www.miningreview.com

Issue 4 | 2021

MINING REVIEW AFRICA

POWER SOLUTIONS THAT WORK

P4

MINING VALUE CHAIN STEP 4:

BENEFICIATION

P48

MINING IN WEST AFRICA

HOTTER THAN EVER

P14

IN THE SPOTLIGHT P6

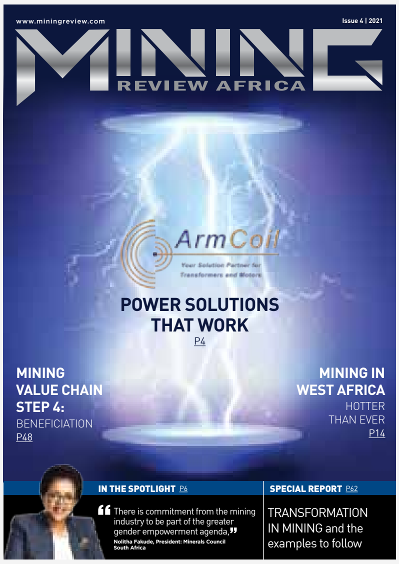
"There is commitment from the mining industry to be part of the greater gender empowerment agenda,"

Nolitha Fakude, President: Minerals Council South Africa

SPECIAL REPORT P62

TRANSFORMATION IN MINING and the examples to follow


WHAT WOULD YOU LOSE IF YOUR BUSINESS WENT UP IN FLAMES?
AST manufactures State of The Art Systems protecting your business and people from fire.
TRUST IN THE LEADERS OF FIRE PROTECTION TECHNOLOGY
AST
ALIEN SYSTEMS & TECHNOLOGIES
ilac-MRA
sanas
Inspection Body
IGS0085
011 949 1157
sales@astafrica.com
www.astafrica.com
ISO 9001
BUREAU VERITAS
Certification
BUREAU VERITAS
1828
UKAS
MANAGEMENT SYSTEMS
0008



FRONT COVER

From humble beginnings as a DC motor repairer, today **Armcoil** is a leading manufacturer of distribution transformers and mini substations for the mining sector.

P4

Mining Review Africa is the exclusive media partner for

Managing Director – Africa
David Ashdown
e: david.ashdown@clarionevents.com

Editor-in-Chief
Laura Cornish
e: laura.cornish@clarionevents.com

Senior Editor
Gerard Peter
e: gerard.peter@clarionevents.com

Online Editor
Richard Jansen van Vuuren
e: richard.jansen@clarionevents.com

Brand & Advertising Specialists
Rochelle Botha
e: Rochelle.Botha@clarionevents.com

Vuyisa Mfobo
e: Vuyisa.mfobo@clarionevents.com

Production Manager
Mandy Rust
e: Mandy.Rust@clarionevents.com

Design & Layout
Catherine van Dyk
e: clearimpressions@outlook.com

Head Office
2nd floor, North Wing, Great Westerford,
240 Main Road, Rondebosch, 7700
PO Box 321, Steenberg, 7947,
South Africa
t +27 21 700 3500
f +27 21 700 3501
info@clarionevents.com
www.clarionevents.com

Production
Reproduction and printing by
Tandym Print.

BENEFICIATION

Much to talk about

This has been an interesting edition to cover, unpacking lucrative projects in West Africa – of which there are many – and delving into the topic of beneficiation on the continent. Two areas that have not left me wanting for good content.

Let me start with West Africa – clearly COVID-19 has not presented any major challenge for the region (generally speaking of course). Take Anglogold Ashanti, for example, who has pushed heavily to deliver on its Obuasi mine objectives. An interesting project of course for our mining community considering its more recent tempestuous history. It is nonetheless a welcome addition to have the mine back on the gold production radar.

Orezone's Burkina Faso-based Bomboré is another 'hot' project – the company is pushing hard to move this project through its development phases and into production next year. The project is impressive and you need only read the article to understand why. I am keeping a keen eye on this project and so should you.

And then there is Thor Explorations' Segilola project – on the brink of becoming Nigeria's first world-class gold mining operation. How I had my hopes set on seeing first gold poured before we went to print but, alas, that was not to be. Nonetheless, I know first gold is imminent and could likely set the country on a path of greater investment interest and new project development attraction. Hmm, I wonder what we can expect from Nigeria moving forward? Will Segilola be the catalyst for growth that the country so desperately needs?

Beneficiation in Africa: Is this topic not premature?

Indeed, it is not. This subject is a top priority agenda for many African countries, who are all eager to see greater benefit from downstream beneficiation opportunities for their citizens. Beneficiation of course brings job opportunities, economic wealth benefit and greater interest from the global stage.

Perhaps there is not much to write home about as yet: There is a tin smelter and gold refinery in Rwanda, a possible gold refinery in Nigeria and even a possible new copper smelter in the DRC. I'm sure there may be more, big or small; it's a little difficult to know for sure.

But what I do know is that this industry sector is likely to grow, considering there is only one major constraint to doing so – energy. Beneficiation, for the most part, is energy intensive and Africa's power infrastructure in most areas needs upgrading, but this too is on the agenda as solar power continues to shine (excuse the pun) on investors' radars for so many reasons. Dare I say ESG (again!) for example.

This topic excites me and I hope to see an array of beneficiation opportunities come to the fore. It's in Africa's best interest, if you ask me, and will help unfold greater potential across the continent. MRA

Remembering the 'good ol' days', visiting mines before COVID-19

REINFORCED EARTH

PROTECT

The adaptability/versatility of **REINFORCED EARTH®** techniques can provide **'Protect'** solutions for **challenging situations that require protection measures.**

12.4T@103km/hour, 5 Megajoule impact minimal deformation

Limited footprint, easily maintained, scalable Reinforced Earth® rockfall bund pushes known limits of soil structure interactions to a new level!

INNOVATIVE Reinforced Earth® techniques create

- Solutions for Clients' needs
- Engineering to mitigate risks

Reinforced Earth® RETAIN, CROSS and PROTECT techniques are used for the following applications:
Bridge Abutments, overpasses & underpasses, approach ramps, access road and railway retaining walls, dump walls, storage bunkers, reclaim tunnels, reservoirs...

Some Reinforced Earth® Applications

Roads & Motorways | Bridges | Railways | Dams & Reservoirs | Mining & Minerals | Energy

Reinforced Earth (Pty) Ltd
Mentone Media Centre
1 Park Road, Richmond - Johannesburg - South Africa
Tel: +27 11 726 6180
www.recosa.co.za

ArmCoil has earned a reputation for manufacturing quality transformers for the African mining sector

Resilient, robust and reliable

From humble beginnings as a DC motor repairer, ArmCoil has today become a leading manufacturer of distribution transformers and mini substations for the mining sector. Sales and marketing manager **MORNE BOSCH** explains to **GERARD PETER** the reasons for the company's ongoing success.

Formed in 2003, ArmCoil initially focused on DC motor repairs primarily for mining operations in the Northern Cape. Soon the company branched out into medium voltage motor repairs including AC motors, pump motors, mill motors and fan motors. The company then ventured into manufacturing medium voltage motors; however, this came to a halt in 2006 because of the high steel and labour prices.

Subsequently, ArmCoil started doing repairs to power and distribution transformers and substations in the utility and mining sectors. "Soon we started investing a bit more in transformer manufacturing and since then we have grown the business quite substantially and today, we manufacture customised transformers miniature substations, NECRTs and starting reactors for mining operations," adds Bosch.

While a large contingent of its clientele is based in South Africa, ArmCoil has a strong African footprint with clients in Egypt, Burkina Faso, Mauritania and Rwanda, to name a few.

Among the recent milestones that the company has achieved is the remanufacturing of a large mobile substation for a platinum mining company in South Africa. Bosch explains that it took the company a year to produce the 6 MVA 33 kV substation.

"Another area where we have been successful is in the manufacture and sale of our mobile and robust miniature substations. We call them self-bunding substations and they are perfectly suited for remote mining operations. They can withstand vermin, water and dust ingress. Also, they don't really need a concrete plinth because of their sturdy bases. In addition, these substations are modular in design so one can easily swap out parts," Bosch states.

More recently, ArmCoil has entered the dump truck market, supplying traction motors and alternators. Currently, this part of the business is still small but Bosch is confident that the company has the capabilities to grow it.

Bosch adds that a large part of the company's success can be attributed to its in-house technical expertise. "Firstly, we pride ourselves on having three ISO accreditations, namely quality; health and safety; and environmental. By having these ISOs we are constantly re-evaluating and reassessing our processes and procedures with the aim of delivering greater downstream benefits to our clients. We also have to adhere to a lot of additional technical specifications, such as SANS 2009 and SANS 2019, and this prompts us to find improved and efficient ways of manufacturing as well.

"Regardless of the product specifications we must consider when manufacturing, our starting point is ensuring that our designs meet our client's specifications. We do however always consider areas for improvement beyond expectation and ensure we are able to solve any problems that may arise. As such, we invest a lot in R&D to ensure that we get it right."

While in-house technical expertise is key to the company's success, Bosch says that networking with industry experts is also essential. "For example, we have in past scenarios outsourced some of our technical engineering to a professor who helped us develop a new market innovation."

Furthermore, ArmCoil is also strongly focused on ensuring the supply of quality and reliable products. According to Bosch, mining clients are not opposed to paying high prices for products that are reliable, robust and assist in minimising downtime. The fact that a large platinum mine has opted for ArmCoil transformers across all its operations is an excellent case in point. "Based on historical work done for the company and R&D executed, we are their preferred manufacturer. Our transformers were chosen because of their reliability and endurance. We have already installed transformers at many sites and we have not had a single serious warranty problem so far," explains Bosch.

Progress amid a global pandemic

Like many other companies, ArmCoil's operations were affected by the COVID-19 pandemic. Bosch explains that the company's operations were quickly halted, with most aspects of the business affected. "We were fortunate that we went into the lockdown period with a relatively secure order book. However, we had to reorganise our labour force and split our workers into shifts in order to ensure social distancing. Still, our efficiency dropped by 40%. Also, our purchasing came to a standstill because a lot of our suppliers were in lockdown as well," he states.

"We are predicting significant growth for the mining industry.. and this means growth for our business,"

MORNE BOSCH

That said, the lockdown period also gave ArmCoil the opportunity to review its processes and to look for ways to increase repair and manufacturing efficiency. In addition, Bosch states that it also gave the team time to catch up on R&D projects that were long overdue. "Also, there was a new SANS 2019 requirement that was released in 2020 and we used our time to update our designs. As such, we now offer both SANS 2009 and SANS 2019-compliant transformers," he adds.

Another key component of ArmCoil's vision is environmental awareness, which it filters down to its clients. The company has a zero oil spillage policy which is governed by its ISO accreditations. Furthermore, ArmCoil itself does not dispose of hazardous materials. Rather it outsources this function to accredited service providers. The company also continually speaks to its clients about the harmful effect that leaking transformers can have on the environment – a message that Bosch says is being taken seriously by the mining industry.

Having built the company on the back of the mining industry, Bosch is confident that ArmCoil will continue its growth trajectory as the African mining sector starts to gather momentum again. A key area of focus will be the supply of transformers and mini substations to those mining companies who are looking for off-the-grid power solutions. "We started out in mining and this industry has kept our business strong. We are very optimistic that certain mining activities are going to perform well from the third quarter onwards; and so we are predicting significant growth for the mining industry and we believe that this means growth for our business going forward," he concludes. MRA

CHEAPER DOES NOT MEAN BETTER

According to Morne Bosch, rising copper and steel prices have had a significant impact on the pricing of ArmCoil's products with some going up between 20% and 30%. This, he says, has resulted in some companies shopping around for lower prices. However, this is not necessarily a good option as a cheaper product may be of low quality. For example, the steel used to manufacture a transformer may be of a lower grade or thinner or the oil used may be of poor quality.

"Recently, a company opted for a transformer that was R80 000 cheaper than ours but there have already been three failures. This downtime has cost the company R2 million across seven hours. As such, companies need to compare apples with apples when looking at pricing as a lower priced product could have negative repercussions in the future," Bosch explains.


South Africa has made significant strides in the number of women employed in the sector

Image: Anglo American South Africa

Nolitha Fakude

Exemplifying employment equity

Corporate activist and business woman **Nolitha Fakude**, who is also a proud beneficiary of employment equity in South Africa, has a passion for leadership development, especially for women and black people in the workplace. In her many roles in South Africa's mining sector over the past few years, she has become a respected authority on transformation and empowerment in South Africa, writes **CHANTELLE KOTZE**.

Having held several senior management and board positions at a number of blue-chip companies in the oil and gas, petrochemicals, financial services and retail sectors throughout her career, Fakude has more recently spent a number of years in the mining sector, where she currently serves as the chairperson of diversified mining company Anglo American South Africa's management board.

Fakude, a former Minerals Council South Africa VP, was recently elected as the Minerals Council's first female president in the 131-year history of the organisation, and also currently serves as chairperson of its Women in Mining Leadership Forum.

Fakude's appointment as the first woman president was described as a "watershed occasion" by Minerals Council CEO Roger Baxter, noting that it is testament to her fortitude and leadership capability.

Speaking at the virtually-held *Junior Indaba* in June, Fakude jokingly blamed organiser and host Bernard Swanepoel for her being in the mining industry, as she served as non-executive director of Harmony Gold while under the leadership of Swanepoel, who was CEO at the time.

Enabling equal opportunities for women in mining

The Minerals Council and its member companies, through the launch of a Women in Mining White Paper published in March 2020, have undertaken extensive work to promote gender diversity and inclusion to ensure that women working in the mining industry have the same opportunities open to them as men – and that they are safe to pursue them.

The mining industry in South Africa has made significant strides in the number of women employed in the sector, which currently comprises about 53 000 women, or 12% of South Africa's total mining labour force of about 450 000 people, compared with about 11 400 women in 2002.

Despite an increase in the number of women employed in the sector, a key focus of the Mineral Council's Women in Mining Leadership Forum is on attracting even more women to the industry. To achieve this, the Minerals Council and its members are using the Women in Mining

White Paper to implement strategies to overcome the challenges that women in the sector face and to advance women in the industry.

Fakude says the March 2021 appointment of Dr Nombasa Tsengwa as CEO-designate of Exxaro Resources, after she was formerly Exxaro's MD for minerals, is significant enough to hope that the country's mining sector is on a mission to transform itself.

Campaigning for socio-economic change

Although Fakude's route to mining came via other industries, she says that each decision taken throughout her career was fuelled by the desire to be part of the decision-makers capable of making a difference in people's lives.

Fakude admits that while she had no clear plan on how to achieve her goal of empowering people, has remained steadfast in her belief in the inherent goodness of people. This has been reinforced throughout her career.

She points to the enactment of South Africa's employment equity legislative framework as having shaped her career, allowing her to benefit from more inclusive opportunities; and then allowing her to showcase her level of skills and competence and what she can bring to the positions she holds.

As a corporate activist for economic and socio-economic change for women in particular, Fakude says it's difficult to ignore that women are still unable to achieve socio-economic empowerment.

> "[The mining industry] must find ways to factor transformation, empowerment, equality, diversity and inclusion into its strategies to ensure a sustainable and inclusive future."
>
> **NOLITHA FAKUDE**

Image: Anglo American South Africa

↑ **Fakude was recently elected as the Minerals Council's first female president in the 131-year history of** the organisation

Acknowledging the gender transformation milestone within the Minerals Council upon her appointment as its next president, Fakude said that this moment must evolve into a movement. Only then will real change be able to take place and allow the economic and social status of women in mining and the communities in which mining companies operate to change, she says.

"This moment has shown that there is commitment from the mining industry to be part of the greater gender empowerment agenda," says Fakude.

In terms of diversity and inclusion, Fakude says this should not solely focus on representation but should also be about creating visible and felt upliftment of women and marginalised groups in the workplace and giving them the opportunity to be meaningful participants in the economy.

Building back better on new foundations

Fakude says that while the mining industry has a real opportunity to assist with economic recovery post-COVID-19, it must find ways to factor transformation, empowerment, equality, diversity and inclusion into its strategies to ensure a sustainable and inclusive future.

"A new normal must be built on these foundations," she says.

"A thriving and healthy South African economy is good for the mining industry and a thriving industry is good for South Africa. These two things are deeply connected. If South Africa wins, we all win, and that is the mindset I bring to everything I do," she adds.

Fakude says that she has endeavoured, on behalf of herself and her fellow Minerals Council colleagues, to build on the work that was started by her predecessors to ensure a sustainable future for the mining industry.

"The people that have come before us and the events that have taken place have all brought us to this stage in our transformation journey," says Fakude, noting that she is honoured to be carrying the baton forward. MRA

Image: Anglo American South Africa

↑ **Fakude currently serves as the chairperson of diversified mining company Anglo American** South Africa's management board

Explorers and junior mining companies remain capital constrained

Image: 123rf.com

Investor insights

What can junior miners do better to access funding?

