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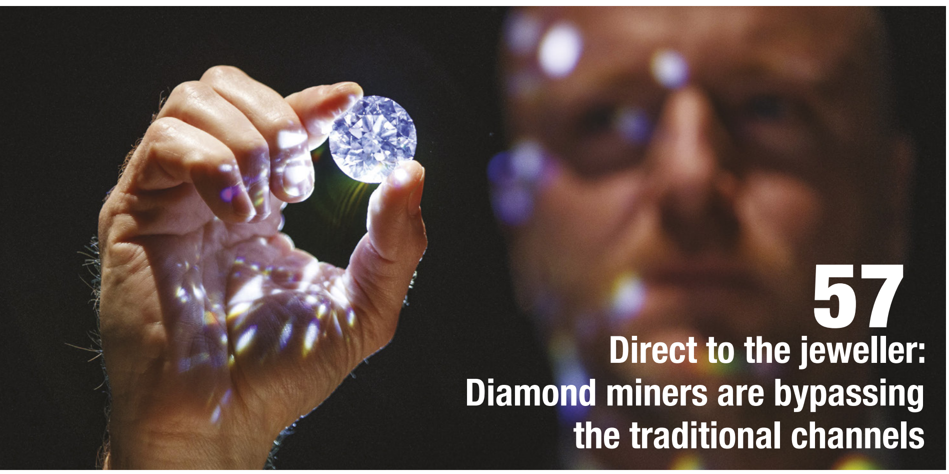

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TRUST DEFICIT: IF THE MINING SECTOR IS TAKING ESG SERIOUSLY, WHY ISN'T SOCIETY LISTENING?

BY DAVID MCKAY

Investors are piling the pressure on mining companies over carbon emission reductions. The industry says it's responding with gusto, but a more balanced discussion about its climate control efforts is missing because it fails to tell its story properly.

Let's get the obvious out of the way: is mining really changing? Or are the billions of pixels spent in lengthy exposition of ESG - environment, sustainability and governance - merely a rendition of that old chestnut: 'When we talk environment we mean business' (nudge, wink)?

Some think authentic change is afoot. "We see a focus on real risk management, not just legal compliance," says James Lake, an environmental scientist who works at SRK, a Johannesburg-headquarted engineering firm. Mining firms he speaks to are no longer focusing on 'can we get the permits?'

Investor and social pressure on mining and energy firms is immense. In recent times, mining has been one of Hollywood's common tropes every audience could recognise and feel itself in opposition to. In Avatar, for instance, film director James Cameron's 2019 blockbuster, the desire for the fictional rare mineral 'unobtanium' stands for insatiable human greed sweeping aside all regard for sanctity. In this way, mining is to the environment what Russian spies were to nuclear disarmament in a 1970s James Bond film.

Popular consciousness aside, the public sector response lately has been to hit mining where it hurts: in its pocket. "Companies that do not respond to the demands of investors will be footnotes in corporate history," says Adam Matthews, chief responsible investment officer at the Church of England Pensions Board. The board's Transition Pathway Initiative is supported by more than 100 investors controlling assets worth $25 trillion, so its word packs a punch.

Banks won't fund new coal mines, while community violence is a sure-fire way to put the skids under a company's reputation, akin to Portuguese footballer Cristiano Ronaldo removing bottles of Coca-Cola at a press conference. Damaging press and a boardroom in turmoil is but a polluted pond away for a mining project with even the noblest of intentions.

Citing the US SIF Foundation, online data publisher The Visual Capitalist says that, between 2018 and 2020, 1,500 shareholder resolutions were filed that had climate change and carbon emissions as their most pressing matter. Assets under management affected by such resolutions grew 39% to $4.1 trillion. Sustainable natural resources concerns grew the most in the same period (see illustration).
https://www.visualcapitalist.com/fact-check-the-truth-behind-five-esg-myths/

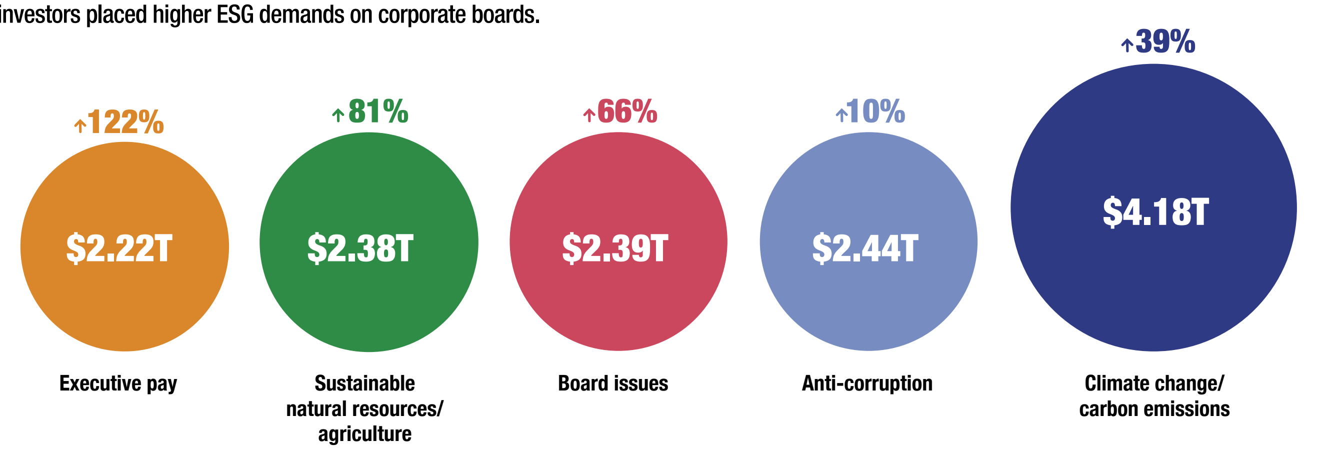
"Climate change, climate change and climate change," says Stewart Bailey, head of corporate affairs for AngloGold Ashanti, a gold producer, when asked for the most popular question posed by shareholders. The matter could not have been painted any clearer than at ExxonMobil, the oil producer, where a small activist shareholder changed the firm's board because it was not responding appropriately to its climate change concerns.

Do mining executives think there's a risk of shareholders changing the company if it won't change itself? "It's already there," says Graham Kerr, CEO of South32, a diversified

TODAY, MONEY MANAGERS ARE FOCUSING ON THESE TOP 5 ISSUES

Top ESG issues considered by money managers and growth in assets affected 2018-2020

Over 1 500 shareholder resolutions were filed between 2018-2020 as investors placed higher ESG demands on corporate boards.



SOURCE: US SIF, ISS ESG, Sustainable Investments Institute (Nov, 2020)

mining company that until very recently mined about 26 million tons annually of thermal coal in South Africa. Moreover, investor scrutiny of potential climate change assets is broadening rapidly. Kerr says attention is increasingly being drawn to metallurgical coal.

Ironically, metallurgical coal — as distinct from thermal coal — is part of the answer to climate change owing to its use in steel which is fundamental to zero-carbon technologies. It's one example of how climate change consciousness lacks nuance, Kerr says.

"I think some of the discussion points are probably a little bit narrow at the moment," says Kerr. He thinks stakeholders don't consider 'just transition', a term to describe the gradual move from carbon-heavy industries in a way that protects livelihoods. According to Kerr, the onus is on companies to get the communication right. "Where Exxon particularly fell foul is it was quite arrogant about its approach," he says of the firm's boardroom ructions.

Mining CEOs are talking about their ESG efforts, but is the message getting across? Of the CEOs surveyed for this publication, not a single one thought the mining sector had done a good job of communicating the positive environmental aspects of its activity. The mining brand continues to stand for "menace", as Mark Cutifani, CEO of Anglo American describes it.

"We don't know how to tell our story. There is more land dedicated to pubs than there is to mining across the globe," he says. The company's proposed Woodside, a £300m fertiliser project in the UK, will occupy an estimated 124 hectares of land - a considerable footprint. However, the polyhalite produced from the mine will improve crop efficiency and potentially turn 1.5 million hectares of land currently used for agriculture back to forest. Agribusiness takes up 50% of the world's land mass compared to 0.04% by mining, and yet the mining sector drives 45% of the world's economic activity, says Cutifani.

This may be true, but as a percentage of land mass, mining remains a significant component of the carbon emissions pie. Tsepang Molefe, a spokesman for Groundwork, a non-governmental organisation, says the 14 coal-fired power facilities in South Africa's Mpumalanga province were responsible for between R11bn and R30bn in health costs in 2018, a figure that is expected to reach a R45bn peak next year. As many as 2,080 premature deaths annually can be attributed to air pollution from power plants in South Africa, he says.

Says Cutifani: "If you live next door to a mine, it's pretty hard for you to see the benefits given the impact we have on your life. As miners, we have to make sure we minimise the impact on those local communities ... or we won't retain a licence to operate."

As part of its response to investor and government pressure, the mining industry has aligned its carbon reduction ambitions in terms of the Scopes one to three. These are targets in the Greenhouse Gas (GHG) Protocol Corporate Standard that was devised by the World Resources Institute and the World Business Council for Sustainable Development.

Scope 3 emissions are those of a mining company's customers while Scope 1 and Scope 2 emissions focus on the carbon footprint of the firm's operations and those of its suppliers, respectively.

The end-game is to comply with the Paris Agreement, a United Nations-sanctioned pact signed in 2016 by more than 100 nations which is aimed at keeping the rise in global average temperature to well below 2oC above pre-industrial levels. The agreement also ties signatories to limit the increase in temperature to 1.5oC. But mining firms differ hugely on how this target should be achieved.

Some companies, such as Glencore, are promising Scope 1 to 3 compliance, but others are ambivalent. How can you be responsible for emissions when you don't exercise influence over the sold mineral?

'We don't know how to tell our story. There is more land dedicated to pubs than there is to mining across the globe'

Mark Cutifani CEO, Anglo American

asks July Ndlovu, CEO of Thungela Resources, a South African thermal coal producer. Guaranteeing end-user carbon emission compliance is especially elusive in the coal sector as ownership of a single seaborne cargo can change multiple times once it leaves the mine gate given the high liquidity of coal merchanting.

Another problem for investors and environmental NGOs is that mining firms are setting fairly long-dated targets, sometimes 15 years out. That makes it difficult for NGOs, government authorities and investors to plot a company's success. Society needs to develop a yardstick as a way of comparatively milestoning progress.

Sibanye-Stillwater is one of the companies (among many) that has 2040 as a net carbon neutral target. "Internally, we've got quicker targets because I don't think 2040 is acceptable anymore," says Neal Froneman, the company's CEO, adding that more detail will be available by year-end. "It's real and we're working on it," he says.

Glencore, in its recent intention to buy the shares of its joint venture partners in the Cerrejón thermal coal mine, said it would introduce a new, short-term carbon emissions reduction target of 15% by 2026, in addition to a newly imposed 50% emissions cut by 2035.

For all the carbon disclosure and net emission efforts underway in the industry, thermal coal remains a significant part of the world's total energy pie, even a decade from now when it's forecast to comprise 31% of total energy generation compared to 35% today, according to a study by research company Wood MacKenzie.

The truth is, the coal mines formerly owned by Rio Tinto, BHP and Anglo American aren't being closed, they are just changing hands.

That means the onus for decarbonisation rests on the extent to which mining firms can either invent or repurpose technology. Cutifani says it's the latter. Cleaner, more energy-efficient mining activities such as bulk sorting, grinding, and milling processes, even the hydrogen-powered fuel cell trucks being trialled at Anglo's 80%-owned Anglo American Platinum, are existing technologies.

"Quite a few of these technologies have been around but we're using them in different applications or we're stringing them together in different ways, which is the real IP (intellectual property)," he says. It's a road Anglo has been on since 2013, way before ESG became the touchpoint it is today, he adds. In terms of achieving a 30% reduction in carbon emissions, Cutifani thinks Anglo is 80% there in applying the technologies.

Renewable power options is no longer the nice suggestion of five years ago, but an imperative. "The speed at which renewable energy prices have come down and capacity has gone up has moved faster and quicker than I probably expected five or six years ago," says South32's Kerr: "Do I think it's probably going to move equally fast in the next, probably, nought to 10 years? I think it absolutely will."

Carbon emission reductions is clearly a massive, complex matter, but it ticks the environment box only. It is like a galaxy in the much larger undertaking of the ESG universe. Take sustainability, for instance: investors want to see a step improvement in community relationships, better than minimum wage salaries, and preparedness for climate change events such as flooding.

What's certain is that ESG as a valuation tool for investors is a fast-changing vector, even though some miners think it's been part and parcel of successful mining anyway.

"It was at the 2019 Indaba [mining conference in Cape Town] and I was absolutely astonished at the amount of conversation there was around ESG," says Jeff Quartermaine, MD of Perseus Mining, a company that mines gold in Ghana and Côte d'Ivoire. He claims not to have known what the fuss was about. "We've been doing it for years," he adds. ■

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FROM SCIENCE PROJECT TO REALITY: THE 'HYDROGEN ECONOMY' IS POWERING UP

BY ED STODDARD

In a little over two years, the boffins have turned extra-serious about how the hydrogen economy will change the world's metal markets.

What do the 2019-2020 bush fires that ravaged Australia and the future of the platinum and copper mining industries have in common?

The former is seen as a catalyst that has shifted the drive to clean energy sources into fifth gear. The latter stand to benefit from this route, even as the internal combustion engine slowly goes the way of the dodo. This is because the road to decarbonisation will in part be paved by the rise of the 'hydrogen economy', and platinum, and to a lesser extent copper, are seen as playing a crucial role in this transition.

"If you spoke about the hydrogen economy two years ago, it was viewed as a science project. But the Australian bush fires started to sway views quite strongly on climate change and the pandemic crystallised a lot of people's views on sustainability and decarbonisation," Trevor Raymond, director of Research at the World Platinum Investment Council told Miningmx in an interview.

Copper, a metal for which new uses are constantly being found, is one of the commodities that will see boosted demand because of these trends as diesel and petrol vehicles are phased out and replaced by battery electric vehicles (BEVs) and fuel cell electric vehicles (FCEVs).

"FCEVs have 70-100% more copper in their traction motors compared to standard gasoline-powered vehicles," BMO Capital Markets said in a recent report on hydrogen fuel cells.

This extends to the infrastructure required to power hydrogen, which will also affect metals markets.

"We believe the drive toward local distribution capacity will increase, and in the long term, result in fewer transmissions lines [hurting aluminium demand], but ultimately benefiting copper," BMO said. That will be good news for the likes of Codelco and BHP.

The real demand will stem from platinum, which is seen getting a new lease on life after being battered by Volkswagen's 'Dieselgate' scandal, and a switch to petrol engines from diesel. Fuel cell technology to power vehicles, as things stand, is heavily reliant on platinum.

This is why companies such as Anglo American Platinum (Amplats) are investing so much research and development into the technology. In the case of its parent, Anglo

American, it has said it may fit as many as 400 mine haulage trucks with hydrogen-powered engines across its operations globally as it strives to reduce its emissions. This hinges on a pilot study on a single haulage truck at its Mogalakwena mine in Limpopo.

This is a case of a science project indeed coming to life, with significant commercial applications.

But for the hydrogen highway to gain traction, a lot of stars have to align in the sky.

For one thing, BEVs can be charged in the convenience of your own home, while FCEVs require a fuelling station.

"However," as the World Bank pointed out in a 2020 report on the issue, "a growing number of countries have ambitious plans to develop new hydrogen refuelling stations in the near future. Also, FCEVs can be refuelled in just a few minutes, whereas it might take hours to recharge a BEV."

"Because of these factors, the current expectation is that, for most passenger cars, BEVs will continue to significantly outnumber fuel cell vehicles, but for longer-range applications, freight transportation, buses, maritime, and air transport, FCEVs could have a strong competitive edge in the future," the World Bank noted.

Basically, an FCEV needs a station, but according to experts in the field, it takes about the same time to fill as it takes to fill an internal combustion tank at a petrol station. And according to Benny Oeyen, executive head of market development for PGMs at Anglo American, that eases the transition to hydrogen, as such stations can be placed specifically on long-haul trucking routes.

"Decarbonising trucks is only possible with fuel cells," he said in an interview.

What does the anticipated rise of FCEVs, which require platinum in the mix, mean for future demand for the commodity?

"If half of the trucks in the world become fuel cell electric vehicles, and the rest are still diesel, we would have two

'If half of the trucks in the world become fuel cell electric vehicles, and the rest are still diesel, we would have two million ounces of platinum demand per year'

million ounces of platinum demand per year," Oeyen said.

For passenger cars, if around 8% of these are FCEVs - with the rest internal combustion or BEVs - it would amount to an additional 3.6 million ounces of platinum, at a current market of 18 to 19 million vehicles per year.

Such scenarios of course rest on platinum remaining a key component to get an FCEV up and running. The technology is also being tested and rolled out in trains

- which are essentially big trucks on a track - as well as in shipping and aviation.

But costs are a trigger for R&D, and while platinum is well below its historic highs, it is not regarded as cheap. A metal's use as a catalyst, be it in a fuel cell or a diesel engine, ultimately depends on its chemical reaction.

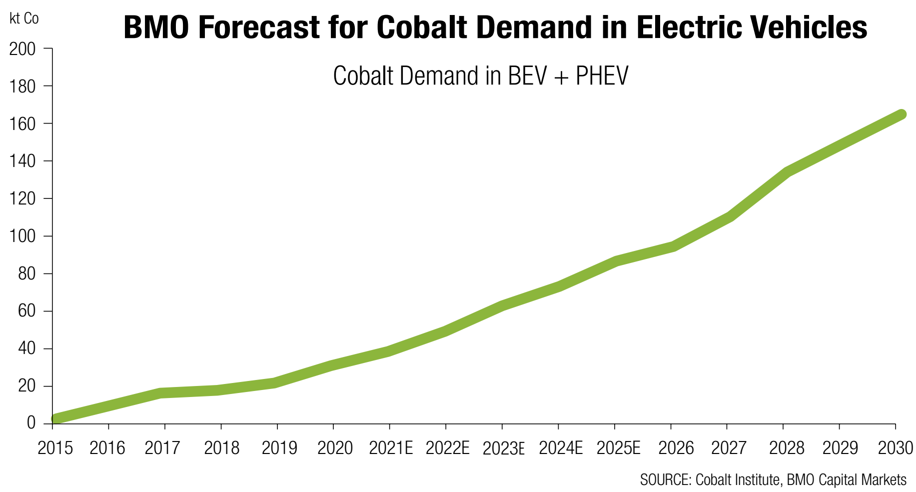
Late last year, researchers at the Pacific Northwest National Laboratory (PNNL) in the US announced that they had "designed a highly active and durable [fuel cell] catalyst that doesn't rely on costly platinum to spur the necessary chemical reaction".

The substitute used was cobalt, which is also seen as a crucial component for BEVs.

"Platinum group metals serve as the most productive catalyst material for PEM [proton exchange membrane] fuel cells, but they account for about half of the fuel cell cost," PNNL said in a statement. It noted that scientists have attempted to use iron as a substitute, but that has been a disappointment.

"Enter cobalt, a transition metal that is — relative to platinum — inexpensive and abundant. Previous studies had shown that cobalt is far less active than iron-based catalysts," PNNL said. Glencore, the world's top cobalt producer, would stand to gain if this proves to have commercial applications.

It must be said that PNNL's assertions about price and abundance are questionable. Cobalt is about half the price of over $90,000 a ton it was fetching in early 2018. But platinum is also in roughly the same position compared to its highs of over $2,000 an ounce reached over a decade ago. And as much of the world's cobalt supplies are found in the unstable and downright



Benny Oeyen Executive head of market development for PGMs at Anglo American

dangerous Democratic Republic of Congo, it might be a stretch to describe the commodity as 'abundant'.

Still, cobalt is among the metals that are emerging in the hype around the 'hydrogen economy'.

Bringing this science project out of the lab and into the wider economy will hinge on several factors. This includes the pace of the phase-out of internal combustion or fossil fuel engines. Several countries, including China, Japan and the UK - countries that count on this front - have proposed or plan to implement bans on the sale of such vehicles in the future.

But what governments commit to now, and what subsequent governments do in the future, are often not the same thing. Political resistance in the US, especially under any future Republican administration, to the demise of the internal combustion engine will be intense. In much of the US, the 'right' to drive a gas-guzzling F-150 pick-up truck (bakkie) is regarded as sacrosanct as the right to bear arms.

