY INTERNATIONAL

RANK 2018
67/180

SCORE
45/100

TAXATION RATES

SOURCE: ICLG

CORPORATE INCOME TAX RATE
30%

ROYALTIES
GOLD REFINED IN-COUNTRY: **3.5%**
GOLD REFINED OUT OF COUNTRY: **5%**

BUSINESS ENVIRONMENT RANKING (1-190)

SOURCE: THE WORLD BANK (2020 EDITION)

EASE OF DOING BUSINESS
123

STARTING A BUSINESS
60

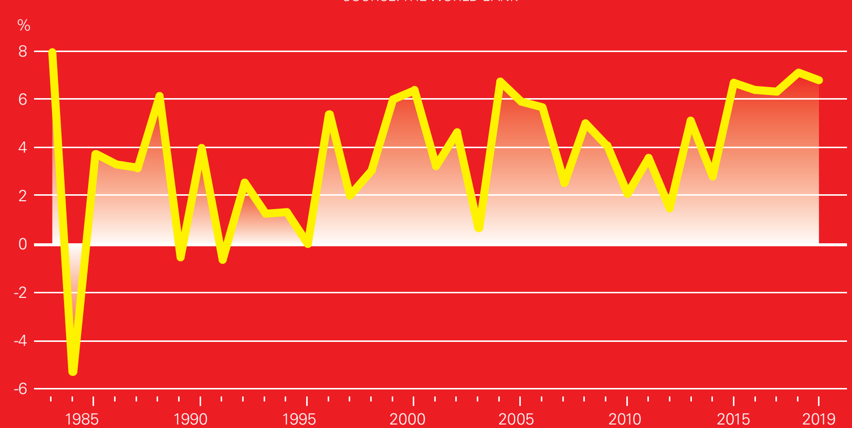
DEALING WITH CONSTRUCTION PERMITS
131

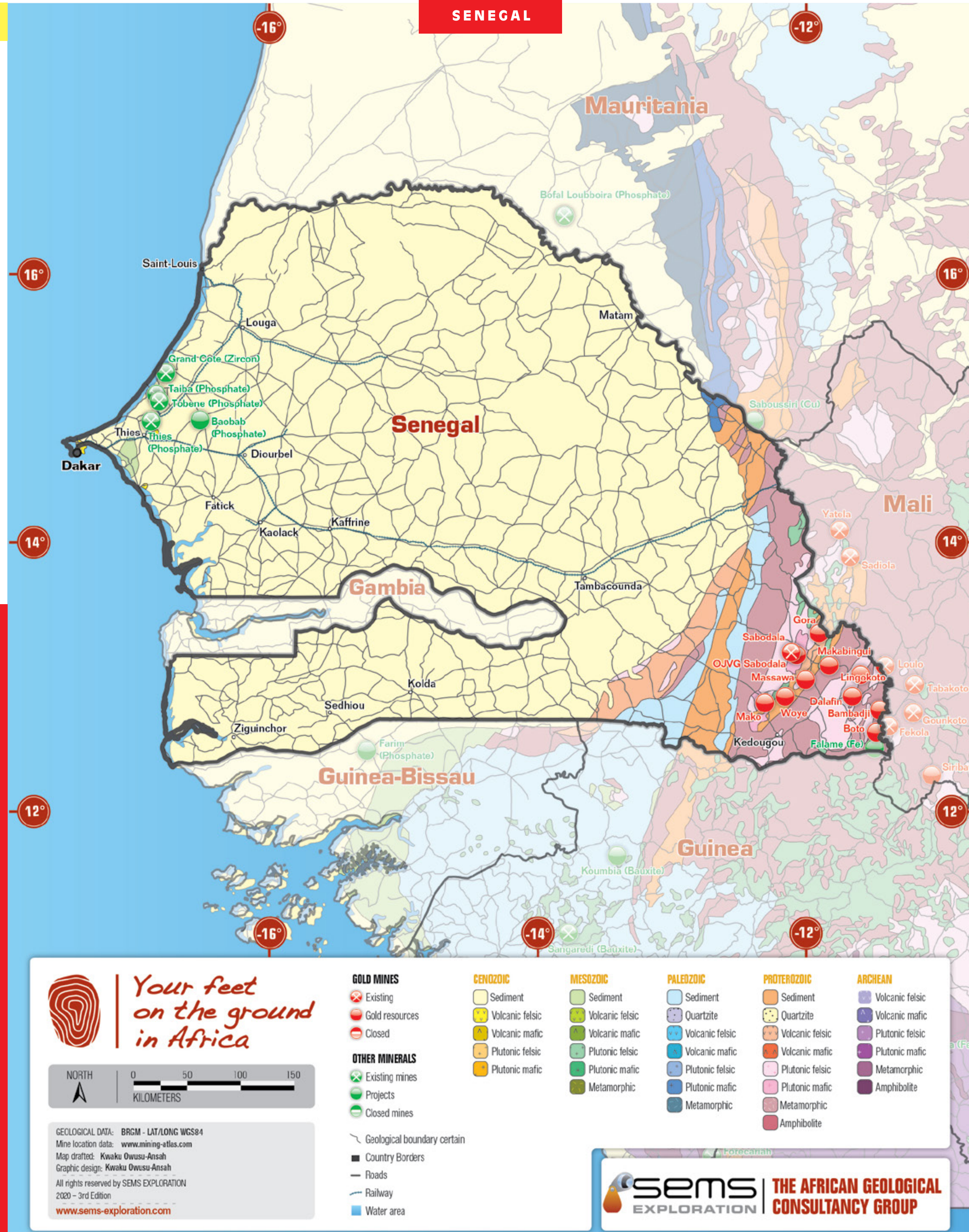
GETTING ELECTRICITY
119

REGISTERING PROPERTY
116

GDP (ANNUAL %)

SOURCE: THE WORLD BANK





Dr. Ousmane Cisse

Technical Advisor
Ministry of Mines and Geology

In an era where West Africa is increasingly opening up its mineral industry for international investment, is there also increased collaboration between countries in the region?
During the last decade, the focus in West Africa has been to attract and retain investment in its mineral industry with various incentives such as tax exemptions. However, mineral investment has not translated to a substantial increase in governments' revenues. It is likely the race to the bottom has touched rock bottom with regards to gold as countries in West Africa all share these concerns. Therefore, the Economic Community of West African States (ECOWAS) urges member states to create a harmonious and regulated environment for the overall sustainability of the region's mining sector. But, I believe the cooperation among countries can be increased further by the creation of dedicated policy and rules for specific minerals to the benefit of the broad spectrum of opportunities derived from mining. It is important to cooperate in areas of innovation and value-chain transformation in mining, which is the Achilles' heel of the region.