Despite surging commodity prices across the board for metals and minerals on the back of rebounding global economies post-COVID-19, institutional investors and fund managers remain cautious when conducting their due diligence before investing capital into mining projects. This means that raising the much needed capital to develop mining projects remains a hurdle for most junior miners, writes **CHANTELLE KOTZE**.

It's no secret that demand for natural resources is increasing, with analysts forecasting widening deficits in the metals and minerals needed to drive the creation of a low carbon economy. For supply to fill the increasing demand gap, new resources must be discovered and projects developed – an impossible feat when explorers and junior mining companies are constrained for capital.

Projects with good grades and margins are critical

Speaking during a panel discussion at the virtually-held Junior Indaba conference in June, Caroline Donally, managing partner at specialised mining capital provider Sprott Resource Streaming and Royalty (a new arm within Sprott's resource financing division which undertook its first investment in March 2020), said that critical to royalty and streaming companies are projects that have good grades with good margins.

> "There is lots of money to be had in streaming and royalties… which bodes well for companies considering raising money via royalty and streaming transactions,"
>
> **CAROLINE DONALLY**

"While [the project] does not have to be the highest grade project in the world, we want to see the ability to generate good margins at somewhat sensible commodity prices," she says.

Donally says that royalty and streaming transactions are relatively new to the South African mining sector. Royalty and streaming transactions that have taken place in South Africa include the transaction by Triple Flag, which closed a US$145 million gold stream with Royal Bafokeng Platinum in 2020 and Orion Mine Finance which also invested in South Africa.

She explains that royalty and streaming transactions usually take place at the prefeasibility study stage, at which point the company has already confirmed the economics of its project and has a relatively good idea of the project's resource potential.

Furthermore, projects should be relatively well advanced in terms of permitting and have a strong and experienced management team that can do what it says it can do, she says.

Donally cautions that at times like these, with some commodity prices trading at record highs, investors are unlikely to run these projects at the spot price and will revise these prices down slightly to ensure that the margins are realistic and reasonable.

In the process of finalising a transaction in South Africa, Donally says there is lots of money to be had in streaming and royalties and believes there are investable projects in South Africa, which bodes well for companies considering raising money via royalty and streaming transactions.

"Although South Africa is not without its challenges, it is a well-established mining jurisdiction, and you can invest in the country with the right risk mitigation strategies in place," she says.

ESG considerations are non-negotiable

Donally says environment, social and governance (ESG) considerations form a critical part of the investment decision but people often forget that ESG considerations have been a critical component of mining projects for decades now.

"Mining companies have not been able to operate mining projects in some of the more challenging and remote locations without having the appropriate ESG considerations in place," she points out.

The challenge we now face is that ESG has in some instances garnered more attention by the mining industry than ensuring that a project is able to operate at a good margin with a strong enough management team to bring it into production.

On the whole, while ESG is often relatively well covered by mining companies, mining companies often fail to communicate to investors what they do on the ESG front – but this seems to be changing, she says.

"As part of our due diligence process when investing, we will look at ESG from a variety of angles, such as from a legal perspective (permitting), technical perspective (environmental aspects such as tailings and water treatment) and the overall involvement with surrounding communities. In some instances we may hire an independent ESG consultant to undertake an ESG report in addition to our due diligence if necessary, she says.

Package your project for the right investor

Also speaking on the panel was Mametja Moshe, Founder and CEO of investment and advisory firm Moshe Capital, who encouraged investors to be frank about what they will or will not invest in.

Moshe, who in her role as an investor, is looking to invest in precious metals and the critical resources needed in the fourth industrial revolution, notes that junior miners in South Africa already

> "Because access to capital is limited… juniors [need] to package themselves attractively for the specific investor they are trying to entice,"
>
> **MAMETJA MOSHE**

have to contend with macro-economic risks within the country that investors factor into their investment decisions. This makes it even more important for juniors to have the right commodity and a project that is far enough down the cost curve before trying to attract funding.

In her role as adviser, Moshe explains that the foreign direct investment landscape has changed. It has contracted 45% from where it was in 2019 – with very limited FDI flowing into South Africa. Because access to capital is limited, she advises juniors to package themselves attractively for the specific investor they are trying to entice. "Investors are looking for different things, so be sure to focus on the one thing that the investor you are targeting is looking for," she says.

Iterating the need to have a sound management team with sound technical expertise, Moshe adds that building industry connections and networking is also an important factor in building relationships and making yourself known, when looking to raise capital.

Moshe is encouraged by the collaboration between miners and regulators taking place in in South Africa on finding solutions and ironing out the challenges that the junior mining sector faces in the country.

The larger the scale, the easier for investors to exit

David Twist, partner at AMED Funds (African Mineral Exploration & Development Fund), says AMED Funds looks for scale early on in the project. "The rationale being that larger projects are easier to exit," says Twist, noting that it looks to exit around the five-year mark.

A project in the lowest cost quartile or relatively close to the lowest cost quartile is also a non-negotiable for AMED Funds, says Twist. "While doing our due diligence studies, we tend to pass on anything that does not meet this right from the start. Because the industry is so cyclical, projects in the highest cost quartiles tend to be shelved when commodity prices begin to fall," he explains. MRA

INVESTMENT IN COAL A NO-GO

When asked whether they would consider investing in coal, the answer was a unanimous 'No'. Despite the abundance of coal resources in South Africa, used to generate the bulk of the country's energy, the firms were no longer allowed to invest in coal, some of them having previously successfully invested in coal.

According to Moshe, you will struggle to find capital as a pure coal play, while a coal play moving towards renewable energy is more likely to find capital, she explains.

Twist says AMED Fund 1 had previously invested in coal, even declaring a dividend to shareholders, but is no longer allowed to fund the development of coal projects.

Blasting and Excavating sets its sights on the rest of Africa

Specialist mining, quarrying and civil engineering construction **Blasting and Excavating (B&E)** is expanding its territory market share across southern Africa. The company believes it has significant technical expertise to offer the region's mining, quarrying and construction industry.

B&E has spent the past year polishing its new strategy. Its aim? To grow its market share beyond current client base. The immediate focus is mineral-rich territories in the rest of Africa where B&E's reputation of excellent services precedes it within the mining, quarrying and civil infrastructure sectors. The company is already enjoying considerable success in South Africa, where it is a household name, as well as in Namibia, Lesotho, Swaziland and Botswana.

Executive Officer and MD, Nathan Williams credits B&E's successful growth to its unmatched ability to deliver specialist services in remote and difficult areas. "The focus now is on sharing this critical service value with the mining industry across the greater African continent," he explains.

Looking at B&E's history, it is evident that it has never suffered from a lack of ambition. Established more than four decades ago, the company has gone from strength to strength, demonstrating an ability to thrive even during the toughest economic climates.

"While we bring technical expertise into a region, our strategy is to partner with local firms, enter into joint ventures with these firms," continues Williams.

This approach is not only the right approach but is necessary considering that many countries have legislation requirements that fall in line with B&E's strategy for foreign/expatriate companies looking to do business in-country to partner with locally own entities.

Contracts Director Nqobile Khumalo says B&E clients can rest assured that the Company's commitment to their countries' development extends to every aspect of the business.

"We also focus on community development which includes training programmes, wellness facilities, education, and local economic development," she explains.

B&E's core strengths

1. Turnkey service offering

Recognised primarily for its excavation services through drill, blast load and haul capabilities, B&E's full service offering also comprises crushing and screening. Also housed within the business are technical advisory experts who can give valuable input on mineral economics and technical processes in the early phases of project development.

"These are not new services but have been part of our greater offering for years," Williams points out.

"We believe that providing the industry with a turnkey service across these various activities has a variety of benefits. However, primarily, it enables clients to interact with fewer contractors on site and in doing so makes ourselves accountable for delivery across the spectrum – an easier prospect for managing site performance." Clients also benefit from our technical expertise.

2. Comprehensive fleet

B&E owns a +500-strong fleet of equipment including drilling machines and earthmoving equipment (trucks and excavators).

Engineering Director Deon Rajoo says these machines have been operating on some of the company's client sites for as long as 20 years.

"Our client retention track record easily showcases the exceptional performance we deliver for our clients, through well maintained equipment."

Importantly, he says, B&E works only with reputable equipment brands that ensure minimal downtime and optimal operating performance.

"The company is also able to lease equipment to clients that need a quick and cost-effective solution," Rajoo highlights. "This is thanks to the close working relationships that B&E has with its OEM providers."

3. Technology evolution

The mining industry in Africa is taking technology evolution seriously – spurred on by COVID-19 operational restrictions and also the benefits technology delivers.

"We have done a lot of work in this regard to enhance our operating performance, the benefits of which we then pass on to our clients," Rajoo outlines.

The company has purchased asset management software – an in-shift maintenance solution that provides an accurate lifecycle position and optimal maintenance strategies.

"We have sourced further software tools that will allow effective business metrics monitoring, as well as GPS tracking for both safety and production metrics, telematics and camera surveillance which will interact with our operations planning system," Rajoo continues.

B&E's technology plan further integrates autonomous drills into its fleet in a phased approach – either new machines or retrofitting autonomous technology into existing machines.

"The end goal to clients through these efforts is to improve safety and reduce our costs to enhance our competitiveness," reflects Business Improvement Director Sandile Masondo.

4. Investment in people

Technical capabilities may be a significant portion of B&E's performance, but this would be incomplete without the correctly trained personnel.

"Under the guidance of our long-standing engineers, we are actively employing newly graduated engineers as part of our equal employee and gender diversity opportunities," says Esther Mohube, Human Capital Director. "This brings vibrancy and passion to the job as well as an understanding of current digital technologies."

She says the business greatly benefits from providing opportunities to graduate engineers as their new ideas, fresh outlook and skills sets deliver a further added benefit to the company's performance, over and above its family-style approach. "Our very own Senior Contracts Manager, Mark Roberts, is one such example, having spent his entire 25-year career with B&E since his inception as a graduate engineer.

"This is a steadfast commitment from our business and a continual and ongoing process. We believe the people in our business offer another key differentiator and this is something we should showcase to the industry," Mohube concludes. MRA

Segilola

Timeline of a Nigerian success story

When TSX and AIM-listed **Thor Explorations** acquired the Segilola gold project in Nigeria in 2016, it set in motion the progression of one of the most exciting mining projects, not only in Nigeria but also in West Africa.

When the company pours first gold at its flagship project this year, it promises to be a game changer and is sure to be the catalyst for more investment and interest in the burgeoning Nigerian mining sector. Here is a timeline of how Segilola has progressed thus far.

June 2016:
Thor Explorations enters into exclusive agreements for the acquisition of a 100% interest in the Segilola gold project located in Osun State, Nigeria through the acquisition of Segilola Resources Operating Limited from Tropical Mines and Delano Gold Mining Industries and through the acquisition of its joint venture partner Segilola Gold from Ratel Group.

Segilola is considered to be the most advanced gold project in the country. At this time, Segilola has an indicated mineral resource estimate of 555 000 oz of gold at 3.8 g/t.

July 2016:
The company completes a technical report prepared in accordance with National Instrument 43-101 on the Segilola gold project.

August 2016:
Thor Explorations completes the 100% acquisition of Segilola and it becomes the company's flagship project. Segilola comprises a proposed open pit gold mining project based on an indicated mineral resource defined by a comprehensive drilling programme.

October 2017:
The company files a Preliminary Feasibility Study (PFS) prepared in accordance with National Instrument 43-101. The PFS demonstrates that Segilola is a robust project with a low capital intensity, strong cash flow and a low All-In Sustaining Cost for the life of mine.

December 2017:
The Office of the Nigeria Mining Cadastre grants Thor Explorations' wholly owned subsidiary, Segilola Gold, four new gold exploration licences, located in southwest Nigeria. The new licences, which total 334 km^2, are located between 30 km and 80 km from Segilola.

An aerial view of construction underway at Segilola

February 2018:
Thor Explorations is announced as the winner of the 2018 Investment Battlefield at Mining Indaba for its Segilola project. The company beats 22 other promising junior mining companies to scoop the award.

February 2018:
Definitive Feasibility Study (DFS) work and pre-development workstreams commence at Segilola. Thor Explorations also continues to assess the resource potential at depth with a view to a potential future transition of operations from open pit to underground, extending the mine life beyond the PFS mine plan.

September 2018:
Chinese company Norinco International Cooperation is awarded the EPC contract to build the required plant and associated infrastructure for the project.

February 2019:
The company completes a Preliminary Economic Assessment (PEA) for a proposed supplemental underground project at Segilola. The underground project considers an initial three-year underground operation which can be brought on during the open pit mine life to supplement the open pit ore with high grade underground production.

April 2019:
Following the completion of a DFS, Africa Finance Corporation agrees to a US$78 million financing package for the construction and ramp-up of Segilola.

February 2020:
Despite hurdles brought about by the COVID-19 pandemic, construction begins at Segilola. Over the initial period, over 360 jobs are created, with 92% being Nigerian nationals and approximately 56% being from the local communities.

August 2020:
Concrete is poured on the process plant site while construction and procurement are progressing on schedule and on budget.

March 2021:
Thor announces an updated mineral resource and mineral reserve estimate for the project. Total probable reserve of 517 800 oz at 4.02g/t represents a 28% increase over the March 2019 DFS. Process plant design capacity increases to 715 000 tpa, representing a 14% increase to the DFS design.

July 2021:
The company commences commissioning of its gold processing plant. Mining gets underway and the company expects to pour first gold at the end of July 2021 (correct at the time of going to print). MRA

Moydow Holdings

Early mover in Nigeria to follow Thor Explorations' lead?

Nigeria might not be considered a mining investment/development hotspot, but for exploration company **Moydow Holdings** the country's vastly unexplored geology makes it a lucrative proposition. **GERARD PETER** finds out more from executive chairperson **BRIAN KIERNAN** and geology consultant **KIERAN HARRINGTON**.

While privately owned Moydow Holdings might be considered a relatively new entrant into the mining sector, the company is built on a rich history of success in West Africa. Kiernan previously headed up Moydow Mines International, a TSX-listed company responsible for two major discoveries in Ghana. The first is the Wassa mine which is still in production today and the second discovery is the Subika gold deposit which is part of Newmont's Ohafa mine. In 2002, the company sold its interest in Ohafa to Newmont and retained a royalty on the project. In 2010, the company was sold in its entirety to TSX-listed Franco Nevada.

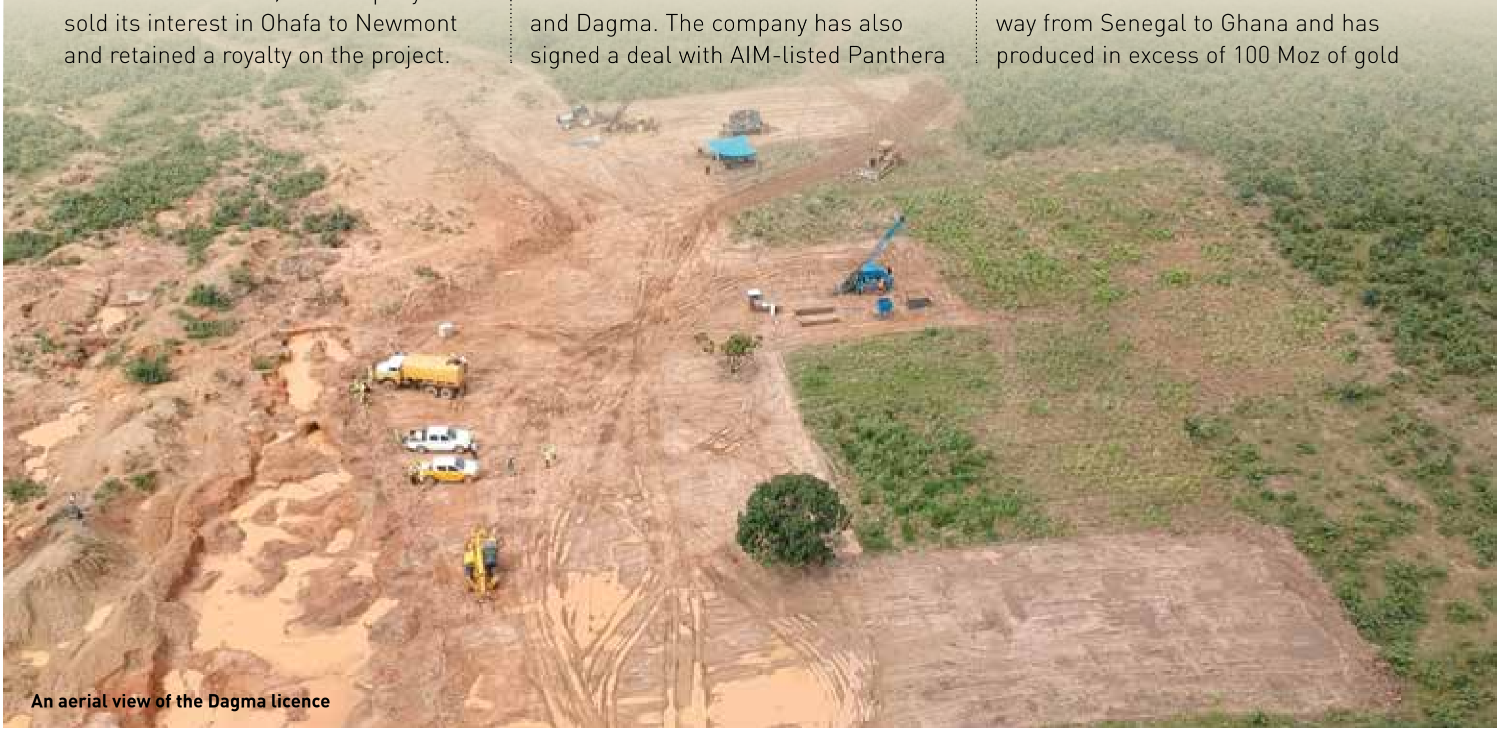
Kiernan has 28 years' mining experience in West Africa and since 2010 had been looking for projects in the region as he firmly believes in the region's resource potential. In 2017, he reviewed a number of gold projects owned by local engineering firm PW Nigeria who had asked him to evaluate several gold projects that clearly demonstrated potential.