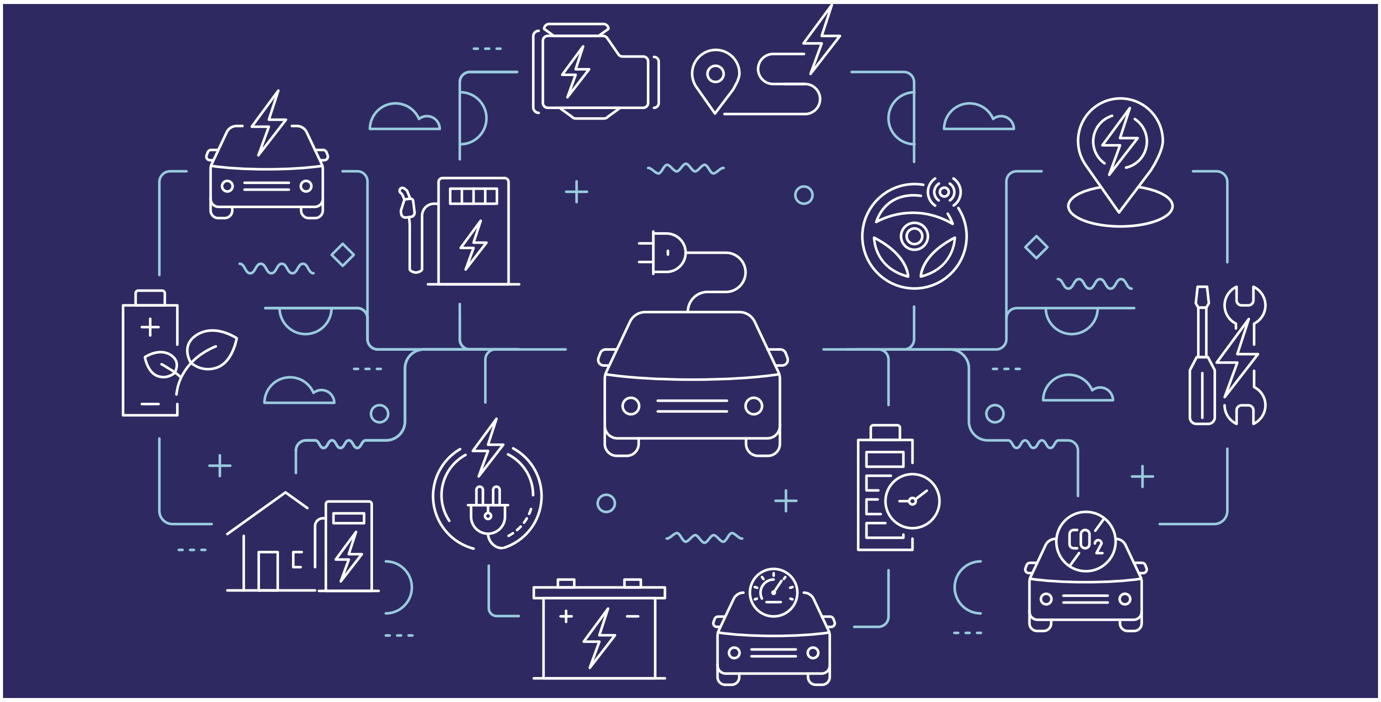
The US is a huge market, but it may find itself isolated on this issue. The global drive to renewable sources of energy - and not all sources of hydrogen have a complete 'green' rating - is almost certainly unstoppable, with public opinion, political will elsewhere, and the corporate focus on ESGs all lining up together. Fossil fuels, and the engines and industries they power, are on the back foot. The recent rebound in oil prices hardly moves the needle on this wider front.

Yet the trucks one sees on the N3 heading for Durban, laden with copper from the Copper Belt in Zambia, are not going to be off the road anytime soon. Copper has plenty of other uses, and the internal combustion engines that deliver the commodity to ports like Durban are not heading for the scrapheap tomorrow - which is also no bad thing for PGMs. The N3 still runs on petrol and diesel stations. Anglo American has a study focusing on testing the feasibility to develop hydrogen infrastructure along the N1 from its Mogalakwena mine to the industrial hub of Gauteng and then the N3 to Durban. But, like a science project, it remains just that for now.

"Before hydrogen fuel can replace fossil fuels in a meaningful way, there are many moving parts that need to come together, and a number of technological hurdles need to be overcome before the necessary efficiencies can be realised on a large-scale basis in the transport sector," the BMO report noted.

"For one, the expansion in the use of hydrogen fuel in the transport sector will rely on public policy to finance and build the necessary fuelling infrastructure, which is complicated in a number of ways. Furthermore, hydrogen production itself needs to be decarbonised and shift from highly polluting grey hydrogen to low to zero emission blue and green hydrogen – currently a costly and inefficient process."

Still, if the aim is for a greener future, hydrogen is surely a key part of the mix. The question marks are over the timing - which points to the when, and not the if. ■



DESPITE THE ROADBLOCKS, ELECTRIC VEHICLES WILL CHANGE A HIGHWAY NEAR YOU, FOR GOOD

BY CHARLOTTE MATHEWS

Electric vehicles (EVs) are revolutionising automotive markets. While the technology is still advancing, they already cost far less to run than a traditional internal combustion engine (ICE), and their greenhouse gas emissions (GHG) are significantly lower - even for South Africans using Eskom's coal-fired electricity to charge them.

Global car sales slumped during 2020, but sales of electric vehicles surged – except in South Africa.

According to the International Energy Agency's (IEA) Global EV Outlook 2021 report, worldwide registrations of EVs grew 41% in 2020, when total car sales dropped 16%. Sales of EVs in Europe surpassed China for the first time.

The main reasons for the popularity of EVs were supportive policies, driven by carbon emissions concerns (by end-2020, 20 countries had banned sales of conventional cars or mandated that all new vehicles sold had to be zero-emission), additional incentives, and a wider range of brand choice with falling battery prices.

The IEA predicts there will be 145 million EVs (in all forms except two-wheelers) by 2030, equivalent to 7% of the total road fleet. In a scenario where governments step up incentives, the global EV fleet could be 230 million by 2030, which could cut GHG emissions from vehicles by two-thirds.

Bucking the trend, South Africa's sales of EVs fell to 92 units in 2020 from 154 in 2019, according to the SA Automotive Export Manual 2021. Between 2016 and 2020, total EV sales totalled only 472 units.

The lack of demand, according to a 2020 TIPS report, 'Harnessing EVs for Industrial Development in SA', reflects mainly the high upfront cost and complete absence of incentives. There is also a very limited consumer offering (only two battery EVs, 23 hybrid electric vehicles, 10 plug-in hybrids and no fuel cell EVs). This was particularly the case in the entry- to mid-level market.

"Any market needs an enabling environment," says Hiten Parmar, director of the uYilo e-Mobility Programme, which was established by the Technology Innovation Agency in 2013 to enable the uptake of electric mobility in South Africa. He says the South African government has frameworks to support the roll-out of EVs, citing the National Development Plan 2030, the 2018 Green Transport Strategy to 2050, and the Department of Trade, Industry and Competition's (DTIC) New Energy Vehicle Green Paper, published on 18 May this year. The department intends to follow up the Green Paper with policy proposals to be submitted to Cabinet by October.

The Green Paper inevitably emphasises the export market - three out of four vehicles made in South Africa are exported, and the majority are destined for the UK. The UK intends to ban sales of new ICE vehicles by 2030. But it is also considering ways to promote domestic EV take-up. It proposes expanding the current charging infrastructure; bringing more renewable energy into the national grid; and adopting a technology-agnostic approach, but giving special attention to fuel-cell technologies based on platinum-group metals (PGM) catalysers, which use green hydrogen as fuel.

Norman Lamprecht, executive: trade, exports and research at the Automotive Business Council, says the Council began an Electromobility Road Map last year, as the ecosystem relating to electric vehicles is huge and involves various areas for intervention.

Parmar says one of the reasons that EVs cost more than ICE vehicles in South Africa is that an imported EV attracts 25% in customs and excise duty compared with 18% on imported ICEs. On top of that, an ad valorem duty is imposed.

Currently, the Mini Cooper S 3-door costs just under R535,000, including CO_2 emissions tax, compared with the Mini Cooper SE Electric 3-door at R658,000. It is difficult to estimate how much import

'As the green hydrogen technologies mature, they are expected to become the technology of choice in SA and across the world'

and ad valorem duties add to the price, because of the offsets that manufacturers enjoy under the Automotive Production and Development Programme.

"Financial models show that EV running costs would be lower in the long run but the initial price difference needs to be addressed first via a tax concession or alternative proposals, as in the Green Paper," says Lamprecht.

Pricing rebates for the domestic market are viable for wealthier countries like Norway, but South Africa has other pressing budgetary needs, Parmar says. In any case, technological advances are bringing down upfront and running costs and improving performance.

When the BMW i3 was introduced in South Africa in 2015, it had a 60 amp hour battery capacity, equivalent to 200km, from a single charge. Today the same vehicle offers a 120 amp hour battery, with double the capacity. Some of the other EV brands, such as Jaguar and Porsche, have a range of up to 500km from a single charge.

Although South Africa has long distances between urban centres, it has a countrywide network of about 300 public charging stations. EVs can also be charged at home overnight or from office or shopping mall parking lots. It can take 20-40 minutes to fast-charge an EV from a dedicated charging station, depending how spent the battery is, which is about the length of the average rest stop, Parmar says.

uYilo compared the cost of charging the Nissan Leaf EV over two years or 15,000km against an equivalent 1.5-litre Nissan ICE model. At the time, the petrol price was about R12/litre. Fuel costs worked out to about R1.24/l for the ICE and 24c/km for the EV. Charging from solar panels brings the charging cost to zero.

For consumers who are more motivated by environmental concerns than cost, EVs make a significant difference. Parmar says Johannesburg is considered the world's 14th worst city for car pollution, as cars are still mostly using Euro II fuel. If South Africa moved to Euro VI fuel, it would only save 14% of GHG emissions. If the country switched to EVs, and charged them with Eskom's largely coal-fired power, the Johannesburg car fleet would save 34% of its current GHGs. If the EVs were charged using solar power, they would save 67% of GHGs.

EV batteries are predominately lithium-ion, with a proportion of nickel. South Africa is not richly endowed with either lithium or nickel. However, an alternative EV, based on a fuel cell using green hydrogen rather than electricity for power, uses PGMs, of which South Africa has the world's largest deposits.

"As the green hydrogen technologies mature, they are expected to become the technology of choice in SA and across the world," the DTIC says.

Parmar says there is likely to be a mix of technologies in future. The government has plans to roll out a hydrogen economy, so FCEVs are an area to watch. They are currently being considered for heavy-haul trucks, and marine and aviation uses rather than passenger vehicles.

For long distances, hydrogen may be more suitable for trucks than batteries only. However, in an urban environment, battery EVs have an advantage because electricity is more accessible to charge batteries, while hydrogen filling stations are still few and far between. BEVs are also more efficient than FCEVs in the amount of energy required to move a vehicle.

Sasol and Toyota SA Motors have formed a partnership to investigate a green hydrogen ecomobility system in South Africa. They will use the Johannesburg-Durban route to trial hydrogen-powered heavy-duty haul trucks.

"The long-term outlook for EVs remains bright, as fundamental cost and technology improvements outweigh the short-term impacts of the pandemic," the Automotive Business Council says.

It forecasts that price parity between EVs and ICEs across the globe should be reached by the middle of this decade in most segments, but there is a wide difference between geographies. "Until these tipping points are reached, policy support is still required in most markets." ■

THE WORLD WANTS MORE PGMS, AND NORTHAM'S PAUL DUNNE HAS A PLAN TO DELIVER THEM

BY DAVID MCKAY

Paul Dunne joined Northam Platinum when the PGM industry was at an ebb. It was a piece of accidental timing that seems to have worked perfectly for Northam Platinum, now enjoying the benefits of a cyclical high

Paul Dunne CEO, Northam Platinum

Paul Dunne says he was teased for claiming Northam Platinum would become a one million ounce a year platinum group metals (PGM) producer. The ribbing may have been entirely warranted: when Dunne took up the firm's leadership seven years ago, there was some scepticism about him. He'd been a director at Impala Platinum, South Africa's second largest PGM producer, but as a CEO he was considered untested. He'd clashed with Implats' then CEO, Terence Goodlace, and left in a huff. When he joined Northam, the company was in a pickle: heavily indebted with a single asset and growth aspirations that were underfunded. Northam's Zondereinde mine had excellent reserves but was geologically troubled. And now there was this new CEO, talking about expansion.

Questions about Dunne's suitability, however, were nothing compared to what was going on in the PGM market. Amid today's rocketing PGM prices it's difficult to recall just how tough it was for the sector's miners in 2013. "We had the deepest downturn in the PGM industry's

'I think for hydrogen, it's coming like a stream train'

history," Dunne said at the firm's north Johannesburg offices. By the end of the price drought, two platinum miners had gone out of business, while the industry's balance sheet shrank drastically. With no money to spend, PGM mining firms stopped projects and with that, retarded the industry's ability to respond to a demand recovery. Dunne describes this condition as a "deep hurt" that damaged the industry's asset base. It is, in fact, at the root of the price rises today across every metal in the so-called PGM basket.

Palladium was trading at $680 an ounce in 2013. Today it's worth over $2,000/oz more than that. The platinum price, meanwhile, is undertaking a slow but consistent recovery. Then there are the other metals. The massive supply deficit has thrown the spotlight on some pretty obscure parts of the Periodic Table. Ruthenium and iridium, previously minor components of the PGM suite, are now star turns. Another - rhodium - is so highly prized that it's expected to constitute roughly half of this year's total PGM revenue despite comprising 10% of all production.

Dunne thinks the supply deficit is so fundamental that prices of this stripe will be in place for another decade at least.

The driving force behind the price improvement has been PGMs in cars, principally petroleum-driven vehicles by dint of tightening emissions standards, and China's adoption of blue-ribbon emission standards. Consumers are also buying bigger cars: more than two-thirds of all vehicles sold in the US are either trucks or SUVs. Even in Europe, the home of the compact car, SUVs have become the biggest seller for the first time. Bigger cars mean more carbon emissions, requiring more PGM-loaded autocatalysts.

"You've got these pretty serious demand-side effects, which have led to at least a 25% increase in PGM loadings cumulatively if you take them altogether," says Dunne. "And you've got these heavy contractions that have happened in the mining side, and that presents this market condition that we're now seeing where it's pretty tight."

Dunne expects Northam to hit a million oz in PGM production by about 2024. That's some improvement considering production in 2015 was about 380,000 oz, most of it from Zondereinde. He says the key element in Northam's performance was a black economic empowerment (BEE) deal in 2014. Though he decribes it as "unwelcome" in its complexity, the deal nonetheless raised R4.2bn in expansion funds which Dunne used to pick up assets "at ridiculous prices". They included Everest South, acquired for R450m from Aquarius Platinum; Eland Platinum for R175m from Glencore; and the biggest deal of them all, the R1bn paid for reserves held in Amplats' Amandelbult extensions.

Naturally, the question is where to from here for Dunne, especially as Northam has settled its BEE deal four years early, which has removed massive liabilities from the balance sheet. There's a plan to reinstall the dividend, but there's also the major opportunity of feeding into the supply deficit of the next decade, assuming the market forecasts are right.

"I really believe the market needs the metal, and to quantify that, just in automotive [demand] alone, I think we're going to grow the demand from about 13 million oz to 16 million oz per year of PGMs," he says. So the question is where the additional three million oz is going to come from. "Some of it will come from Russia, but Southern Africa also needs to respond."

'Just in automotive [demand] alone, I think we're going to grow the demand from about 13 million oz to

16

million oz

per year of PGMS'

For this reason, Dunne doesn't see Northam making surprise strategic shifts in focus. It's worth noting that rival Sibanye-Stillwater is intent on growing its gold production, to which it also wants to add battery metals such as lithium. Even Implats has mentioned, though in rather subdued, slightly ambivalent tones, the potential of metals diversification. Dunne is having none of that: if Northam is to stay in PGMs, it has to stay in South Africa. "It's not always the message you may get from some of the competition, but we firmly see ourselves as a South African PGM producer with lots of opportunity in South Africa."

There's also science to thank for South Africa's centrality in the future industrial usage of PGMs. The rapid advance of hydrogen technology has opened the prospect of fuel-cell batteries and given PGMs a role in the development of electric vehicles and global decarbonisaton that didn't seem quite so apparent as little as four years ago.

"There are three metals that would be important for the hydrogen economy," says Dunne. "Definitely platinum in both generation and use; iridium for the generation of green hydrogen, and ruthenium in the use of hydrogen in the fuel-cell application." He adds another, rhodium, as crucial. "Guess where they are all found? South Africa."

Handily, the metals also predominantly occur in a type of mineralisation known as 'UG2'. UG2 is deeper than Merensky Reef which is more prized as a consequence. Or was. Hydrogen technology, however, has thrust UG2 resources, in which South Africa is abundant, to the forefront.

"I think for hydrogen, it's coming like a stream train," says Dunne. "You'll see a lot of developments this decade already, and you can imagine what it will look like in the 2030s. It's very promising." ■

Palladium sceptics on a quest for **'unobtanium'**, says PGM market's Mr. Optimistic

Mike Jones is a great talker. Boundlessly enthusiastic about his company, the Toronto-listed Platinum Group Metals (PTM), he's optimistic it can finance the $617m required to build its Waterberg Project, a massive palladium-rich mine in the Limpopo province.

The resource, which strictly speaking is a geological extension of the famed Bushveld Complex platinum group metals (PGM) deposit, has proved difficult to develop. It is capital-intensive and although conducive to mechanisation, the project is viewed as risky and potentially short of water resources, with long lead times.

The main risk, say critics, is whether palladium prices will be sustained for the Waterberg Project to benefit over its lifetime. According to PTM's website, it will take three years to produce the first ore from the Waterberg Project after beginning the development of the mine's decline, and five years in total in project construction. Assuming approval for the project today, full ramped-up production is not expected until 2026.

Northam's Paul Dunne, among others, has spoken of PGMs' long-term prosperity, but will palladium sport the same price achieved in the last 12 months? At this year's zenith, the year-on-year price of palladium was $1,000 higher per ounce, a gain of about 50%. Sceptics see only price risk for a project as long-dated as Waterberg.

Inevitably, Jones doesn't see it this way. The wide-scale adoption of electric vehicles cannot be supported by the materials and metals industries, he says. Battery manufacture today is about half a terawatt - about 500 billion watts - but adding up just the countries that have mandated electric vehicles, that battery demand increases to 15.5 terawatts. Even after accounting for a doubling in battery density (effectiveness) - not technically available currently - you would need four to eight times' mining of everything.

"If you plot that in terms of real materials, the problem is unobtanium," he says, referencing the fictional mineral mined in the Hollywood blockbuster, Avatar. "It just can't happen."

Instead, the world is likely to see the development of hybrid vehicles, a combination of battery and traditional engine, requiring a level of autocatalysis for which PGMs are still required. In fact, PGMs in autocatalysis are needed in increasing intensity as emissions standards tighten, as car demand grows 4% to 5% (although flat for internal combustion engines as electric vehicles take up market share), and as economies begin the thirty-year journey towards the aspirational net emissions standard of the Paris Agreement. "I think the death of palladium by 2035 or 2030 is greatly overdone," says Jones. "It's just fundamentally wrong."

By his own admission, Jones bears the scars of his own previous miscalculation. PTM's Maseve mine, a proposed 250,000 oz/year PGM mine a decade in the making, effectively closed a year after commissioning in 2017. Maseve's production ramp-up proved slower than planned and dilution caused by waste rock heavily affected profitability. So PTM attracts its fair share of scepticism when its officers talk of the next project. To be fair to PTM's Maseve mine, it didn't help that the PGM market had collapsed.

A report by Unathi Loos and Daniel Sacks, analysts for asset manager Ninety One, says the long-term prospects for PGMs are strong. The report's authors agree with Jones that a shortage of supply response measures, the continued use of the internal combustion engine (whatever government mandates may be on the adoption of electric vehicles), and the development of hydrogen-powered fuel cells all support the thesis for strong PGM use over time.

"It is ... likely that we will see PGM basket prices remaining well above cost support as the strict emissions standards and related higher loadings offset the decline in absolute auto unit volumes during this transition decade," they say.

It's worth noting, however, that it is platinum that mainly benefits from fuel-cell technology whereas palladium is used more widely as an autocatalyst in internal combustion engines. "Ten years is a very short timeline in the life of a miner," say Loos and Sacks. - David McKay

CRACKING EUROPE'S BATTERY MARKET COULD GIVE SIBANYE-STILLWATER EDGE IN PGM MARKET

BY DAVID MCKAY

Neal Froneman is taking his shareholders to Finland, where the company hopes to get closer to Europe's electric vehicle battery market. It's an entirely new departure for South Africa's czar of M&A

Neal Froneman CEO, Sibanye-Stillwater

The last time a South African mining company packed for Finland, it ended in tundra and tears. That was in 2004, when Gold Fields committed $90m drilling Arctic Platinum, eventually selling it 14 years later for a knock-down $40m.

But Neal Froneman, CEO of Sibanye-Stillwater, says his company's R6bn investment in the Keliber Oy lithium prospect in the Kaustinen region is nothing like Arctic Platinum.

Firstly, Keliber is a lithium deposit which has no comparison in South Africa, whereas Arctic Platinum always looked like a poor cousin against the riches of the Bushveld Complex's abundant platinum group metal (PGM) deposit.

