GLOBAL BUSINESS REPORTS

MACIG 2020

Pre-release Edition (I)

DRC Country Focus

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DRC Pre-Release

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Dear Readers,

If we were to rank the factors considered by investors when assessing a country as a viable mining destination, resource endowment and the potential for a high return would almost unequivocally be placed at the top of the list. If we then consider the DRC's resource potential against this first criteria in isolation, it would appear we have a frontrunner. As well as being joint-host with Zambia to the Central African Copperbelt, which holds approximately 5 billion tonnes of copper ore (often upwards of 3% – versus the global average of 0.6% to 0.8%), the region also boasts 40% of global cobalt reserves. However, if we run down the hypothetical investor checklist on to factors such as stability, ease of doing business and infrastructure costs, the country fares less well versus other geographies, including many of its neighbors.

While Africa is already considered a high-risk environment for investment, the DRC's progress has fallen behind that of many of the top mining destinations on the continent. Marked by political turbulence, corruption and infrastructure challenges across the country's expansive land mass, the high-reward potential offered by the DRC's resource wealth certainly comes with its fair share of high risk. Nevertheless, a new president with a pro-business stance should herald positive change for the sector, and many companies with long-term commitments in the country are taking the challenges in stride and experiencing positive results.

In this first pre-release edition of the Mining in Africa Country Investment Guide (MACIG), we examine the investment environment in the DRC and shine a spotlight on the underlying challenges, progress and recent developments in the country's political scenario and its new mining code. The final MACIG 2020 publication will be launched at the February 2020 Mining Indaba in Cape Town.

We would like to thank the industry leaders that have participated in and supported our research thus far, and, following our departure from Lubumbashi after DRC Mining Week, we will continue our on-the-ground investigation of the continent's top mining jurisdictions. We welcome your feedback and interest in being interviewed – please feel free to get in touch at ***chowe@gbreports.com***

Enjoy the read!

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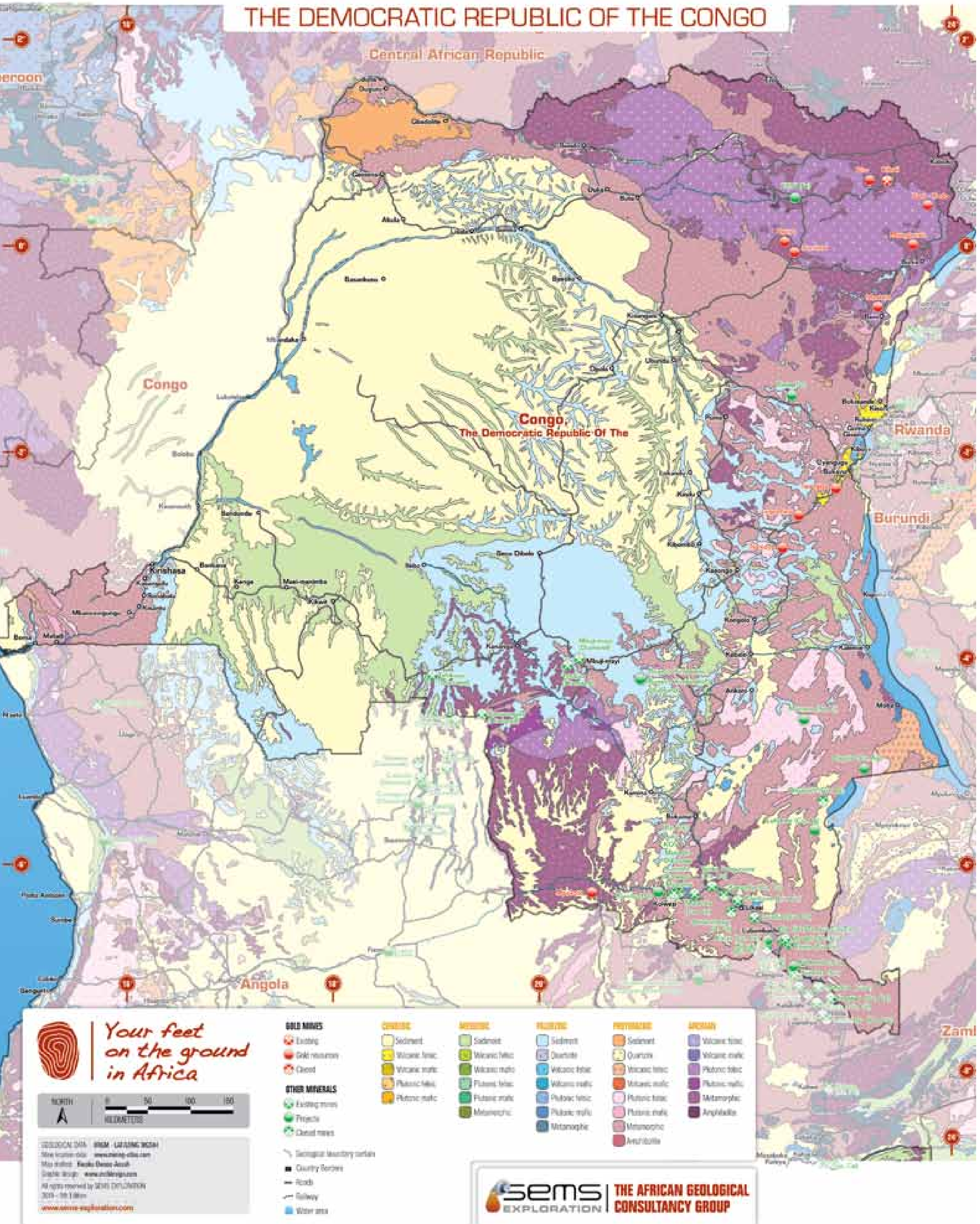
Mining in the DRC