IN SHORT
Both of Moydow's Dagma and Paimasa-Mint projects share the same geology as that of Thor Explorations Segilola mine.

In 2019 Moydow and PW Nigeria signed a joint venture on two of the projects, both in Niger State – now referred to as Paimasa-Mint and Dagma. The company has also signed a deal with AIM-listed Panthera Resources which brings projects in Burkina Faso and Mali into the Moydow portfolio. That deal made Panthera a 45% shareholder in Moydow.

Niger State is one of the main gold producing states in Nigeria, with all production coming from artisanal or small-scale mechanised mines. The projects lie at the southern end of the Kushaka Schist Belt. Both the Paimasa-Mint and Dagma areas have themselves been the target of very extensive artisanal gold mining activity in recent years. Interestingly, the projects share the same geology as that of Thor Explorations' Segilola mine.

"The attraction for this area and these projects lies in basement rocks, similar to the Birimian of the West African craton that extends all the way from Senegal to Ghana and has produced in excess of 100 Moz of gold



An aerial view of the Dagma licence

over the past few decades, whereas in Nigeria there has been almost no formal gold exploration. And when we went and had a closer look at the rocks, we found they were not very different from what one finds further to the west," explains Harrington.

While progress on the projects has been hampered by the COVID-19 pandemic, Harrington explains that the company has managed to make some inroads with first-pass drilling programmes taking place at both projects. The drilling has confirmed the presence of significant ore grade mineralisation. At Dagma, the highest intersection was 3 m at 8.6 g/t while the best intersection at Paimasa-Mint was 6 m at 3.2g/t.

Harrington explains that in both cases the grades were less than the company had expected from surface bulk sampling, which had returned grades of 22g/t and 28g/t respectively. He states that because there is a lot of coarse gold found in these deposits, it presents challenges for sampling and assaying of relatively small drill samples. "As such, we've have conducted bottle roll tests on drill samples from each of those areas to determine the possibility of increasing the grade. Thus far, initial results from the tests on the larger samples have been promising and have shown a very considerable increase in grade versus fire assays. Following the bottle roll tests analysis, the company plans to do further drilling on both projects around October this year," he adds.

Plenty of reasons to explore Nigeria

While Nigeria's mining sector is still in its infancy, Kiernan believes that there are a number of factors that attracted Moydow to the country. "Firstly, the geology doesn't change and is similar to the rest of West Africa. It's just a matter of finding the most lucrative resources. Secondly, the government has put in place a roadmap to develop the mining sector and this includes an incentive scheme for mining companies."

Kiernan adds that having a first mover advantage also means that the company has an opportunity to go into areas where very little exploration has been done and can use modern methods to bear fruit in these areas.

Furthermore, Harrington points out that working with an established partner like PW Nigeria has also ensured that operations run smoothly. PW Nigeria has been operating in Nigeria since 1973 and was part of a group that became one of the largest mining contractors in West Africa. While he admits that there is a shortage of experienced metal mine workers in the country, there is not really a shortage of mining skills. This stems from the fact that the country has a large quarrying sector. "It's not that Nigeria has been completely free of any mining projects. It's just that it has not had any large-scale hard rock metal projects over the past few decades. So there is a reasonably large pool of resources that one can tap into from the quarrying sector, particularly the cement industry."

> "Thor Explorations' first gold pour at Segilola mine will open the floodgates, more mining companies will start to look at Nigeria and more investors will consider the country a viable option."
>
> **BRIAN KIERNAN**

Securing investment to take these projects up the value chain may be a challenge for Moydow, but there is a game changer on the horizon that will significantly change the potential for raising cash for projects in Nigeria. "Thor Explorations' first gold pour at Segilola mine will open the floodgates, more mining companies will start to look at Nigeria and more investors will consider the country a viable option. This will make it easier to raise finance for projects in the country," states Kiernan.

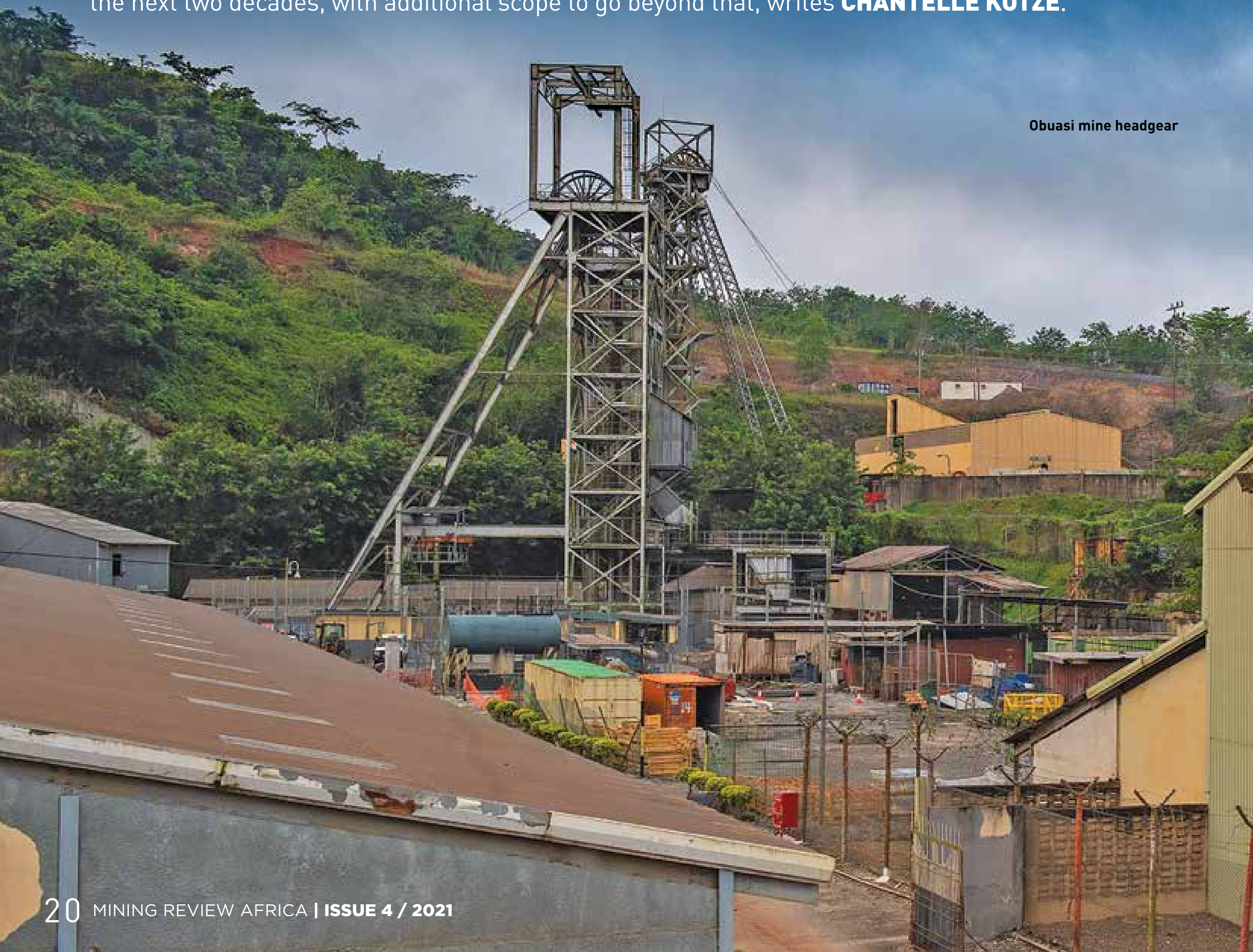
Most importantly, Kiernan believes strongly in the potential of both Paimasa-Mint and Dagma. "When I closely evaluated these projects, I was completely 'blown away' by their prospectivity. There were really obvious mineralised horizons, lots of quartz and lots of local artisanal miners working the properties. They are probably the best Greenfields exploration projects that I have ever seen," he concludes. MRA

↑ **Kieran Harrington (right) with the team on the ground at Dagma**

Obuasi redevelopment project

Creating a sustainable future for AngloGold Ashanti's century-old asset

AngloGold Ashanti, one of Africa's largest gold producers, has successfully proven its ability to transform the historic Brownfields **Obuasi gold mine** in the Ashanti region of Ghana into a modern, mechanised mining operation capable of producing more than 400 000 ozpa of gold over the next two decades, with additional scope to go beyond that, writes **CHANTELLE KOTZE**.



Obuasi mine headgear

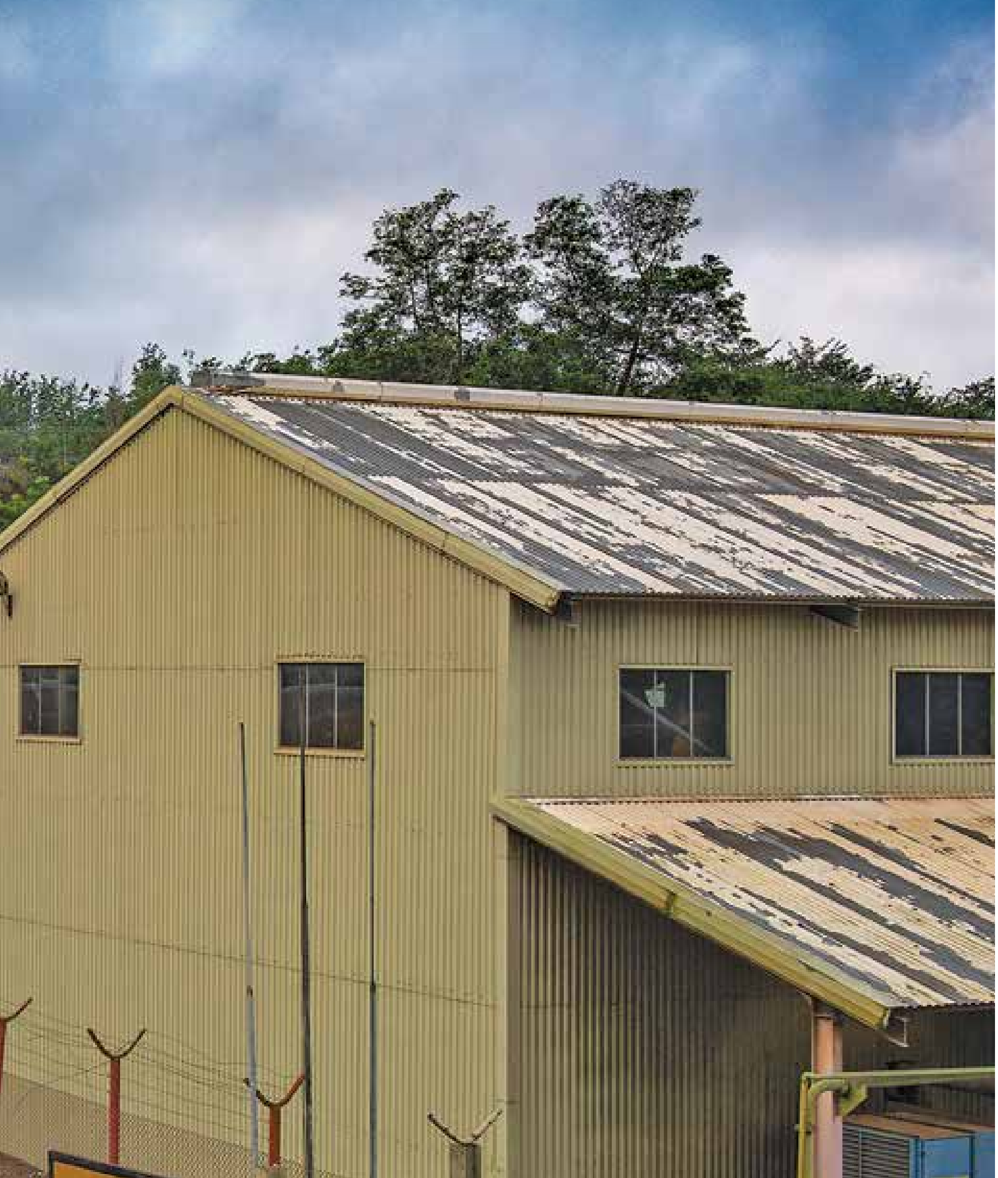
IN SHORT
With a mature mining history dating as far back as 1897, the historic deep-level Obuasi gold mine has been redeveloped with a future-forward approach to mining, stakeholder relations and sustainable development.

Acquired upon the merger of AngloGold and Ashanti Goldfields in 2004, the 124-year-old deep-level Obuasi gold mine produced gold until 2014 when AngloGold Ashanti suspended underground mining operations amid weak gold prices and ongoing financial losses. The mine was placed on limited operations until time would enable the company to recapitalise and redevelop the iconic mine.

In February 2018, the company announced that it had signed the necessary regulatory and fiscal agreements with the government of Ghana to provide the framework for the redevelopment of Obuasi.

According to Graham Ehm, executive VP of group planning and technical management at AngloGold Ashanti, who is providing strategic oversight on the redevelopment project, Obuasi's redevelopment required extensive work to get the operation to a point where it could deliver cash flow into the business and deliver against the envisioned mine plan.

"Obuasi's redevelopment was more technically challenging than a Greenfields project, which involves the construction of new plant and infrastructure, and the building of a new operating team," says Ehm. "Obuasi's reconstruction involved the demolition of old and redundant plant and infrastructure, the extensive refurbishment of existing surface and underground infrastructure, and the construction of several new facilities.



"The operation's poor efficiency and availability needed to be addressed and the recovery optimised," he explains, noting that the underground mine infrastructure needed to be refurbished and the small-scale, labour intensive open-stoping mining method modernised.

A closer look at the two-phase redevelopment

The first phase of the two-phase Obuasi Redevelopment project, which began at the start of 2019, entailed mine rehabilitation and infrastructure refurbishment to enable gold production to resume at a rate of 2 000 tpd for the first operating year, allowing the company to establish cash flow, Ehm explains. This phase was successfully completed on time and on budget and culminated in the pouring of first gold at the mine in December 2019.

This was followed by the second phase of the Obuasi Redevelopment. Ehm explains that this phase included the refurbishment of the underground materials handling system, shafts and ventilation. "The KMS shaft was refurbished and is now being used for hoisting while a new 612-m-deep by 5.8-m-diameter ventilation shaft was established," he says.

This phase also included a substantial rebuild of the processing plant, which entailed the construction of the primary crusher, SAG/ball mill circuit, biological oxidation (biox) circuit, carbon regeneration circuit, flotation circuit, a new gold room, tailings storage facility, water management system and an 18 MW emergency back-up power station. This phase enabled the operation to increase production to 4 000 tpd by the end of 2020.

POWERING OBUASI

There is existing power infrastructure to Obuasi, and AngloGold Ashanti has signed a contract with one of the country's power generators, Volta River Authority, which will supply the project with hydro-electric power generated from the Volta River.

> "Obuasi's redevelopment was more technically challenging than a Greenfields project,"
>
> **GRAHAM EHM**

By the end of March 2021, the Obuasi Redevelopment project was 97% complete. Obuasi produced 46 000 oz of gold in the first quarter of 2021, with production expected to steadily ramp up to 5 000 tpd over the next three years.

Despite well over a century of sustained mining, Obuasi has an estimated 8.7 Moz gold in reserve and 29.5 Moz of mineral resources, which could comfortably sustain mining for well over the next two decades. In doing so, the company expects production in the first 10 years to average between 350 000 ozpa and 400 000 ozpa, while production in the following 10 years is forecast at between 400 000 ozpa and 450 000 ozpa. The average gold grade at Obuasi is between 8 and 10 g/t, with sections within the ore body averaging as high as 16 g/t.

In May, a fall of ground resulted in the death of one of the employees of AngloGold Ashanti's mining contractor at Obuasi.

Work was immediately voluntarily halted and an investigation into the incident and review of the mine's production areas is being carried out.

"Even though the incident occurred in a small area of the overall mine, we did want to pause and review, having a look at each of the mine's production areas before resuming stoping and mining activity. When we designed Obuasi's redevelopment, we were careful to consider what is involved in resuming mining in a mine that has a lot of history. We designed the operating systems, ground management system and mining schedule to cater for being in a historical mine," said Ehm.