Secondly, Sibanye-Stillwater hopes to influence the European supply chain for electric vehicle battery (BEV) manufacture which the Finnish government wants to champion. That's a critical linkage for Sibanye-Stillwater for reasons other than successfully supplying lithium to the evolving hybrid BEV market.

Froneman recently convinced end-users of palladium, one of the metals in the PGM basket, that structural problems would emerge in the market unless they reduced their dependence on the metal. He argued that acting now would not only stimulate platinum demand but also release palladium for substitution with rhodium. He's hoping that in getting closer to the lithium battery market, he will get the opportunity to influence demand. "It's more around long-term sustainability," he says.

There are other benefits to investing in Finland. One is that the country ranks among the top five best investment jurisdictions, as per the Fraser Institute, a survey of geopolitical risk for miners. As the chosen mining partner, Sibanye-Stillwater is improving its asset profile, which is currently heavily skewed towards South Africa.

Secondly, Sibanye-Stillwater has scored some ESG brownie points: having the Finnish government, which is invested in Keliber through the Finnish Minerals Group, plump for the South African mining company required it to pass the most vigorous of stress tests. "We got grilled," says Froneman.

There's another side to Sibanye-Stillwater's investment. The Finnish government's interest in capturing the lithium supply and downstream market reflects how Western powers are increasingly viewing the international world of mining demand and supply. If miners learned anything from Covid-19 it was that logistical disruption on the scale experienced in 2020 can't happen again.

A source inside President Joe Biden's administration recently told Reuters that the US wanted to source minerals from "allies", leaving local manufacturers to focus on downstream processing. The implicit consequence of this is to reduce China's influence in areas such as the BEV market, where it's currently dominant.

'We bring technical expertise to the Keliber team, but we're not promoting the idea that we can operate in Finland better than the Finns'

"You can rest assured that the Europeans are going to become less dependent on batteries out of China. The Americans are going to become less dependent, and we're just talking batteries here, out of anywhere else other than America," says Froneman.

What's unlikely to happen with Keliber Oy is the export of South Africans to operate the project, he says. That could have attracted criticism to the effect that the Sibanye-Stillwater team was dabbling in geology and operating conditions in which it didn't have direct experience.

"We bring technical expertise to the Keliber team, but we're not promoting the idea that we can operate in Finland better than the Finns," says Froneman. ■

MICK DAVIS RETURNS WITH A PLAN TO SPEND WHERE MINING GIANTS WON'T (OR CAN'T)

BY DAVID MCKAY

Mick Davis is back in the headlines as chairman of Vision Blue Resources, an investment company seeking out positions in early-stage battery minerals projects.

Mick Davis has had a singular career. Firstly, there's the knighthood, awarded in 2015 for his efforts in Holocaust commemoration and education. Then there's the three-year stint as treasurer and then CEO of the UK's Conservative Party, under the leadership of then prime minister, Theresa May. But for the most part it, is as a mining tycoon - 'Mick the Miner' - as the City once dubbed him, that Davis is renowned. The last three years have been among his quietest following the 2017 closure of X2 Resources, the $6bn privately backed fund. This year, however, marks his return as chairman of Vision Blue Resources (VBR), a company initially backed by $60m in private funds.

Davis says VBR is not like his other mining ventures. "I'm not building a mining company; I'm essentially investing in opportunities where I think value can be created. I'm adding combinations of my financial capital and my human capital to ensure these projects and opportunities can track up the value curve. That's why Vision Blue is different to the rest, and that's essentially what we're trying to look at."

'The rest' refers to Davis's previous roles, firstly as the CFO of Billiton, the South African company that merged with BHP to create the world's largest mining company, and then subsequent roles as founding CEO of Xstrata, and X2 Resources.

The way Davis sees it, Billiton represented the emergence of a newly democratised South Africa on the international mining stage, while Xstrata was driven by the surge in demand for commodities as a result of growing urbanisation in China. X2 Resources, which Davis started after Xstrata's merger with Glencore, also sought to capitalise on China's commodities boom, recognising in a debt-burdened mining sector the chance to buy projects cheaply.

VBR is a different animal, says Davis. Its initial investment - in a graphite project in Madagascar through a $29.5m stake in NextSource Materials - is aimed at supplying the electric vehicle market, which Davis believes is part of a new, potentially multi-generational phase in elevated commodities demand. What appears unique about decarbonisation is it has widespread, almost global, political sanction.

"Here we're seeing the key driver being the transition to green energy and the almost globally mandated reduction of CO2, and that is leading to a new secular shift in demand," he says. According to Davis, this is not a secular shift created by a country industrialising like China, or massive growth in GDP, but as a result of "... mandated political structural change in the way that economies function".

Davis thinks demand for minerals such as graphite, which is processed for use in the lithium-ion batteries needed to power electric vehicles, will be profound, easily outpacing in duration and impact the China-led super-cycle of 2002 to 2019.

The investment in the Madagascar mine has been followed by a $300m capital-raising after VBR teamed up with the New York-listed SPAC ESM Acquisition Company. The SPAC's mandate is to hunt for green energy investments. Separately, VBR has invested $12.6m in Ferro-Alloy Resources Group with a view to expanding a vanadium project in Kazakhstan. Previously a steel-strengthening agent, vanadium is now being used in new ways, including for large-scale power storage.

VBR's quick-fire investments compare favourably with the stationary nature of X2 Resources, where Davis's financial backers declined to sign off on at least three deals. He describes this situation

'I come along and I put some money into NextSource Materials, whose share price goes up threefold by virtue of me being there, and credentialising the project - and that's tremendously valuable for my investors'

Mick Davis Chairman, Vision Blue Resources

as a governance issue but says, had the approval been given, X2 Resources would have returned "ten times the money invested in something like 70% off internal rate of return".

X2 Resources represented a lean period for Davis. Between it and VBR he helped found Niron Metals, which had an option over West African iron ore but remains heavily hamstrung by a combination of politics, logistics and investment cost. He is keeping Niron Metals on the backburner, especially given the centrality of iron ore in global decarbonisation efforts.

One transaction that X2 Resources sought to close was the purchase of Rio Tinto's Australian thermal coal assets. At the time, it was a pretty big deal in terms of strategic shift, whereas today the major diversified mining companies are falling over themselves to sell or close their emission-heavy assets, especially as investors take a critical view of their environmental, social and governance standards. As a result, the large-cap, diversified mining sector is constrained in its ability to move with speed on opportunities. Diversified miners also can't easily justify investing in early-stage projects given the low impact they would have on earnings and dividends, and the high-intensity management. For entities such as VBR, this spells opportunity.

"They're going to have to devote a huge amount of management time without much effort and they get no credits in their multiple," says Davis of large mining groups. "Whereas I come along and I put some money into NextSource Materials, whose share price goes up threefold by virtue of me being there, and credentialising the project - and that's tremendously valuable for my investors."

Since VBR is not a mining company, there's already a strategy to exit the investments. According to Davis, this will be just as the projects move into production. At some point, mining companies will have to switch from dividend payments to investing in replacement reserves and growth in minerals production. That's when VBR will be ready to provide those growth options.

Davis thinks it's also critical for the West to start building in both upstream and downstream productive capacity in the decarbonising of minerals.

It's a mistake to have allowed China a march on green energy technology. "It gives them disproportionate commercial and strategic power. I do think that the West needs to catch up and basically our view is that the greater part of the value-add chain is down to the process as opposed to simply in the mining chain."

To this end, VBR is weighing up potential locations for a battery materials factory that will produce a purified form of graphite for use by end-users such as Tesla, the US carmaker. One potential location identified by VBR is South Africa, potentially even Gqeberha, formerly Port Elizabeth, where Davis was born. However, he questions South Africa's ability to attract investment.

"The ideology and politics are inimical to investment. You have a situation where it [the government] is driving an ideological agenda which doesn't make it easy to invest, and increases cost of investment." That affects everything, says Davis, including logistics, which would be South Africa's ace card considering its proximity to Madagascar.

"I'm not going to say that I would never invest in South Africa. I'm just saying that it's easier to invest in other countries." ■

FROM DESERT DUST, SOUTHERN AFRICA IS REDISCOVERING ITS MOJO FOR COPPER

BY BRENDAN RYAN

Copper mining in the Northern Cape shut down in the early 2000s when the former Gold Fields of South Africa finally closed the Okiep mine. It's back with a vengeance, however, with Orion Minerals CEO Errol Smart declaring the region to be "a major mining province" and "a dripping roast".

Australia and JSE-listed Orion are carrying out extensive exploration work in the region, looking at reopening the former Prieska and Okiep Copper Mines. Orion raised A$25m (R294m) through issuing equity that will fund the company through to an investment decision on Prieska, which is scoped to produce 20,000 tons of copper and 70,000t of zinc annually.

Smart's assessment is backed up by Jan Nelson, CEO of soon-to-be-listed Big Tree Copper, which started production as a small-scale copper project treating dump material in the Okiep region in October last year.

That operation is being expanded with the construction of a full-blown SX-EW recovery plant that is due to start operations in July and reach a steady-state production level of 160t/month of copper cathode within three months.

Nelson - who is well-known in South African mining circles from his time running gold junior Pan African Resources - commented: "We are offering South African investors the chance to buy into a pure copper play, which will come into production immediately. We will be cash flow positive from month two and we have no debt."

He added: "That's one of the big differences between us and Orion because they are at least two years from starting

Karl Simich CEO, Sandfire Resources

production. The other is that we are a dump retreatment operation while they will be mining underground."

Nelson is "gung ho" over prospects for copper mining in the Northern Cape, commenting: "If this region were located in Canada or Australia instead of South Africa, there would be 100 junior explorers operating here and not just four of us, as at present."

The main reason for the lack of interest appears to be the negative impact on foreign investors of the South African government's vague and vacillating approach to the country's mining legislation and, in particular, black economic empowerment requirements.

Nelson plays that down, saying it's inconsequential compared to the huge benefits of operating in the Northern Cape compared to, for example, the Democratic Republic of Congo (DRC), of which first and foremost is the excellent infrastructure available in the region.

Nelson comments: "South Africa is great. I am a big fan of [Ivanhoe Mines CEO] Robert Friedland but, from where I sit, a copper deposit grading 2.5% in the Northern Cape is the equivalent of one grading 4% in the DRC, where there is limited infrastructure. Despite the issues with Eskom, we have power, we have roads, and we have skilled labour. The skills we needed to build our plant were all available in the Northern Cape."

Nelson got into Big Tree Copper via a Canadian-listed junior - Handa Mining - which has an 18% stake in the new producer. However, the pioneer of the resurgent copper mining boom is local entrepreneur Shirley Hayes, who holds a 16% stake through her operation, Shirley Hayes-IPK (Ship).

But that stake is just one part of the copper mining business she has put together in the Northern Cape, where she acquired the prospecting rights to the Concordia project in 2009.

Hayes was born in Springbok and matriculated from the nearby town of Pofadder and is passionate about her Northern Cape roots. She comments: "I knew I was sitting on a copper hot spot right from the beginning, in 2009. It is very nice to be in the position I am in now after more than 10 years of risk-taking."

Hayes has seven individual projects lined up, which she intends developing on a "cluster model" approach, with each one forming part of an overall mining complex and all within a 5km radius of the central treatment plant that will be built. She is waiting for the mining licence to be granted, which will allow development of the first three mines.

She comments: "I am a small-scale miner and that is how I intend developing these mines. The first three have an expected life-of-mine of 15 years but the remaining four could be mined for up to the next 75 years depending on the scale of production that is adopted."

Also attracting investor attention is neighbouring Botswana, where two juniors - Australian-listed Sandfire Resources and US private equity-owned Khoemacau Copper - are both developing mines.

These are located on what is called the Kalahari Copperbelt, which runs in a band from north-east to south-west across northern Botswana, and extends into neighbouring Namibia.

Khoemacau is about to begin production from its so-called "starter" project, with first concentrate due to be produced in mid-2021, after which the mine will build up to annual output of 60,000t of copper and two million oz of silver, with an estimated life-of-mine of 22 years.

Sandfire CEO Karl Simich describes the Kalahari Copper Belt as "one of the world's most exciting emerging copper-producing regions". Plans are to start process plant construction in January 2022, with production to start from mid-2023.

'If this region were located in Canada or Australia instead of South Africa, there would be 100 junior explorers operating here and not just four of us, as at present'

Jan Nelson CEO, Big Tree Copper

At the risk of being dismissed as old and cynical - and maybe I am guilty as charged after 40 years of covering the Southern African mining industry - I do need to raise a note of caution: all this activity reminds me of the mid-to-late 1980s, when South Africa experienced a junior gold mining boom based on the then soaring gold price, which made many marginal gold projects viable.

The reigning attitude was "nothing can go wrong", which, of course, turned out to be horribly incorrect. Many of those juniors went out of business, at great cost to their shareholders.

So now copper is booming and the prevailing attitude again is one of "nothing can go wrong". But sadly, it can, and there's already an example from the former Mowana mine in Botswana.

Mowana was commissioned by African Copper Plc in 2008 but the company ran into financial difficulties and was taken over by ZCI - the former Zambia Copper Investments - in 2009. ZCI put the mine into liquidation in 2015 because it could not survive at the then depressed level of copper prices.

Mowana was subsequently acquired by mining entrepreneur Kevin van Wouw through his London-listed Cradle Arc company in 2017. At the time, Van Wouw said Mowana was "a stepping stone to build our company into a diversified mining group" but Cradle Arc had to throw in the towel in 2018 and suspend operations at Mowana because they were not reaching planned production rates, so causing a financial shortfall.

Van Wouw is now back in the copper game, but in the DRC and Zambia. His Central Copper Resources (CCR) company in May raised $3m through a "pre-IPO fundraising, which will allow the company to advance operational activities at all assets while completing its IPO on the London market".

According to Van Wouw, "CCR can now start to accelerate its development and exploration operations across its two assets, with the goal of becoming a new, prominent copper mining developer/producer in Africa."

Let's hope it all goes to plan, but investors should always keep in mind the infamous "99 Club" - highlighted by serial mining entrepreneur John Teeling – made up of investors whose shares have dropped in value by 99% and of which Teeling by his own admission is "a multiple member". ■

MASTER OF SPIN BOWLS ANOTHER BEAUTY

Love him or hate him - and his grandstanding 'showman' style has earned him many detractors - but controversial billionaire mining entrepreneur Robert Friedland has done it yet again.

On May 26 this year, he brought Phase 1 of the 3.8 million tons-a-year Kamoa-Kakula copper mine in the Democratic Republic of Congo (DRC) into production several months ahead of schedule and just over five years since the Kakula deposit was discovered.

Never one to hold back from blowing his own trumpet, Friedland declared that timetable represented "remarkable progress by the mining industry's glacial standards from first drill hole to a new, major mining operation".

He added: "The initiation of production puts us on the path to establish Kamoa-Kakula as the second-largest, and perhaps eventually the largest, copper mining complex in the world."

His success is good news for copper juniors operating in other regions such as South Africa and Botswana as they invest to exploit the copper boom currently underway.

Kamoa is coming into production just as the copper price moves through $10,000/t, with conventional analyst wisdom being it is going to stay at those levels and probably move substantially higher.

Shares in Friedland's Toronto-listed Ivanhoe Mines have shot up fourfold to C$9.74 from C$2.86 over the past 12 months, which is the kind of performance that gold bulls keep hoping their much-touted stocks will emulate.

You can't say you weren't warned: Friedland has been telling anyone who would listen for years that a massive copper boom was coming and he was going to crack it with his venture in the DRC. That has been the central message of his addresses to the Cape Town Mining Indaba for the past four years. Very few, it seems, believed him until this year, when the share price indicates the penny finally dropped.

That scepticism was despite Friedland's views on the copper market being supported by a far more conservative member of the copper mining establishment - Freeport McMoran CEO Richard Adkerson - who told Bloomberg Markets on May 27 that the copper market was "extraordinarily strong", both from booming demand and from "serious challenges on the supply side".

He commented: "Copper mines of size are very rare. Grades are falling in existing mines. It's hard to find another commodity that has the supply-side support that copper has."

On the demand side, Adkerson pointed to the booming demand for copper from new uses like electric vehicles (EVs) plus what he called "a new era of demand" from sources outside of China.

In a nutshell, copper demand associated with EV and renewable energy generation is expected to more than double over the next five years because EVs use up to four times more copper than internal combustion engines and renewable power generation uses five times more.

Robert Friedland Executive Chairman, Ivanhoe Mines

Both Friedland and Adkerson are forecasting a massive copper supply deficit - around 6 million tons a year within a decade - but, where Adkerson keeps it polite in his assessment, Friedland happily puts the boot in: he told the 2019 Mining Indaba that, "the great copper mines in Chile are like little old ladies lying in bed waiting to die", pointing out that the world's biggest copper mine Escondida, which belongs to Rio Tinto and BHP - had a remaining resource grade of 0.52%. The average grade at Kamoa is 4.15%.

Friedland reckons the DRC is the best place in the world to find copper, but South Africa's Jan Nelson and Australian Karl Simich are among a number of mining entrepreneurs who beg to differ as they develop their copper projects in other jurisdictions. - Brendan Ryan.

NEW FACE, OLD HAND:
WHAT TO WATCH OUT FOR IN GARY NAGLE'S FIRST YEAR AS GLENCORE CEO

BY DAVID MCKAY

Asked at a press conference what his successor might look like, Ivan Glasenberg replied: "I hope he looks like me." It was a quip that anticipated in Gary Nagle, Glencore's CEO from July, a company preferring continuity over novelty. Nagle might not be Glasenberg's lookalike, but he is certainly a 'think-alike'.

Analysts don't expect Nagle to spring any surprises when he gets into his stride, which should be immediately. He's been at the company since graduation (in accounting). His alma mater is the University of the Witwatersrand, the same as Glasenberg's. Like Glasenberg, Nagle learned the ropes in the group's coal division.

Listening to Nagle at Glencore's results presentation in February, he was on message with all of Glencore's recent ideas and opinions, although importantly for Glencore's corporate governance, Nagle will wield less influence over strategy. As a 9.2% shareholder, Glasenberg was uniquely positioned to have a bigger say on strategy than you'd expect of a regular CEO.

As for the company itself, it's like the world's mining industry has a suggestion box with 'Glencore' written on the outside. The Swiss group embodies in one place all of the boons and booby-traps of mining today: it produces coal (environment), it is facing corruption charges (governance), and it has cupboards-full of resources in minerals the world needs for a sustainable, decarbonised economy.

"With its largest copper and nickel businesses and its cobalt production, Glencore is the ultimate large-cap global miner for leverage to battery materials and decarbonisation trends," said Christoper LaFemina, an analyst for Jefferies. He termed the group's foothold in the copper/cobalt industry in the Democratic Republic of Congo (DRC) its "ace in the hole".

The market seems to be recognising the fact of Glencore's potential to generate cash, finally. For several

Gary Nagle CEO, Glencore

years, the share trailed its peer group as investors factored in an outsize sanction - yet to be conceived - from the US Department of Justice, which is currently investigating allegations of marketing division fraud.

Glencore believes its marketing division, previously considered by analysts to be opaque in its operating methods, is now emblematic of a sprucier, more transparent organisation. It provides true defensiveness in times of industrial asset hardship, and enhances mining margins in times of plenty.

As for the presence of coal in Glencore's portfolio, which it says it will operate until the reserves are depleted, Nagle has taken Glasenberg's approach of being prepared to ride with the times. He will retain coal production while a sufficient volume of shareholders recognise its economic contribution. But he's also prepared to review the portfolio if it leads to disfavour.

For now, banks seem pacified by Glencore's manage-down approach to coal. "Coal is by far the biggest emissions driver for Glencore. Our estimates suggest coal production falling by 43% by 2035," said Citi in a report, referring to the depletion of Glencore's Colombian and South African coal reserves.

Whether Nagle will eventually look to a sale or a demerger of the coal assets, à la Anglo American, time will tell. For now, it's hard to see Glencore changing tack on the seaborne thermal coal while it remains a key component of Asia's primary energy mix, and while - not so incidentally - Glencore is lapping up the plaudits for its commitment to reduce net carbon emissions by 2050.

It's fair to say Glasenberg viewed the installation of Glencore's ESG strategy as the final piece of his legacy. In essence, the plan is to target a 40% cut in Scope 1 to 3 absolute greenhouse gas emissions by 2035 against a 2019 baseline, and zero net emissions by 2050 also across all three scopes, largely by reducing the coal.

In contrast, Anglo American and BHP Billiton are targeting Paris-aligned strategies but keeping those targets restricted to Scope 1 and Scope 2. Glencore thinks this undertaking is its major market differentiator and contrasts it with the likes of Rio Tinto, the Anglo-Australian mining group. In the view of Barclays, a bank, Rioa Tinto is not even Paris-aligned.

Yet Glencore's major standout feature may be its sheer heft. If Nagle is to follow the party line on the issue of asset mix and geographic spread, he will be completely unmoved by comments that Glencore is too complex a company. The Glencore view is that its spider-like reach, from central Africa to Australia, to the far-flung Koniambo nickel mine in the south Pacific island of New Caledonia, is a competitive advantage of note.