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 a resilience in riding out a long storm of political and regulatory uncertainty, in addition to plummeting commodity prices. Unable to sink much lower, cobalt prices are expected to recover in 2019, 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 –



Population: 79 million (World Bank)

Land area: 2.345 million km^2

Main official language: French

National languages: Kituba (called Kikongo), Lingala, Swahili, Tshiluba

Capital: Kinshasa

Head of Government: Félix Tshisekedi, Union for Democracy and Social Progress (UDPS)

GDP: $37,642,482,562

GDP per capita: $463

Growth rate: 3.70%

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)

Public debt: 15.65% (2018)

Sources: World Bank, World Atlas and Worldometers

Cobalt Price (USD/lb):

2014: $3.11
2015: $2.49
2016: $2.20
2017: $2.81
2018: $2.93

2017-2018
4.2% ↓

Copper Price (USD/lb):

2014: $14.48
2015: $13.44
2016: $12.01
2017: $26.97
2018: $37.43

2017-2018
38.8% ↑

Sources: Statista.com, the Cobalt Institute

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.

THE DRC THROUGH HISTORY

From King Leopold to Felix Tshisekedi

The Colonial Years

1870s
Belgian King Leopold II launches a private venture to colonize Congo.

1885
Leopold announces the establishment of the Congo Free State and proclaims it his personal domain.

1906
Anglo-Belgian mining company Union Minière du Haut-Katanga is formed and commences primarily copper mining in Katanga.

Independence and Mobutu's Rule

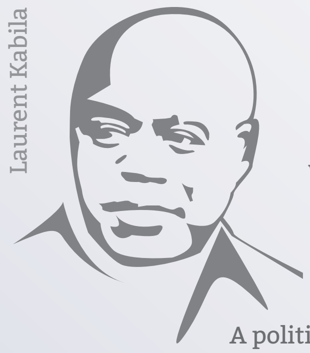
1960
Congo gains independence with Patrice Lumumba as prime minister.

1965
In 1961, Lumumba is assassinated, likely with Belgian and U.S. complicity, allowing army chief Joseph Mobutu to seize power.

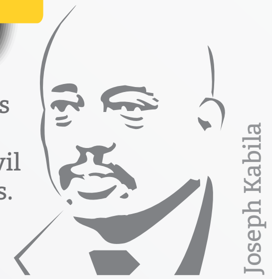
1973
Mobutu nationalizes foreign-owned companies and forces European investors out of the country.

The Kabilas

1997
With the aid of Rwanda and Uganda, opposition rebels oust Mobutu and Laurent Kabila becomes president



2003
Kabila soon loses popularity as he adopts the tactics of his predecessor, incarcerating civil society leaders and journalists.



2006
Joseph Kabila is declared winner of the presidential election.

2011
President Kabila gains another term. The vote is criticized internationally and disputed by the opposition.

2016
A political deal is signed between President Kabila's ruling coalition and the opposition to delay the presidential election until 2018.

Election Turmoil

2018 - March
Main opposition Union for Democracy and Social Progress chooses Felix Tshisekedi as its candidate for the December presidential election.

2019 - January
Officials declare opposition candidate Felix Tshisekedi the presidential winner, prompting protests from rival opposition candidate Martin Fayulu.