The new Obuasi

Once the redevelopment plan is complete, underground mining will take place using large equipment, including development drilling jumbos and 60 t dump trucks and 20 t loaders operating at a depth of about 1.5 km at the 5 000 level. The mine will be accessed via two main vertical shafts, GCS and KMS, and 6 m x 6 m decline access for some materials and equipment. An additional shaft, Adansi, is used for dewatering at the extreme north of the mine, explains Ehm.

The mine will also have a level of automation that never before existed, explains Ehm. "The KMS shaft is now hoisting automatically, with loading operations controlled at surface and full wireless connectivity underground, which enables real-time tracking of people and equipment," he says. The process plant has also been modernised with a modern control system, and automated power systems, says Ehm.

He continues, outlining that the ore body, which contains both refractory ore and visible gold in quartz, comprises a series of three shears, dipping at about 35° from the south to

↑ **Obuasi mine entrance**

↑ **The ore body, which contains both refractory ore and** visible gold in quartz, comprises a series of three shears

↑ **The new Obuasi mine will employ more skilled** and considerably fewer people than in the past

By the end of March 2021, the Obuasi Redevelopment project was 97% complete

the north as it gets deeper. Mine production in the first 10 years will focus on the upper ore bodies, moving from 800 m (2 600 level) below surface down to 1 500 m. "There is drilling as far down as 7 000 level, which is 2 000 m below surface," says Ehm, noting that there is plenty of ore body to mine before reaching those depths.

With regard to operational readiness, which Ehm believes is equally important as building the project, AngloGold Ashanti fully redesigned the organisation and systems to enable the company to establish itself as a modern business. The company introduced modern employment contracts, fair compensation and an integrated, accountable and empowered culture among its employees.

Recruitment and training in this regard was also an imperative, as was ensuring the greatest Ghanaian participation possible – in procurement, contracting as well as direct and indirect employment – with levels exceeding 80%.

Ehm explains that the new Obuasi will employ more skilled and considerably fewer people than in the past, noting that there will be 850 AngloGold Ashanti employees, excluding contractors, compared with the workforce of 4 000 people when mining was suspended in 2014. MRA

CREATING AN ECONOMIC LIVELIHOOD BEYOND THE LIFE OF MINE

In a bid to ensure that the local economy continues to thrive beyond the life of the Obuasi mine, AngloGold Ashanti helped to facilitate the development of a satellite Obuasi campus for Ghana's Kwame Nkrumah University of Science and Technology (KNUST). The campus was launched in 2019.

The catalyst for the university's new outpost was the donation of a number of office complexes and residential properties in the north of the Obuasi mine.

KNUST hopes that the campus will develop into a full-fledged university comparable to the University of Mines and Technology in Tarkwa, located near some of Ghana's other major gold mines.

Orezone Gold Corp.'s Bomboré

Burkina Faso's next gold mine under construction

The established West African gold mining jurisdiction of Burkina Faso, where 15 projects have progressed to production, will by Q3, 2022 add another gold producer to the list when TSXV-listed gold developer **Orezone Gold Corp.** (Orezone) pours first gold at its **Bomboré gold project**, writes **CHANTELLE KOTZE**.

IN SHORT
Orezone Gold Corp., which owns a 90% stake in the Bomboré project in Burkina Faso, is advancing construction of the fully-funded, shovel-ready gold project, scheduled to pour first gold within a year.

Orezone has made significant progress at Bomboré under the leadership of president, CEO and director Patrick Downey, who has over 30 years in the international resource industry and joined the company in 2017 to spearhead the development of the project.

Downey changed the direction of Bomboré's development strategy at that point by adopting a phased development approach aimed at first mining the soft free-dig oxide material and subsequently expanding the process plant to incorporate the higher grade sulphide zones of the resource, while still allowing potential further expansions to exploit the full resource.

"Apart from requiring less upfront capital, the phased approach was also

Earthworks for the plant site area and tailings storage facility have begun and are rapidly advancing determined to be the best long-term development plan as it would support a longer, more profitable operation over the life of the mine, while also supporting further expansions of the operation," says Downey.

This phased plan was incorporated into the company's 2019 feasibility study which, when modelled on a base case gold price of US$1 300/oz, determined that Bomboré's 5 Moz gold resource was capable of producing 133 800 ozpa of gold in the first 10 years (1.6 Moz in total) over a +13-year mine life at an all-in sustaining cost of $762/oz in the first 10 years with an after-tax payback period of 2.5 years.

Bomboré development

The 2019 feasibility study incorporates Downey's phased development approach at Bomboré, in which two independent milling circuits (one oxide and one sulphide) will be developed, with both combining to feed the common CIL and gold recovery circuits.

"The crescent-shaped Bomboré ore body comprises a number of different pits, including three main pits and several smaller pits," says Downey, noting that on average between six and eight different pits will be mined each year, providing the project with operational flexibility.

↑ **The community resettlement villages and new community infrastructure**

The Phase 1 oxide plant, at a cost of $153 million, will be developed first and will have an annual feed rate of 5.2 Mtpa of ore at an average head grade of 0.7 g/t of gold, capable of delivering higher-grade ore in the early years of the project, and stockpiling lower-grade material for later years. The first 2.5 years of production will all be from free-dig oxide ore.

The oxide plant development will be funded through Orezone's $182 million project financing package which it concluded in January this year.

The package comprises a $96 million senior secured debt facility with Burkina Faso-based Coris Bank International and a $35 million 8.5% convertible note with the company's largest shareholder – global private equity firm Resource Capital Funds' Resource Capital Fund VII and Canadian private investment firm Beedie Capital. The equity component comprises a $51 million bought-deal equity offering of 62 million common shares of the company at a price of C$1.05 per common share.

1% NSR

The mine-impacted communities surrounding the Bomboré mine are entitled to a 1% net smelter return of the gold produced over the operation's life of mine.

Thereafter, construction of the 2.2 Mtpa Phase 2 sulphide expansion circuit, at a cost of $63.2 million and funded through cashflow, will begin in year two of the oxide operations and be commissioned in year three, at which point the throughput of the oxide circuit will be correspondingly reduced to 3 Mtpa to maintain the combined capacity at 5.2 Mtpa. The sulphide circuit has potential to be expanded an additional 1.8 Mtpa for a total sulphide capacity of 4 Mtpa.

Processing of Phase 1 oxides and Phase 2 sulphides

The oxide plant has been designed to process the soft, free-digging, fine-grained ore which eliminated the need for a crushing plant ahead of the grinding circuit. The ore is direct loaded across a static grizzly onto a large hopper and then a variable speed apron feeder. From the apron feeder, the ore is transferred to a mineral sizer to break up any sticky lumpy ore and then transferred to a conveyor that feeds directly to a ball mill, which will be equipped with a variable speed drive sized to accommodate a wide range of ore types and hardness.

The ball mill discharge will then be pumped to a cyclone cluster with the

> "Orezone has made significant progress on site during the first half of 2021, where engineering is about 30% complete and procurement is well-advanced."
>
> **PATRICK DOWNEY**

↑ **Accommodation blocks 1,2 and 3**

oversize reporting back to the mill and the undersize fed to a pre-leach tank and seven-stage carbon-in-leach (CIL) circuit. The CIL tails are then pumped to a lined, zero discharge tailings facility. Gold will be recovered in a standard 10 t carbon desorption plant, followed by electrowinning and smelting to produce gold doré bars.

The sulphide expansion circuit will consist of a single stage jaw crusher, SAG mill, pre-leach thickener, a pre-oxidation tank and three leach tanks.

"Only after leaching will the sulphide material combine with the oxide material in the existing CIL circuit for final leaching and gold recovery," explains Downey.

Engineering on track and progressing well

Having appointed its engineering, procurement and construction management contractor, Lycopodium Minerals, in January and its open pit mining contractor, Sila Equipement, an established Burkinabé company, in February, Downey says that Orezone has managed to make significant progress on site during the first half of 2021, where engineering is about 30% complete.

According to Downey, the engineering and procurement activities for the process plant, the tailings storage facility and water management systems have already begun and are progressing well. This includes the ball mill (a critical long lead item) as well as several other major items of equipment including the apron feeder, CIL inter-tank screens, and CIL agitators.

Orders have also been placed for most of the mechanical and electrical equipment as well as the bulk materials – including concrete reinforcing bar and embeds, CIL tank platework, structural steel and platework, HDPE liner, and overland piping have also been ordered with costs also trending within budget. "The contract for the CIL tank and overland piping will be awarded imminently, while the structural and mechanical piping contract will be awarded at the end of July," says Downey.

Downey explains that earthworks for the plant site area and tailings storage facility have begun and are rapidly advancing, ahead of the first concrete pour, scheduled for mid-July.

Moreover, an important schedule milestone is the pre-production mining of the off-channel reservoir, which will serve as the main water storage facility to store raw water sourced from two seasonal rivers in the area. The mining contractor has already been deployed to begin excavation of the mine pit that will become the off-channel reservoir.

Expansion potential through exploration

The P17S deposit, located at the southern tip of the ore body, has been subject to an ongoing drilling programme to test its expansion potential. Drilling to date has

RECORD RECOVERIES

The oxide gold recoveries are around 90% while the sulphide recoveries average between 85% and 96% depending on the ore type that will be fed into the plant

↑ Orezone aims to positively impact the communities in which it operates

returned thick, near surface intercepts which are currently outside of the resources and reserves at Bomboré.

"With similar previous results at P17, we now have over 1.7 km of strike extent with multiple high-grade stacked zones and a very exciting target to expand these high-grade reserves and resources," says Downey.

Downey says that Orezone plans to continue to drill in the areas around P17S, P17 and P16 – a large exploration corridor – with good sulphide reserve grades of over 2 g/t. MRA

BOMBORÉ TO BE POWERED BY CLEAN ENERGY

In June, Orezone signed a life of mine power purchase agreement (PPA) with Genser Energy Burkina, the local subsidiary of US-based energy solutions provider Genser Energy Holdings for the supply of clean energy electrical power.

Genser will use liquefied natural gas (LNG) as its main fuel, augmented with a staged solar plant and Bomboré will be the first mine in Burkina Faso to use LNG to power its operations.

The power plant, which will be owned and operated by Genser, will consist of six 2.5 MW LNG generators with four 2.6 MW diesel back-up units. A solar photovoltaic plant up to 14 MWp to be installed in stages with an 11 kV powerline to connect the gas and backup diesel generators, and solar plant.

Firefinch's Morila mine

Reviving one of Africa's great gold mines

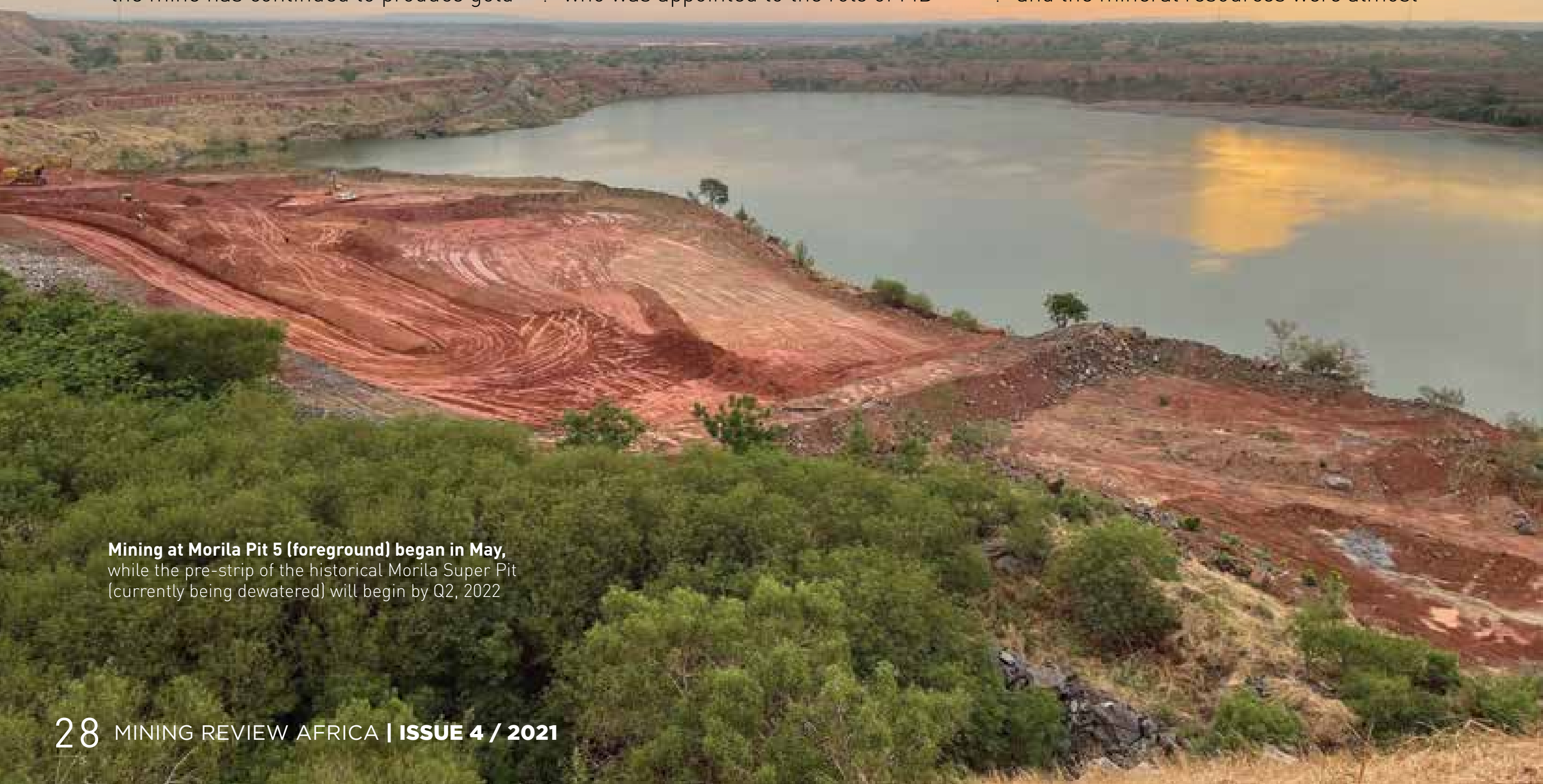
A transformative deal struck just less than a year ago, which saw ASX-listed **Firefinch** (formerly Mali Lithium) acquire the 80% stake in the **Morila gold mine** from Barrick and AngloGold Ashanti, is quickly gaining momentum with the company firmly focused on its objective of becoming a 200 000 ozpa gold producer by 2024. **CHANTELLE KOTZE** spoke to MD **MICHAEL ANDERSON** about Morila's rapidly advancing development plan.

IN SHORT
Having produced a healthy 7.5 Moz of gold over the past 20 years, Morila's resources are far from being mined out according to Firefinch, with 2.43 Moz of remaining mineral resource across the project and drilling underway to grow the resource even further.

The Morila mine poured first gold in October 2000, making a name for itself as one of Africa's great gold mines owing to its high-grade ore body which treated 14-15 g/t material in the early years of operation, with gold production peaking at just over 1 Moz of gold in 2002. Since then, the mine has continued to produce gold non-stop over the past two decades, despite halting open pit mining in 2015, when it transitioned to treating only stockpile and tailings material.

The project is set to make quite the comeback, with Firefinch hard at work on re-establishing Morila as a West African gold mining company, under the leadership of Anderson, who was appointed to the role of MD in March. He joined Firefinch from resource-focused asset management firm Taurus Funds Management where he led the company's investment into numerous West African gold producers.

The Morila project comprises the historically-mined Morila Super Pit (currently being dewatered) containing a measured and indicated mineral resource of 21.2 Mt for 1 Moz of gold; as well as several satellite deposits – N'Tiola, Viper, Morila Pit 5 Koting and Domba – which were recently upgraded and the mineral resources were almost



Mining at Morila Pit 5 (foreground) began in May, while the pre-strip of the historical Morila Super Pit (currently being dewatered) will begin by Q2, 2022 doubled. The satellite pits now contain a combined measured and indicated mineral resource of 5.5 Mt for 190 000 oz of contained gold. The project also comprises a remaining 1.7 Mt of tailings material containing 28 000 oz of gold, which the company expects to deplete by the end of 2021.

Since acquiring the stake in Morila in the last quarter of 2020 for US$29.7 million, Firefinch has been ramping up production from a current annual production profile of 40 000 oz from tailings treatment alone, towards a targeted 50 000 oz by the end of 2021 by mining a combination of the smaller, satellite open pits, stockpiles and tailings.

FAST FACT

Morila's global resource now stands at 50.5 Mt grading at 1.50 g/t of gold for 2.43 Moz of contained gold

Testament to its hard work to date, Firefinch achieved record monthly production of 5 019 oz of gold in June – its best month of production since Morila's acquisition. Morila's quarterly gold production for the period April to June 2021 was 12 555 oz, while the production guidance for the upcoming quarter (July to September 2021) is between 13 000 to 15 000 oz. The full-year production guidance for 2021 is forecast to be between 43 000 and 49 000 oz of gold.