Absent iron ore, and perhaps even platinum group metals, about which Nagle may be especially sniffy from his days as Glencore's representative on the board of the now defunct Lonmin, Glencore has a major say in virtually every mineral and metal crucial to decarbonisation or drive-train technology.

'With its largest copper and nickel businesses and its cobalt production, Glencore is the ultimate large-cap global miner for leverage to battery materials'

Ivan Glasenberg ... powerful Glencore shareholder

Mutanda, a copper and cobalt mine in the DRC, is being reopened. The mine produced 103,000 tons of copper in 2018 when it last operated, and 25,000 tons of cobalt - about a fifth of the cobalt market. Moreover, cobalt is a mineral only produced as a by-product and where additional extensive resources are hard to find outside of the DRC and Indonesia.

Analysts think cobalt, as well as copper, offers the keys to the mineral kingdom for Glencore. "There is widespread confidence of strong future demand growth for cobalt, with the growth in electric vehicle [EV] batteries outweighing the pace of thrifting," said Colin Hamilton, an analyst for BMO Capital Markets in a note in May.

There is a risk of cobalt being engineered out of the EV market by lithium-ion technology, partly a response to questions of provenance regarding DRC cobalt. Non-governmental organisations monitor the cobalt market for child labour and other human rights abuses on artisanal mines. Glencore has joined an alliance of end-users aimed at stamping out these practices.

Extracting mineral from places like DRC is never easy, especially given the rise of new resource nationalism, but Glencore's appetite for developing economy risk largely explains the group's established authority in the market. ■

PORTIA DERBY HOPES TO LIFT THE BRAKES ON TRANSNET'S RESPONSE TO SURGING CUSTOMER DEMAND

BY CHARLOTTE MATHEWS

Transnet CEO is shutting down rail projects based on yesterday's coal ambition.

"Coal mining is easy," the CEO of a large South African coal miner once said. "You just dig it out of the ground and throw it on a truck.

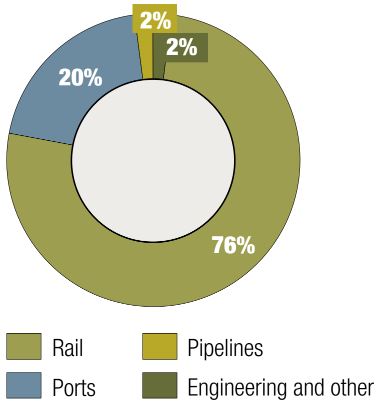
"That's when your problems start."

Whether it is coal or base metals, getting the product to market at the right price is even more challenging when the state rail monopoly is facing a long list of problems. These range from historical issues such as fraud to failure to implement capital projects efficiently, neglect of skills training and maintenance, current issues such as Covid-19's effect on staffing and procurement, ongoing theft and vandalism of infrastructure.

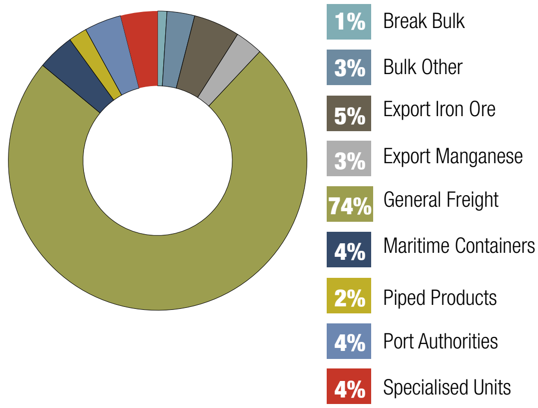
Portia Derby, appointed Transnet's CEO in January 2020, has the unenviable task of sorting all this out at a time when prices of coal, iron ore, manganese and chrome are surging and miners are frantically trying to meet global demand.

Portia Derby CEO, Transnet

Capital investment by operating segment



Capital investment by commodity



SOURCE: Transnet

In the first four months of this year, Exxaro Resources warned that two million tons of its coal exports through the Richards Bay Coal Terminal (RBCT) were at risk because Transnet Freight Rail (TFR) was battling to find spares. The Merafe-Glencore Joint Venture said it was struggling to export ferrochrome because utilisation rates on Transnet's rail and port facilities were sometimes as low as 40%, partly because of theft of infrastructure. South32, an Australian-headquartered company, said sales of manganese in the March quarter fell after parts of the rail-line were washed away by flooding.

Turning Transnet around is going to take time, Derby says. For Transnet's two biggest customer sectors - agriculture and mining - the priority is to stop cable theft and get a product to market that is either perishable, in the case of agriculture, or subject to price cyclicality, in the case of minerals.

"Transnet understands the upswings and downswings in commodities and that, when we can deliver those volumes, it benefits both us and the industry," says Derby.

Maintenance efforts have been hampered by procurement issues, partly as a result of post-Covid global supply bottlenecks and partly because of strict, multilayered procedures that state-owned enterprises (SOEs) have to follow.

"For rail, the Department of Trade, Industry and Competition [DTIC] requires us to procure locally, but there is no local rail manufacturing capacity," Derby says. "DTIC has now allowed us to import two years' worth of rail, while we work towards developing local manufacturing.

"On the loco side, we needed DTIC to approve our request to import just over 1,000 components for locos. This required us first to do a study on local capacity to manufacture, so that we could commit to a localisation percentage with DTIC. If we need a part that can only be made by General Electric, we have to get National Treasury to approve our request to procure without going out on open tender. Some of the items we need have long lead times.

"It takes time to make progress, because we have to follow the required procedures. But we have now allocated about 60% of our funding towards maintenance and dealing with backlogs on freight rail."

She says apart from using the law to tackle infrastructure theft, Transnet is considering new technologies, such as replacing copper cable with a less valuable material.

'It takes time to make progress. But we have now allocated about

60%

of our funding towards maintenance and dealing with backlogs on freight rail'

"But the replacement is not for free either. Copper cable theft is forcing us to replace infrastructure that would not normally need to be replaced. We are considering whether it would be better to move from electricity to diesel, but diesel is four times more expensive, and government requires us to meet stringent CO_2 emissions targets."

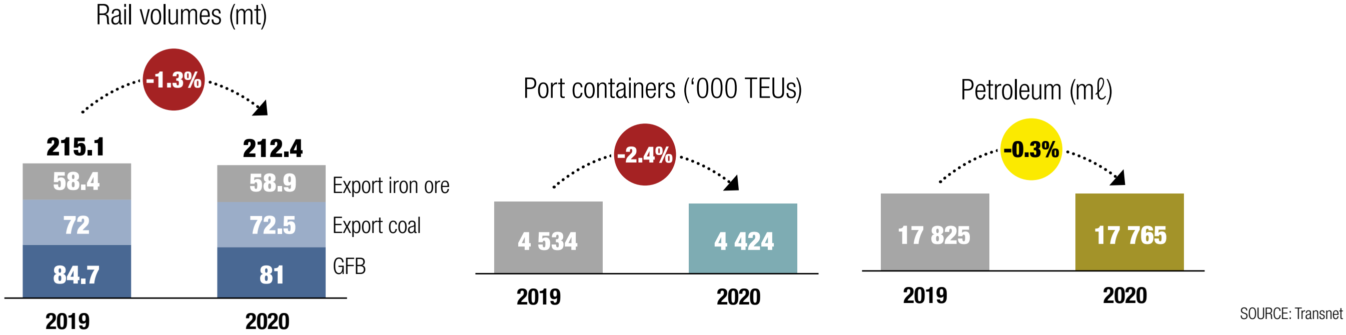
With limited capital resources and an urgency to deliver results, Transnet's capital projects team, headed by Andrew Shaw, is looking at all major projects, prioritising those in segments that contribute 80% of revenue, and examining how they can be completed better and faster so they can start delivering revenue.

For example, the team reviewed the original berth-deepening project at Durban Port, and concluded that the Durban Port Master Plan delivered better outcomes. Under the Master Plan, TEUs will increase to approximately 11.3 million from the current 2.9 million. The port may need to be deepened after 2045, so Transnet is retaining that land, but will use it as a Durban Logistics Hub until then.

In June, President Cyril Ramaphosa announced that the National Ports Authority would become a separate, wholly-owned subsidiary of Transnet, which would mean that revenue generated by the ports authority could be invested in the maintenance and upgrading of port infrastructure.

Transnet has similarly revised its plans for expansions that affect the mining industry directly.

VOLUMES AT A GLANCE



"We see coal falling off a cliff from about 2037, so we have taken the decision to keep TFR's coal export rail capacity at 81 million tons," Derby says. "We will not increase the capacity on the Waterberg coal line beyond the six million tons that we have already announced. We have indicated to Botswana that we will not be extending the North-East Corridor line to the border.

"We are making good progress in our discussions with CFM of Mozambique on better aligning operations between South Africa and Maputo so we can move more chrome and magnetite through Maputo.

On the Sishen/Saldanha line, we believe there are opportunities in the immediate future, once we have an air emissions licence, to export 67 million tons in total of iron ore and manganese."

The Department of Environmental Affairs has set Transnet a deadline to close the old manganese terminal in Ngqurha port near Gqeberha (formerly Port Elizabeth) by December. Transnet applied to National Treasury to allow the Coega Development Corporation to close the old terminal and build the new one at Ngqurha. Discussions with the Eastern Cape government on scheduling will follow.

Derby says the plan is to engage all the manganese exporters to co-fund the new terminal with a capacity to handle 16 million tons.

The envisaged partnership on the manganese terminal is what Transnet wants to implement in other, non-core areas of its business. In general, Derby says, Transnet wants to retain ownership of the infrastructure, and be the operator.

"We would like to harness funding from the private sector, and they would be treated as co-investors. We are still looking at the model and have not decided whether their benefits would be paid in the form of dividends or the tariff."

> **'We see coal falling off a cliff from about 2037, so we have taken the decision to keep TFR's coal export rail capacity at 81 million tons'**

She says it makes more sense to embark on infrastructure development in cooperation with the private sector, rather than the state and private companies make separate investments into replicating infrastructure.

The plans Transnet once had to develop a rival coal export terminal next to RBCT are no longer on the table.

"We are talking to RBCT and another operator [RBTG] to see how we could consolidate our activities around Richards Bay, as we don't believe we have realised the potential economies of scale there," she says. "It is far better to discuss together what we need so we each get what we need out of the final product."

Over the past 18 months, TFR has done a more detailed analysis of its revenue and costs to make a case for getting private operators to run branch lines that will feed into the main network. Transnet will stay focused on its six main rail corridors, to make them as efficient and low-cost as possible.

Partnerships with the private sector would help to reconcile the longstanding conflict between the mining industry's projections of future logistical demand and the fact that Transnet's capital is at risk if their outlook is over-optimistic.

"Let's say the industry envisages there will be demand for 22 million tons of manganese export capacity from the current 16 million tons and we build the port to handle that volume," Derby says.

"That means there is six million tons of our capacity at risk of standing idle. But if we can share that risk, we strike a balance. In the past, the risk wasn't allocated properly; either the state took it all on and the private sector reaped all the rewards, or the private sector took on all the risk and collapsed.

"I believe it is essential for the state to supply the capacity ahead of demand. I am a firm supporter of a regulator who allows you to invest ahead of demand and claw back the revenue," Derby said.

Under the Economic Regulation of Transport Bill, all Transnet entities, plus Acsa and Sanral, would fall under a single regulator to which they would submit their tariffs for approval. The regulator would take into account the need for investment and the effect of these prices on the broader economy.

"What we need in the immediate future is cash," Derby says.

"We have made good progress in firming up our business case for partnerships, and that will free up our cash resources so we can concentrate our efforts in priority areas. At the moment we are having to allocate a bit of cash to fund everything.

"What is encouraging is that TFR is reporting there is more demand at the moment than they can satisfy. That helps to give me confidence that we can achieve this turnaround." ■

WOMEN LEADERS HAVE ONE THING TO SAY ABOUT LEADERSHIP: **DITCH THE GENERALISATIONS**

BY CHARLOTTE MATHEWS

Nolitha Fakude President of Minerals Council South Africa

It was never an easy job. But the challenges of being a CEO of a mining company have escalated in a period of rapid technological and cultural change. These challenges often require a less confrontational approach and a more diverse style of leadership than in the past. Investors also expect companies to demonstrate gender diversity as part of their environmental, social and governance compliance.

With this in mind, in the last five years, some of South Africa's biggest mining organisations have welcomed women to the helm.

Christine Ramon, who was the interim CEO of AngloGold Ashanti for 10 months and steered the group through a crucial period, says mining companies are the epitome of a cross-functional business that spans finance, metallurgy, engineering, complex supply chains, industrial relations, legal compliance, the full gamut of environmental and social sciences, and geopolitics, among many others.

"It's equal parts science and human interaction, and it's never, ever dull."

All mining CEOs now have to demonstrate patience, understanding and diplomacy to maintain a positive relationship with local communities. How do women deal with these issues?

Ramon says mining companies are tied to local communities for the long term. "They cannot simply move locations, so they have to ensure the relationship is symbiotic."

For this reason, she adds: "We have to be intensely mindful of how we conduct ourselves and how we organise our work, to ensure not only that it's safe and responsible, but that it leaves a positive impact on the countries and local communities in which we operate."

Diplomacy is also needed with other stakeholders.

Nolitha Fakude, chairperson of the Anglo American South Africa board and recently elected president of the Minerals Council of South Africa, says while mining is a long-term endeavour, requiring commitment to projects with long lead times and usually long payback periods, this is often at odds with the short-termism of the market. CEOs often have to make decisions in the interests of business sustainability that are unpopular with stakeholders.

Fakude says that mining, like all other industries, is on the cusp of significant technological change. "This means that we must think differently about how we organise the workplace, and what the jobs and skills of the future look like.

"This is arguably one of our most pressing challenges going into the future."

A culture change is needed in mining companies to ensure they are agile and resilient in a fast-changing world, says Natascha Viljoen, CEO of Anglo American Platinum (Amplats).

But some challenges are the same for any woman CEO, in any sector, Fakude says. These are "equality in the workplace, unconscious bias, gender pay gaps, the ability to build alliances or networks, to name a few. And, of course, the burden of work-life balance because, as we know, the duty of raising a family and caring for the elderly is still seen to be the domain of women."

Viljoen rejects the suggestion that women can make better leaders than men.

"I think every person brings his or her own strengths and weaknesses to a role. I try to build a culture of trust and understanding, creating a workplace where everyone can do their best work every day, [where people] are comfortable sharing their views and are open to change. If there's one thing that gives me sleepless nights, it is a good-news culture where people are too scared to share the truth."

"I'm not sure if generalisations are useful," Ramon says. "Really, leadership and the ability to do it well is down to the individual. Once you have the right individuals in the roles, the trick is to create the right combinations – and an enabling environment – to meet the needs of the organisation."

Ramon cites various examples of highly effective women leaders of countries and global businesses, many of whom were praised for their responses to the pandemic.

"Some of this success has been chalked up to the strong interpersonal skills that women typically display, including the ability to inspire, to communicate, to collaborate and build substantive and durable relationships. Those are all absolutely vital in leading an organisation of any size, in any industry."

She says although socialisation might be geared towards making boys more competitive and girls more empathetic and nurturing, there are many exceptions to these stereotypes. "What I do know from my own experience is that the more diverse the leadership teams are that I've been associated with, the more successful they tend to be in solving problems, and in making good decisions."

'If there's one thing that gives me sleepless nights, it is a good-news culture where people are too scared to share the truth'

Making the mining workforce and leadership more diverse is going to take effort. Viljoen recalls that when she began her career in the mining industry 30 years ago, she needed special permission to go underground, and had to be accompanied by a chaperone.

Fakude says a particular area of work in Anglo's "women in mining" strategy relates to dealing with unconscious bias. There are many ways to bring more women leaders into the mining industry, such as getting more young girls interested in maths and science, and studying mining at university; recruiting and developing more women engineers in mining; making workplaces more welcoming and accommodating towards women, physically, mentally and culturally; and modernising the way mines work, with less reliance on physical fitness and greater reliance on mental agility.

Ramon says companies need to develop best practices to foster gender diversity, encompassing recruitment, pay parity, equal opportunities and a culture that embraces gender diversity, with the sponsorship of the top leadership. ■

SA'S COAL INDUSTRY IS FINDING NEW, SAVVIER WAYS TO THRIVE

BY DAVID MCKAY

Market data suggests thermal coal, cast in the role of pantomime villain, can still capture investor interest. The demerger of Anglo American's South African coal mines will be a critical test case

Mike Teke CEO, Seriti Resources

A question the Johannesburg and London listing of Thungela Resources may answer is whether investors believe in coal mining. A view in the market is that UK holders of Thungela shares - of which about 15% are index tracker funds - would quickly exit. They appear to have done exactly that in the first days of Thungela's listing in June.

A valuation placed on the company by Ben Davis, an analyst for Liberum Capital, a UK bank, wisely gave Thungela a wide valuation range of between $440m and $950m. It opened well below that level at $250m.

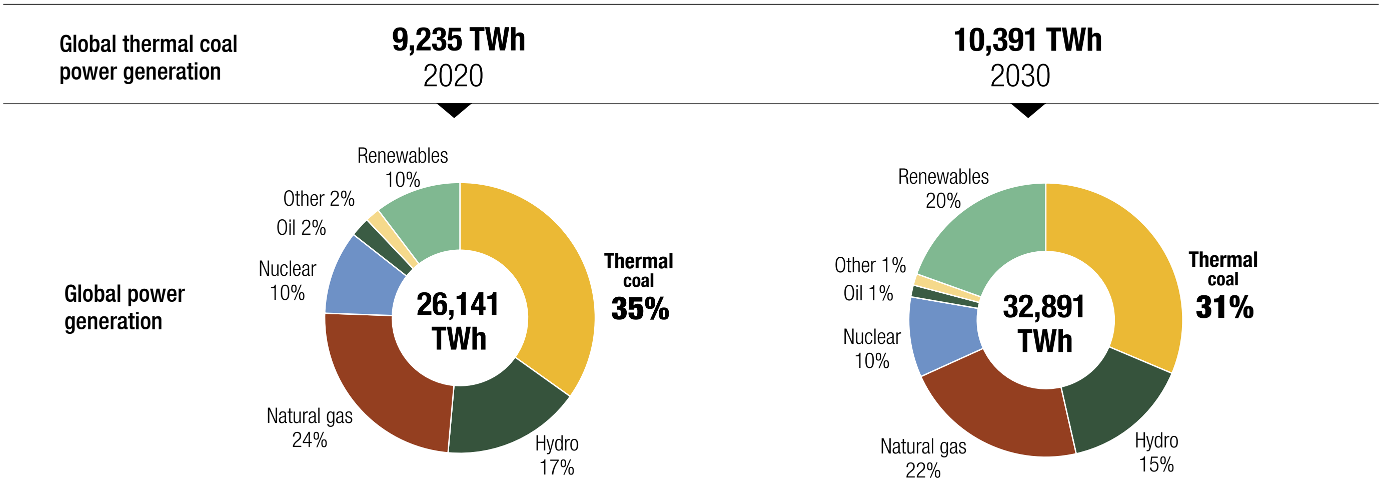
It's pure conjecture to say whether that's a reasonable level, not until the company has a chance to deliver on its goals, which include paying dividends out of cash flow, operating to unstinting sustainability levels, and exploiting the (green activists: close your eyes now) healthy thermal coal market.

Thermal coal faces existential questions. It has been cast in a dark and sinister role. Unlike the evergreen appeal of copper, thermal coal's demise is viewed as a function of the zeitgeist and a question of time, the speed of which depends on one's outlook. Commercial banks, for instance, keen to limit brand exposure to fossil fuels, have stepped back from the sector.

Yet, from a market perspective, supply forecasts suggest a different picture. The short-term outlook is positive, says Andries Rossouw, leader of PwC's Africa mining practice. "There's been a big improvement in the coal price in 2021. Not an outperformance, but significant," he says.

"I challenge people to look at the facts," says July Ndlovu, Thungela

THERMAL COAL REMAINS A KEY ENERGY PILLAR



SOURCE: Wood Mackenzie data and forecasts

Resources CEO, and previously head of Anglo Coal. "When you think about us and our policy of transitioning to cleaner sources of energy, you've also got to think about the context of 660 million people who today still rely on biofuels."

According to Wood Mackenzie, a mining research company, coal as a constituent of total world energy supply is forecast to fall from 35% in 2020 to 31% by 2030. That's a decline, but it's hardly extinction.

Coal-fired power installations in Asia are the driving force for this relatively sustained level of coal demand. Ndlovu says the average age of power plants in India and China is about 25 and 22 years respectively compared to an expected lifespan of 60 years. Closing the plants prematurely, if that were the end-game, is a cost governments in those countries would find hard to justify.