Joseph Ikoli Yombo Y'Apeke

General Secretary
Ministry of Mines

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.

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 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

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 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.

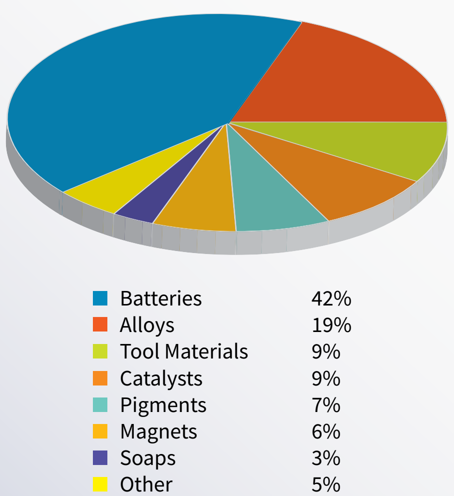
In addition, technological innovation has the ability to bolster profits and undermine human rights violations in the DRC's gold industry. Companies are increasingly investing in blockchain and other tracking technology to ensure ethical sourcing of commodities. For example, the Kampene Gold Pilot – 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 Africa

USE OF COBALT IN INDUSTRY



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.

Kibali Mine plant. Photo courtesy of Barrick.

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

"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."

- Olivier Duterme, Regional Director, Banque Commercial du Congo (BCDC)

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 Durable 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."

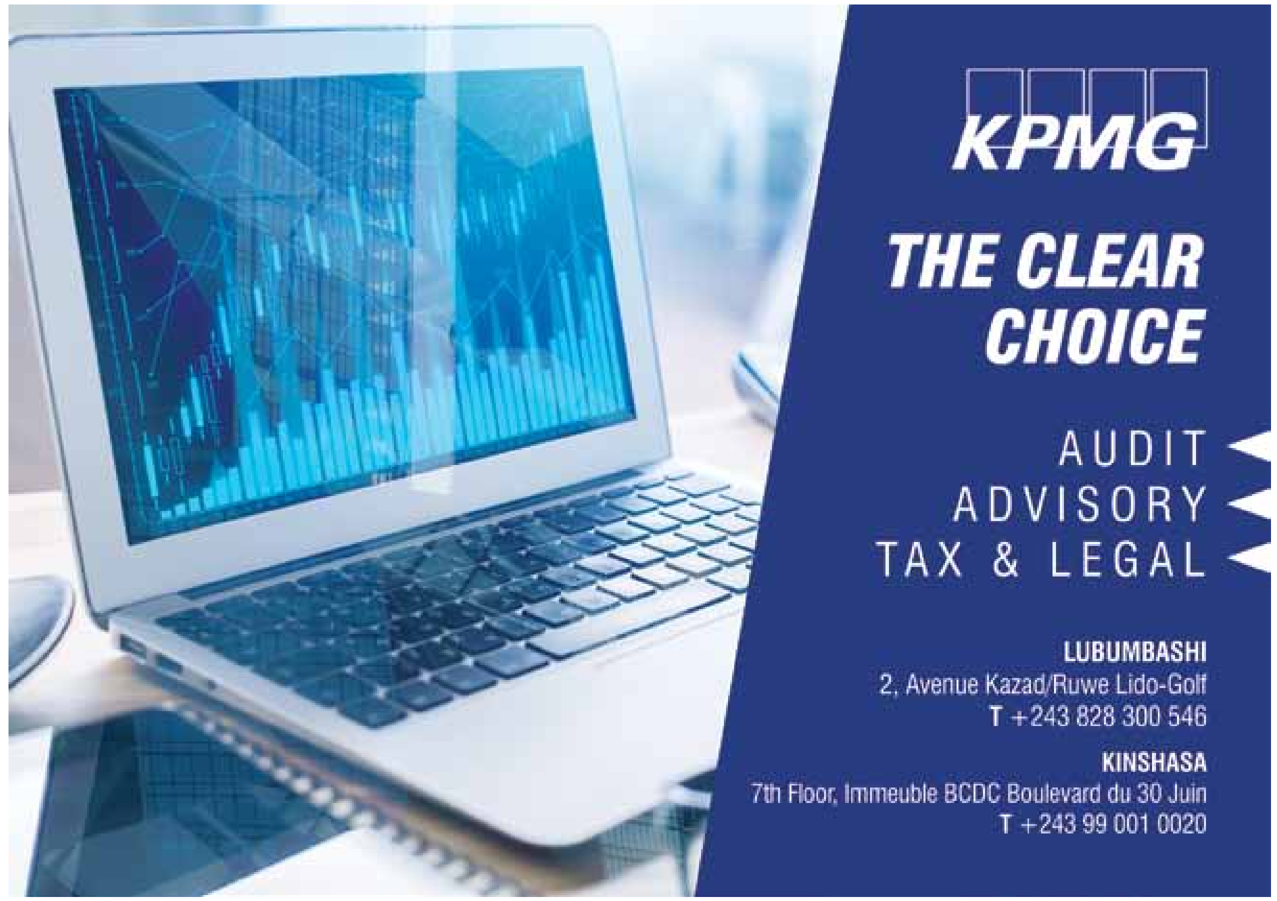
In the absence of clarification of the law, the Congolese may simply perceive subcontracting as a too complex and rigid process that would render the law counterproductive. However, should the regulation be adequately explained and properly enforced, it could benefit both the Congolese population and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