The heyday is far from being over

While some might say that "Morila the Gorilla" has had its heyday, Firefinch's life of mine plan for Morila, published in May, reveals that there is significant upside still to be had, as it undertakes work to prove up enough resources to support a 200 000 ozpa operation with an initial 7-10 year mine life. Not only will Firefinch continue to prove up resources at the historical Morila Super Pit and the numerous satellite pits, but the company will also do so at the multiple targets on the 685 km^2 of surrounding tenure, which will be subject to further exploration.

Although Morila has only been undertaking hydraulic mining of tailings, since pouring first gold under the ownership of Firefinch in November 2020, Anderson says that open pit mining of the satellite deposits started in May. Mining initially began at Morila Pit 5, undertaken by Malian mining contractor EGTF, with mining at the Viper and N'Tiola satellite pits to begin thereafter. These satellite pits will provide the primary feed for the next 12 month of production until such a time as the Morila Super Pit can be mined, explains Anderson.

The processing of material from Morila Pit 5 was made possible by the refurbishment and recommissioning of the comminution circuit, which was finalised in May, where a blend of tailings and ore from the Morila Pit 5 is currently being fed to the mill for processing. The mill is currently averaging annualised throughput rates of 3 Mtpa, but on an instantaneous basis has operated at its nameplate capacity of 4.5 Mtpa. Going forward the key to maintaining nameplate is matching mining rates from both the satellites and the Morila Super Pit.

"At present, the Morila Super Pit pre-strip is provisionally planned to begin in the first quarter of 2022 once a sufficient amount of dewatering within the pit has been completed and sufficient tailings from the pit has been repatriated. This will enable us to access areas of known mineralisation along strike and at depth within the pit. By the second half of 2022, we aim to rapidly increase our production to 120 000 ozpa of gold by mining the Morila Super Pit," says Anderson.

Thereafter, Firefinch will continue to grow Morila's production to 170 000 ozpa of gold in 2023 and 200 000 ozpa of gold in 2024.

In order to achieve its envisioned production targets, Firefinch awarded a large open pit mining contract to international mining contractor Mota-Engil and Malian-owned and operated contractor Inter-Mining Services in June. companies will, in joint venture, mine the Viper and N'Tiola satellite pits, as well as phase 1 mining of the Morila Super Pit, while also managing the run of mine stockpile at the Morila plant.

According to Anderson, work is scheduled to commence at the Viper and N'Tiola satellite pits in August, while mining at the Morila Super Pit is scheduled to begin in the first quarter next year.

Resource development and exploration upside

Having initially raised $74 million for the acquisition of Morila and for working capital to revive the mine and processing plant, the company raised an additional $47 million in June, not only to accelerate production growth at Morila, but also to continue exploration and undertake resource development drilling.

Anderson explains that because Morila's geological limits are not well

"With a 7-10 year mine plan based on the company's current reserves, the aim is to further optimise and define this plan, while significantly increasing Morila's resource inventory and extending the mine life beyond the current mine plan,"

MICHAEL ANDERSON

↑ N'Tiola satellite pit

↑ Viper satellite pit

understood, exploration of the near mine potential at Morila is a major focus, where Firefinch plans to further test the potential of the various satellite resources and multiple targets on the 685 km² of surrounding tenure.

Plans are also firmly in place to undertake resource development and expansion drilling at the Morila Super Pit to increase resource confidence and to support reserve growth, says Anderson. The company will also investigate extensions to Morila at depth to define its underground potential and see whether the establishment of a small, targeted high-grade underground mine makes financial sense.

"With a 7-10 year mine plan based on the company's current reserves and known resources, the aim is to further optimise and define this plan, while significantly increasing Morila's resource inventory and extending the mine life beyond the current mine plan," Anderson concludes. MRA

GOULAMINA LITHIUM PROJECT GAINS MOMENTUM

Firefinch's Goulamina lithium project, also in Mail, is one of the world's largest undeveloped deposits, with a mineral resource of 109 Mt grading at 1.45% lithium oxide for 1.57 Mt of contained lithium oxide.

Its recently announced partnership with the world's largest lithium producer by production capacity, Ganfeng Lithium, will see the companies form a 50/50 joint venture at Goulamina, where the partners expect to produce 436 000 tpa of high-quality spodumene concentrate over an initial mine life of 23 years.

Plans are in place to demerge Goulamina into a separate lithium-focused entity to be listed on the ASX, known as LithiumCo, with a separate board and management team.

Panthera Resources

Many projects, one vision

With an interest in six gold projects spanning three countries in West Africa, there is little doubt that AIM-listed junior **Panthera Resources** has a significant footprint in the region. And while all these projects are being progressed simultaneously, **MD MARK BOLTON** tells **GERARD PETER** that creating shareholder value remains its key focus.

IN SHORT
Panthera is currently focused on progressing six gold projects across West Africa and will look to fast-track those that show the most promise as evaluation of each remains underway.

Panthera is currently exploring two projects in Mali (Bassala) and Burkina Faso (Bido). Furthermore, through the associated company, Moydow Holdings, the company is exploring four projects: Mali (Kalaka), Burkina Faso (Labola) and Nigeria (Paimasa and Dagma-Mint). Panthera holds a 45.8% interest in Moydow Holdings.

When Bolton joined Panthera in April 2020, the company was primarily focused on its Indian assets, namely Bhukia and Taregaon. However, since his appointment Bolton has pivoted the company to focus on its West African interests.

"I felt that the West African portfolio was very undervalued and that a properly executed strategy could unlock a lot of value for shareholders," Bolton adds.

However, the task was not that simple as Panthera only had a market cap of about US$4 million and no working capital. As such, Bolton decided to embark on an aggressive exploration campaign to unlock the potential of its projects. However, such an ambitious venture required some innovative investment strategies. One such strategy is the ownership of a 45.8% share in Moydow Holdings. The deal has also resulted in Moydow taking the lead on developing Kalaka and Labola while also progressing its own Nigerian projects. "With Moydow

Drilling at Bassala

funding and running these projects, it has effectively allowed us to have four projects on the go without drawing on Panthera's working capital," Bolton explains.

Each target is a project on its own

Panthera is actively underway with work at both its Burkina Faso and Mali prospects. The Bido licence covers 100 km² and already the company has identified at least seven potential target sites, all of which are in different stages of exploration. "Some of these targets are drill ready while some of them are grassroots where we have only done geochemistry surveying and mapping. We have also undertaken initial drilling in other areas and intersected ore grades," states Bolton.

The most recent drilling programme at Bido was conducted by Panthera in July 2018. This involved 1 077 m of reverse circulation (RC) drilling in the east of the licence. The programme was described as very successful with the Bido vein, Kaga vein and Somika East targets all upgraded. Positive results were obtained with over 3 g/t gold returned from each target and a best result of 32.3 g/t gold.

In addition, a recent soil sampling survey towards the south of the tenement has yielded what Bolton refers to as "excellent results". In total, 1 166 soil samples were collected and assayed with some very high grades. This includes 22.6 g/t gold, 16.7 g/t gold, 4.15 g/t gold, 3.72 g/t gold, 3.06 g/t gold and 2.1 g/t gold. Panthera believes these results confirm that the Bido tenement has the potential for high-grade mineralisation.

Due to the potential of the identified targets, Bolton states that the company is taking a segmented approach to developing Bido. "We do need to prioritise and view each target as a project on its own and tackle each one individually. At the moment, we're formulating our exploration strategy across each one of those targets because we have to effectively come up with a unique strategy for each of them."

Meanwhile, the company's Bassala project in Mali is in the early stages of exploration. The licence covers 27.4 km² and is located in an established mining area with three large mines in close proximity. These are Wassoul'Or's Kodieran mine (2.5 Moz resource) – 5km to the east, Endeavour's Kalana development project (2.3 Moz resource) – 8 km to the south east and Hummingbird's Yanfolila mine (2 Moz resource) – 35 km to the north west.

So far, Panthera has only conducted limited evaluation work at Bassala. This has included data compilation, close spaced geochemistry, geological mapping, a ground magnetic survey and in early 2021, an IP survey. Importantly, following analysis of the IP and magnetic survey results and correlation with the soil chemistry data, Panthera has concluded that Bassala could host a large exploration target with strike potential of over 8 km.

In June, the company commenced a planned 9 000 m air-core (AC) and RC drilling programme at Bassala. The programme will primarily comprise AC drilling to identify mineralised zones in the basement rock. 22 targets will be drill tested and assay results are expected from Q3, 2021.

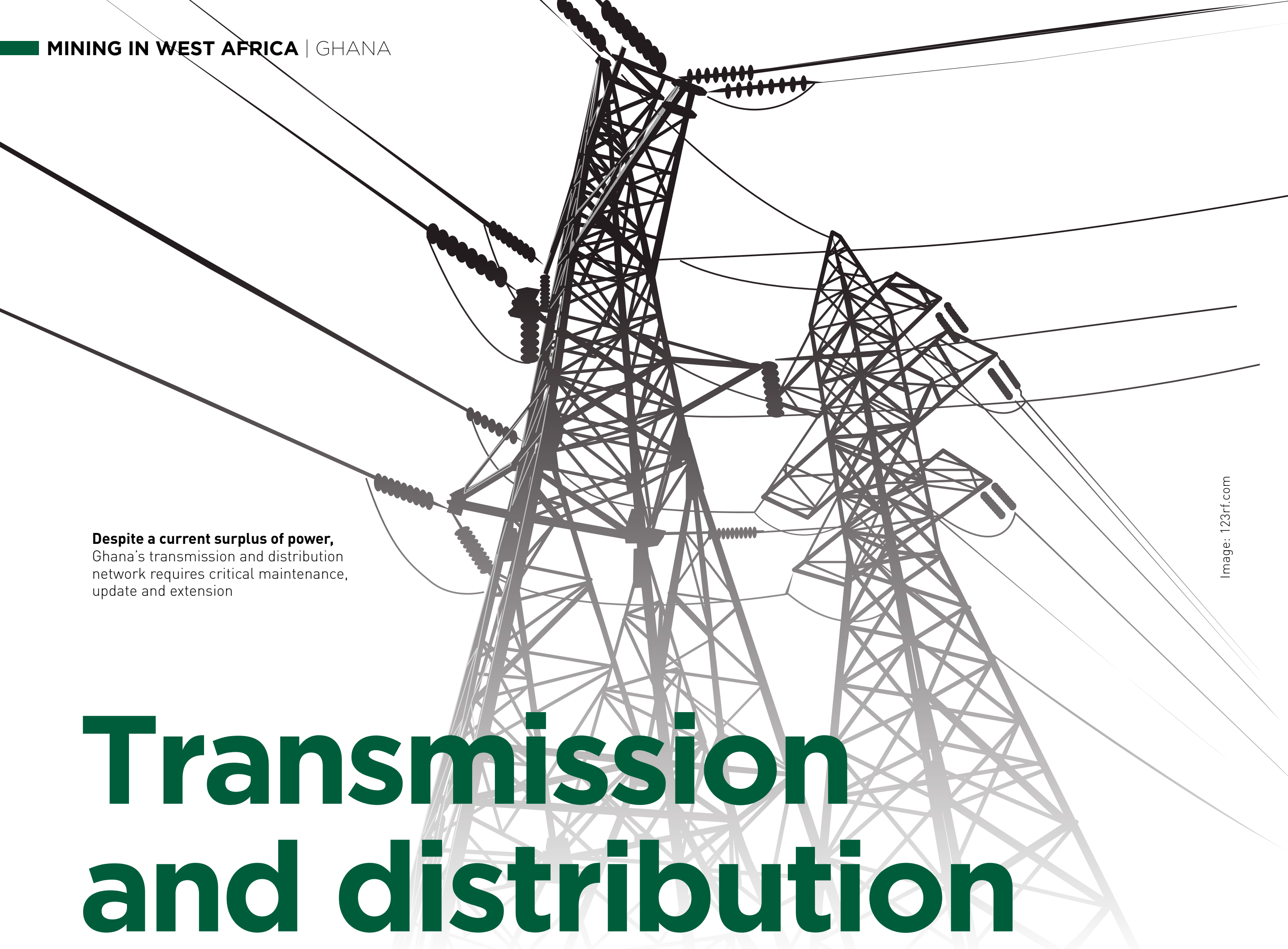
> At the end of the day, the aim is to make money for our shareholders and not just become a mid-tier producer,
>
> **MARK BOLTON**

Shareholder value is top of mind

With a handful of projects on the go at the same time, Bolton admits that if the company notices that one of these has more potential than the others, then the company will shift its focus and resources in order to fast-track that project. This, Bolton says, is in keeping with the company's ethos of providing value to its shareholders. "I know it's a cliché and appropriate for junior explorers to say they want to become a mid-tier mining company. There is nothing wrong with that as a strategy, but from my point of view, this is a coincidental outcome.

"Our absolute focus is value per share. If that means developing these projects and taking them forward ourselves then that is what we will do. Alternatively, we could spin them off into a company like Moydow. At the end of the day, the aim is to make money for our shareholders and not just become a mid-tier producer," Bolton concludes. MRA

↑ **Ongoing work at the Kalaka licence**



Despite a current surplus of power, Ghana's transmission and distribution network requires critical maintenance, update and extension

Image: 123rf.com

Transmission and distribution

Key to creating a sustainable and robust energy sector in Ghana

Ghana's energy sector has gone through quite a tempestuous time, from an energy shortage a few years ago to a surplus of energy at present, all of which has had an effect on the country's mining sector, which is heavily reliant on stable and uninterrupted energy supply. What has not changed is Ghana's limited transmission and distribution network, which requires critical maintenance, update and extension. This may only be possible through private sector capital injections, writes **CHANTELLE KOTZE**.

Ghana, which is Africa's largest gold producing country and also produces bauxite, manganese and diamonds, may find that its largest consumer – the mining sector – turns its gaze to the private sector to source the energy needed to power its mines, amid the country's continued electricity distribution woes.

Speaking during a Webinar hosted by *Africa Mining Forum* and *Mining Review Africa* on the prospects for a mature mining industry lacking power infrastructure, Solomon Asamoah, CEO of the Ghana Infrastructure Investment Fund, a government-owned investment vehicle with the purpose of investing in infrastructure assets throughout Ghana, shed light on the energy crisis in the country.

Energy crisis is financially crippling Ghana's economy

According to Asamoah, the country's underlying take or pay contracts, which it signed with a number of independent power producers (IPPs) meant that when the country moved from an energy deficit to an energy surplus, the government remained liable to pay for energy that was being generated, but not being used.

"This led to a financial crisis in the country where outstanding payments for power generation was approaching US$750 million a year in liabilities, which took a toll on the country's finances," says Asamoah.

Because most of these IPPs were funded through relatively expensive debt funding, a decision was taken by the government to use $1 billion of a $3 billion Eurobond issue to refinance the debt, in a bid to address this situation. In doing so, this would reduce the cost of energy for the country's power utility and for the country's consumers, Asamoah explains.

This process is currently underway and the government is negotiating with each of the IPPs and has provided an offer for them to refinance their debt to much lower levels and over a longer tenure, says Asamoah, noting that this should provide a win-win situation for both the government and IPPs and provide much needed stability within the energy sector.

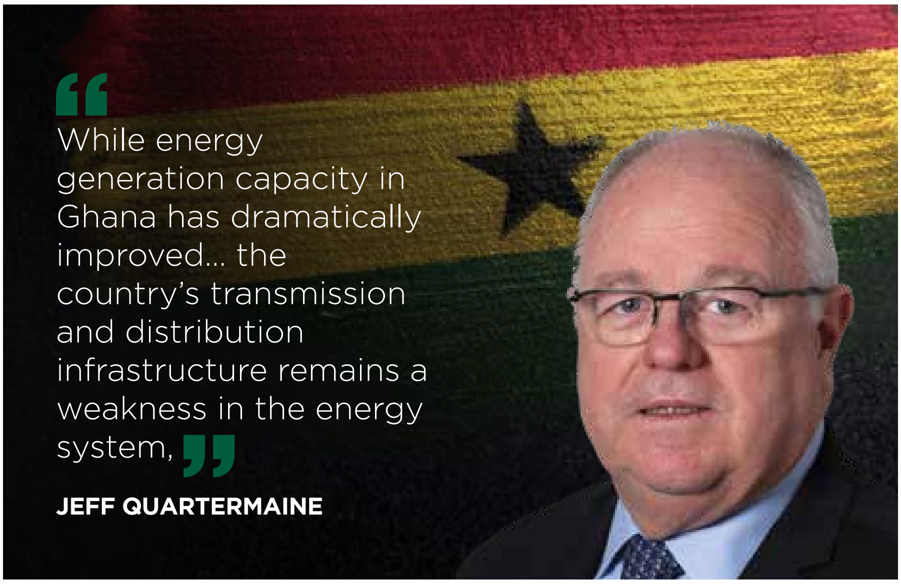
At the same time as refinancing this debt, the Ghanaian government, together with the country's ministries of energy and finance have looked at ways of further strengthening the energy sector through the 2019 Energy Sector Recovery Programme (ESRP), aimed at identifying the policies and actions necessary for the sector to recover its financial footing.