"I think there is this disconnect between our desires and the will to fund those desires," says Ndlovu. Surprisingly, global government policies, in line with the Paris Climate Agreement, actually hardwire the continued use of coal. The current seaborne market of a billion tons of coal will be barely disturbed, falling gently to 980 million tons (Mt) 10 years later. "The facts say to me that if I look 10 to 15 years out, there's still demand for coal," Ndlovu says.

From a South African industry perspective, however, there's a debate as to whether the coal industry has a growth trajectory, bullish global demand forecasts notwithstanding. If there's no growth, the alternative is the prospect of companies eking out what's left of remaining coal reserves that can be accessed through low-risk, low-cost brownfields development.

That's partly the way Seriti Resources sees it. "These assets will never be built again because there isn't the funding to do it," says Doug Gain, CFO of Seriti in an interview. "So I guess the trick is how do you take these bases of assets, with excellent infrastructure, that have run successfully through many cycles, but which have become more marginal over time?"

Seriti Resources is an unlisted company founded on the purchase of Anglo American's domestic coal mines from Anglo Coal in 2018. Earlier this year, it expanded its production base, buying South32's 92%-owned business, South African Energy Coal (SAEC). It wasn't an easy deal to conclude: an unprofitable contract between SAEC and Eskom's Duvha power station threatened to unravel the transaction.

In a process that was as political as it was economic, a break-even coal supply agreement (CSA) was eventually settled between SAEC and Eskom, presided over by the South African National Treasury. Eskom agreed a doubling in the contract price, but it also won the option of putting the CSA out to public tender in 2024, 10 years earlier than the original CSA signed by SAEC had allowed.

Gain won't say it, but the likelihood is Seriti's coal will always be the cheapest for Duvha. That's because Seriti's Ifalethu mine - a section of the Wolvekrans Middelburg Complex (WMC) housed in SAEC - is the closest to the power station. Nonetheless, the introduction of third-party competition in less than four years is a threat to Seriti, and it's increasingly thinking it may have to repurpose Ifalethu coal, possibly selling it on the export market.

Exports can be a good, even a great, business when the thermal coal price is high, but damagingly loss-making when the price wanes. This is especially so for WMC when the seaborne price trades below $80/t. Seriti is hoping it can work some operational wonders at WMC in terms of plans to mothball and re-engineer parts of the complex.

The point is that a reassessment of what constitutes marketable export tons versus domestic production is broadly underway in South Africa's coal sector. In the past, coal mining firms understood their reserves in terms of higher-quality export coal, coal that South African power utility Eskom burnt; and then a mid-range product that was supplied to industrial buyers, such as cement manufacturers, in the domestic market.

Today, however, the market is fluid and coal products are blended with greater skill. In similar vein, Seriti may have to identify and capture export markets for its New Largo mine, initially a project bought from Anglo

July Ndlovu CEO, Thungela Resources

American in 2018 for R850m.

Seriti bought the New Largo mine expressly for Eskom's Kusile, the 4,800MW power station. The deposit is close to Kusile but its development was never a certainty, not while its previous owner, Anglo American, held the property. In the absence of its development, Eskom procured coal from junior mining firms. Some of this alternative coal is from mines 50 to 60 kilometres away, which makes it costly and, from a business perspective, illogical. Some sources say there's no good reason for this: quite possibly it is the procurement practices of previously corrupt Eskom management in support of the trucking agenda.

In any event, Seriti may be forced to find export markets for New Largo coal. At least, though, it will help fill Seriti's entitlement to export facilities through Richards Bay Coal Terminal (RBCT), situated in KwaZulu-Natal. Originally scoped for well over 100Mt capacity, the terminal has never approached that level and is currently operating at 70Mt. However, plans by Transnet, the government-owned logistics firm, to expand its railing systems in Limpopo province to increase coal exports and fill RBCT look like a pipe dream.

That's the negative impact of a slowing coal sector: it hurts economies built upon its success. The failure of Resource Generation, a Johannesburg-listed coal development firm, to finance its Boikarabelo mine in Limpopo province, is a case in point. Its development was supposed to help give wings to the government's Limpopo Corridor industrial programme. Rail expansions anticipating a surge in Limpopo province coal development look unlikely.

"There's been talk of the Overvaal tunnel doubling [a rail route in Mpumalanga province operated by Transnet Freight Rail], but I don't think it's going to happen. We think realistically, coal could shrink over the medium term," says Gain.

Seriti Resources CEO Mike Teke doesn't think the company will take to public markets to raise the capital it needs. Others, however, are prepared to do it. "Normal sources of funding available ten years ago are not available today," says Morné du Plessis, CEO of Minergy, a company that operates in Botswana. Nonetheless, he's preparing to take the company public in a standard London Stock Exchange listing, on the heels of Thungela's debut.

It's bold because Minergy is a junior miner, with a single mine in Botswana that has significant resources it wants to finance. Du Plessis says, in the absence of commercial banks, partnerships with host governments as well as coal buyers will be critical in financing the coal mines of tomorrow.

Ndlovu's view is that before Thungela thinks about raising capital to replace or even grow its reserves, it first needs to find its rhythm as an independent company. Anglo has pumped in R2.5bn in capital to support the company in its early years - a "soft landing", as Thungela financial director Deon Smith describes it. This money is for "a rainy day", however: it will need to generate its own cash flow, if only to deliver on investment promises. The company has committed to a dividend policy, a strategy aimed at attracting yield investors. The downside is that this limits the company's ability to aggressively utilise the balance sheet and raises questions as to whether there's growth in Thungela at all.

'I think there is this disconnect between our desires and the will to fund those desires'

Says Ndlovu: "Traditional finance sources don't like funding fossil fuels. If we've got the right project, I don't doubt we can fund it with our internal cash flow or other financing measures. Ultimately, in the commodity business, it comes down to having an attractive market for the commodity.

"If you can sell it [the coal] and get an attractive return, then the answer is yes, funding is not an issue."

Menar MD Vuslat Bayoglu has several new mines in development but his frustration with the anti-coal lobby is clear. He worries about focusing only on a 'just transition' to a non-coal future, saying that the emphasis ought to be on developing better coal technology that tamps down the impact of its carbon emissions.

Menar is in a joint venture with Mercuria, the trading house, and therefore never has to consider funding in the same way as Seriti or Thungela for that matter would have to. Still, for all his tub-thumping about the value of coal, Menar's more recent investments have been in manganese, base metals and gold. Two of those investments are new projects in central Asia's Kyrgyzstan and Turkey, where other South African risk factors such as a lack of clarity from Eskom and a restive workforce are not risk factors. ■

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DON'T LOOK NOW, BUT **ANDRÉ DE RUYTER** MIGHT ACTUALLY BE SAVING ESKOM

BY MARIAM ISA

André de Ruyter knew the enormity of the challenges he would face when he took on the mantle of Eskom CEO at the end of 2019.

But he did not expect the extent of neglect he found at the state-owned utility, from its crumbling infrastructure to the corruption and lack of governance that had inflated Eskom's cost of procurement so much it had created an unsustainable debt burden for the country.

Nor did he expect death threats and a volley of racism allegations.

Nonetheless, 18 months later, there is widespread consensus that De Ruyter has stabilised a sinking ship, although it still poses a formidable risk to South Africa's economy. He has cut a significant chunk of the utility's costs, enforced accountability at top levels of management and reduced a bloated headcount.

Most importantly of all, he has been outspoken about the fact that Eskom cannot address the country's future power needs and he is working effectively with government and business to accelerate reform and restructure the industry in a way that will make it competitive and sustainable.

One of De Ruyter's biggest wins was the role he played in supporting business to persuade President Cyril Ramaphosa to override entrenched ideological opposition to liberalising the power industry through lifting the licensing threshold for embedded power generation within the private sector.

Industrial companies and others had campaigned for years to be allowed to generate more of their own electricity through Solar PV installations, arguing that it was the only way to bring on additional capacity fast enough and at the scale needed to address the economy's crippling power supply constraints.

"I think there are many things in Eskom that we can fix," De Ruyter told Miningmx in an interview on 10 June. "We can restructure ourselves. We can improve the processes, we can fix our plant, we can try and address our debt. But we can't harken back to some glorious past where we are this monolithic supplier of last resort that can keep the lights on no matter what, at the sixth-lowest cost by world standards, to domestic customers and industry.

"That is not the future that we see for Eskom; we see a future where we play a smaller but still relevant role in generation."

De Ruyter angered Minister of Minerals and Energy Gwede Mantashe in February by stating publicly that the utility supported calls to raise the licensing threshold for embedded generation to 50MW from 1MW.

Mantashe said afterwards that Eskom should "stay in its lane" and was understood to be pressing for the utility to be moved to his ministry from the Department of Public Enterprises (DPE) - a step that would have made De Ruyter's position untenable.

But in a dramatic sign of political support for the position he took from President Cyril Ramaphosa and DPE Minister Pravin Gordhan, Ramaphosa announced in June that the licensing threshold for embedded generation was being lifted to 100MW.

Roger Baxter, CEO of the Minerals Council of SA, says De Ruyter has done a fantastic job since taking over as the CEO of Eskom. "From the mining industry side he's done an excellent job engaging with customers, particularly with large industrial customers, and obviously in driving processes forward.

"He has recognised that renewable energy and embedded generation is an important supplement to the fact that Eskom simply can't produce enough power for the country's needs, at the moment and obviously into the future."

Estimates vary, but energy analyst Chris Yelland believes that if all goes well, the new embedded generation threshold could bring 6,000MW on to the national grid within 18 months - a significant addition to the 28,000MW of reliable capacity Eskom has at present.

The utility's theoretical installed capacity is 40,000MW and daily demand is often above 30,000MW during winter, forcing the utility to implement rolling power cuts, described as load-shedding, when there are high levels of unplanned breakdowns.

De Ruyter has been instrumental in driving government's plans to restructure Eskom by splitting it into generation, transmission and distribution units.

The most critical part of the strategy is unbundling an independent transmission system and market operator into a separate, independent, state-owned utility that procures, contracts and dispatches least-cost power, balances the system, and invests more in transmission.

De Ruyter is blunt about the fact that although Eskom will be able to stick to an agreed timeline for restructuring the utility, achieving this, as well as ensuring its financial stability and accelerating investment in new power generation, government's full support will be required.

"I think that I must point out, Eskom operates in a policy ecosystem. And if the fiscal, environmental, industrial and energy policies don't dovetail and don't create a favourable environment to achieve all of our objectives, then that makes it more challenging to navigate the turnaround," he said in the interview.

De Ruyter has been advocating for the phased, controlled closure of old, unreliable coal power stations and a shift to utility-scale renewables, battery storage and some natural gas capacity. This transition would enable Eskom to access cheaper climate finance and ensure that its commodities and manufactured products are not penalised by global carbon taxes in the future, he says.

De Ruyter's comments have drawn praise from analysts and business leaders alike. "He has a clear vision for the power sector of the future which is competitive and sustainable. He is the first Eskom CEO to speak out boldly on all these issues," says Anton Eberhard, an energy expert from the University of Cape Town.

De Ruyter's crackdown on profligate, corrupt spending and his success in clawing back money from fraudulent contracts have been his biggest achievements. To ensure that corrupt culprits in Eskom were brought to book, he set up a forensic team from scratch.

When he started, De Ruyter saw that about 75% of procurement orders were placed through a system that easily enabled inflated prices. He has since reduced the amount of orders processed through that system to about 8%.

"This must have saved literally billions of rand. The opportunities for further tender opportunity for fraud, corruption, and collusion with suppliers gets stamped out by forcing people to use standard product input methods when procuring standard products," Yelland says.

Through legal action, De Ruyter's team managed in December 2020 to force the multinational ABB Group to return R1.56bn of overpayments made by Eskom during the construction of Kusile Power Station, which is now more than six years behind schedule and well over budget.

Eskom is pursuing another R3bn of irregular expenditure at the badly designed coal-fired plant, which was to have helped meet the country's future power needs.

In June 2021 Eskom won a landmark legal challenge to scrap an R8bn tender agreement with fuel oil supplier Econ Oil, after arguing that the tender was "patently unlawful" and clearly contravened key provisions of public procurement policy.

Under De Ruyter's watch, the utility managed to claw back R150m in consulting fees from Deloitte Africa, after an irregular procurement process a few years prior.

André de Ruyter CEO, Eskom

'We can restructure ourselves. We can improve the processes, we can fix our plant, we can try and address our debt. But we can't harken back to some glorious past'

A contractual dispute with US-headquartered tech giant Oracle was also addressed and its R7bn claim on the utility incrementally reduced to R160m.

In February 2021, De Ruyter suspended Eskom's former chief procurement officer, Solly Tshitangano, for misconduct and non-performance. Tshitangano responded by making racism claims against De Ruyter, but these were retracted and he was fired on 28 May after a disciplinary process.

Ramaphosa heaped praise on De Ruyter a few days later, describing him as a "top- performing business leader" who was doing his best to fix the state utility.

The following day, Eskom suspended Koeberg Nuclear Power Station general manager Velaphi Ntuli over performance-related issues after a unit of the plant taken out for maintenance missed a deadline, adding to the pressure for rolling power cuts it was forced to implement in June.

"André is very assertive, André knows what he's doing, and André is very bold," says Busisiwe Mavuso, a non-executive director on the Eskom board and CEO of Business Leadership SA.

Since De Ruyter took over, Eskom's headcount has been reduced to 42,785 from 46,000 and its debt cut to R401bn from 484bn through repayment of matured loans and a more favourable exchange rate.

The one thing he has been unable to do - and which unfortunately the public will judge him on - is to improve the performance of Eskom's ageing coal-fired fleet enough to eliminate load-shedding, which he had hoped to do through a stepped-up and overdue maintenance programme.

"What we found, as we have taken these units out for maintenance, as we open the equipment it has become apparent that the damage caused by deferred maintenance, by not operating the units within the parameters, was worse than we expected," De Ruyter said in the interview.

"Until such time as additional capacity is not on line, there will be an inherent risk of load-shedding in the system, particularly during times of elevated demand."

De Ruyter, 51, took a pay cut to move to Eskom from his previous job as Nampak CEO, and says he was motivated by an "old- fashioned sense of patriotism". When asked whether he ever regretted the decision, he replied: "Three times before lunch, every day." ■

IT'S CARPE DIEM FOR SA MINERS AS GOVT OPENS UP THE ENERGY SECTOR

BY CHARLOTTE MATHEWS

As South African miners try to ramp up output to sell into the post-pandemic commodities boom and meet intensifying investor demands for carbon-neutral operations, they are being frustrated by their dependence on Eskom's stuttering, coal-fired energy infrastructure.

By mid-2021, only one company – Gold Fields – has received a licence for a renewable project above 10MW. It has passed all the regulatory hurdles needed for a 40MW solar project that will supply one-fifth of the electricity needs of South Deep Mine and reduce annual CO_2 emissions by about 100,000 tons/year.

In June, President Cyril Ramaphosa announced that the private sector would in future be able to self-generate (without going through onerous licensing requirements) up to 100MW. This was a bold and welcome step: double the 50MW that the mining industry had urged after the meagre 10MW cap gazetted in April by minerals and energy minister Gwede Mantashe.

The Minerals Council of South Africa, on behalf of its members, had argued that with a cap of 50MW, its members could launch 17 self-generation projects, 12 of which would be renewable projects with the potential to generate 1,600MW.

Gold Fields, however, managed to get its 40MW project through the system relatively quickly. It submitted its feasibility study to the regulator in June 2020, dealt with the regulator's technical and legal teams through Covid-19 lockdowns, and was granted its licence on 25 February 2021.

Martin Preece, executive vice-president – Gold Fields: South Africa, says there were a couple of reasons it made rapid progress.

It strongly believed this was an important step, and looked for ways to make it happen. Gold Fields management sat down with Eskom and Nersa, the energy regulator, listened to their concerns and found ways to address them.

Gold Fields also decided against the traditional IPP route, which involves bringing in a third party to build and operate the plant, because this would add a layer of complexity and costs. It decided it would self-fund and self-operate the plant, so South Deep gets the full benefit.

"One of the obstacles to getting a large self-generation plant approved can be that you want to sell or wheel excess power back to the grid," Preece says. "The reason we designed our plant at 40MW is that it just covers our baseload requirement, including critical pumping and ventilation, with no surplus energy generated."

Preece says batteries are not economically viable at present. South Deep's solar power generation will normally taper off late in the day, and it will start to add 40MW of power demand to the Eskom grid, at Eskom's period of greatest strain: the 5pm-8pm peak and 5am-8am.

Martin Preece Executive vice-president, Gold Fields: South Africa

"This was obviously a concern for Eskom, but we are looking at ways to mitigate our demand at these times, for example by scheduling maintenance activities then so we do not contribute to their surge in demand," Preece says.

Other gold operations that are hoping to self-generate renewable power are Harmony Gold, with a 30MW solar project in the Free State, and Sibanye-Stillwater, with a 50MW solar project for its South African gold mines.

Pan African Resources has contracted juwi South Africa to build a 9.75MW solar plant to supply about 30% of the power at its Elikhulu tailings operations during daylight hours and save about 26,000t of CO_2 in its first year.

In the platinum sector, Impala Platinum (at Marula) and Northam (at its Zondereinde smelter) are planning 10MW solar projects. Royal Bafokeng Platinum is busy with a feasibility study on a 30MW solar farm at BRPM mine.

The bigger projects include Anglo American Platinum's 75MW solar plant at Mogalakwena, a first step in what could ultimately be 320MW of solar generation. Sibanye-Stillwater is investigating an 85MW solar project for its Marikana PGM operations.

At Orion Minerals' Prieska copper mine, it is considering a hybrid facility providing 20MW from wind and 35MW from solar PV, which would provide 52% of the mine's energy needs and save 1.5M tons of CO_2 over its first 10 years.

Vanadium miner Bushveld Minerals plans to use its own minerals in a vanadium redox flow battery (VRFB) mini-grid at its Vametco mine, storing energy from a 3.5MW solar PV plant.

Preece says, in the long term, hydrogen will probably be the best power generation technology option for Gold Fields, but at this stage it is not commercially viable. ■

WHY ROGER BAXTER ISN'T GETTING CARRIED AWAY BY THE GOVT'S PROMISE OF REFORM

Roger Baxter is a veteran when it comes to crossing swords with South Africa's mines ministers. Amid all the criticism that comes his way, he thinks the country might be on the cusp of change.

BY BRENDAN RYAN

Roger Baxter CEO, Minerals Council SA

Since he returned to South Africa from Canada in 2012, Minerals Council CEO Roger Baxter has been negotiating issues around the Mining Charter with a string of mining ministers of which by far the worst was Mosebenzi Zwane and by far the best is current incumbent Gwede Mantashe.

The improved relationship between the Minerals Council and the Department of Mineral Resources and Energy (DMRE) is hugely important for the future of South Africa, which is why Baxter's optimistic assessments on progress are being put under the microscope.

Baxter reckons mining has "bailed out" South Africa's hammered economy from the second half of 2020 and has a huge role to play in the country's continuing recovery from the Covid-19 pandemic.

But the attitude of long-suffering South African business people is one of "seeing is believing" because whatever is going on is not yet visible to outsiders and the African National Congress (ANC) has a long track record of foot-dragging, stalling and paying lip service to plans that go against its bedrock socialist ideologies.

Baxter concedes this but points out: "The minister has admitted the licencing regime is a shambles and that Samrad [the South African Minerals Administration] does not work. They have agreed to produce an RFP [request for proposal] for a new, on-line mining cadastral system, which is a big shift.

"We have negotiated a brand-new exploration draft plan, which they still need to publish, which is a bit frustrating. So there has been progress but that progress is not visible until you see it in the public domain.

"We are on the cusp of seeing some changes but those changes need to be implemented. The proof of the pudding will be in the eating. I can sit here and say we have made all this progress but it counts for nix unless we see an exploration plan released and finalised and see the adoption of a globally competitive mining cadastral system."

The example that South Africa should be following is that of neighbouring Botswana, which, according to various mining entrepreneurs, is "eating South Africa's lunch" in attracting new mining exploration investment.

"Botswana has stability and clarity in their framework, with very limited administrative discretion. They don't change the rules every five years and they are very swift in approving both mining and prospecting rights."

Baxter maintains that Mantashe is negotiating in good faith with the mining industry to deal with all these issues. "He's not a lip service man. He has made commitments."

So, if both sides are getting on so well, why is there still legal action underway between them?

"Just because we take someone to court does not mean we cannot talk about the other issues," says Baxter. "We are in court over three things of which the issue of renewals, extensions and Section 11s [change of control legislation] is something we must have certainty on but have never been able to agree with the DMRE."

Asked why it is taking so long to get things done from the government side - for example, industry participants say you can buy an on-line mining cadastre system "off the shelf" - Baxter replies that the South African government has "its own processes".

Baxter points to the decision taken by Gold Fields to build a 40MW solar plant costing R660m at the South Deep mine as an example of a project that was fast-tracked after approaches to both the DMRE and Eskom.

"The mining companies are sitting with 1.6GW of renewable energy projects. If that was unlocked, you would see something like R26bn of new investment in energy taking place in South Africa," he says.