How has the 2016 mining code been received by the sector? Are there clauses which are subject to revision?
The 2016 mining code is the result of a four-year process aimed at modernizing the Senegalese mining sector. The law promotes human rights, gender equality, transparency and good governance, introduces competitive tenders for the issuing of mining titles, gives priority to environmental obligations and social responsibility and provides exemption and advantages for investors. It seems too early to introduce changes to the law, but as a matter of living law the practice could positively enrich the mining code.

How is transparency ensured in the Senegalese mining sector?
Senegal is a member of the Extractive Industry Transparency Initiative (EITI) since 2013. The EITI stipulates international norms for the good governance of oil, gas and mineral resources. Senegal published its 2015, 2016 and 2017 EITI reports, making its EITI reporting the most up-to-date in Africa in 2018. Senegal has made swift progress throughout the five years it has adhered to the EITI norms and the country will continue to build momentum towards greater transparency and accountability in the extractives sector.

While phosphate remains one of the country's biggest export items, gold is becoming more important. What is your prediction for the future of Senegal's gold sector, and are there other minerals you believe will play an increasingly prominent role?
Senegal has a long phosphate and industrial minerals history. During the last decades, the government has encouraged foreign investment in the country's mining industry, enacting an attractive mining code and providing as much geological information as possible. The effort has paid off as new discoveries are being made. Most of grassroots gold projects promise economic discoveries. Today the exploitable resources are estimated to contain 1.63 million oz of gold, with resources of 3.55 millon oz. But policies and regulations still have to be introduced to tackle artisanal and illegal gold mining.

Last year, you mentioned the need for bolstering downstream capacities such as the creation of a phosphate-fertilizer sector. Are there any such initiatives currently underway?
The creation of a phosphate-fertilizer sector is still on the country's agenda. There were challenges which delayed the initiative, but quickly overcome by the investors. Projects are on track.

What are the main competitive advantages of Senegal as a mining jurisdiction?
Senegal offers a stable political environment and strong institutions with growing opportunities for foreign investment. The country has a wealth of diverse and unexploited mineral deposits. The mining code is a transparent, predictable, simple, stable and non-discriminatory mineral regime. The code has been designed to reduce administrative formalities and to create a legal environment based on the principles of clarity, flexibility, competitiveness and sustainability.

Do you have a final message for our international readership?
There are a lot of reasons as to why Senegal is fast becoming the new mining investment destination, but there are only three that matter; its geology, its friendly investment framework and its stable political environment. •

Senegal

Does this nascent jurisdiction have what it takes to be the region's next great mining hub?

Speaking to Bloomberg TV at the 2014 World Economic Forum in Davos, President Macky Sall earmarked mining as one of the country's "pillars of development." As a key sector in the 2014 Plan for an Emerging Senegal (PES), the mining industry would help drive the economy to an average 7% GDP growth rate during the upcoming decade. Accordingly, in 2018, the estimated real GDP growth was 7%, down slightly from an even more impressive 7.2% in 2017. With this momentum recorded since 2015 expected to continue into 2019 and 2020, Sall's re-election in early 2019 came as no surprise. Election uncertainty now in the rearview, the government is set to continue its mission to join the top seven largest gold exporters in Africa, to diversify its mining portfolio and to become a regional mining hub.

Leveraging Political Actability to Attract Investment

The revision of the mining code in 2017 followed the theme of numerous African mining jurisdictions that have altered regulations in the last few years. Emphasis was on increased government revenue and greater benefits for local communities as well as more stringent environmental requirements. Most of the changes introduced by charter bring Senegal in line with other West African countries, and, despite some predictable pushback from the mining sector, the charter is competitive so that Senegal remains widely perceived as an investor-friendly jurisdiction. Like many of its neighbors, Senegal is endowed with vast mineral resources, ranging from gold, phosphate, zircon and titanium to iron ore and limestone. But what has contributed more to Senegal's status as a rising star in West Africa is the nation's political stability.
"Although there are still some opportunities, safety issues are obstructing the development of countries such as Mali and Burkina Faso," said Cedric Fernandez, country manager at equipment provider Saudequip. "Senegal has a stable and safe environment, and I see this as an opportunity for significant growth for both the company and the country."
With mounting terrorism in countries such as Nigeria, Niger, Burkina Faso, Chad, Cameroon and Benin, Senegal - which is among Africa's most stable countries, with three major peaceful political transitions since independence in 1960 – is likely to keep gaining popularity. Sall comfortably won his second term with 58.27% of the votes and an unusually high voter turnout of 66.23%. "The advantage of the reelection of President Macky Sall is that it brings stability and reliability, which attracts investment," said Abdourahmane Diop, general director at Labosol – AGTS. "With the emerging oil and gas sector in Senegal, we still hope to see investment into the mining industry."
Since 2015, mining's contribution to GDP has been relatively steady at 2.5%, with the majority of foreign investment directed towards gold and phosphate. Currently, gold represents more than 40% of total mining output, with significant deposits in the southwestern part of the country, while phosphate production represented about 15% of the sector in 2018.

Ramped-up Gold Production

The government's plan for Senegal to join the world's top gold producers is far from a pipe dream. Senegal holds almost double Mali's portion of the gold-rich Birimian Greenstone Belt, and the country's gold output has increased steadily in recent decades, with production rising from 0.6 mt/y in 2005 to 4.4 mt/y in 2010 and more than 7 mt/y in 2018. Located in southeast Senegal near the Mali border, Teranga Gold Corporation's Sabodala gold mine is the largest producing gold mine in the country and expected to produce over 1 million oz of gold between 2018 and 2022. Since the IPO in 2010, Sabodala has

We are predicting production of approximately 50,000 oz per year for at least four years. During the production phase, we will reinvest funds into resource drilling to expand our resource and production capabilities.

- Moussa Diba, Exploration Manager, Bassari Resources

produced some 1.7 million oz and has, as of December 2018, an estimated gold reserve of 2.4 million oz. Between 2018 and 2022, the mine is expected to proffer a total of US$230 million in free cash flow, which will be used to advance Teranga's project pipeline. To extend Sabodala's production profile at higher grade, Teranga announced in December 2019 its intention to acquire Massawa, one of the highest-grade undeveloped open-pit gold projects in Africa. Massawa is favorably situated next to Sabodala with mineral deposits within 30 km of Sabodala's existing processing facility.

"By combining the two assets and utilizing the Sabodala plant and infrastructure, we are targeting to create a low-cost, high-grade gold complex," said president and CEO Richard Young. "We anticipate that the opportunities for synergies that come with combining the two properties will enable us to build a top tier asset in Senegal and accelerate Teranga's growth to mid-tier status."

In November 2019, the TSX-listed company also kicked off production at its Wahgnion gold mine in Burkina Faso ahead of schedule. "We will start to realize the benefits of operating a second mine in 2020 when Wahgnion is expected to increase Teranga's consolidated annual production to between 300,000 and 350,000 ounces, not taking Massawa into account, Young said. "Wahgnion's reserve base has already grown by 40% since the initial reserve estimate and in 2020 we plan to embark on a multi-year exploration and drilling program focused on highly prospective targets within trucking distance of the plant."