Asamoah says that a list of recommendations from the ESRP will be implemented to improve the country's overall energy sector, including the renegotiation of existing power purchase agreements signed with the IPPs from a take or pay basis to a more balanced take and pay basis, the use of more efficient gas power while reducing fossil fuel-based power as well as future energy generation dispatch based on merit order so that cheaper, more efficient power is used.

Despite being a challenge – energy is a risk that miners can control

Also speaking during the Webinar, Jeff Quartermaine, MD and CEO of Perseus Mining, which owns and operates the Edikan gold mine on the prolific Ashanti Gold Belt, said that the company has had to adjust its business model to accommodate and better manage the risks associated with the changing energy landscape in the country over the past decade.

Perseus Mining poured first gold at Edikan in 2011. Besides the prolific gold resource, the company was attracted to Ghana because of its abundant supply of relatively low-cost and reliable hydro-electric power when



it was first considering investing in the country in 2009.

Quartermaine says that the country's generation capacity constraints prompted Edikan to invest in alternative diesel-generated stand-by power to mitigate these constraints.

"While energy generation capacity in Ghana has dramatically improved, with sufficient energy supply at the moment, the country's transmission and distribution infrastructure remains a weakness in the energy system," says Quartermaine.

The Edikan mine – and most mines in general – requires uninterrupted energy 24 hours a day with even the slightest energy spike in the grid causing a power failure and requiring the operation to re-energise its system, Quartermaine explains. He adds that it uses its standby diesel-generated energy to supplement and smooth the grid power.

Quartermaine points out that IPPs, such as the one that has established a gas-fired power plant adjacent to Edikan, provide an additional alternative stand-by energy source to that of the company's stand-by diesel-generated energy.

Transmission and distribution investment needed

Iterating Quartermaine's concerns around Ghana's transmission and distribution network, Asamoah says while Ghana has successfully attracted a large share of private sector investment in the energy sector, largely within the generation sector, there has been much less investor interest in the country's power transmission and distribution.

"If we are serious about strengthening the country's power sector we have to attract investment into the transmission and distribution network," says Asamoah, noting that Ghana needs to take full advantage of any private sector involvement in this area of the power network.

Asamoah explains that Ghana's power transmission and distribution network is seen as a strategic asset for the country and is an area where the government is wary of giving away too much control. "While Ghana's electricity transmission company, GRIDCo, has made investments in this area of the power network, greater additional investment, specifically from donors or the private sector, is needed if it were to have any significant impact," says Asamoah.

Should Ghana manage to improve its transmission and distribution network, the next natural step would be the export of its surplus power to neighbouring countries within the West African Power Pool, says Asamoah. He notes however that the additional investment would be required to facilitate the interconnectedness between neighbouring countries.

He adds that in order to facilitate private sector investment, the business model on how this would be done would need to be clarified so that the benefits for private investors are clear from the outset. MRA

Vibramech

Maintaining a firm footprint in West Africa

As a leader in the manufacture and supply of high-quality vibrating equipment to the mineral processing industry for 44 years, **Vibramech's** screens and feeders have ensured that the company maintains its firm footprint in West Africa.

Vibramech's equipment has been supplied to numerous mining operations in the region including Mali, Liberia, Sierra Leone, Mauritania, Guinea, Senegal, Ghana, Burkina Faso and Côte d'Ivoire.

As an OEM, the company has purposefully designed high quality, reliable and robust vibrating equipment for the often harsh African operating conditions above ground, which are highly diversified from one country to the other.

The company has a flexible and practical approach to screen design, which enables the client to optimise the vibrating equipment geometry to suit its specific requirements, resulting in tailor-made equipment. It has developed a comprehensive range of multislope (banana) screens, horizontal and inclined screens, dewatering screens, grizzly feeders, pan feeders, tubular feeders and grease tables.

"Our design practice makes use of Finite Element Analysis and Strain Gauge Analysis to prove structural integrity, with detailed attention paid to wear protection and commonality of components to minimise spare parts inventories," adds MD David Massey.

Vibramech understands the harsh operating conditions which vibrating screens, grizzlies and feeders are subjected to in the mining industry, worldwide. As such, the company is cognisant that its designs need to cater for both abrasive and corrosive environments. As sound dynamic behaviour is essential to ensure vibrating equipment reliability, all equipment is built to perform within strict dynamic parameters.

Geared exciter driven, double deck secondary screen, 7 m x 3.6 m, destined for West Africa

In addition, the company's quality assurance programme makes provision for a full 3D vibration analysis to be conducted on all equipment prior to release. This is used as a benchmark for the life of the equipment.

Tailor-made solutions

All equipment is manufactured in-house at its premises in Chamdor, Gauteng, South Africa. Almost every piece of equipment is tailor-made to suit a client's specific requirements, from both a plant layout viewpoint and process considerations.

Presently, the company consistently produces in excess of 500 vibrating units per annum and is historically, and continues to be, the foremost supplier of vibrating equipment to the coal, diamond (land and marine) and platinum mines in southern Africa.

Vibrator motor and geared exciter repairs form part of Vibramech's service offering, with repairs conducted to OEM specifications at Vibramech's 8 000 m² under crane factory. Vibramech is particularly proud to be the exclusive distributer of a wide range of URAS vibrator motors for Africa and the Middle East, and has offered these exceptionally robust motors as part of its vibrating equipment product offering since 1981.

Please visit Vibramech's website at www.vibramechglobal.com for an overview on how Vibramech could assist with your current and future mineral processing requirements. MRA

In Q1 AISC reached its highest level since Q2 2013

Image: 123rf.com

Gold watch

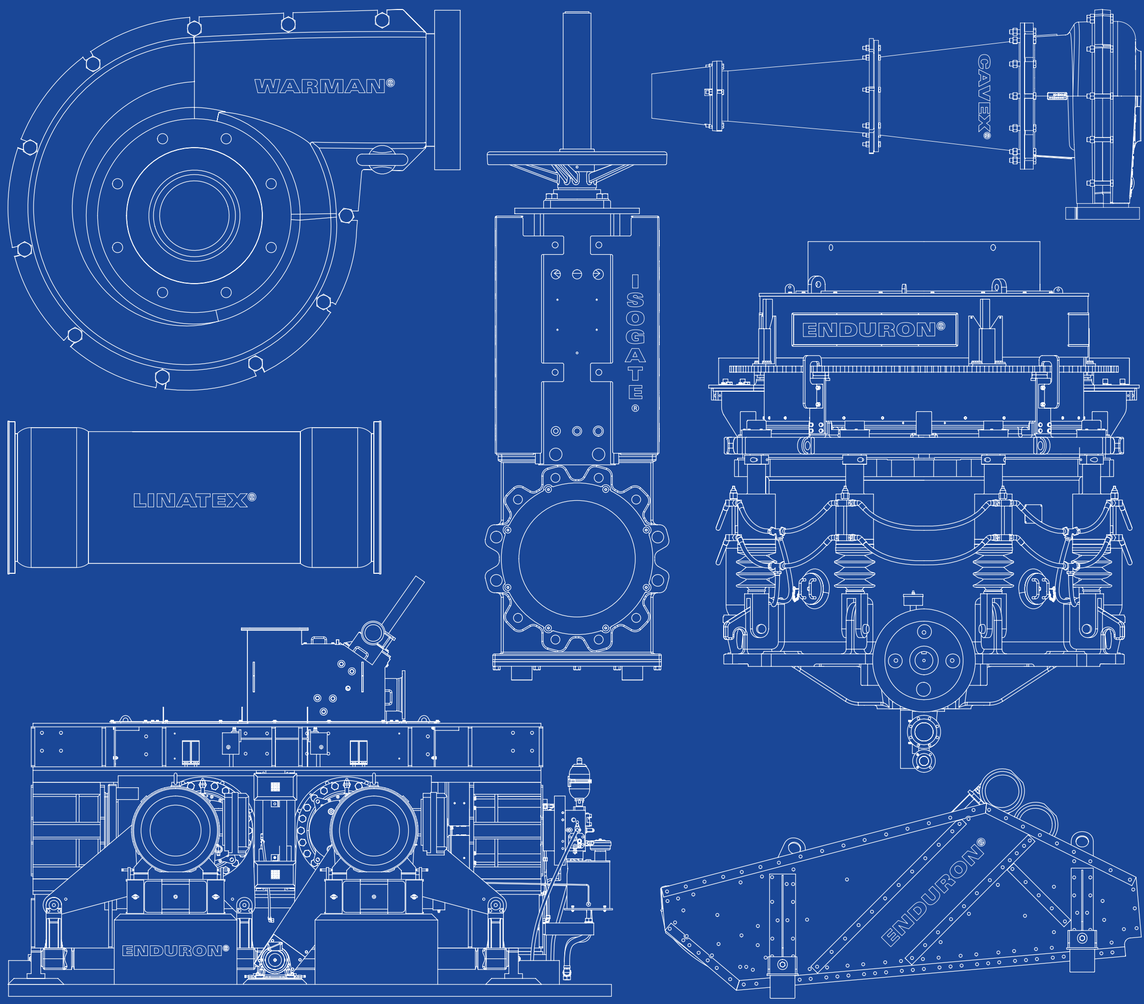
Mining costs continue to rise

By Adam Webb, Metals Focus

While the price of gold continues to remain positive, costs in the gold mining industry increased for the second consecutive quarter in Q1 2021.

During this period, the global average All-In Sustaining Cost (AISC) was up by 5% quarter-on-quarter to US$1,048/oz, reaching its highest level since Q2 2013. This, combined with a 4% fall in the average quarterly gold price, resulted in a 14% drop in AISC margins (the gold price minus AISC) between Q4 2020 and Q1 2021. Despite this decline, industry margins remained healthy, with only the top 4% highest cost mines featuring an AISC above the gold price during the quarter.

Increased mine site operating costs were the main driver, with total cash costs (TCC) rising by 6% quarter-on-quarter to US$769/oz. Some of this quarter-on-quarter change was caused by regular seasonal variations in costs in several countries. For example, operating costs during the first quarter are often higher at mines in countries which have harsh winter conditions, such as Canada. Meanwhile, Q1 production and costs in South Africa are usually impacted by the holiday season when many workers take time off, reducing production efficiency.


WARMAN®
CAVEX®
ISOGATE®
ENDURON®
LINATEX®
ENDURON®
ENDURON®


Expect **more**
tyre life
Give tyres with large injuries a second life.
Send tyres with large injuries back into production and see thousands of hours of like-new performance with Ultra Repair™. Our proprietary process effectively repairs injuries on all areas of the tyre, restoring its original strength and integrity at a fraction of the cost of new tyres.
KALTIRE®
Kaltiremining.com

Pandemic results in extra costs

However, the Q1 2021 rise in costs was not just down to seasonal variations. TCC also increased by 4% year-on-year. This rise was the result of a number of factors.

It must be taken into account that miners now have additional costs related to COVID-19 which did not exist in Q1 2020, such as additional PPE, testing and quarantine procedures.

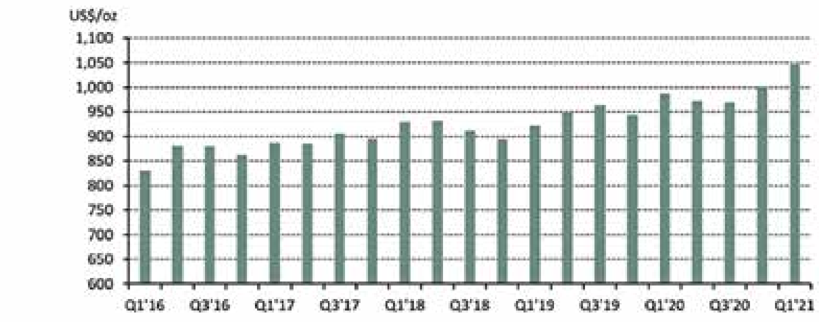
Also, average grades declined by 4% over this period dropping from 1.44 g/t to 1.39 g/t, as lower grade material has become economic to exploit at higher gold prices, putting further upward pressure on unit costs.

Another factor is that labour costs in the mining industry are rising. This is being driven by increased demand for skilled workers as metal prices incentivise project development across multiple commodities, combined with COVID-19 travel restrictions limiting the availability of workers and contractors.

With these pressures on costs expected to persist throughout 2021 costs are expected to remain elevated in the coming quarters. MRA

ABOUT THE AUTHOR

Adam Webb is director of mine supply at Metals Focus. He is responsible for research and analysis of supply and operating costs across gold, silver and PGMs and manages a team of analysts focused on these areas.



Source: Metals Focus Gold Mine Cost Service

↑ AISC continued its upward trend in Q1 2021, rising for the second consecutive quarter

GOLD'S IMPORTANT ROLE IN COVID-19 TESTING

While gold is a key component in electronic goods and jewellery, the World Gold Council (WGC) reports that the demand for gold-containing COVID-19 tests was at an all-time high during Q1. While the quantity of gold is not material to overall demand (each test contains a miniscule quantity in the form of nanoparticles), it is a critical component of the tests. According to WGC, with increasing numbers of tests receiving approval for use in the market, demand has grown rapidly thanks to sustained government procurement programmes. In the UK, for example, any adult is currently eligible to receive seven rapid COVID-19 tests for free. The US has also begun to approve these tools as an over-the-counter product. It is conceivable that Q1 saw over one billion tests manufactured for use around the world.

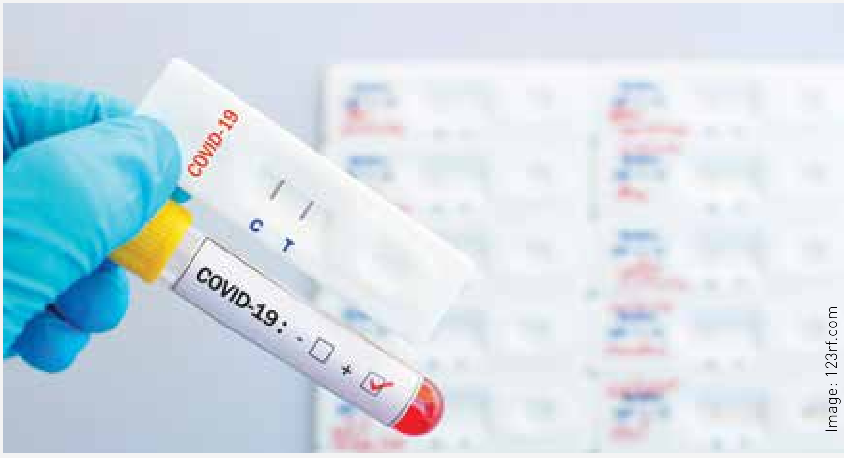


Image: 123rf.com

Autocatalyst demand is expected to make the largest contribution to platinum consumption growth this year

Image: 123rf.com

Platinum group metals

Minor PGMs receive major focus as hydrogen economy heats up

The minor **platinum group metals** (PGMs) including iridium and ruthenium, formerly seen as mere by-products to platinum mining, are now at the forefront of PGM producers' minds as the hydrogen economy develops, says **Heraeus Precious Metals**, one of the world's largest PGM refiners. Compiled by **CHANTELLE KOTZE**.

South Africa's UG2 reef, which contains the highest proportion of ruthenium and iridium of any other ore body worldwide, accounting for 81% and 87% of global production in 2020 respectively, is closely aligned to future PGM demand.

Ruthenium and iridium, with traditional end-uses in niche industries, saw steep price gains early this year, driven by robust industrial buying, disruptions to South African supply and rising investor awareness of the potential for PGMs' use in hydrogen applications.

In the hydrogen sector, through their co-use with platinum, ruthenium is used in polymer electrolyte membrane (PEM) fuel cells for mobility applications, while iridium is used in hydrogen production via PEM electrolysis – in which water is electrochemically split into hydrogen and oxygen. Despite ongoing innovation to reduce the intensity of PGM use, these metals are hard to replace entirely and are vital in certain technologies, Heraeus Precious Metals says.

In its 2021 Platinum Standard report published in May in partnership with PGMs consultancy SFA Oxford, Heraeus Precious Metals said that the current outlook for iridium and ruthenium supply sees mine output peak in 2022 before depletion begins to take effect. In order to support long-term demand, driven by the burgeoning hydrogen economy, significant growth in supply is needed to keep pace with consumption by industrial end users.

Heraeus Precious Metals notes the importance of producers working in conjunction with end-users to ensure that the future PGM demand ratios are in alignment with planned production. This reduces price volatility and will provide confidence to end-users adopting these precious metals for the long term, the PGM refiner says.

According to analysts Francesca Price and Alex Biddle from SFA Oxford, the metal supply ratio of the UG2 reef is best placed to meet future hydrogen demand, owing to its higher weighting towards iridium and ruthenium than current supply from South Africa.