Several days after making these comments, the government increased the threshold for unlicensed embedded generation to 100MW from its previously intended cap of 10MW.

"Eskom just does not have enough generating capacity. It is about 5GW short. Eskom CEO André de Ruyter has made it clear he is supportive of bringing new self-generation projects online."

Baxter attributes government's slow pace of implementing change to a combination of corruption in the DMRE in prior years; the removal of key competent staff during the "state capture" era; and generally inefficient operating procedures.

He cites Optimum Colliery and the Guptas as a case in point. "The system functioned well for some. They got their Section 11 change of ownership in three weeks, which was record speed for the DMRE."

He believes that if the agreed steps on the mining cadastral system and the exploration plan are implemented it will be "game changing" for the South Africa mining industry.

The Minerals Council has set targets for the South African mining industry to attract 5% of global exploration spend and increase its contribution to South Africa's GDP to more than 10%. Baxter reckons that some R30bn in new investments is being held back by constraints such as the uncertain regulatory conditions.

He says those targets are "absolutely realistic" but achieving them requires more than sorting out specific issues affecting the mining industry which are only part of the bigger picture.

He highlights the lack of sufficient electricity and Transnet's inability to meet demand to get mineral exports to the country's ports in particular, along with the need for a "massive crackdown" on the crime situation throughout the country and not just as it affects mining specifically.

"There is large-scale illegal mining taking place. We are aware that a fair portion of South Africa's chrome ore exports are being produced from mines that are operating illegally without valid licences. Government needs to crack down on that." ■

DOUBLING DOWN ON SA MANGANESE WILL GIVE SOUTH32 THE QUICK-FIRE GROWTH IT NEEDS

BY DAVID MCKAY

The burning question about South32 is whether the company has a meaningful way of capitalising on the foaming enthusiasm for battery metals currently underway.

Analysts ask it because ever since the company was formed - in 2014 following the demerger of BHP's non-core assets - South32 has tended to manage it mines for cash, generating $9bn in the process and disbursing more than 8% of that in dividends alone. That's an impressive capital return programme, especially considering a further 19% has gone into share buy-backs.

This cash generation has been driven by the quantities of nickel it produces in Colombia, as well as metallurgical coal, zinc, lead and silver in Australia, and aluminium in Southern Africa. But this careful curatorship of assets is not in the spots the market considers sweet. Where, for instance, is the copper, lithium, iron ore, or even the new-fangled rare earths that investors crave?

"There is no doubt that over the last two years, many of our commodities, whether it's manganese, alumina, aluminium or metallurgical coal, have not performed as strongly as we've seen with iron ore," says Graham Kerr, CEO of South32.

South32 has got "a couple of gaps" in its short-term growth options, he acknowledges. But over the longer term, Kerr thinks it has better prospects than either Rio Tinto or BHP.

South32's exploration projects in the US states of Arizona and Alaska - situated far, far

Graham Kerr CEO, South32

'If you have a good aluminium value chain, I think that's going to be an absolute metal of the future'

north of the 32º parallel south line of latitude from which the firm gets its name - lock in significant future copper output. Additional copper discoveries in the Alaskan prospect would make the market sit up.

Investors being investors, however, their focus is the here and now. Kerr's view is that, in the short term, South Africa is a geography that offers potential expansion. For example, the company is considering the merits of doubling the capacity of its Wessels underground manganese mine in the Kalahari. There's also the Hillside aluminium smelter, which may start to benefit from a run in the aluminium price.

So far, aluminium has been something of a frustration for South32. The company has a strong position, with facilities in South Africa's Richards Bay and Mozambique (Mozal), but robust demand for the metal has been more than satisfied with Chinese supply. What's coming, though, is the prospect of increased aluminium demand as a substitute for copper in battery applications, while tightening emissions in control could retard the ability of China to respond with output.

"If you have a good alumina, aluminium, bauxite value chain, I think that's going to be an absolute metal of the future," says Kerr. "It's lightweight, and as copper becomes more expensive, aluminium is a very healthy substitute."

A recent run in the aluminium price is the market realising this potential, he adds.

Two things need to happen, though, before either the aluminium or manganese assets in South Africa take up a more prominent role in the South32 offering. One is for an improvement in the performance of Transnet, the South African state-controlled freight and logistics company. The other is the development of a rational power supply policy in South Africa. However, neither can be described as a slam dunk.

Green energy generating the power-intensive aluminium smelters would help South32 sell its metal in Europe (with about a third of production sold locally). Kerr acknowledges the South African government's recent increase in the threshold for unlicensed embedded power was "a positive surprise". While South32 is unlikely to get involved directly in green power generation, the ability to land goods in export market depends heavily on how they are produced.

According to Kerr, all energy formats are possible for Hillside. "The question is going to be around what are the policies that encourage that investment and what is the quality of governance that would give people confidence in investing in the kind of capital you need to develop those industries?"

On Transnet, Kerr thinks expanding Wessels will require quicker and better rapid loading facilities to accommodate the expansion. Transnet has been on the receiving end of criticism lately, largely to do with poor rail utilisation. But there is opportunity for South32 insofar as Kerr thinks Transnet can squeeze out three to four million tons of capacity from existing infrastructure. South32 can use that for its manganese expansion, especially, as the firm suspects, under-capitalised rival producers in the Kalahari region struggle to access deeper parts of their resources going into 2026/27.

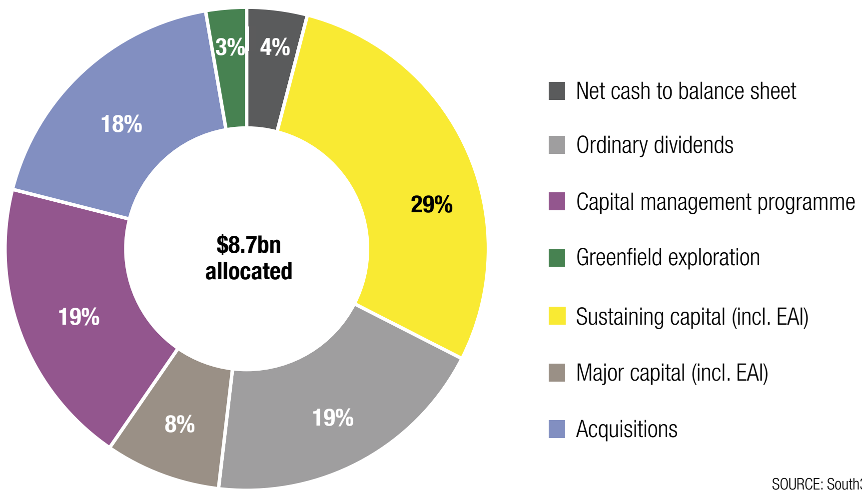
Hearing Kerr speak of potential growth channels in South Africa may come as a surprise considering South32 closed its manganese alloy smelters in the country, and more recently sold a 92% stake in South African Energy Coal (SAEC), a thermal coal business. Both events were viewed as a 'smile and wave' move by South32 as it slowly exited the South African stage.

Kerr insists this isn't true. Nor was the decision to divest of the firm's stake in SAEC solely driven by ESG motives of reducing carbon emissions - though it does significantly. Rather, it was a disaffection with the SAEC's domestic sales to Eskom. "It doesn't make sense for a global multinational to apply its capital in South Africa when you're producing a domestic product where you're getting a utility-type return," he says.

The divestment also helps simplify the group: about a third of the firm's workforce was employed at SAEC such that today Kerr and Mike Fraser, South32's COO, spend a lot less time on assets they don't think fit or add huge economic value. There's nothing surprising in this: Anglo American floated off its South African coal assets into Thungela Resources for exactly the same reason.

"The one thing we're very clear about is that it [the SAEC sale] never has been, and is not a call on the country," Kerr says, although he adds that there are "... economic reforms and policy reforms the president [Cyril Ramaphosa] needs to continue to pursue". ■

Capital allocation FY16 to H1 FY21



SOURCE: South32

IN AFRICA, POLICY CERTAINTY IS A RELATIVE GAME

Sub-Saharan Africa has all the minerals the world needs to transition to a low-carbon economy. But policy uncertainty, a new wave of resource nationalism and poor infrastructure remain the region's biggest stumbling blocks to capitalising on its vast resources.

BY LIESL PEYPER

Gwede Mantashe Minister, mines & energy

Cobalt, copper, lithium, manganese, nickel and the platinum group metals (PGMs): these are some of the key minerals for a low-carbon future. And sub-Saharan Africa has them all. The International Energy Agency predicts a possible sixfold increase in demand for these crucial clean energy minerals by 2040.

But does Sub-Saharan Africa have the right policies and systems in place to attract investment from the world's mining houses? The answer is yes - and no.

The case for investing in South African mining has certainly improved in the past five years, says Marcin Wertz, partner and principal mining engineer at SRK Consulting SA: "Improvements, however, were off a low base." he says.

Small wins are Mines Minister Gwede Mantashe's withdrawal of the potentially damaging Mineral and Petroleum Resources Development (MPRDA) Amendment Bill from Parliament in 2018, and concessions in the Mining Charter 3.

But investors are still uncertain about how aspects of the Mining Charter will affect the security of their assets, says Wertz. "Investors are waiting to see progress without taking any decisions."

In May this year, the Minerals Council of South Africa and the Department of Mineral

Resources and Energy were back in court over the issue of "once empowered, always empowered". After four days of hearings, judgment regarding this contentious issue in the third version of the Mining Charter was reserved and the matter is still inconclusive.

The mining sector contends that once a company has met the 26% black ownership level, as stipulated in previous versions of the charter (the current charter now requires 30%), the ownership should stay intact, even if empowerment holders dispose of their stake. The Department of Mineral Resources and Energy (DMRE) wants perpetual empowerment. Once shareholders sell their stake, the mining company would be required to top up their black ownership.

Ian Woodley, an investment analyst at Old Mutual Investment Group, is of the view that there is insufficient legal certainty in South African mining. "It hasn't really been made easier. Like once empowered, always empowered. It's still not a given. It's still too vague."

Peter Leon, partner and Africa chair at Herbert Smith Freehills, says the fact that historical empowerment deals are not grandfathered creates uncertainty in the mining industry. He also points out that there is a discrepancy between the MPRDA in its existing form and Mining Charter 3 in terms of requirements for black economic empowerment (BEE) for prospecting applications.

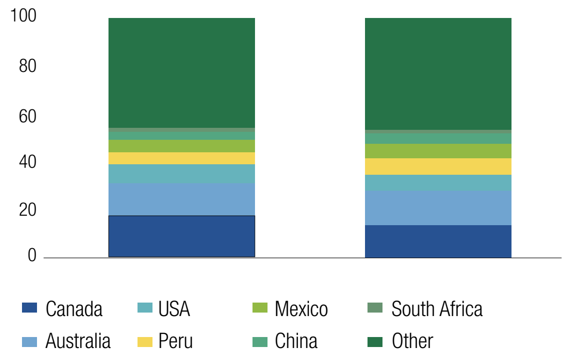
In the Mining Charter this requirement was omitted, but it remains as a discretionary requirement in the MPRDA. Leon says some officials at the regional offices of the DMRE insist that prospectors have a BEE partner when submitting their applications. "That is why there is so little exploration. Applicants argue it's not a requirement in terms of the charter and then departmental officials say: 'It's in the Act'. Minister Mantashe should address this."

Claude Baissac, CEO and founder of the risk consultancy Eunomix, says legislation and policy changes in respect of mining in South Africa are "never-ending", and government's intention to revisit this to transform the economy creates even more instability.

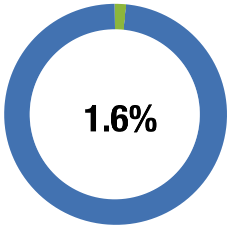
"I've been warning the private sector for a decade: stop asking for policy certainty only. Also ask for quality policy. What you want is the 'sweet spot' where you have sufficient certainty and quality. This will make investments durable and lead to positive policy returns. But South Africa has neither certainty nor quality."

SA's share of global exploration budgets decreased to ~1%

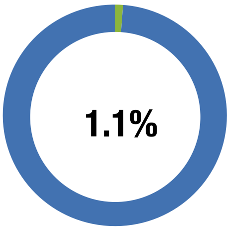
SA % of global exploration budgets relative to major global peers



SOURCE: Boston Consulting Group, 2018



SA share of global exploration (2009)



SA share of global exploration (2017)

The incongruity between the MPRDA and the Mining Charter is one of many reasons for the dismal prospecting activity in South Africa. Incompetence in the DMRE, maladministration, and a dysfunctional cadastral system are hampering billions of rand of potential investment.

In February this year, the DMRE admitted to serious backlogs in granting mineral rights (235), prospecting rights (2 485), mining permits (1 644) and licence renewals (724).

The Minerals Council estimates that these delays and bottlenecks amount to R30bn in lost projects. In South Africa it takes 355 days to award a mining right and 245 days to award a prospecting right.

"Compare that with Botswana, our neighbour, where it's 20 days to award a mining right if the application is compliant with the mining code, and 40 days to award a prospecting right," says Leon. "If you have almost 5 500 outstanding applications in South Africa, some of which go back years, then the system is simply not working."

Countries that successfully attract investment have efficient systems in place to apply for, grant and manage mining rights and permits. A functional mining cadastral system is a crucial element in restoring confidence among investors and developers, says Wertz.

The Fraser Institute ranked Botswana 11th out of 77 mining jurisdictions in its 2020 report. South Africa was in the 60th position.

The basics must be there to have a booming mining industry, says Old Mutual's Woodley. "Those basics are exploration and projects." Exploration in South Africa has plummeted over the past 25 years.

In 2019, South Africa accounted for only 1% of global exploration expenditure and only 0.1% of greenfields exploration, according to the Minerals Council (see graph). In light of the country's untapped mineral wealth, it is a mammoth missed opportunity.

Roger Dixon, corporate consultant at SRK Consulting (SA), says while there is talk about government encouraging exploration, it finds little traction amid ongoing concerns, such as the lack of basic services at municipal level and the absence of a proper rail system at national level.

"Law and order also demand more attention as mining sites experience disruption from local 'mafia' groups that will quickly put off investors."

According to Theo Venter, a political and policy analyst, the prevalence of informal mining activities by 'zama-zamas' has created an untenable situation at some mines in the North West Province. "At night it sounds like a mini-warfare because they are armed with

AK47s and they fight among one another. The police are scared to get involved because they only have hand weapons."

"Uncertainty in mining is poison," says Venter.

In South Africa, policy uncertainty also trickles down to infrastructure deficiencies, such as unreliable electricity supply and a largely defunct rail system. Mining companies now have to rely on much more costly road transport. "Mining companies stopped investing in new projects. They are utilising the current infrastructure until only the proverbial rim is left on the wheel."

The announcement that mines will be allowed to generate up to 100MW of their own electricity is good news for companies with operations in South Africa. "It's significant and will certainly reduce the industry's dependence on Eskom," says Leon.

Jonathan Veeran, a partner and head of mining at Webber Wentzel, is of the view that the current commodity boom will create opportunities – not only for big mining companies, but also mid-tier, low-cost players.

"Larger miners might want to relook at their portfolios and adjust their marginal mines and create opportunities. There should be some activity in this space and that's the way we'll get economic growth," he says.

Siphelele Ntshangase, a consultant at LEI Advisory, is of the view that the sub-Saharan region as a whole is on the right path in terms of strengthening its position to attract investment dollars: "The presence of major international mining companies that continue to invest in big projects should attest to that fact."

Risks remain high, though. Verisk Maplecroft warns in its Political Risk Outlook 2021 of a new wave of resource nationalism taking place in various parts of the world, but also in sub-Saharan Africa. This is aggravated by the economic impact of Covid-19. The consultancy expects this risk to increase over the next two years in countries that are dependent on minerals for their fiscus. Governments of these countries will try to claw back the financial losses of the pandemic and the mining industry will take the brunt of these measures.

According to Verisk Maplecroft's Resource Nationalism Index for the first quarter of 2021, the Democratic Republic of Congo (DRC), Zambia, Zimbabwe and Tanzania are the highest risk countries in sub-Saharan Africa.

Daryll Kilian Principal environmental consultant, SRK Consulting

The DRC has the world's richest cobalt deposits, Tanzania has vast deposits of nickel and PGMs, and Zambia is richly endowed with copper.

According to Leon, the DRC is a risky mining jurisdiction as a result of governance issues, a weak rule of law and issues with the judiciary, unlike South Africa, where the rule of law has remained comparatively strong. Fiscal stabilisation agreements with mining companies, which means a consistent tax regime for the life of the mining right, is one way of mitigating this risk.

A commodity research report by BMO Capital Markets states that the DRC government is on the "front foot" in terms of gaining greater control of its cobalt mineral rights. Joseph Ikoli, DRC secretary-general of mines, says all mining contracts will be reviewed. This could mean a ban on the export of cobalt.

In 2017, the Tanzanian government passed three pieces of legislation, one of which is a 16% free state carry, which could potentially increase to 50%, says Leon. In terms of the Unconscionable Terms Act, which allows for the renegotiation of the terms relating to the extraction, exploitation and acquisition of mineral resources, Tanzania's national assembly can expunge unconscionable terms from the mineral development agreements if it so desires.

"Mining companies in Tanzania have no recourse to international arbitration under this Act," says Leon, but would have to have recourse to any applicable bilateral investment treaties.

Tanzania's new president, Samia Suluhu Hassan, has made positive utterances in the oil and gas sphere, reopening negotiations with major oil companies. The hope is that this sentiment will spill over to the mining industry.

In Zambia, the government has halted stabilisation agreements with mining houses because of the frequent change in royalty rates and the tax regime. The Zambian government will try to capitalise on the record high prices of copper – one of the most wanted minerals for electrification.

In PwC's Mining 2021, an overview of the top 40 companies in the world, it is estimated that the average price of copper could increase by 40% in 2021.

Baissac says the nationalisation of the copper industry in Zambia caused production to tank between 1970 and 2000 because of very little capital investment in the industry.

"African countries are sitting on millions of ounces of natural resources, yet many remain poor. The main cause is problems with domestic policy and politics."

Daryll Kilian, partner and principal environmental consultant of SRK Consulting, is of the view that sub-Saharan Africa has made progress on political stability over the past two decades, but this is fragile, and the risk remains high.

Mining companies are also increasingly required to align with best practice, which includes community engagement on land access, human rights and sustainability, says Kilian.

Leon adds that mining companies will have to make sure they retain their social licences in the jurisdictions where they operate.

The environmental, governance and social (ESG) aspects of mining have received a lot of attention over the past few years. Leon says the 'E' (environment) and 'G' (governance) parts of ESG have generally been present, but the social side will become crucial for mining companies to operate. "If a company doesn't maintain its social licence, it will fall foul of the government. Going forward, mining companies will have to go beyond the black letter of the law to continue their operations." ■

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MALI COUP WON'T STOP GOLD DOLLARS HEADING WEST AFRICA'S WAY

Gold mining has flourished in West Africa despite its occasional lapses in political order. There are even hopes the region could overtake China for gold production.

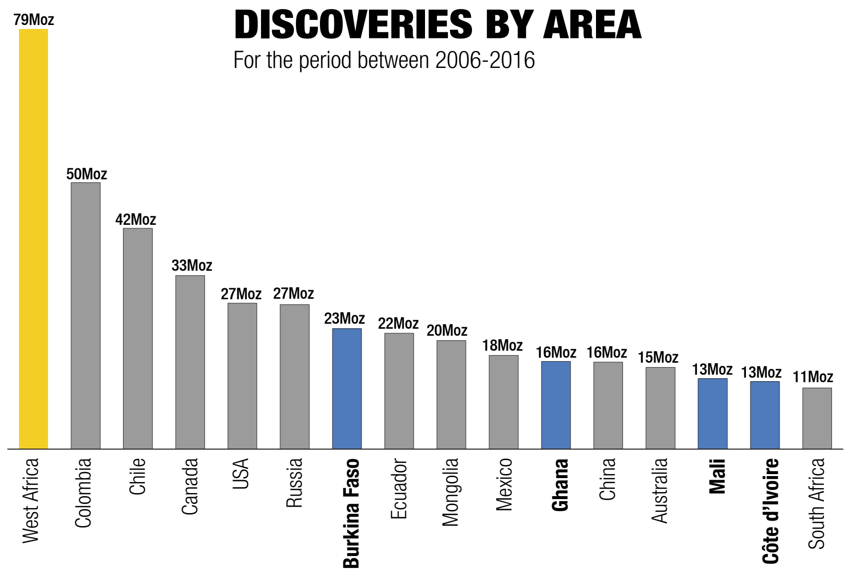
BY DAVID MCKAY

In 1997, when Randgold Resources listed on the London Stock Exchange, about 2.5% of world gold production was being dug in West Africa, of which most was from Ghana. In contrast, South Africa produced more than 15% of total world production.