Close to the Sabodala mine, Toro Gold's Mako mine became Senegal's second gold producer when it commenced production in January 2018. The low-cost, high-margin mine produced 156,926 oz of gold in 2018 and hosts a mineral resource of 1.24 million oz grading 1.89g/mt Au, and an ore reserve of 928,000 oz grading 2.05g/mt Au. In July, Australia-based Resolute Mining announced its acquisition of all the shares of Toro Gold by way of takeover. The US$274 million-deal comprises US$130 million in cash and US$142.5 million Resolute shares. Resolute is targeting annual average production from Mako of 140,000 oz at an all-in sustaining costs of US$780/oz over a seven-year mine life.

With the country's second gold producer up and running, Senegal nudges closer to reaching the government's goal of an annual gold production of 18 mt/y by 2023. Additional projects are also expected to come online shortly. IAMGOLD, which also has a presence in Burkina Faso, Mali and Guinea, carried out a feasibility study on its Boto gold project in October 2018. From its beginning as a grassroots exploration project, Boto now has an indicated resource (including reserves) of 2.2 million oz. In a 2019 report, IAMGOLD announced the completion of approximately 13,500 meters of diamond RC drilling. The drilling program included further resource delineation and evaluation of potential resource expansions adjacent to the Malikoundi design pit, as well as condemnation drilling of proposed infrastructure sites. The company also advanced its application for a mining concession with the government, with approval expected in the second half of 2019.

Meanwhile, ASX-listed Bassari Resources is sprinting to bring its Makabingui gold project into production in 2019. The project currently hosts a mineral resource of 11.9 mt averaging 2.6 g/mt Au for a contained 1 million oz of gold classified into the indicated and inferred resource categories, with 158,000 oz classified as reserves. Bassari Resources received the US$13 million loan approval for the project in January 2019.

"Through the process, we have been working closely with Coris Bank International who has now also set up an office in Senegal," said project manager Andrew Goode. "We have been working with the bankers as much as we have been working with our suppliers. We are now in the process of finalizing the construction of the mine, and we expect to be in production by late 2019 or by the first quarter of 2020." Bassari sees Makabingui as the gateway to more Birrimian riches and has already conducted drilling in proximity to the existing resource.

"We predict to produce approximately 50,000 oz/y for at least four years," exploration manager Moussa Diba continued. "During the production phase we will reinvest funds into resource drilling to expand our resource and production capabilities."

Opportunities in Other Metals

The ministry has also expressed ambitions to improve the iron, zircon and phosphate sectors. At the end of March 2019, l'Agence nationale de la statistique et de la démographie (ANSD) reported an increase in zircon exports from 2.5 billion CFA francs in March 2018 to 3.8 billion a year later. The increase in 1.3 billion CFA francs is equivalent to US$2.3 million and represents a rise of 53.4% in relative value. The ministry has voiced aspirations to become the world's 4th-largest zircon producer by 2023, with an annual output of 90,000 mt.

Senegal is already one of the world's top phosphate producers, with production reaching 2.4 million mt in 2017. Production will soon increase as ASX-listed Avenira's 80%-owned Baobab project is set for expansion. The Baobab mine started producing phosphate in September 2016, and Avenira completed a feasibility study for expansion in March 2019. After expansion, the high-grade phosphate rock mine will have a concentrate production capacity of 1 mt/y. The final investment decision (FID) is anticipated to be made in the first half of 2020.

Senegal is also rich in iron-ore and limestone. The southeastern part of the country holds an estimated 750 million mt of iron-ore reserves, and the government is actively working on expanding this area of mining. If successful, annual production could be in the realm of 25 million mt, but so far, disputes between the government and companies have hampered production. Abundant reserves of limestone – estimated at 300 million mt – have made Senegal a strategic provider of cement in the region.

"In other West African countries, limestone reserves are limited," said Luk Haelterman, country manager of Dangote Cement Senegal. "Côte d'Ivoire, for example, has a large number of cement mills but no limestone quarry available – this means that clinker must be imported, which results in a higher cement production cost."

Senegal currently has considerable production overcapacity across its three cement factories, sitting at about 200% of national consumption.

"Approximately 75% of our products are delivered to the local market in Senegal and 25% of our products are exported to Mali, Guinea Bissau and Gambia," Haelterman added.

A Mining Hub in the Making?

While Senegal has received a lot of attention as an up-and-coming jurisdiction, the country still has a lot of digging to do if seeking to compete or surpass more mature mining destinations. Mining represented a mere 2.5% of Senegal's GDP in 2018, and, although the volumes are set to increase, the greater mineral potential of the country would need to be unlocked.

"In 2018, exploration activities in Senegal were abundant and became an important part of Geotec's business," said Jean-Christophe Andre, general manager at consulting firm Geotec Afrique. "The country has, however, seen a decline in greenfield exploration activities and in 2019, we have not had any contracts within this space. It seems as if mining companies have stopped their exploration activities and are now focused on production."

In addition to the abovementioned resources, Senegal has unexploited mineral and metal reserves such as platinum, copper, chromium, nickel and decorative stones. As there are relatively few producing mines in Senegal, greenfield exploration is the way forward to expand the sector. But as juniors struggle to attract investors, a perceptible uptake in exploration will likely depend on commodity prices as well as government initiatives to bolster international entries.

"Senegal has a well-balanced society with both social and political stability," said Mamadou Lamine Gueye, president director general of freight forwarding company CSTT-AO. "This is a considerable competitive advantage as it bolsters investor confidence. If the country continues on this stable path, I am very optimistic about the opportunities for growth."

A possible impediment to the development of the sector is the government's failure in resolving the growing issue of illegal extraction of resources. This issue is not specific to Senegal; Ghana, Zimbabwe and the DRC are just a few out of many countries struggling with territorial conflicts, investor deterrence and environmental destruction as a consequence of illegal mining. In all of these countries, efforts to formalize the sector under legal frameworks and to improve its environmental and health practices have so far largely failed. Often this is due to top-down policy measures that make change complicated and burdensome for low-resource miners.

The mining code has increased transparency and introduced environmental

Senegal plans to acquire two new ports in Ndayane and Bargny-Sendou to redirect traffic from the autonomous port of Dakar which is currently near its limits and very congested.

- Vincent Bayiha Kodock, Country Manager, OMA Group

Image courtesy of Geotec

safeguards that will underpin the sustainable development of the sector. The Senegalese government also acted wisely when merely tweaking the existing regulation rather than completely overhauling the existing regime. New mining legislation is always a sound of alarm to investors, but the government included a stability clause providing that provisions of the new code will only apply to mining titles acquired after November 2016. This contrasts sharply with other jurisdictions where, following adaption periods of between one and five years, the new legislation has applied to existing holders of mining titles.