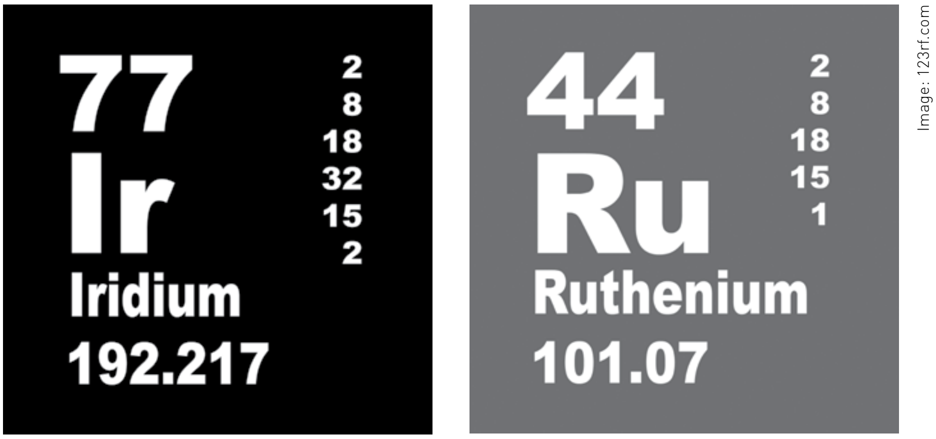
FAST FACT

According to Anglo American, the annual potential for platinum in the hydrogen value chain could be up to 6 Moz if fuel cells find reasonable traction in the automotive sector.

The strength of the UG2 basket price is motivating producers to invest in replacement projects to extend the life of mines and keep high-cost operations open for longer. Previously uneconomic areas of shafts are now viable under current basket prices, lifting UG2 supply projections in the near-term, particularly for mature ruthenium and iridium-rich operations.

Sibanye-Stillwater, the world's largest primary producer of platinum and second largest primary producer of palladium, decided to restart its K4 shaft, which it acquired from Lonmin; while PGM producer Impala Platinum and diversified miner African Rainbow Minerals announced the Two Rivers Merensky project. Moreover, PGM miner Anglo American Platinum is likely to invest in Der Brochen to extend Mototolo's mine life.

"Now that revenue is led by the UG2 basket price, rhodium and palladium are the main drivers for the future of the industry, with increasing influence from iridium and ruthenium as well, the analysts said in the report.



In the hydrogen sector, ruthenium is used in polymer electrolyte membrane (PEM) fuel cells for mobility applications, while iridium is used in hydrogen production via PEM electrolysis

Platinum remains in surplus

According to Heraeus Precious Metals, the industrial platinum market surplus is predicted to widen to more than 1.5 Moz this year (excluding investment) as supply rebounds more than demand. A year without significant mine shutdowns plus additional supply from processing stockpiles could lift global refined platinum production by 1.6 Moz, the PGM refiner says.

While record investor demand for platinum in 2020 absorbed most of the industrial surplus, record investment demand will be needed to balance the market in 2021. However, with a higher platinum price predicted this year, investment demand may not be as high as in 2020.

This year, Heraeus Precious Metals predicts autocatalyst demand to make the largest contribution to platinum consumption growth, gaining 710 000 oz to 3 Moz.

The growth will be driven by recovering vehicle sales post COVID-19, and higher platinum loadings to meet stricter heavy-duty vehicle emission standards in China and India, as a result of the first full year of Bharat VI regulations in India and the introduction of China VI emissions standards in July. MRA

The average price of silver is expected to reach a seven-year high in 2021

Image: 123rf.com

A silver lining

Silver expected to outshine gold

Led by industrial and physical silver investment, global silver demand is expected to achieve a six-year high of 1.025 billion ounces in 2021 and outperform gold. This is according to the *World Silver Survey 2021* which was recently released by the **Silver Institute**.

The survey paints a positive picture for silver, with the Silver Institute remaining optimistic about the precious metal's prospects for the remainder of the year based on the following insights:

Price

The recovery in the silver price, which first emerged in 2019, continued last year. As a result, the average annual silver price rose from US$16.19/oz in 2019 to $20.52/oz last year, a 27% increase. With the onset of the COVID-19 pandemic, the market saw an increasing number of countries introducing looser monetary policies. This helped drive down real interest rates and, together with a rotation in favour of safe-haven assets, encouraged investors to buy into silver and other precious metals.

In early February, a jump in retail investor appetite for silver pushed the price to an eight-year high of $31.10/oz, while the gold:silver ratio fell to 62, a seven-year low.

Going forward, the outlook for the silver price in 2021 remains promising, with the annual average price projected to rise by 46% to a seven-year high of $30/oz. Given silver's smaller market and the increased price volatility this can generate, silver is expected to comfortably outperform gold this year.

Turning to investment, global holdings in ETPs (exchange traded products) grew by an impressive 331 Moz to end 2020 at 1.04 billion ounces, and since then, global ETP holdings have continued to escalate.

Further upside is expected this year for physical investment, which is anticipated to rise to a six-year high of 257 Moz, though short of the record high level of over 300 Moz achieved in 2015. This projection reflects current demand in the all-important US market, which has enjoyed a robust start to 2021, with overwhelming demand causing product shortages. As such, these gains should offset a relatively weak Indian market.

Demand

The outlook for silver demand is bright, with the global total forecast to achieve a six-year high in 2021 of 1.025 billion ounces, thereby recovering all losses sustained in 2020. This reflects expected gains in the critical segments of industrial demand, physical investment, jewellery, and silverware fabrication.

Industrial demand is projected to post a four-year high in 2021 of 510 Moz, a 9% increase over 2020 figures. Demand from the electrical and electronics sector is poised to account for the bulk of the gains. With the growing penetration of 5G technology in consumer electronics this sector is expected to drive notable gains for silver offtake, with a 7% increase over 2020 to 300 Moz for silver's use in the sector.

Furthermore, the global total for the photovoltaic (PV) sector is forecast at 105 Moz in 2021. Although silver loadings continue to drift lower, the sector will benefit from a growing number of countries that are installing new PV capacity. Silver's use in the automotive market is also expected to rebound strongly this year, to just over 60 Moz, benefiting from the growing electrification of vehicles.

Supply

Silver mine production output is expected to recover and rise from the pandemic-affected 2020 level, achieving a double-digit gain this year to 866 Moz, which would be the highest total since 2016. Most mines affected by COVID-19 restrictions have restarted, with the recovery also benefiting from the re-opening of key mines affected by strike actions. Growth will also be driven by higher output from primary silver mines and by new projects in Mexico and Australia.

Mine production

In 2020, global mined silver production fell by 5.9% year-on-year to 784.4 Moz. This was a direct result of the COVID-19 pandemic which led to temporary mine closures in several major silver producing countries in the first half of the year.

Production from primary silver mines fell by the most (-11.9%) due to their concentration in countries where mining was heavily impacted by the pandemic. Silver output from lead-zinc mines (-7.4%) and gold mines (-5.7%) also declined, while output from copper mines increased (+3.5%).

However, minimal disruption to silver mining is expected from the ongoing pandemic, which will allow the vast majority of mines to operate at full capacity throughout 2021. As a result, mined silver output will rebound strongly and is anticipated to increase by 8.2% year on year to 848.5 Moz.

Long-term outlook

Silver demand should enjoy solid growth from 2022 onwards. Industrial offtake for instance will initially benefit from the post-COVID-19 reopening of economies, but perhaps of more interest is its structural potential. Silver's end-use in the automotive arena should grow fast for example, as vehicle output bounces back and there is a surge in demand for electric vehicles, which have a much higher silver loading than conventional vehicles. The proliferation of 5G devices and networks will also act as a useful boost, as could induction chargers and cold sintering powders. MRA

Silver is increasingly being used in the manufacture of electric vehicles

Image: 123rf.com

SILVER A KEY COMPONENT OF THE MODERN MOTOR VEHICLE

Automakers today are increasingly relying on silver to enable the vast technological advances incorporated into modern vehicles. This has resulted in another powerful demand centre for silver, with projections of nearly 90 Moz of silver absorbed annually in the automotive industry by 2025. Notably, by that time, this will rival silver consumption in the photovoltaic industry, forecasted to be 98 Moz this year, and currently the largest application of global industrial silver demand.

Beneficiation

Filling in the missing piece in the African mining equation?

Beneficiation in Africa is complicated, costly and cannot happen overnight. In order to succeed, it requires the right infrastructure, investment in human capital and investor-friendly policies. **GERARD PETER** reports.

This was the general consensus of a panel discussion at the recent *DRC Mining Week Online* event organised in collaboration with *Mining Review Africa*. Titled *Beneficiation: Missing piece in the equation*, the discussion centred on ensuring that beneficiation is carried out in a way that benefits both countries' economies and mining companies.

The panel featured Louis Watum, president of the Democratic Republic of Congo (DRC) Chamber of Mines and general manager of Ivanhoe Mines DRC. He was joined by Aleksandra Cholewa, director of investment and development at LuMa Holdings. The company is responsible for developing the LuNa Tin Smelter located in Kigali, Rwanda.

Kicking off the discussion, Cholewa said that in established mining countries such as the DRC, beneficiation should be a natural growth path. However, in order for beneficiation to be a success, it means that all boxes need to be ticked. This includes having a stable energy supply, a raw material base available, infrastructure and skilled teams. This, she said, can only be achieved if there is strong ongoing cooperation from all stakeholders including investors, the central government, local authorities and communities.

Weighing in on the point, Watum said it is important to first map out a way for beneficiation and then determine what enabling policies and support measures are required to ensure this happens successfully and for the benefit of all. "If a country such as the DRC wants to ensure that minerals are refined in the country, then it needs to focus on building capacity such as ensuring that there is enough energy to process those minerals," he added.

Obviously, a key factor that drives beneficiation is government policy. However, Watum stated that building a smelter should not be a political decision but rather an economic one. "Everyone would prefer to ship metals rather than concentrates but to build a smelter costs a lot of money. As such, one has to look at the economics of each mining project, including looking at the basis for the funding of these projects. That's because some of these projects

> "We need to create conditions that enable beneficiation in all countries, not just a few in a particular region,"
>
> **ALEKSANDRA CHOLEWA**

are funded on the basis of producing concentrates and already have long-term offtake agreements in place."

At the same time, Watum advised that a good starting point is to consider growing "back linkage industries": businesses that are involved in the production of machinery and spares as well as services that support processes that precede beneficiation such as exploration, mine construction and extraction.

In May this year, Ivanhoe Mines started production of copper concentrate at its Kamoa Kakula mine in the DRC. Subsequently, the company signed a ten-year agreement with Lualaba Copper Smelter in Kolwezi to process a portion of its copper concentrate production. However, Watum points out that the company will have its own smelter up and running within the next four years at a cost of about US$800 million. "The smelter will process our concentrates and produce blistered copper. Preparations have already begun, with the first aim being to provide more power by refurbishing one of the turbines at Inga Dam which will provide 160 MW of power to the plant."

With ESG goals becoming more critical in assessing the success of mining operations, Watum explained that Ivanhoe Mines will be using indirect crush smelting technology to reduce its environmental footprint. "This is the cleanest technology that exists today in terms of smelting sulphide copper concentrates to produce blistered copper and produces very low emissions. Also, half of the waste that we will be producing will be returned for backfill in the ground."

Encouraging responsible mining

With regard to the DRC, Cholewa stated that there is definitely a place for beneficiation in the country but this requires a lot of preparation. To that end, she said that cross-border cooperation could be of great benefit. "We know that there is a significant lack of energy in the DRC but this could be delivered from neighbouring countries. There could also be a transfer of skills knowledge between countries so that the smelting capacities and the skills required are fully developed in the DRC," she explained.

Meanwhile, one of the key concerns about metals produced in Africa is traceability to ensure that it has been responsibly sourced. To that end, Cholewa stated that this was top of mind when LuMa Holdings decided to build a smelter in Rwanda. "Our traceability team was the first team we put together when we decided to come to the Great Lakes region. LuNa Smelter is the only smelter which operates in a so-called high-risk conflict area according to the Organisation for Economic Co-operation and Development (OECD). Today, we are the only smelter in Africa that meets OECD due diligence guidelines for responsible mineral supply chains."

Furthermore, the company has collaborated with German company Minespider and Google to pilot the OreSource blockchain tool to ensure responsible mineral sourcing.
As a result, all products that are manufactured at LuNa now carry digital certificates and are fully traceable, which is particularly beneficial for downstream companies.

Sustainability key to successful beneficiation

Ultimately, beneficiation needs to benefit countries at a grassroots level. A good example is the socio-economic upliftment that LuNa is enabling in the

↑ **A skilled workforce, stable energy supply and good infrastructure are key to** sucessful beneficiation

> "Everyone would prefer to ship metals rather than concentrates but to build a smelter costs a lot of money."
>
> **LOUIS WATUM**

local community where it operates. For example, the smelter is one of the largest employers in the district. Also, the company has empowered a female-run agricultural cooperative that sells its fruits and vegetables at the smelter.

With Africa holding 30% of the world's global mineral reserves and producing over 60 different metals and minerals, there is huge potential for exploration and production. And there's no doubt the mining industry has the potential to contribute to economic growth in a very significant way and help alleviate poverty on the continent.

In order to achieve this, Watum says that beneficiation has to be done in a sustainable manner. "If we want to be competitive, we must adopt the right policies and support measures to allow investment and the development of the mining sector. Also, we must seriously look at the deficit in infrastructure such as roads and railways."

In conclusion, Cholewa stated that the Green Revolution cannot happen without Africa. Taking this into account, she called for sustainable investment as well as support from downstream high tech companies to create environments conducive to beneficiation. "We need to create conditions that enable beneficiation in all countries, not just a few in a particular region. A key factor in determining this is regional cooperation between countries as well as community involvement." MRA

↑ **LuNa Smelter in Kigali, Rwanda**

Recycled copper is preferred by South African manufacturers as a more cost effective alternative to using raw copper material

Image: 123rf.com

South African copper scrap

Massive exodus starves domestic recycling opportunity

The price of copper breached the US$10 000/t mark at the end of April 2021 for the first time in a decade on the back of Asia's insatiable demand for this "green" metal – a critical raw material required in the global transition towards a low carbon economy. The high copper price environment has made the export of copper scrap even more lucrative and has resulted in large volumes of copper scrap and copper alloys being exported from South Africa, **Copper Development Association Africa** (CDAA) executive chairperson **EVERT SWANEPOEL** tells **CHANTELLE KOTZE**.

"This is having a devastating effect on the domestic copper industry in South Africa," says Swanepoel, noting that the drive to obtain copper is fuelling the theft of copper cable from Transnet, Eskom and telecommunications companies and causing billions of Rands of consequential damage.

Recycled copper is preferred by South African manufacturers as a more cost effective alternative to using raw copper material as it requires significantly less energy to melt, as opposed to using raw copper material for manufacturing. With the illegal export of South African copper scrap, South Africa is becoming increasingly reliant on the importation of raw copper material from abroad at a high cost, leading to increased manufacturing costs.

Many of the large South African copper manufacturers, including the CDAA's manufacturing members, rely on good quality recycled copper for their production processes and the massive exodus of domestic scrap copper (exported both legally and illegally) to overseas recyclers is starving the industry, which is in turn leading to a reluctance to invest in more capital equipment and employment of labour, Swanepoel explains.

On 10 May, the London Metal Exchange three-month spot copper price hit a record high of $10 747.50/t, and although copper prices have since pulled back and were trading around the $9 300/t mark in early July, the challenge in retaining sufficient volumes of quality scrap in South Africa is expected to remain, says Swanepoel.

Illegal copper exports

According to the export scrap guidelines, gazetted by the South African government in September 2013, export permits have to be applied for through the International Trade Administration Commission of South Africa, or ITAC, for the export of scrap from the country. Swanepoel highlights that these guidelines have had to be revised on a number of occasions due to the ingenious ways certain scrap metal merchants have been by-passing the rules by exporting the scrap under false tariff codes.

According to Swanepoel, this has resulted in the issuing of a progressively lower number of export scrap permits each month, with CDAA statistics showing that the number of licence applications have drastically declined from an average of 10 000 permit applications each month in 2012, to under 1 000 each month in 2020.

Most surprising is that, despite the steady increase in copper prices since the start of the COVID-19 pandemic in March 2020, the number of scrap export permits applied for in South Africa has continued to decline. According to ITAC statistics, the amount of copper scrap exported has dropped from around 159 556 t in 2013 to 9 956 t in 2019, and 4 286 t during the first five months in 2021.

It is therefore the CDAA's opinion that copper scrap is being exported illegally under false tariff codes by unscrupulous scrap merchants, reflected in the decline in scrap export permit applications.

Swanepoel explains that in order to circumvent the copper export permit application process, some scrap merchants melt the scrap into ingots, billets or blocks as these do not require an export permit, as is the case with scrap. It also allows more copper to be loaded into shipping containers, yielding higher returns per load. "Regrettably even these melted blocks of copper are not always exported under the correct tariff codes," Swanepoel highlights.

In a bid to stem the illegal outflow of domestic copper scrap, Swanepoel says that the CDAA is in constant engagement with government in an attempt to retain scrap material for its members to recycle in a bid to grow the domestic copper industry.