Two decades later, just as Barrick Gold absorbed Randgold Resources in a merger that left a gaping hole in London's gold investment market, the picture could hardly be more different. West Africa comprised 12.5% of world gold output, largely owing to major new mineral discoveries in the francophone regions of Mali, Côte d'Ivoire and Burkina Faso. South Africa had become a relative minnow in the gold mining stakes, worth only 3.2% of world production, according to data from the Minerals Council South Africa.

The prognosis of those invested there is that the West African region will grow its production base further. "West Africa will overtake China in the near future," says Sébastien de Montessus, CEO of Endeavour Mining, a company whose ambition is to become London's go-to gold share, filling the vacancy left by Randgold in 2019. Six of the world's largest gold producers by market capitalisation have a presence in the West African region. "I expect it to grow faster than other regions of the world."

West Africa attracts the most gold exploration spend after North America and Australia, and consequently has been host to an estimated 79 million ounces in



SOURCE: S&P Global Market Intelligence

new discoveries in the past decade, the most globally, according to S&P Market Intelligence (see graph). But it's risky operating there.

Mali, for instance, has been embroiled in crisis since the resignation last year of its president, Boubacar Keita, amid year-long violence. The junta that replaced him - installed in order to oversee an 18-month transition period - fired the country's interim president in May. Described as a 'coup within a coup', the events were enough to set nerves jangling among the 15-member Economic Community of West African States (Ecowas), which insists Mali must hold democratic elections by February, 2022.

Endeavour Mining doesn't have an operating presence in Mali (it is considering developing the Kalana project there), but it is massively exposed to Burkina Faso on Mali's southern border. In fact, of some 1.4 million ounces in gold production forecast for its 2021 financial year, roughly 853,000 oz is from Burkina Faso.

"In terms of geopolitical risk, if I look at our peers who are operating in Mali, they've not really been affected by the current environment," says De Montessus. It's true that gold mining - which accounted for 10% of GDP last year - tends to plough on during political and social foment in Mali.

That's not necessarily true of Burkina Faso, however, where a jihadist strike near the premises of the Boungou mine halted production and seriously damaged its Canadian owner, Semafo, until it was bought by Endeavour Mining. Political risk is the biggest question hanging over Endeavour's investment proposition.

In the end, De Montessus believes it boils down to a risk-reward equation investors will have to assess. "We feel that this is the place to be," he says. "Some investors will be looking for, I would say, moderate risk, which are probably [areas in] North America or in Australia. But they have less reward."

There is, of course, nothing new about political risk and mining, especially in Africa. "When I started in the early Nineties it was risky; much more risky than it is today," says Mark Bristow, the South African-born CEO of Canada's Barrick Gold, the world's second-largest gold producer.

"Mali is the very foundation from which we built Randgold, but it has always been a country of risk. It worried me most," he says. "But it's the country that has delivered the most as far as our exploration success goes."

A complicating overlay to the political

intrigues of West Africa's gold mining has been Covid-19. Jeff Quartermaine, MD of Australia's Perseus Mining, knows all about that.

Speaking from a hotel in Perth, where he's in quarantine for 10 days following a visit to the firm's $265m Yaouré project in Côte d'Ivoire, Quartermaine says the onset of the pandemic last year called for quick-fire decision-making.

"We reckoned the airlines would be pulling out on Friday, so this was like Monday ... I said: 'Anyone who really needs to get home needs to say so now. We'll get you out straight away, but if you don't, you're going to be here for a while. It's your call'."

Perseus planned for its entire expatriate team to leave site, but hardly anyone did.

As a result, some employees worked 12- to 16- week rosters. "A few of the guys were still on-site when I was there last week," said Quartermaine in June. "We sat down and had a beer over a barbecue one night and it's pretty evident the bonds that have been created will last them for a lifetime."

Once fully ramped up, Yaouré will take Perseus's annual gold production to about 500,000 oz/year. It's one of several companies, along with B2Gold, a Toronto-listed firm, that has helped build West Africa's regional dominance in gold.

Outwardly, Perseus would appear to have grown in stature in fairly hitch-free short order, but Quartermaine - while acknowledging Yaouré's construction has been a success story of note - insists progress has been cumulative. "When we got to Yaouré, we took all the lessons from the previous two operations [Edikan in Ghana and Sissingué in Côte d'Ivoire] and we sat down and put a lot of effort into the planning of it," he says.

Now, as the half-a-million-ounce production milestone beckons, there are questions about where Perseus Mining sits in the West Africa gold table: neither small player, nor senior - the definition of which tends to be predicated on multi-jurisdictional mines of more than a million ounces annually.

De Montessus says Endeavour could not have contemplated a primary listing on the London Stock Exchange without racking up serious production numbers, but Quartermaine seems less convinced about such targets. Half a million ounces is "an arbitrary number" while claims by Neal Froneman, the CEO of Sibanye-Stillwater,

Jeff Quartermaine MD, Perseus Mining

that a market capitalisation of $20bn means mining companies don't cut the mustard is something Quartermaine doesn't get "... too excited about. Quite frankly ... Other people can call us what they will. What we want to do is to get on and create benefits all round."

A common refrain from investors in the gold sector, if not in mining generally, is whether firms have enough reserves to keep operating at their current clip. B2Gold is waiting on the Mali interim government to review its surprising decision this year

SHANTA GOLD'S ERIC ZURRIN IN SECOND OF

Eric Zurrin, CEO of Shanta Gold, knew the market needed convincing about his company's fortunes when he was told by an analyst in 2017 that the firm's power station was worth more than the actual company. "I thought to myself this was one of those moments when I should be buying as many shares as possible because there's clearly an information asymmetry," he says.

At the time, the company's balance sheet was heavy with debt while also committed to selling gold $200 to $300 per ounce below the market price. This was in terms of a hedge contract Shanta Gold was honouring akin to "fighting with one arm behind your back", as Zurrin describes it.

While West Africa is doing a roaring trade in gold potential, Shanta Gold is one of the relative few gold producers looking to grow the East African region. Its New Luika gold mine in Tanzania produces about 80,000 oz/year and there are hopes Singida will add 20,000 oz more a year. A more meaningful leap in output could be developed at its West Kenya project - one of the resources sold by Barrick Gold - which Zurrin says comprises "act two" of his three-act performance.

The first was to stabilise the company. Zurrin thinks the announcement of a maiden dividend earlier this year is a milestone moment in this stage. Now, the plan is to make good use of the cash on hand, as well as improve the firm's cash conversion. For Shanta, this is getting a VAT refund from the Tanzanian government.

"The sooner we can have the VAT situation resolved, the quicker we can invest more money in Tanzania. That resonates well with the government."

The appointment this year of President Samia Suluhu Hassan seems to have helped Tanzania's investment case. Zurrin says the friendlier attitude to foreign investment has started to influence the not to grant the firm access over a potential extension of Fekola, a fabulously wealthy mine that comprises about two thirds of the company's one million oz in expected annual production this year.

In the case of Perseus, it has four-and-a-half years of reserves to maintain 500,000 oz/year. Quartermaine says organic growth probably adds more value than merger and acquisition activity.

That's an understandable position to take in the current market with a relatively buoyant gold price and assets probably fully priced. Yet West African gold is ripe for more M&A, according to Bristow who, in his roles at Barrick and Randgold, has traded a bucketful of African resources over the last 20 years. The sale of Barrick's Massawa mine in Senegal to Teranga Gold Corporation paved the way for Teranga's takeover by Endeavour, leaving Barrick with a minor position in De Montessus's company.

"I'm a big believer of the consolidation of the industry," says Bristow, who adds that Barrick's combination with Randgold triggered the recent wave of corporate action in Africa as well as the migration of North American shares to London, including Wheaton Minerals, Yamana and now Allied Gold.

"Endeavour's consolidation was always an inevitable occurrence. Sébastien de Montessus started that process and I was privileged enough to help Endeavour to consolidation further," said Bristow in somewhat rare praise of a peer group company. "Endeavour's listing on LSE creates another significant vehicle for investors to invest specifically into West Africa."

De Montessus has high hopes for the listing. "We will be the largest pure gold player on the premium segment and I think alternatives in London have been mainly Russian assets - companies exposed to Russia - so we have an attractive proposition." ■

THREE-ACT PROCESS

civil service as well as outwardly find a voice in terms of policy - a stark contrast to the sanction-heavy approach of former president John Magufuli, a Covid-19 denialist who died under mysterious circumstances earlier this year.

"President Hassan is trying to see the right ingredients for foreign investors to add stimulus to Tanzania's growth story and that's good news for Shanta," says Zurrin. But he won't speculate on where the company may end up. He's wary of setting the same "lofty targets" as other gold producers, and M&A often doesn't add up.

"We're custodians of capital and if it's organically through the assets we already have, great. Maybe Shanta might someday become part of something bigger, that's perfectly great as well. As I said, I am here as a custodian of the shareholders' capital."

That could be act three. - David McKay.

Chris Griffith CEO, Gold Fields

FINALLY, A COMPANY OF HIS OWN. WHY GOLD FIELDS IS PERFECT FOR CHRIS GRIFFITH

Chris Griffith is at Gold Fields, where he once worked out a bursary. What's there that couldn't keep him at Anglo American? Plenty, he says.

BY BRENDAN RYAN

Two months into his new job as CEO of Gold Fields and former Anglo American Platinum (Amplats) boss, Chris Griffith is sticking to his pledge to make no comments on specific future strategy and where he intends taking the group for at least six months.

"I'm in the listening phase," he tells Miningmx. But Griffith will say that so far, he likes what he sees and has no regrets leaving his former employer just before the platinum group metal business went ballistic as the long-awaited impact of the 'green' and 'hydrogen' economies finally started to kick in meaningfully.

Griffith was a high-flyer at Anglo American, having run both Amplats and before that iron ore producer Kumba Resources, so his decision to step down in February last year took many by surprise.

Not only did he leave Amplats on a high at the age of 55, but he was viewed as a strong contender for the top slot in the 'Firm' - CEO of Anglo American itself.

So, was it not worth maybe hanging in there a bit longer to see if he could make it all the way to the top of the greasy corporate pole?

Griffith replies: "That was a consideration, but I did not really see myself as being competitive for that role because of my lack of international experience.

"So, rather than wait for a number of extra years and potentially jeopardise a new opportunity, I thought that was a great time to leave. I had done what I needed to do at Amplats and felt it was the right time to move on. At my age I would be able to offer another company another very competitive period of my life."

Another school of thought was that Griffith had felt constrained by the corporate structure where he was the CEO of Amplats, but had to report to "Big Brother" in the form of Mark Cutifani, CEO of Anglo American, which owns 80% of Amplats.

Griffith concedes the point, but reckons it was not material, commenting: "There are more complexities with a listed company with its own board and processes but which also has a major shareholder.

"That major shareholder has a material say in the processes and the final outcomes and direction of the company. A lot of CEOs have battled to manage those complexities but I think I managed to tap-dance and navigate my way around them fairly well.

Salares Norte project

"Anglo American was incredibly respectful of the board and the minority shareholders. Their view was you could put forward any project provided it had the right returns. It may have taken a bit longer but the bottom line is that I never felt there was anything I wanted to do that I could not do."

Griffith is a keen birdwatcher and loves the African bush, so the plan for his sabbatical year after leaving Amplats was to spend it travelling the world to exotic birding destinations, but that was scuppered by the outbreak of the Covid-19 pandemic.

Instead, he spent six months of what he terms "national service" working with Business for South Africa to help the South African government deal with the implications of the lockdown and chart a way out of it.

After that, he spent six months travelling around South Africa and nearby countries like Botswana and Tanzania before "slowly starting to open my telephone up to some headhunters".

Griffith comments: "I turned down a number of companies which I will not name, but put my hat into the ring for Gold Fields because it seemed to me there was an alignment between my values and the values of the company and how it was run which was similar to what I was used to at Amplats and Kumba.

"I may have had a slight bias because I started my career with Gold

Fields when I had a bursary from them. So far, I am very pleased with what I have found at Gold Fields and there's very little that I can say I don't like."

He is running a gold major at a time when the metal's price is booming, so it's not surprising that Griffith reckons his job "feels like a nice place to be at the moment, given the opportunities presented by what the gold market is going through".

Two major challenges he will face running Gold Fields are the increasing importance of ESG (environmental, social and governance) issues on group operations and dealing with the expectations of investors, who are totally focused on maximising the returns on their investments even at the expense of future growth.

He comments: "Pressure over ESG has ramped up exponentially over the last two years and that path is unstoppable. But Gold Fields has been one of the leading companies in this regard and can justifiably live up to its vision of being the global leader in sustainable gold mining. Gold Fields has demonstrated this and not just talked about it."

Griffith reckons Gold Fields has been "leading the charge towards decarbonisation in a great way", and he cites the examples of solar and wind-power generation set up on the group's gold mines in Australia, where the Agnew mine already sources 57% of the power it requires from renewables.

In South Africa, Gold Fields has just announced plans to build a 40MW solar plant at its South Deep mine.

Griffith adds that Gold Fields is due to update its long-term ESG targets by the end of the year and is assessing the implications of this on the group's future strategy.

"For the first time we are involving ESG in our strategy choices over the assets we want to keep running and the assets we need to invest in."

Turning to the gold price, Griffith says the current price is a good one at which Gold Fields will make "fantastic money" but he is wary about its volatility.

"I have seen enough of companies which do crazy things and start investing in projects at very high prices that they would otherwise never have done.

"When we make investments it has to be at a long-term gold price that is substantially lower than where it is now. If we can't make the right returns at a much lower gold price - our reserves and resources are valued at $1,300/oz - then we are not interested in those kinds of projects.

"So we are not getting carried away. At Salares Norte [in Chile] we are investing in a project that will have an all-in sustaining cost of under $500/oz.

"We are focused on returning cash to shareholders but we are not sitting still. We are expanding right now and looking at opportunities, but what we will not do is get seduced by a higher price and assume that price will be there forever.

"I don't think a gold price of $2,000/oz for another year or two is going to change the focus of the company. ■

'NOISE ALWAYS LOUDER IN SA'

When it comes to no-holds-barred confrontations with the South African government over running a mining business, Gold Fields CEO Chris Griffith has paid his dues and has the scars to prove it.

Yet, despite the bruising events that took place in 2013, when Griffith started the process to restructure Anglo American Platinum's (Amplats') then loss-making Rustenburg operations, he remains optimistic over South Africa as a mining destination.

"We have difficulties and the noise always seems to be louder in South Africa, but it is still a jurisdiction where you can mine and it's one of the better places to operate. It's just a shame that it is harder than it needs to be."

In January 2013, then mines minister Susan Shabangu launched an all-out attack on Griffith - which at times was personal and insulting - after he announced plans to restructure Amplats' loss-making Rustenburg mines, which would involve the loss of 14,000 jobs.

The ANC intervened in the Section 189 process to restructure the mines and Amplats eventually modified its plans, retrenching 6,000 workers plus 900 "corporate and overhead employees".

The government at the time was hell-bent on being seen to be doing its best to save jobs as the mining industry cut back on operations across the board as the impact of the 2008 "great recession" became increasingly severe.

At the time - in October 2013 - Griffith commented: "There will need to be greater engagement and more time spent between government, labour and business. That's a reality business will need to get used to."

He got that one right, but fast-forward to the present and Griffith sounds optimistic about the situation here despite the political challenges that remain for the mining industry.

"This ongoing uncertainty over the Mining Charter is not helpful. Getting that done and dusted is the right thing to do. The cadastre system is a mess and the difficulties with the DMRE [Department of Minerals and Energy] over approval of licences just makes it more difficult than it should be for new projects, for exploration and for deals to be done.

"We still don't have the most investor-friendly policies. You get mixed messages around some of that [from government] saying we really are going to focus on this but then nothing happens for massive periods of time.

"The minister has given undertakings that he is looking at these things and all of the South African mining industry would like to see that happen much, much faster.

"But, having said that, we are not the only country that faces challenges, including many other so-called mining investment-friendly countries.

"Most mining companies in South Africa actually have got their licences for the next 20 years and they have done their BEE [black economic empowerment] deals so they can continue with their businesses."

Griffith also highlighted positive points such as being able to access and repatriate all the money made in South Africa - unlike other countries such as Tanzania and the Democratic Republic of Congo - while the judicial system still works.

"You can take government to court and actually succeed and I have personally demonstrated that. Then, there's no talk of nationalising mines in South Africa and there's no talk of massive tax increases. Compare that to the conversations that are happening in Peru and Chile at the moment." - Brendan Ryan.

DIRECT TO THE JEWELLER: DIAMOND MINERS ARE BYPASSING THE TRADITIONAL CHANNELS

The world's diamond industry, once the preserve of De Beers' sometimes mysterious market practices, is being liberalised by digital innovation - a trend the Covid-19 pandemic has accelerated.

BY ED STODDARD

A diamond may be forever, but the routes that the gems take from the mine to consumers are not set in stone.

The traditional site auctions pioneered by De Beers are being bypassed, with gems being sold directly to manufacturers - an almost revolutionary concept compared to ingrained practice.

A trailblazer on this front is Lucara Diamond Corporation, a Toronto-listed company that operates the Karowe mine in Botswana. Lucara last year shook up the diamond sector by agreeing a novel supply agreement with Antwerp-based HB Antwerp. That agreement was extended in April of this year to December 2022.

"Our new supply agreement with HB creates true alignment between the producer and manufacturer for the first time. Rather than Lucara selling our +10.8 carat rough diamonds at the mine gate, we are putting this most valuable part of our production [accounting for ~70% of annual revenues] into manufacturing with HB and receiving final polished prices less a fee and the costs of polishing," Lucara CEO Eira Thomas said in an emailed response to questions.

"HB's fee is based on the final polished price achieved so we are both motivated to maximise the value of each and every diamond. In general, the polished diamond market has performed better than the rough diamond market and has certainly been less volatile," she said.

A better performance and less turbulence should contribute to delivering regular cash flows and "has the potential for increased revenues over time".

Another route that Lucara has taken is the digital one. The company is selling rough diamonds through Clara, a web-based digital marketplace where gems from one to 15 carats in size are on offer.

Thomas said it employs technology "to match individual rough diamonds with specific polished demand from our customers. It creates a much more efficient sales process and eliminates the need to travel to inspect diamonds in person, unlocking significant value for buyers and sellers alike."

This will have consequences for midstream cutters and polishers. The economic meltdown, triggered by the Great Lockdown in 2020 to contain the Covid-19 pandemic, hit diamond demand and has led to job losses for such artisans in centres such as Mumbai - a trend also seen during the global financial crisis of over a decade ago. This sub-sector of the industry may remain under pressure as middlemen are cut out through digital and other initiatives.

Thomas said Lucara's novel approaches are also cutting edge on the ESG front - environmental, social and governance concerns. 'Blood' or conflict diamonds, for example, remain a public concern.

"One of the real benefits of selling through HB or Clara is that in both cases we are using processes that trace each and every diamond through the sales process. That traceability can also be extended right through the manufacturing process, something consumers today are demanding," Thomas said.

She went on to say that she sees wider shake-ups to the diamond industry, which are needed to prod it out of its inertia.

"Our industry has been under tremendous downward pressure for years due to our collective inertia. We can no longer harken back to a past era and unwisely cling to processes that haven't changed in generations. I have been in the industry for 25 years and I believe the best is still to come."

Eira Thomas CEO, Lucara Diamond Corp

For its part, De Beers says it is also embracing change.

In a response to questions, the company said: "De Beers Group has for some time now been looking to evolve how it sells rough goods to its sightholders and how to best streamline the process to improve midstream efficiencies. As part of this, we introduced a new sightholder supply agreement on April 1 of this year. This new supply agreement sees three different types of customer – integrated retailers, manufacturers, and dealers – and the first of these contract types is designed to allow De Beers to sell rough goods to Sightholders with retail offerings."

It also said it was considering "what activities can be undertaken usefully during this time even if it's not what we would usually be doing".

It said initiatives along these lines include:

• Offering flexibility to its rough diamond customers which would "allow 100% deferrals for several Sights and ongoing flexibility across targeted goods thereafter; provided the option for additional 'buybacks' to further enhance supply flexibility, and are hosting viewings in other locations (Antwerp, Dubai) while travel restrictions remain in place".

• The launching of podcasts to maintain contact with customers and "reduce as much as possible the impact that travel restrictions and remote work" have on the company's relationships with the wider industry.

De Beers added that: "More generally, we could also see other trends that had already developed now accelerate – this could include the use of online channels for selling, as well as growing consumer preferences for brands with a social purpose ... There were already several developments underway in the industry regarding enhancing the role of digital technology in the sales process and we may now well see this accelerate."

The company still believes that "there will always be a place for sales in physical locations, especially in the diamond industry where seeing the product in real life is so significant".

So physical sales, where diamonds are painstakingly examined, are not seen to be coming to an end.

But it does seem that they will become a less prominent feature of the industry, which is embracing a wider mix of sales options.

GEM Diamonds and Australian-listed Lucapa, which operate in Lesotho and Angola, are taking initiatives that are similar to Lucara's: diamonds are taking new routes from the mine to the consumer. The full implications of this trend will become apparent in coming years. ■

ONE MIGHTY SHARE ISSUE SAVED PETRA DIAMONDS. WHAT'S NEXT FOR THE BORN-AGAIN FIRM?