In addition, the local content provisions of the new code will hopefully remedy the skills shortage that currently undermine the spread of mining benefits to the population, and companies are increasingly engaging in the transfer of skills voluntarily.

"Finding skilled labor in Senegal is a huge challenge," said Nicolas Turpin, CEO of SMT Senegal. "SMT has many expats working for the company as we sometimes have difficulties to find the required profiles locally. Aware of this reality, and willing to share Volvo's expertise, Volvo does provide proper training to our employees so that we can best serve our customers."

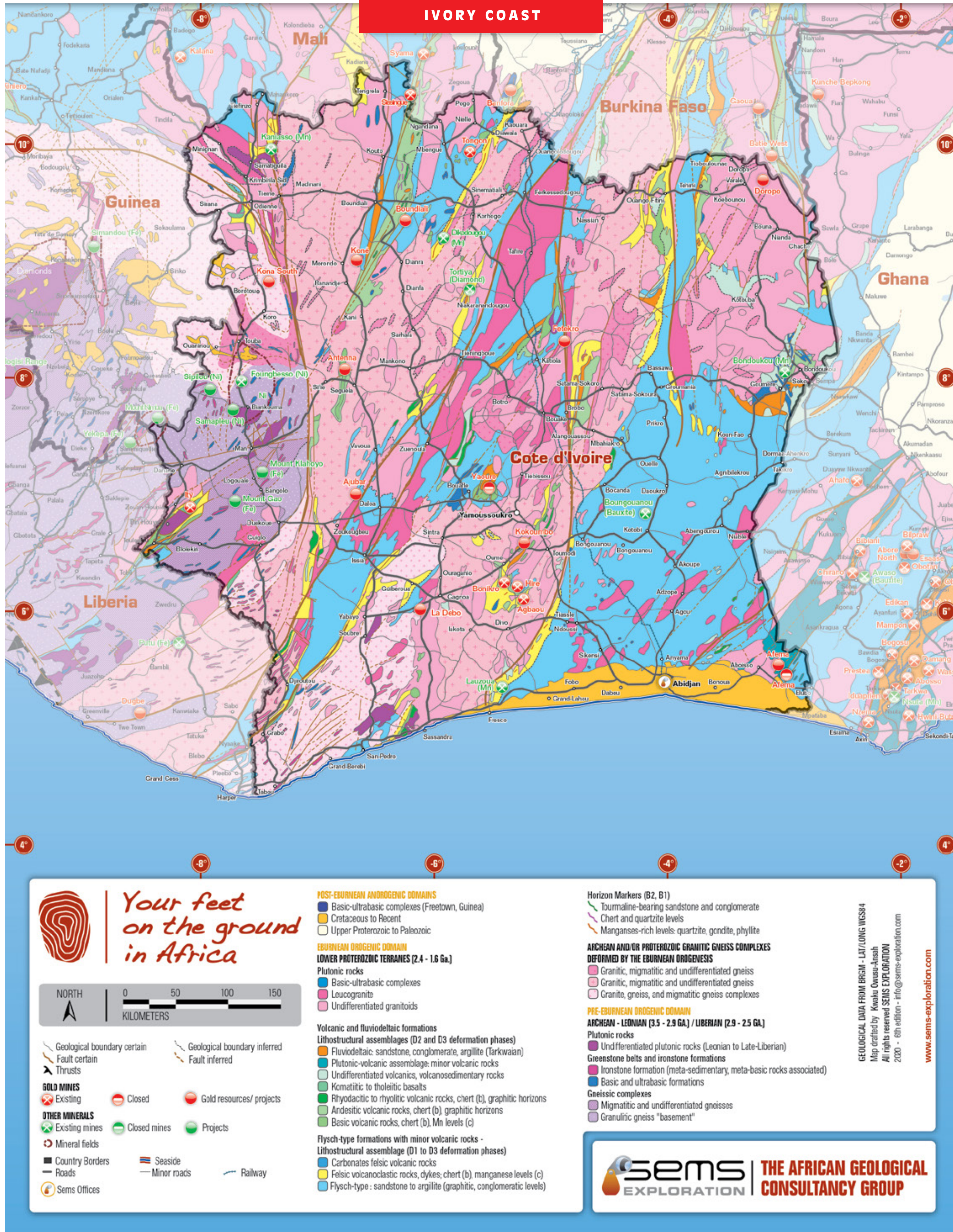
While the practice of empowerment policies yields more cautionary tales than best practices, Senegal has so far avoided the pitfall of unrealistically aggressive local content laws. Yet, Senegal is a young mining jurisdiction, and the existing laws should be regarded as a work in progress where improvements can already be made.

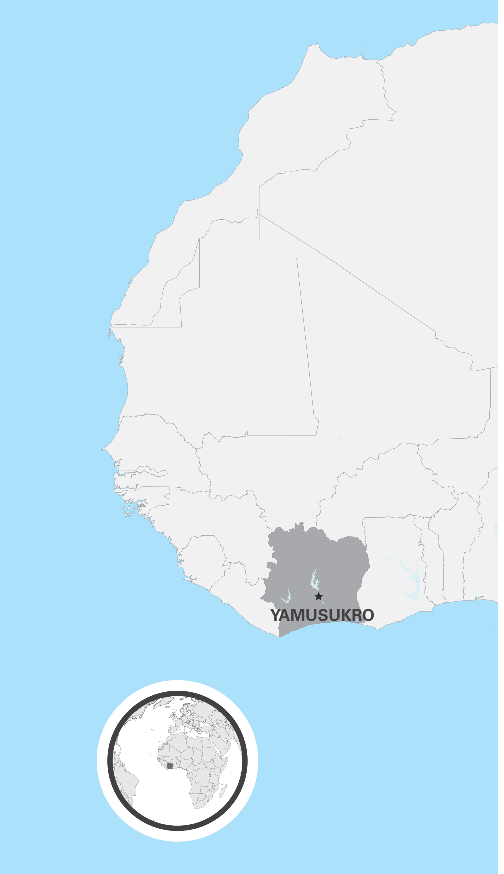
"Although local content laws have been better implemented in Senegal compared to otherAfrican countries, the laws and regulations are still burgeoning," said Mouhamed Kebe, partner at law firm Geni & Kebe. "The country also has laws and provisions that indirectly address local content, for instance, in the last mining code, there where provisions addressing the issue of mining shares allocated to local companies. The main challenges are firstly to establish a very efficient local content policy and secondly to implement this policy. The difficulty is that companies are not willing to give away the proportion of shares requested by law, but local companies do not necessarily have the financial capacity to buy the shares."

The government's infrastructure development plans, mainly driven by the need for meeting the requirements of future oil production, will also benefit the mining sector. The president's plan centers on 27 infrastructure projects and 17 structural reforms aimed at attracting foreign investments.