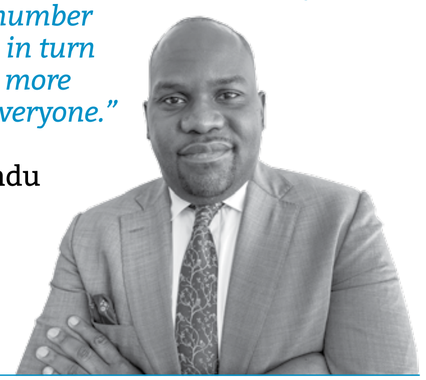
FINANCE

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 […]."



"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 number of clients which in turn makes banking more affordable for everyone."



- Yannick Ngandu Mbiye, Regional Director, TMB

"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."

Photo courtesy of Congo Equipment.

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 reconsideration, 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.

"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

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. Provincial governments are 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."

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

"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 DRC across different sectors. Companies are starting to change their mind-sets and consider cheaper options than Volvo and Mercedes. Some of these established brands, such as Volvo, will remain competitive as they supply a heavier vehicle type that Sinotruk does not. However, the Sinotruk suite is highly competitive with its smaller, 12-wheel trucks that are more common locally"

- Patrick Thema, CEO, Groupe Thema

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 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 controversy continues down the supply chain, with equipment providers expressing grief over Chinese brands capturing too much of the market share. According to Amaury Lescaux, managing director at Lubumbashi-based equipment provider Swedish Machinery and Trucks (SMT), companies increasingly buy Chinese trucks to get a quicker return on their investment, causing 80% of market to favor Chinese-supplied trucks – a 30% increase in the last six years. "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," Lescaux said. "As for trucks, the situation has in certain cases become the opposite as the market has been invaded by Chinese companies supplying trucks for half the price. If a customer needs 30 trucks, he will buy 35, use spare parts from the excess trucks purchased and dispose of them once the project is complete."

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.

Photo courtesy of Groupe Forrest.

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,

"It is within the junior companies where there is still a big security gap and they can be less prepared for the jurisdictions they operate in. Most junior companies do not have a strong internal security capability and will quite often put this responsibility on their health and safety department. In many jurisdictions such as West Africa, it is important to have proportionate security measures in place and to be prepared for the challenges unique to that area."

- Liam Morrissey, CEO, MS Risk

"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 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."

In the absence of an 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 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$14 billion. However, doubts have been expressed as to whether South Africa will live up to the deal, and experts have stated that the estimated US$14 billion construction cost is much too low.

Benoit Eeckhout instead 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."

Photo courtesy of Kanu Equipment.

Production and Exploration

Battery metals continue to rule the day

COPPER, COBALT AND LITHIUM HIGHLIGHTS

Since 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 a 12-month period that intensified in 2019. The fact that the ramped up production was due to faulty predictions of supply shortage has made investors weary 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 unable to fall much further and levels of stockpiling rebounding, prices could increase throughout 2019.

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

"We are concentrating on the copper belt. It is said that up to 50% of the copper belt is still unexplored, but the question is exactly how much of that 50% is viable to exploit. We are the only explorer in the DRC looking beyond the boundaries of our tenement."

- Miles Naude, General Manager, MMG

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. "We are nearing the end of the feasibility study for an exciting opportunity, the Kinsevere expansion project, which would be the addition of a sulfide processing plant to run in tandem with the existing oxide plant," said general manager Miles Naude. "Once completed, this expansion would increase production to a total of 90,000 mt/y and extend the project lifetime to approximately 2031. This extension of the project would also provide an assurance of stability and longevity with the company for our local staff."