BY BRENDAN RYAN

With the loan restructuring completed - which reduces Petra's debt to manageable levels - and a sustainable recovery hopefully underway in the global diamond market, CEO Richard Duffy is hoping the worst is over for the embattled diamond miner.

An added bonus would be a successful outcome to the discussions currently underway between Petra and the Tanzanian government over a revised regulatory framework which would lead to the re-opening of the mothballed Williamson mine.

A key issue in those discussions concerns a parcel of 71,654 carats of diamonds effectively placed in limbo after they were blocked for export in 2017 by the government under then hard-line president John Magufuli, who died in March.

He was replaced by President Samia Suluhu Hassan, who Duffy says has made "very encouraging comments around a more investment friendly environment".

"I would probably be fairly pessimistic in the climate prevailing under the late President Magufuli but we are seeing a shift. I am confident we will get the discussions finalised."

In terms of the restructuring completed in March, Petra's holders of $650m in notes due to be repaid in May 2022 have swapped those for new notes worth $337m - including a $30m cash injection - and equity in Petra such that they now own 91% of the company.

The principal benefit is that Petra's net debt dropped to $290.7m at end-March from $700m at end-December 2020.

The impact on the Petra share price from the past few years of tough times and now the expanded equity base has been extreme, with the share plunging 99% from an all-time high of 164p in July 2014 to trade around 1.4p in early June this year.

"The restructuring has effectively been a reset for us from a balance sheet point of view. On the marketing side it is probably a little early to be definitive but it is certainly encouraging to see the recent improvement in diamond prices and demand in our sales as well as that reported by De Beers and Alrosa.

"Key fundamentals are coming together, which would suggest at least consolidation of the market and my view is that we are through the worst of the impact of Covid-19 on the diamond business."

The process of getting Petra back on its feet started dramatically in June 2020, when Petra announced the entire group - or parts of it - was up for sale.

"In terms of the scheme of arrangement, which had to be sanctioned by the UK courts, we had to demonstrate we had done all we could to realise value for our bondholders.

"So we had to test the market for interest in our assets. We got some offers but the view of the advisers, the board and the creditors was that their interests would be better served from a value point of view by completing the restructure."

Duffy declines to identify those diamond companies that came to "kick the tyres" at Petra.

Petra ran up the debt that led to its restructuring through incurring major capital expenditure on two projects simultaneously at the Cullinan and Finsch mines in South Africa.

Duffy - who was appointed in April 2019 and therefore after the expansion decisions were taken - says those investment decisions were made "at a very different time in the market.

"At that time the outlook supported the proposed plan. Projections of where we would be in the market today were very different to where we have ended up."

Asked - given his experience as former CFO at major mining group AngloGold Ashanti - why he had not foreseen the looming financial catastrophe when considering taking up the Petra job, Duffy said: "It was very clear that Petra was carrying too much debt and there were questions around the Cullinan plant operations.

"Going in, I had eyes wide open to the challenges represented by the balance sheet but, at the time, the view was that the diamond market would see some consolidation in 2019. I thought we could generate enough cash to buy ourselves some time.

"I thought we were close to the bottom but the events of 2019 surprised all of us. Then the market looked like it was starting to recover, with prices picking up

'I would probably be fairly pessimistic in the climate prevailing under the late President Magufuli but we are seeing a shift. I am confident we will get the discussions finalised'

Richard Duffy CEO, Petra Diamonds

in January and February of 2020 but, just as it was showing some green shoots, Covid-19 happened."

All going to plan the next big step in Petra's future will be reopening the Williamson mine, where the group has just settled - on a "no admission of liability basis" - claims brought against it in London over "alleged breaches of human rights associated with third-part security operations at the Williamson Mine". The cost is £4.3m, of which more than £1m is to be spent on projects that will directly benefit the communities near the mine.

That all has to do with the complex issue of illegal mining, which is a growing trend in many African countries and is clearly not going to go away at Williamson.

Duffy says the settlement is separate from the decision to reopen the mine, which will be based on economic fundamentals.

"The biggest challenge with illegal mining involves not the individuals or small groups coming onto the property but dealing with larger groups sponsored by illegal diamond syndicates.

"We are dealing with this through the government and formal channels because that's part of the problem. It's not something we can resolve on our own. It has to be done in conjunction with the government and the community." ■

GEMFIELDS READY TO BRING BACK THE STYLE TO RUBY AND EMERALD INDUSTRY

A horrible 2020 with Covid-19 turned worse for Gemfields CEO Sean Gilbertson when jihadists besieged parts of northern Mozambique. Having survived, Gemfields is looking to return with style.

BY BRENDAN RYAN

Is Gemfields jinxed? It's a serious question when you look at the track record of the group founded by mining industry legend Brian Gilbertson and listed on the Johannesburg Stock Exchange (JSE) in 2007 as Pallinghurst Resources, just in time for the 2008 global recession.

Restructured and renamed Gemfields in 2018 and run by son Sean Gilbertson, who listed the company on AIM in London, Gemfields promptly ran straight into a brick wall when the Covid-19 pandemic erupted early in 2020.

Now throw in a potentially disastrous development out of left field - the Islamist jihadi insurrection in the Mozambican province of Cabo Delgado, where the group's major Montepuez ruby mine is located - and you get the idea.

"Long-suffering" does not begin to describe the original Pallinghurst Resources shareholders after what they have been through. The share price has been heading south since 2007, when it traded at a high of around R10 after listing on the JSE, but slumped to 230c by March 2008.

Since then, the downward trajectory has eased, but Gemfields hit an all-time low of 103 South African cents a share in August last year, from where it has recovered slightly to around 160c as of early June.

And don't mention the discount to net asset value (NAV). That has been an albatross around the group's neck for years, which both Brian and Sean Gilbertson have been unable to remove, with NAV sitting at 513c as of December 31.

But there is good news, according to Sean Gilbertson, who tells Miningmx that the situation facing Gemfields looks vastly improved from the position that ruled in March this year - when the 2020 annual report was released - and Gemfields had to warn shareholders about various "material uncertainties" that could have serious financial consequences.

Chief among these was the impact of the closure of the Kagem emerald mine and the Montepuez ruby mine for a year and the worry that Gemfields would not - because of Covid-19 - be able to hold the regular auctions of its ruby and emerald stocks, which would hammer expected cash revenues during the first six months of 2021.

"The critical things are that, as of today [early June], both Kagem and Montepuez are back up and running at full capacity. Then we brought in $90.3m in revenues from auctions of emeralds and rubies during March and April and that has gotten us back onto our feet after the knee-capping we got in 2020."

Gilbertson says that, unlike diamonds, "virtual auctions" do not work for gemstones and the buyers have to get their hands on the gems to do their own assessments.

So, instead of holding "regular auctions" - where around 150 buyers are brought into one room over a period of days to assess the gemstones - Gemfields held a series of "mini-auctions" where the gems were taken to a number of different cities, such as Tel Aviv, Dubai, Singapore, Bangkok and Jaipur.

Gilbertson says limited numbers of customers - between one and three at a time - were allowed to "come in and do socially distanced viewings, where they could get their hands on the physical gemstones".

"Getting those auctions away and putting $90m of fuel back in the tank means those going concern considerations are no longer relevant. We are back in business and, absent some big scary gorilla in the second half which we currently cannot see, it should be a fairly respectable year for us."

Gemfields still faces some big uncertainties, one of which is the situation facing the Montepuez mine, which sits uncomfortably close to the insurrection in northern Mozambique, where it seems the Mozambican government has lost control.

So far the conflict has forced around 700,000 refugees to shift south to the area around Montepuez, which could well increase the already high levels of illegal ruby mining near the mine.

"This is a serious situation which we are monitoring very closely," says Gilbertson. "The problem fundamentally is poverty, jobs and upliftment, which is not going to be solved rapidly. We expect the insurgency will be with us for a few years yet.

"Ten days ago, I attended a round table discussion in the UK hosted by Chatham House, which included the minister of mines from Mozambique.

"At face value and in the media it may not appear that the Mozambican government is doing much to address the situation, but I have to say that I came away very surprised in a positive manner and very impressed by what was shared with us at the round table.

"So I express a quiet confidence that we are going to see a number of positive developments in Cabo Delgado. I do think there are a lot of things moving behind the scenes which are not yet in the press. Nobody should expect miraculous improvements in the short term, but I think in the medium to long term, this is getting the right attention."

Gilbertson also wants something done about the illegal ruby mining situation where the smuggling networks - which he says are based in neighbouring countries but are using Mozambicans to do the dangerous mining - sitting behind the illegal miners are the major problem.

"Those networks are looking to mine rubies illegally on our licence area, which means there is a parallel supply of smuggled rubies going to the international market."

The size of that illegal trade is difficult to assess, but Gilbertson reckons it's huge. "We have sold about $620m worth of rubies since we started. Our subjective estimate - there are no facts and figures for it but based on discussions with other industry players and what we have seen turning up in the overseas market - is that about another $600m worth has left the country illegally.

"We are not the only ruby-producing area in the country but I would say somewhere between 60% and 70% of that came from our licence area."

'We are back in business and, absent some big scary gorilla in the second half which we currently cannot see, it should be a fairly respectable year for us'

Sean Gilbertson CEO, Gemfields

Montepuez has paid a total of $150m in tax on its ruby revenues over the past six years, which indicates the amount of tax revenues lost to the Mozambique government from this illegal trade.

Another issue is the sale of Gemfields' 6.5% stake in unlisted platinum producer Sedibelo, which is dragging on. Gilbertson agrees the process is going slowly and says the key problem is the ownership structure because the Gemfields stake is held indirectly through an "interposed vehicle".

"That means we can only sell our holding in that entity and cannot sell our indirect stake in Sedibelo separately, which has put buyers off. They would rather buy directly into Sedibelo.

"We have to unlock that structure. It should be unbundled in the next few months and hopefully that will reignite our sales process."

So Gilbertson reckons Gemfields is not jinxed, but has had some bad luck on the timing of key developments.

"People are now waiting to see if the recovery we have delivered is sustainable. We should have a good second half. Remember that in 2019 we had record revenues of about $219m and we produced a free cash flow margin of about 17%, which was comparable to any of the big diversified miners at that time." ■

BHP'S UTILITY PLAYER, ALBERTO CALDERON IS ANGLOGOLD ASHANTI'S LAST SHOT AT THE BIG TIME

BY DAVID MCKAY

Anglogold Ashanti's head office is located in Turbine Hall, a building of metal grid windows, ductwork and brick in downtown Johannesburg that dates from the 1920s. When the company moved there in 2007 it was a declaration of independence: a fashionable abode for a company cut free from its overlord Anglo American, yet solidly rooted in the South African earth of its origin.

At the time, the company operated some of the country's largest gold mines - as it had done for the best part of a century before. Today, however, it doesn't mine South African soil at all, focusing instead on Ghana and Tanzania in Africa, Australia, and newer prospects in Colombia. Moreover, AngloGold's lease on Turbine Hall has six months to run: emblems, perhaps, of a company in search of a fresh identity.

Kelvin Dushnisky, a former Barrick Gold executive, was the last person to speak with certainty about where AngloGold was heading. In an interview with this publication in 2019, not long after his appointment, he spoke of narrowing the gap between the company's market value and its gold production. The company was the third-largest gold producer but was fourteenth in the gold company market capitalisation stakes behind Newmont Mining, Newcrest Mining, and Franco-Nevada. Gold-rich, but dollar poor, you might say.

Today, AngloGold still trails those über-gold producers in market value, with the added fact that it's also less valuable than its South African rival Sibanye-Stillwater. What's equally significant is that the firm's new boss, Alberto Calderon, is talking about narrowing the firm's discount to net asset value, just as Dushnisky had done two years before. The divestment from South African mines that Dushnisky considered key to AngloGold's makeover had had some effect, and yet the market remains meh about its prospects.

Calderon, a former BHP executive with broad experience (but none in gold mining), says he'll take over at AngloGold in September with a mission to join the dots. He wants to tighten the screws on things like operational execution and bring momentum to development at Quebradone and Gravelote, its two main Colombian projects. As a Colombian, analysts think Calderon will help AngloGold's cause in this regard. They are also impressed with the breadth of his experience.

There's also hope Calderon will tackle the question of AngloGold's primary listing, currently on the Johannesburg Stock Exchange. Dushnisky had indicated it might be switched to London or New York where it might attract the kind of premium rating its peers enjoy.

Riding high above these particulars, however, is the possibility that failure of Calderon to deliver could spell the end for AngloGold. Waiting on the sidelines, Sibanye-Stillwater is aiming to beef up its own flagging gold production with the non-South African output of a rival. It approached AngloGold in 'friendly terms' during December to do exactly that until its corporate hawks were sent packing by then-interim CEO, Christine Ramon. But Neal Froneman, Sibanye-Stillwater's deal-hungry CEO, is not a man easily deterred.

Froneman also sized up Gold Fields, another company with a Johannesburg head office. Unlike AngloGold, Gold Fields has local production, but relative to total group production, it is small beer. It's unknown whether Gold Fields's recently appointed CEO, Chris Griffith, is interested in Sibanye-Stillwater's takeover interest. If not a merger, Griffith might sell Froneman the South Deep mine, Gold Fields' Carletonville asset.

Alberto Calderon CEO Elect, AngloGold Ashanti

Whatever happens, the Johannesburg-listed gold industry is likely to be an interesting watch: two new CEOs and another with a keen appetite for M&A. Calderon, 61, railed against the notion of the non-executive duties a semi-retirement might easily afford him. "It'll be boring", he said in an interview. One thing's for sure, AngloGold is likely to keep him busy. He dare not get it wrong. ■

THE PERIODIC TABLE'S LESSER KNOWN MINERALS ARE HANDING COVID-19 HIT SOUTHERN AFRICA A MUCH-NEEDED LIFELINE

New ventures aiming to mine new-fangled battery metals, as well as more familiar minerals, may be the much-needed antidote to the economic hardship tearing through Southern Africa's Covid-19 stricken economies.

BY DAVID MCKAY

The Cactus Coffee Shop has a five-star rating on TripAdvisor, an online travel company. Situated on the corner of the Old Gold Course Road and Third Avenue in Namibia's Uis, a layby on the way to the famed Etosha National Park, the shop's cappuccino and confection offering is one tiny example of how the region has been given fresh economic impetus.

The reason? The reopening of a tin mine once operated by South African steelmaker Iscor in the Fifties before it closed forty years later amid a squeeze in the tin price.

These days tin is one of a host of metals causing a stir globally for its ability to help the world decarbonise. The importance of this trend can't be emphasised enough. Unlike the last metals supercycle, which was driven by the urbanisation of the Chinese economy, and therefore related to GDP growth, the current spike in metals demand is a function of a near-global and politically sanctioned

Photograph by: Brendan Ryan

Sand dunes and stony ridges in the Namib Naukluft Park near Luderitz.

restructuring of economies.

Tin has a crucial role as a semi-conductor, especially in smart devices. But decarbonisation now looms large in its fortunes. According to Anthony Viljoen, CEO of AfriTin Mining, the UK-listed firm operating the Uis mine, tin is forecast to be one of the metals most positively impacted by the development of energy generation and energy storage devices.

Having invested R500m so far on the first phase of the Uis mine, AfriTin's presence is becoming hugely important to the Namibian economy. "Covid-19 has really hit Namibia's tourism industry hard," says Viljoen. "That makes mining even more important."

Speaking at a United Nations World Tourism conference in April, Namibia's president, Hage Geingob, said the tourism industry was expected to record negative to zero growth until 2022. There was an estimated 87% decline in international visitors during the Covid-19 pandemic in 2020.

"Namibia was hit hard fiscally due to the major hit to tourism," said Heye Daun, the Namibian-born CEO of Osino Resources, a Toronto-listed gold exploration and development firm that's drilling Twin Hills, a gold deposit south of Uis. "There's exploding public debt and no line of sight on any new major revenue streams. A project like ours will make a massive contribution."

Viljoen said he'd personally witnessed how the local economy had opened up with engineering contractors beginning to crop up as AfriTin's business grew from exploratory work to production several years later. In addition to the shady repast of coffee shops, there's a new guest house built to accommodate mine visitors. It may sound like small beer set against Namibia's Covid-19 crisis, where infection rates are currently high, but for mining companies, it's the critical economic development of communities that gives them the social licence to mine.

AfriTin's tin deposit is located in the Damara mineral belt, a long-known geology that runs from Botswana in the northeast to Karibib in the southwest where Namibia has a recent history in gold production. The deposit also hosts potential lithium which Viljoen says his company can mine as a by-product, potentially derisking Uis' revenue stream.

There are examples where, owing to common geology, tin allows for lithium production, says Viljoen. Australia's Greenbushes in Western Australia for instance also started as a hard rock tin mine before moving into lithium, a mineral generating a lot of excitement owing to its application in electric vehicle batteries.

The Damara belt is more traditionally host to copper resources. Rio Tinto, the Anglo-Australian mining group, has taken a large prospecting position in the region and there's also a number of other battery metals hopefuls cropping up.

One is Desert Lion Energy, a company founded by Adonis Pouroulis who was the founder and long-standing chairman of Petra Diamonds. He recently sold the company to Australia's Lepidico suggesting that speculation and corporate 'prospect pegging' is very much the activity of the day in Namibia - not all of which will be successful.

But whilst there's a question mark over how many new battery metals ventures in Namibia will eventually take hold, the world's push for decarbonisation and the electrification of the drive-train is sending miners to new, relatively unexplored districts in search of metals, including copper.

Copper's credentials as a major metal in decarbonisation is a well-established fact. Reports by banks Goldman Sachs and Jeffries last year which suggest the world was in the foothills of a major copper bull run were justified out by the metal's price this year, pushing through $10,000/t - a ten-year high.

On the doorstep of the Etosha National Park, the copper smelting facilities of Tsumeb Copper still stand, formerly run by Newmont Mining and then Gold Fields of South Africa.

Now operated by the Canadian firm, Dundee Precious Metals, copper concentrate from a mine in Bulgaria is sent to Tsumeb for processing. Some 232,000 tons of copper concentrate were smelted at the facility in 2020. Tsumeb was built on geology that is proving fertile ground for US firm Cupric Canyon. It owns Khoemacau Copper, a mine under construction in neighbouring Botswana, a country that is desperate to diversify from diamonds.

Anthony Viljoen CEO, AfriTin

"Everyone's eyes are on us," says Johan Ferreira, CEO of Khoemacau Copper Mining. "After diamonds, we are the only mining company that is diversifying the Botswana economy," he said, speaking at the Junior Indaba, a mining conference.

Khoemacau mine, which will cost about $800m to build, employs about 30% of all people in the region and is situated in an area that has been excitedly referred to as the Kalahari copper belt. The world is desperate to find new mineral districts, if only because grades at existing ones are falling or are situated in countries where infrastructure is poor, and the politics unpredictable.

The plan for Khoemacau is to produce 62,000 tons of copper metal a year with the potential to expand further. But it's taken about nine years to develop from its greenfields discovery.

"It's cost nearly a billion bucks. I'm sure there are a billion bucks in the ground but will they get the value for that," said Peter Major, director of mining at Mergence Corporate Solutions, an advisory.

"This is big news for Botswana. It will make a lot of people happy, but how much of that [billion dollars) has just vanished?" he asked referring to the major capital bill of the mine. He thinks it's possible a major mining company such as Anglo American or BHP might eventually buy the operation.

Still, there's real hope Botswana could provide a new copper district in southern Africa. "This is, in effect, the dawn of a new global copper province," said Karl Simich, MD, and CEO of Sandfire Resources, an Australian listed company that will build Motheo, a $259m, 30,000 tons a year copper mine in the Kalahari Copperbelt.

An important participant in the push for global decarbonisation has been the scientific and engineering community. Increasingly, scientists are looking for metals that can replace the metals currently attracting huge premiums. It's led to a 'mining of the Periodic Table', as it's sometimes referred to, throwing

Heye Daun CEO, Osino Resources

the spotlight on previously ignored minerals such as neodymium and praseodymium - referred to as 'NdPr' - minerals used in the manufacture of large stationary batteries used in electric vehicles and wind farms.

"These are minerals that people are becoming familiar with, and can even pronounce," says Tim George, CEO of Pensana, the first mining company to list in London in the wake of the Covid-19 pandemic last year. Pensana is building the Longonjo rare earths mine, about 300km from Lobito, Angola's recently refurbished port.

"We really got our timing right given the drop off in the oil price and the fact that the Angola government wants to diversify its economy into other mining, agriculture, and tourism," he says.

Apart from a recently improved regulatory regime, Angola also has extensive hydropower and an improved rail network. It's perfect for Pensana which is able to supply rare earths to its UK processing facilities and European end-users. The rare earths market is 90% captured by China which mines and produces the so-called magnet metals like NdPr. "We have a non-Chinese supply chain. This is important because people want provenance," says George. ■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