"Senegal plans to acquire two new ports in Ndayane and Bargny-Sendou to redirect traffic from the autonomous port of Dakar which is currently near its limits and very congested," said Vincent Bayiha Kodock, country manager of logistics giant OMA Group. "The Bargny port will be more dedicated towards the mining industry and the Ndanyane port will be geared towards containers. This means that the traffic at the Dakar port will be lightened and this port will then be dedicated towards the oil and gas industry."

Senegal's mining industry is in its infancy and requires a great deal of development. The greater agenda is to leverage the country's political stability to unlock Senegal's vast mineral potential and to increase foreign investment in exploration and production while also upgrading infrastructure and ensure compliance with environmental regulation. •





Ivory Coast

Population: 25,823,071
Land area: 318,003 sq km
Official Language: French (official), 60 native dialects of which Dioula is the most widely spoken
Capital: Yamusukro
Currency: West African CFA Franc
Chief of State: President Alassane Ouattara (since 4 December 2010)
GDP (PPP): $93.585 Billion (2018, base year: 2011)
Real GDP Annual Growth Rate: 7.433% (2018)
GDP per Capita (PPP): $4,199 (2018, base year: 2011)
Exports: Cocoa Beans 37%, Rubber 11%, Cocoa Paste 10%, Cocoa Butter 6% (2017)
Exports Partners: Netherlands 15%, France 9%, Germany 7.1%
Imports: Crude Petroleum 7.9%, Rice 4.1%, Non-Fillet Frozen Fish 3.4% (2017)
Imports Partners: China 20%, France 16%, Nigeria 8.1%
Trade Balance: Surplus of $179,495 as of September 2019
Inflation rate (Consumer price): 0.44 (2018)
Poverty Headcount ratio: 46.3%

TRANSPARENCY INTERNATIONAL CORRUPTION PERCEPTIONS INDEX
SOURCE: TRANSPARENCY INTERNATIONAL

RANK 2018
105/180

SCORE
35/100

TAXATION RATES
SOURCE: PWC

CORPORATE INCOME TAX RATE
25%

ROYALTIES
PRECIOUS METALS: **4%**
BASE METALS: **3.5%**
GOLD: **3-6%**

BUSINESS ENVIRONMENT RANKING (1-190)
SOURCE: THE WORLD BANK (2020 EDITION)

EASE OF DOING BUSINESS
110

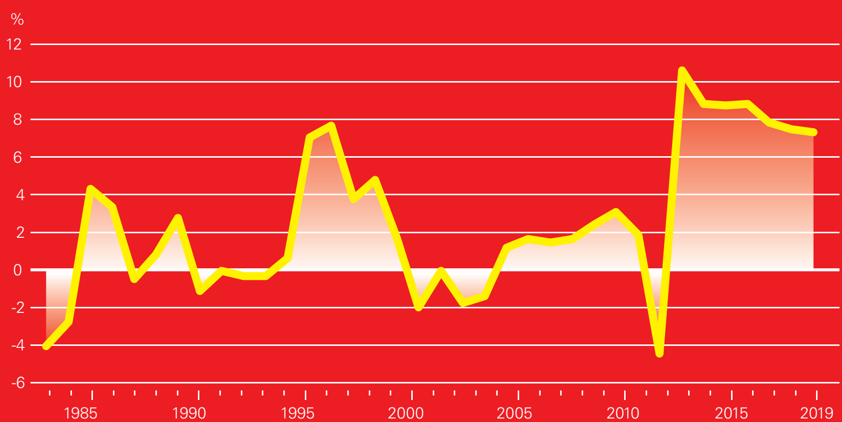
STARTING A BUSINESS
29

DEALING WITH CONSTRUCTION PERMITS
152

GETTING ELECTRICITY
141

REGISTERING PROPERTY
112

GDP (ANNUAL %)
SOURCE: THE WORLD BANK



Ivory Coast

Exploring a young and rapidly developing jurisdiction

If West Africa has investors excited, Ivory Coast is at the center of their attention. With less than a decade gone by since the civil war's end, the country is one of the fastest-growing economies on the continent, forecasted to expand more than 7% in 2020 – a considerable upward leap from the sub-Saharan average of 2.41% and the regional average of 2.40%. Privatization, ambitious infrastructure projects, improved access to loans, a benign tax regime and the cutting of red tape in the corporate sphere have elevated Ivory Coast to the top of African business indexes and ramped up FDI 84% between 2015 and 2018. Reasons for excitement abound, but Ivorians old enough to recall the long reign of their first president, Félix Houphouët-Boigny, might argue that a too-spirited narrative strains credibility as it echoes of the past.

In the three decades that followed independence in 1960, Ivory Coast was heralded for its ethnic and religious harmony, and the words "economic boom," like now, escaped a million mouths. Then, in 2002, an attempted military coup split the nation in two. The armed rebellion led to a five-year civil war followed by resurgent armed conflict, human rights abuses and election-related violence. As Ivory Coast edged its way towards peace, the disputed 2010 election of Alassane Ouattara resulted in a second civil war that finally ended in 2011.

If today's situation is not a perfect mirroring of a recent past, then it is a decent reproduction. There is compelling evidence that Ivory Coast faces a sustainable economic boom, but the country's turbulent history begs the question of just how sandy the foundation might be. With general elections scheduled for October 2020, we will perhaps be better placed to answer this a year hence.

Election and Unhealed Scars

In a ceremonial speech in January 2019, incumbent president Alassane Outtara assured the Ivorian people of a peaceful outcome for the impending elections. "I can tell you that 2020 will go well (...) I assure you. If 2015 went well, why would not 2020?"

In 2015, Ivory Coast did indeed see a first peaceful election. Three years after the end of the first civil war, the country slipped back into conflict when then-president Laurent Gbagbo rejected the internationally recognized victory of Ouattara. The entailing year-long conflict between the pro-Gbagbo Armed Forces of the Republic of Ivory Coast and the pro-Ouattara New Forces claimed the life of more than 3,000 people and displaced one million before ending in Gbagbo's arrest, who was then turned over to the International Criminal Court for charges of war crimes. Amid widespread international support in his efforts to rebuild a war-torn Ivory Coast, Ouattara won a peaceful re-election in 2015 in which he essentially ran unopposed thanks to a largely exiled or imprisoned opposition.

Yet, there are good reasons for why the popular Ouattara needs to give assurances of peaceful electoral outcomes. In an attempt to heal the political rifts that led to the first civil war, an alliance was struck in 2005 between President Ouattara's Rassemblement des Republicains (RDR) and former President Henri Konan Bedie's Parti Democratique de la Cote d'Ivoire (PDCI). But the strong political block that was meant to last for generations, and ultimately helped Ouattara win the presidency in 2010 and 2015, was dissolved in 2018 when Bedie announced his party's withdrawal – raising the possibility that Bedie could emerge as a candidate himself. The acrimonious divorce has brought worries

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The mining sector in Ivory Coast is young, compared to South Africa and Ghana, as we decided years ago not to use our mining resources. It was a decision made by our first president and I believe it was the right one at the time, as we diversified our rather than solely focus on mining as some African countries did.