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.

Commenting on the benefits of having CMC as a shareholder, Naude said: "It allows MMG to benefit from China's reputation as an international mining powerhouse. This connection also provides direct access to massive research firms and infrastructure firms that are able to build smelters and metallurgical plants."

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 four African nations – including the DRC.

The Kibali gold mine, located in the northeastern 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 portfolio – the bottom end of the mine and the entire ore-handling system, including hoisting, is 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 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.

"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 David Forrest, CEO, Groupe Forrest International

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.

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 built Randgold into a market leader in every aspect, from discovery to reserve per share and returns to shareholders. Meanwhile, our industry was running the risk of becoming irrelevant. There were too many assets with too many management teams that were not performing. The industry needed to consolidate.

We were focused on Tier One assets, and whichever way we looked, Barrick always came up as the company with the greatest number in the industry. We had two. The new strategy is based on Randgold's. 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 returns, which is a product of the first two factors.

As you look to streamline your portfolio, where will the focus be, and which assets are likely to be in line for divestment?

Our strategy centers around working with our core stakeholder – the country of operation – to bring in additional or new investors in order to continue our contribution to that country's economy through the development of the mining sector. Africa is core to this strategy and we now have a much bigger business with the same commitment to all the countries in which we operate across the continent.

In terms of mine operations, will Randgold's contract miner-led model be migrated 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 having 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.

As companies seek to increase operational efficiency, do you expect to see acquisitions of technology companies becoming more prominent in the mining sector?

The need to own everything is a major weakness of mining companies. There is great opportunity in digital technologies, artificial intelligence and automation for improving efficiency. However, since technological innovation moves at such a rapid rate, it's better to purchase innovation solutions that are supported by multiple users.

We are rebuilding our platforms to allow our managers to manage on a real-time basis. On the digital and technological front, OEMs are now starting to embrace that – the actual innovation and roll-out of technology that would support the data points collected by modern machinery is still behind in terms of being able to do anything with it.

The DRC's new mining code received 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 recently 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 – 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.

Do you have a final message to current investors and potential new entrants with interest 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. This is certainly something that the new President has his eyes on.

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% Li_2O. "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."

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, pose 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

Djo Moupondo
CEO
Sodeico

Can you please provide an overview of Sodeico, your services and your geographical footprint?

We specialize in Human Resources Management (HRM) and other recruitment services such as temporary hiring of locals and expatriates. We also do consulting, training and payroll and expense management as well as tax and insurance services. We offer services across the Sub Saharan Africa region and have physical offices in RCA, Zambia, DRC, Cameroun, Congo & Maurice. We have an extensive database that helps us to find the appropriate, qualified labor for different market segments. As an example, to the mining industry we offer specialized explosives technicians in the DRC, Zambia and Rwanda. We have a department dedicated to training and, in addition to a local training force, we sometimes bring instructors from Belgium France or South Africa to meet the requirements of each company.

Part of your service offering includes helping companies comply with labor laws. Can you tell us about your processes?

The DRC has a new labor code making amendments especially to the social security system. The law brings positive changes in the form of elderly care, maternity leave, insurance and family allowance. However, often employees do not know the law which leaves them vulnerable to different kinds of mistreatment. There is often insufficient communication regarding the law on behalf of the government as well as employers. With our expertise we can assist companies in properly informing employees about their rights and available options.

What is the vision of Sodeico moving forward?

Sodeico will continue to provide services to the mining sector and we aim to grow our market share moving forward. We want to address the skill shortage in the country and intend to start a mining training academy in the DRC to transfer skills from expats to locals and serve all of the Copperbelt with a new generation of mining experts. The challenge is the significant investment needed as well as support from the industry, but we are set on realizing this vision.•

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 back contents, 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

Photo courtesy of Groupe Forrest.

> *"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

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 ability to react very quickly when we see an opportunity. It also facilitates the process of acquiring equipment and upskilling 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."

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.

> *""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

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 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.

"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.

"While we are open to project sizes across the board, our primary target market will be medium-sized clients as they allow us to build stronger relationships with our own employees as we can keep them all onboard for longer periods of time. Ideally, we would work on projects where we can actively put to work a staff of between 200 and 400. Something our clients appreciate in our approach is that we work together with the client and do not expect anyone to pull any weight for us. "

- Cécile Amory, General Manager, Mining Contracting Services Congo (MCSC)

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