- Marc Vincens Wabi, Managing Partner, Deloitte

Hon. Jean-Claude Kouassi

Minister of Mines and Geology
Ivory Coast

Ivory Coast has managed an almost miraculous rebuilding after the Civil War. What part has the mining industry played in the economic recovery?
We are proud of the remarkable recovery from the 2010 post-electoral crisis. The mining sector's contribution to GDP has increased this past decade from 2% to 3% in 2018. While this is not substantial, the mining industry has had a positive social impact. The 2014 mining code placed an emphasis on socio-economic development and committees for local development of industrial mining projects and collected financial resources to complete socio-economic projects including schools, hospitals, water supply and roads repairs in remote areas through contributions from mining companies (0.5% of turnover).

The 2014 Mining Code elevated Ivory Coast to the top of numerous investment attractiveness indexes. Can you outline the code's key competitive aspects?
In 2018, 16 new exploration licenses were granted while two permits were relinquished – reaching 178 licenses compared to 164 in 2017, while investment in the mining industry amounted to approximately US$123 million. Consequently, many prospects are being developed and taken into prefeasibility or feasibility stages and greenfield exploration has increased.
Key innovations introduced by the 2014 mining code include the introduction of internationally recognized good governance practices such as the Kimberley Process and the Extractive Industries Transparency Initiative; expedited exploration licensing (60 days) and extended accumulative validity exploration period from 7 to 10 years; stabilization of the fiscal regime applicable during mine life; as well as environmental safeguards.

The government has had some success in controlling illegal mining but it remains a widespread problem. What is the government's strategy for 2020?
In 2013, the National Program for Rationalizing Gold Panning (PNRO) was established with the aim of replacing illegal miners with authorized small-scale miners. We also offer support to local populations who suffer the repercussions of illegal mining as well as restore the environmental damages. The program has been successful. Five evacuation operations have been conducted resulting in the closure of 667 sites throughout the country, the arrest of hundreds of illegal miners and the destruction/seizure of weapons, ammunition, equipment, chemicals and narcotics.
However, illegal mining remains a challenge and the Ministry continues this program by awareness campaigns and through its Mining Code Infringement Brigade (BRICM). We have installed practical field schools in Bozi, Katiendé and Loboville to train nationals in safe legal small-scale mining and we are delimitating mineralized corridors countrywide. Finally, we cooperate with and draw from experiences of neighboring countries.

What is the government's outlook on future local content policy?
A local content policy is under development with the support of the World Bank. Meanwhile, we recognize that strict local content laws may discourage investment and have therefore decided on a subtle approach.
Consequently, the policy is being drafted in consultation with all stakeholders including the private sector, the local civil society (NGOs), and the local communities. In addition, a benchmark mission has been organized in several neighboring countries to take account of their successes and failures. Shortly, the draft local content policy document will be made available covering local procurement, employment and entrepreneurship areas.

The country's diamond industry has benefitted from technological innovation. To what extent are innovative mining techniques adopted in other segments and how can the government further spur such initiatives?
I am not quite sure whether our diamond industry has benefited greatly from technological innovation. Perhaps, this will be achieved in the coming years, in the interest of the sector and our people.
Regarding the other segments of the mining sector, it is in the interest of the industry to move toward innovative techniques to increase productivity and returns for local people and the government.
The government can further encourage such initiatives by, for instance, providing fiscal incentives for companies that invest in innovative techniques. According to current regulation, the rate of royalty decreases with the level of minerals processing. This is a way for the government to push for more innovative transformation. Further measures will be taken with the adoption of the new mining development policy and its implementation scheme for the period 2020 – 2025.

Do you have a final message to our international readership?
Côte d'Ivoire is a relatively nascent jurisdiction but endowed with remarkable minerals potential. Our government and people welcome all investors to share and mutually benefit. •

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about a turbulent 2020 election, especially as Laurent Gbagbo is once again head of the Ivorian Popular Front after his acquittal by the ICC in 2019. The changing dynamics have brought speculations of both a three-front contest between Bedie, Gbagbo and Ouattara – who is yet to disclose if he intends to run for a third term – as well as a potential alliance between Gbagbo's FPI and Bedie's PDCI.
While contending parties are hardly an election-time irregularity in any non-authoritarian state, it is Ivory Coast's historical divisions based on ethnicity, land and religion that prompt worries that the slightest outbreak of a new crisis could deepen unhealed wounds and demolish recent achievements. Following the 1960 independence, Houphouet-Boigny's promises of fertile land to whoever was willing to farm had millions of foreigners crossing the border from the parched surrounding areas. But the open-door policy, which transformed Ivory Coast into a world-leading cocoa producer, fell short of the long-term vision as millions of immigrants were barred from citizenship. This heightened existing tensions between the Muslim north and Christian south and eventually led to the first civil war.
In 2013, Parliament passed a bill that facilitated access to citizenship for foreigners and improved state regulation of land ownership – sparking some optimism about more peaceful future electoral outcomes. "In 2010-2011, the country was largely destroyed but President Ouattara has transformed the country since," said Lazar Toure, general manager of mining equipment provider Sofim. "Thus, I do not think that the 2020 election will have a detrimental effect on the country's business climate the way 2010 did as the nature of the conflict has changed."
The sentiment is echoed by Kouamé Klemet-N'Guessan, partner at KSK Avocats.
"Recent history has shown that this country has the capacity to overcome political crisis and get back to work as quickly as possible."
While there is justification for optimism – for example, the election of Ouattara, himself a northerner, is a testament to progress made – the 2015 election, which was mostly a plebiscite for the sitting president, was hardly a watershed moment of democratic transformation, and the impressive economic reforms pushed through by the technocratic leadership have not been matched sufficiently by political change.
While the Ouattara administration has proven itself capable of consolidating power in the recently unified state, its efficiency is partly owed to the dominance of the presidency, which simultaneously impairs horizontal and vertical accountability. For example, in an ominous display of democratic retreat a senate was inaugurated in April 2018 that lacked the support of both the opposition and large swaths of the population. The new upper house to the parliament – grandiosely referred to by the president as a "chamber of wisdom" but viewed as a power grab by the opposition – will comprise 99 senators of whom Ouattara will appoint 33. The senate was created as part of constitutional reforms passed by referendum in 2016 through popular participation of a mere 42%. Consequently, polls for electing senators were boycotted by the opposition, leaving the ruling coalition to sweep up 50 of the available 66 seats. Most likely, the establishment of additional political posts is a strategic move by Ouattara to quell discord in a coalition where the incumbent's RDR party has been criticized for wielding too much power.
A tightened grip on power could be Ouattara's way to hold together a country in which the contours of citizenship and political community remain dim. If so, it is likely a mistake. Political exclusion risks amplifying the still-simmering notion of "Ivoirite," an ethnically-tinged idea of Ivorian identity that led to Ouattara being excluded from presidential elections two decades ago and played a central role in the most recent civil war. In addition, stability in Ivory Coast has mostly been graded on a curve against neighbors with escalating incidents of terrorism, but recent events suggest that that the country's security situation is wobbly. In 2018, Ivory Coast suffered successive waves of army mutinies by ex-rebel commanders and militia members who fought against the former Laurent Gbagbo regime and were later funneled into the national army. The members of this faction, who accounts for 8,400

Image courtesy of Resolute Mining

of Ivory Coast's army of an estimated 24,000, have maintained prominent positions within the national security apparatus. The mutiny, during which the soldiers took the nation's second-largest city hostage, ended peacefully with the government agreeing to cut a hefty check to compensate for unpaid bonuses promised years ago. Yet, the unrest was a reminder that the leadership ignores lingering grievances at its utmost peril – and that violent answers to unattended questions are still the norm in one of Africa's fastest-growing economies.

The Mining Sector (Better Title TK)

The cocoa-dominated economy of Ivory Coast has long been criticized for over-dependence on the crop. Today, with mining investors across the globe turning their eyes to the country, the mining industry will benefit greatly from the groundwork laid by a strong agricultural sector. "The mining sector in Ivory Coast is young, compared to South Africa and Ghana, as we decided years ago not to use our mining resources," said Marc Vincens Wabi, managing partner at Deloitte. "It was a decision made by our first president and I believe it was the right one at the time, as we diversified rather than solely focus on mining as some African countries did."
Different from the hazardous dirt roads that constitute a large portion of the region's transportation routes, paved highways link the major political and economic hubs of Ivory Coast – the result of a post-war recovery strategy engineered by the former central banker and senior IMF official, Ouattara. Key drivers of what has been called Ivory Coast's "second economic miracle" are more transparent regulation for private investment, improved protection of property rights and the acquisition of property, the rationalization of administrative procedures, as well as the restructuring of the private banking system. With FDI continuously increasing since 2012, the government's main objective is now to diversify the economy.

Diversification

The adoption of a new mining code in 2014 – widely considered one of the most competitive on the continent – marks a strategic economic shift as the government attempts to diversify its agriculture-based economy and better exploit its long-neglected mineral endowment. "The mining code brought the mining industry in Ivory Coast to a standard found in countries with mature mining industries such as Ghana," said Any Raymond, partner at AnyRay & Partners. "Before 2014, there were no mining conventions to be signed where obligations were clear. The mining actors are more comfortable now than they were before the code."
The code introduced greater transparency, restricted possibility of government involvement in mining companies as well as the slashing of the additional profit tax previously payable by permit holders at 7% of turnover. In 2017, sector revenue more than doubled to reach 539 billion CFA francs (US$1.02 billion),

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Christine Logbo

President
Chamber of Mines

What are the challenges to the mining industry in Ivory Coast?
The mining code implemented in 2014 after three years of consultation and the creation of the Ministry of Mines and Geology have consolidated the sector's prominence and recent growth, facilitated by new reforms such as goods protection and the government's response to illegal mining. Ivory Coast's attractive legislation, stable infrastructure and relative safety make it the mining destination of choice. The Minister recently met with leaders of the mining companies based here for them to present their vision and to assure their mutually beneficial partnership. The challenge of the upcoming 2020 elections may stall investment if the country does not respect the investment engagements taking place, which is unlikely.

To what extent do foreign mining companies contribute to the local workforce?
The new mining convention includes a recommendation for mines to contribute to a fund of 25 million CFA that is allocated to mining training to boost skills of local employees. All the five operating gold mines in Ivory Coast are headed by a local managing director. The state also invests in technical schools and funds scholarships to send local students abroad for further training as it anticipates the upcoming boom in the industry. The challenge is promoting local entrepreneurship in the sector to give birth to local SMEs that provide mining services.

What are the mains reasons that there are more men than women in the mine sector?
The workforce in the mining industry in Côte d'Ivoire is around 13,500 while women represent under 1,500; the gap is evident. Less than 1% of the annual 100-250 graduates specialising in mining are woman and very few women are in leading or managerial positions. However, as the sector gains prominence, more women are likely to consider a career in the industry as mining engineers, for example, especially with the recent technological advances and regulations that ensure safety and development as opposed to operations in a mine in the 1900s. We encourage women to take an entrepreneurial role in the sector such as leading a mining services company. I am grateful that the new Ministry prioritises women's role in mining and their professional development.

Are companies and the government focussing enough on innovative technologies?
SODEMI (the national company for mining development) and BNETD (the National Office for National Development) already have a laboratory engaged in new research for processing plants and focussed on R&D. The goal is to have sufficient technology to develop our downstream capacity. Developing small mines to serve the local market is also an option whereby the jewellery sold locally would be sourced from a local mine.

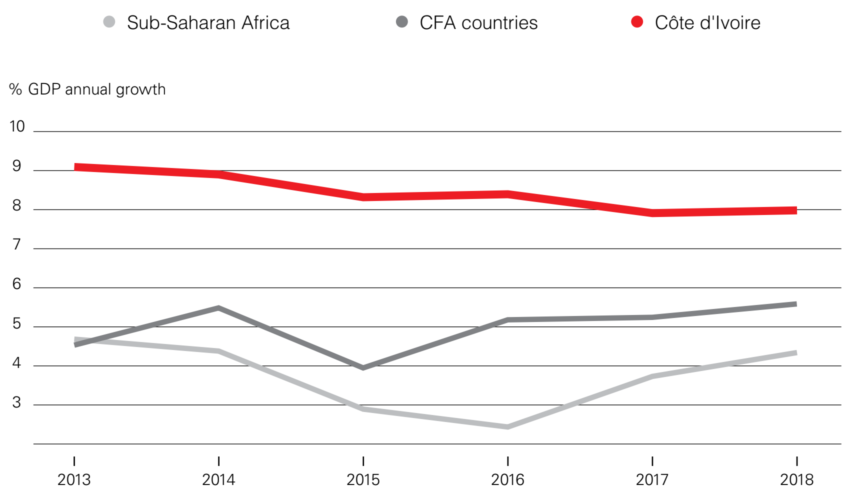
What is the Ivory-Coast's approach regarding illegal mining?
The Ministry of Mines and Geology tackles this issue by focusing on formalisation. Firstly, by providing security to the mine sites by punishing infractions to the mining code. Secondly, the Ministry has set up Chantiers Écoles, to train young Ivorians in the practice of responsible mining. Three cohorts have already been trained. Finally, the Ministry is increasing consultation with neighboring countries to define areas of collaboration to reduce the regional impacts of this problem.

What do you see as a more pressing issue: focusing on gold or exploring new minerals?
Exploration projects across all the identified reserves should be promoted. The majority of mining companies at the moment are focused on gold as are we. However, some companies are undertaking exploration projects for copper, manganese, lithium and diamond.

How strong is the domestic financial capacity; could a local bank fund a major mining operation?
Access to finance remains a challenge across the region. We need to promote a local market that facilitates the creation of local entrepreneurial projects. The difference in currencies between Anglophone and Francophone countries exacerbates this problem. If one homogeneous currency is set up, it will allow the diversification of the mining sector since the exchange regulation stalls investment in the long run. •

CÔTE D'IVOIRE IS NOW AFRICA'S FASTEST GROWING ECONOMY

Source: World Bank



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achieved mainly via exports of gold, manganese and nickel.

By comparison to other mining jurisdictions in the region, Ivory Coast has chosen a soft approach to local content laws. While governments still scramble to find a balance between local content and investor attractiveness, there is still no tangible data suggesting that stricter policies bring more local benefits. As expressed by Stanislas de Stabenrath, CEO of X&M Suppliers, "Many companies already source from local suppliers, reasoning that domestic growth will increase local stock and supply capabilities."

The Ivorian government is currently developing a new local content framework in collaboration with the World Bank, but companies across the value chain are in general confident that the government will continue to be prudent in its approach. "It is not the government's way to push international companies for an equal partnership, but rather to encourage them to include local parties to contribute what they can," said Wabi. "That means approximately 20% local content. Too much local content legislation deters investment, and it might not be feasible to find local talent to that extent. If local content laws are enforced too harshly, it might not be possible to do business. One needs to rather put incentives in place."

With the entire country underlain with mostly unexplored parts of the prolific Birimian Greenstone Belt, gold will remain the principal mining export with major companies including Barrick Gold, Toronto-listed Endeavour and Australia's Newcrest and Resolute Mining already present. Production nearly doubled between 2013 and 2015, jumping from 13 mt to 23.5 mt, and the government has set a target output of 30 mt by 2020. Production will be further boosted as first gold at Perseus Mining's Yaouré project in Ivory Coast's north is scheduled for December 2020, increasing the company's total annual production to 500,000 oz with all-in-site-costs (AISC) below US$800/oz. The project, expected to produce gold in excess of 200,000 oz/y, is fully funded at a capital cost of US$265 million. Perseus has also announced the potential to materially extend beyond current 8.5-year mine life as a scoping study has demonstrated the viability of underground mining. Yaouré will become the company's second mine in the country after its Sissingué project was fully developed in January 2018, currently producing between 70,000 and 90,000 oz of gold per year.

Gold production in West Africa is dominated by larger players and the last year has brought some significant merger and acquisitions. One of the companies that has capitalized on the favorable pricing of exploration and development-ready assets is Canadian-based Roxgold with projects in Burkina Faso and Ivory Coast.

> **The mining code brought the mining industry in Côte D'Ivoire to a standard found in countries with mature mining industries such as Ghana. Before 2014 there were no mining conventions to be signed where obligations were clear. The mining actors are more comfortable now than they were before the code.**
>
> **- Any Raymond, Partner, AnyRay & Partners**

'As a high margin producer, with a strong technical team, we have the cash flows and talent to jump on projects and advance them up the value chain," said president and CEO John Dorward.

Roxgold acquired the Séguéla gold project in April 2019 as part of a portfolio comprised of 11 regional exploration permits. The company currently has four rigs turning at the project located 240 km northwest of Yamoussoukro and expect to have a preliminary economic assessment by H1 2020.

"Séguéla is shaping up to be a very value accretive transaction for us, having acquired the project for US$20 million earlier this year (and US$10 million upon production). We envision the project as a straightforward open pit operation, targeting the cornerstone Antenna deposit supplemented with feed from the multitude of nearby satellite deposits, including: Agouti, Ancien, Boulder, and P3."

While gold is expected to spearhead economic diversification into mining, other minerals such as diamonds, iron, cobalt, nickel and manganese have been identified by the government as prospects. The mining code has already resulted in ramped up production across the board, with manganese production doubling from 2014 to 2018 to reach 600,000 mt/y, and nickel production grew from zero to 800,000 mt/y over the same period. However, Ivory Coast is still playing catch-up with the overwhelming minerals investor interest and needs to fill logistical gaps to exploit its riches properly. "There are plans for base metal projects, however, we are facing infrastructural issues with regards to transport and electricity," said Nouho Kone, general manager of NF Consult. "Diamond and gold can be transported via air, but that is not the case for nickel or manganese or any other base metal. They also require more electricity, which must be supplied for companies to build nickel plants."

While the country's road network is one of the densest in sub-Saharan Africa and supports the vast majority of domestic freight, recurring conflict has caused maintenance to lag. According to the World Bank, the years 2011 to 2015 saw a total investment of US$2 billion into transport infrastructure, and the government plans to allocate another US$7 billion between 2018 and 2023. Chief areas of investment include an ambitious expansion of the Northern Highway, which already connects Abidjan to Yamoussoukro, to other areas of economic importance; the extension of the road network connecting the country's rural and urban areas; and the construction of a new container terminal, which is set for completion in 2020. Part of the funds comes from the African Development Bank, which recently returned to Abidjan after a decade-long exile in Tunis forced by the civil war.

Ramping up power capacity has been high on the government's agenda, achieving a 56% hike to 2,200 MW between 2011 and 2018. With power demand having increased with an average 10% in the last five years, the government plans to invest US$20 billion to reach an annual output of 4,000 MW by 2030. Plans are also set for diversifying the thermal-dominated generation to include a larger share of hydropower, biomass and solar.

The Ivorian economy shows no signs of slowing down, and the government is confidently discussing the prospect of the country joining the league of emerging economies by 2020. Depending on definitions, it could already be considered so. But the government's choice of "emergence" as its mantra might be as good a predictor of the future as prodigious growth numbers. While a wildly elusive term, "emerging economy" is a label typically based on a number of core market indicators where economic inclusivity and social and political makeup are, if featured at all, found at the bottom of the list. Although the government has taken some pains to avoid a playback of the catastrophe that concluded the country's first streak of post-colonial development – mainly by promoting domestic processing of agricultural products as well as extending road and electricity infrastructure to the rural population (increasing from 33% to 54% coverage between 2011 and 2018) – the underplaying of the country as a post-conflict nation risks diverting attention from the some 40% of the population still living below the poverty line, who cannot afford to install electricity from the extended grid and cannot take advantage of the broad highways running through Abidjan. In addition, wage stagnation and high levels of crime, corruption and unemployment among university graduates are all flashpoints that should be prioritized over international prestige.

There is no blanket answer as to what extent social liberal reforms should be considered a decisive indicator of good investment prospects. In China, another emerging economy and champion of economic miracles, a large part of the population has been excluded from the capitalist dream, but, in the tight grip of an authoritarian state, economic inequality is unlikely to translate into violence. In Ivory Coast, where the state has already demonstrated its inability to control the security apparatus and a neglected underclass is rife with frustration, policies of social inclusion could spell the difference between a recap and a new chapter in the nation's history of modernization. •

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