"Until measures are introduced to reduce the export of scrap, looting of copper cable and other copper objects will continue," says Swanepoel.

CDAA is of the opinion that the demand for international copper scrap has created a very lucrative market and the only way to remove the demand for local scrap is to remove the market.

"The CDAA is in constant engagement with government in an attempt to retain scrap material for its members to recycle in a bid to grow the domestic copper industry."

EVERT SWANEPOEL

Copper export tax

In a bid to reduce the amount of illegally exported scrap, Swanepoel says that the government will be introducing an export tax on the export of scrap in August 2021, but as most of the copper is leaving the country illegally, it is doubtful if the tax will result in a reduction of copper cable theft.

Finding a solution to this is important for the survival of the domestic scrap recycling industry on what is estimated as only 20% of legally exported copper scrap, Swanepoel concludes. MRA

Thousands of jobs are on the line as South African smelters continue to shut their doors

Image: 123rf.com

South Africa's smelter crisis

80 000 jobs on the line

Lobby group **Save SA Smelters** has warned of a national crisis as local smelters are shutting down, resulting in the loss of thousands of jobs.

The group further argues that if the price disparity between China and the West is allowed to continue, then there will be no South African smelting industry left standing. It has called on the government to implement tax on the export of raw ore that it announced last year.

Save SA Smelters says that 80 000 more jobs are on the line in the coming months as government continues to fail to implement a tax on the export of raw ore. In his Economic Reconstruction and Recovery Plan read in Parliament last October, President Cyril Ramaphosa announced measures to support the domestic ferrochrome industry. One of the measures was to implement a tax on the export of chrome ore, but to date no announcement on when this tax will be implemented has been made.

Recently, the group released a statement saying, "The Chinese and increasingly important Indonesian markets are growing and will dominate demand for ore and ferrochrome in the future. If a tax is not imposed soonest it will truly be one of the greatest destructions of a nation's wealth in history. Imposing this Chrome Export tax will grow this great industry in South Africa instead of China and countries alike."

Last year, the Lydenburg and Meyerton smelters shut their doors, resulting in thousands of job losses. "These two smelters closed in a short space of time last year because people are just taking the minerals and building smelters in their own respective countries to produce ferrochrome – which is really what is damaging our economy. We are in a situation where as South Africa we are not in control of our minerals especially from a tax perspective, and we are effectively exporting the material without imposing any tax," says Powers Motsileng, Save SA Smelters convenor.

Taxation could aid South Africa's ailing economy

Motsileng explains that as a benchmark, Indonesia previously implemented a 100% tax on nickel and within three years, the country overtook South Africa to become the world's biggest ferrochrome producers behind China. Before 2012, South Africa was the biggest producer of ferrochrome and currently has 80% of the world's chrome raw material. Save SA Smelters says it is the lack of imposing tax on the export of chrome ore that causes smelters to close down.

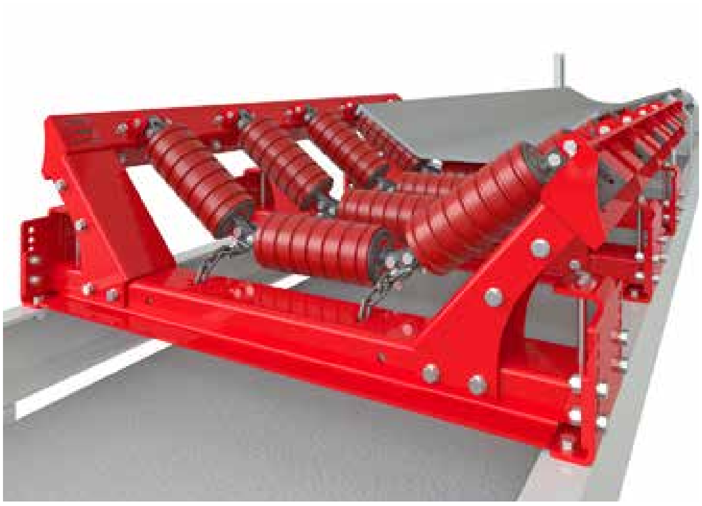
"We want to reposition South Africa as the country of choice for international investors in the steel value chain. In the past, South Africa was a leader in the supply of steel, boasting many Arcelormittal plants and furnaces. We have lost a lot of these furnaces which in turn has resulted in the loss of thousands of jobs," adds co-convenor Lindelani Nyathikazi.

By delaying the tax imposition, Save SA Smelters states that the government is possibly losing out on a R15 billion income stream that could aid the country's ailing economy.

It further adds that the tax would enable an environment for the creation of at least 3 000 immediate jobs just to start up idle capacity, and possibly another 8 000 to 9 000 jobs over the next three years. MRA

FEATURING BRELKO POLYURETHANE IMPACT ROLLS
PROVEN TO LAST UP TO 3 TIMES LONGER

BRELKO®
CONVEYOR PRODUCTS



HI-IMPACT IDLER SYSTEM

PATENTED

- A load point belt support system designed to offer maximum impact absorbing capabilities.
- Suitable for all belt conveyors where large particle size and severe impact load conditions occur.

BELT TRACKING SYSTEM 3 / 5 ROLL TROUGHING FRAME

PATENTED

- Install the Belt Tracking System on the troughing side of the belt to centralise a misaligned belt, prevent spillage, decrease downtime, decrease maintenance and extend belt life.

PRODUCTS

- Belt Support Systems
- Hi-Impact Systems
- Belt Tracking Systems
- Keyskirt®
- Conveyor Belt Scrapers
- Angle & V Plough
- Chute Inspection Seals
- Chute Sealing Systems
- Nip Guard Safety Device
- Installation & Service

Tel : +27 11 013 4000 Fax : +27 11 013 4150 E-Mail : sales@brelko.com Website : www.brelko.com

Coal beneficiation

Agreement benefits economy and environment

Acrux Sorting Coal (ASC) has signed a coal beneficiation agreement with two wholly owned subsidiaries of **Wescoal**, whereby ASC will deploy advanced sensor-based sorting technology to upgrade lower-grade coal from the mines.

Image: 123rf.com

Under the agreement, ASC will provide a fully funded turnkey crushing, screening and sensor-based sorting solution centred on an advanced dual-energy X-ray transmission (XRT) unit to process run of mine (RoM) coal. As part of a unique partnership with ASC, the plant will be designed, constructed, commissioned, operated and maintained by IMS Engineering.

XRT technology has already proved its worth in the recycling, food processing and diamond recovery industries where it is considered the preferred beneficiation technology. ASC believes that sensor-based sorting has a significant role to play in minerals beneficiation due to its strong environmental, social and governance (ESG) benefits.

A positive impact on ESG requirements

ASC's sorting solution offers significant economic benefits as coal resources can now be upgraded to be included as a saleable product which will reposition the mines along the cost curve. "The XRT technology has proven its ability to upgrade RoM coal through rejecting material that has sulphur or ash content that exceeds programmed parameters," comments Paul Bracher, MD of IMS.

The solution will also have a positive environmental impact as no water is used during beneficiation, and the carbon footprint is reduced through the optimisation of transportation and materials handling.

"This sorting technology solution will enable us to impact on ESG, while creating shareholder value from optimising our coal resources at no capital investment," adds Wescoal's executive director, Thivha Tshithavhane.

"We are very happy to have concluded this agreement with Wescoal," comments Sean Browne, ASC's chairman and group founder. "Partnering with Wescoal underlines our commitment to driving sustainable innovations that reduce the environmental impact of mining". MRA

Mill internal image of material on grinding table

Vertical roller mills

New technology in mineral beneficiation

By Jonathan Smith, Loesche SA sales and marketing manager

Beneficiation in mining, or extractive metallurgy, can be described as a process which improves and enriches the product stream to produce the highest economic value of the ore and ensures that gangue minerals are removed efficiently. This is a process that uses many steps to get to the result.

Comminution specialist Loesche's Vertical Roller Mill (VRM) can simplify the beneficiation process using improved liberation of targeted minerals within the ore, even with complicated sulphide ores. This is possible as a result of Loesche's unique ability to mill product using particle-on-particle comminution, combined with compressive and shear forces to liberate the minerals, allowing for total improved recoveries.

Well-known older technologies utilise a wet process which contaminates the ore with oxidation and impurities from the milling process, forcing the mine to utilise a large amount of chemicals/re-agents to remove the valuable mineral.

How does the VRM technology work?

The VRM utilises an in-bed grinding system (multiple layers), particle-on-particle comminution process that puts compressive and shear forces into the material bed, allowing for multiple points of inter particle contact as the bed is compressed.

This allows for cracking of the ore along the weakest point of structure, which is the mineral boundary, giving an improved degree of mineral liberation and a selective breakage of the weakest material first, an angular particle shape is also achieved. Through this process, an increased degree of mineral liberation is experienced with a much lower specific wear rate to the mill liners – reducing contamination. Studies have proven that the VRM technology which utilises a dry process has a liner wear rate of up to 90% less than that of a wet process. Consequently, the mineral has a fresh non-oxidised surface with very little contamination.

Added to this is the VRM's ability to adapt to the varying run of mine material, as the mill can be adjusted whilst in operation, always ensuring the

correct product particle size is supplied to the downstream process. This can be achieved using an operator or Loesche's digital 4.0 software platform which makes minor adjustments to the milling process without the operator knowing to ensure throughput capacities and particle size are maintained. Coupled to this is the immediate classifying of the ore particles, reducing the overgrinding of the ore which in turn reduces the upper coarse and ultra-fine particles.

The particle size distribution from the VRM has a steeper curve (51° compared to the 45° from a wet process ball mill); this allows for a larger band of floatable product. As we now have a high range of fresh, non-oxidised and cleaner concentrate material moving to the downstream process the flotation kinetics is improved, reducing the processing cost by utilising less reagents and chemicals to achieve the desired float recoveries.

A positive aspect of using a VRM in the comminution process, due to its dry operation, allows the milled ore to be stored in a product silo which in turn allows for immediate product on hand for the flotation circuit as well as 'stock'. By this the comminution and recovery circuits can be decoupled, allowing the mine more flexibility during basic weekly maintenance toppages. This improves the mines availability.

The quality of the final water flow, after the flotation, is cleaner with much lower impurity levels – allowing for higher settling velocities as the mine recycles the water for re-use. Less agents are used in a smaller footprint; and this process is as important as the recovery of the mineral itself.

The mine's ability to use less water and fewer purifying chemicals is a cost saving alone, not forgetting to mention the environmental impact it has which will keep the mine sustainable.

In conclusion, the VRM's better availability with higher mineral recoveries, lower chemical usage, and a smaller footprint are all factors that contribute to an efficient, profitable mine. This has a positive effect on the operational expenses and the net bottom line. MRA

ABOUT THE AUTHOR

Jonathan Smith fulfils the role, in a full-time capacity, of sales and marketing manager at Loesche SA. He has held the position since August 2016.

↑ **Typical mine flotation plant**

↑ **Inside a typical flotation tank**

The Mining Charter sets out parameters to create equal opportunities in the workplace as well as to benefit mining communities

Image: 123rf.com

Creating opportunities, changing lives

Mining companies drive transformation agenda

Since the birth of democracy South Africa in 1994, transformation in the mining sector has ranked high on the government's agenda as it seeks to redress the imbalances of the past. Since then, mining companies have made considerable strides towards transforming their own businesses and more importantly, contributing to the socio-economic upliftment of the country. **GERARD PETER** reports.

The Mining Charter was first implemented in 2002 and was amended in 2010 and again in 2018. Its main objective is to facilitate meaningful participation of Historically Disadvantaged South Africans (HDSAs) in the mining and minerals industry, by deracialising the ownership of the industry, expanding business opportunities for HDSAs, and enhancing the social and economic welfare of employees and mine communities.

The 2018 Mining Charter is aimed at accelerating transformation in the sector and sets out targets around six elements to achieve this goal. These

The partnership with GIBS seeks to empower local Exxaro suppliers by providing business education and mentorship

are ownership, employment equity, human resource development, inclusive procurement, enterprise and supplier development (ESD), and housing and mine community development.

While there have been concerns that the targets set out are too stringent, according to a 2019 Minerals Council South Africa survey, "Real and sustainable progress has been made in addressing imbalances and transforming the sector over the last decade and the industry is committed to making every effort to achieve the set targets".

A commitment to social investment

One area where mining companies are making good inroads in transformation is social investment in mining communities. One company at the forefront of this is Exxaro, one of South Africa's largest black-empowered resource companies. According to its 2020 Annual Report, it places a strong focus on ESD and community infrastructure projects.

Last year, R25 million was spent on schools, building an ESD Hub and water infrastructure projects through its Social and Labour Plans (SLP), in both Mpumalanga and the Waterberg. It is estimated that 1 446 community members will benefit from services provided from these projects. A total of 151 jobs were created during the construction period.

Exxaro also provided funding, totalling R105.1 million, to seven SMMEs through its ESD programme. It is also supporting skills development through initiatives such as a Financial Excellence Programme with SAICA Enterprise Development and a Contractor Development Programme with the Gordon Institute of Business Science (GIBS).

The partnership with GIBS seeks to empower local entrepreneurs. The programme aims to promote and support the advancement and empowerment of local Exxaro suppliers by providing business education and mentorship. The programme will provide a unique intervention that combines selected accredited unit standards with customised mining and Exxaro-specific content to maximise impact and relevance for participants.

The objective of the programme is to improve local economic development in host communities by empowering suppliers, who in turn will impact their families and communities through job creation and poverty alleviation.

The scope of the programme covers four primary domains: Leadership, entrepreneurship, people management, and business management practices. It is intended to empower participants to acquire the industry knowledge, skills, attitudes, and values required to make their businesses more competitive and to respond to the challenges of the economic environment.

"Partnerships and collaborations are empowering both to ourselves and communities to address today's socio-economic challenges," says Exxaro CEO Mxolisi Mgojo. "And by using our industry knowledge and resources to upskill up-and-coming entrepreneurs, we can grow new businesses and communities by providing knowledge and mentorship at a grassroots level."

Empowering tomorrow's leaders

Exarro believes that empowering and developing the youth is vital to reducing the country's unemployment crisis by bridging the skills gap, hence

Exxaro's internship programmes help train the workforce of the future

its significant investment in youth development through skills programmes, learnerships and internships.

In 2020, the company sponsored 411 engineering learners, 33 miner learners, 90 operator learners, and 19 business administration learners as part of its formal engineering and mining learnership programme. Of these, 89% of learners were black, including 38% black female youth. The learnerships take place at the Grovos Training Centre in Lephalale and the Colliery Training College in Mpumalanga and include formal theoretical and practical training in core skills, such as plant and mobile equipment operation. The learners also receive a monthly allowance while in training.

To acquire practical experience in the industry, Exxaro also provides internships for recent graduates, equipping 110 interns with impactful workplace exposure and hands-on training in 2020. All the interns were black and 45% were black female youth. "So much has changed in our industry over the years and more young black people are attracted to a career in mining and engineering. And with digitalisation, the mining sector is about to get even more exciting and appealing for the youth," explains Mgojo.

"The youth of today are very conscientised when it comes to issues like social inequality and environmental stewardship, issues that have affected them directly and may severely impact their future if unabated. They challenge us to question what we are doing to build a better world for our future generations. Young South Africans want to work for organisations that have a social conscience and are driving initiatives that address socio-economic challenges. That's why everything we do is geared towards a much bigger purpose: To power better lives while being resilient and growing our business," he emphasises.

From the boardroom to communities

Another company that is passionate about transformation is Menar. Through its Social Licensing Department it aims to uplift local communities by developing

Canyon Coal has given Ofentse Tabane's company an opportunity to thrive

and implementing SLPs and Local Economic Development (LED) projects in the form of skills development, mine community development projects, economic empowerment and transformation.

The Social Licensing team supports the group's human resources and procurement departments in promoting local employment and procurement opportunities. All Menar companies are committed to supporting local community businesses through local enterprise development initiatives such as aiding in building and capacitating SMMEs and integrating them into its mines' procurement supply chain.

For example, Menar subsidiary Canyon Coal appointed Atang Logistics, which is run by Cultura Park local residents Ofentse Tabane and his brothers Mpho and Lebogang, to transport coal from its Khanye Colliery to the nearby Bronkhorstspruit siding in Gauteng.

This family-run company has been in existence for over 20 years, largely transporting coal to Eskom power stations in Mpumalanga. The company with a fleet of 25, 34-ton side-tipper trucks – all owned by Atang Logistics – has serviced both large and small coal mining companies.

Ofentse has been in the industrial and mining sector since 2013 and is responsible for business development at the company. Mpho is an accredited international trader who heads up the procurement and marketing departments, while Lebogang leads the technical logistics operations of the company.

Ofentse has always wanted to work at home but was previously forced to live in different places owing to work needs. "It was extremely difficult for me to find work in Bronkhorstspruit so I couldn't stay here," he laments.

However, he notes that the relationship with Canyon Coal has been a crucial lifeline for the company, as because of the downturn in the market and the additional pressures placed on the sector owing to the COVID-19 lockdown the company had lost other business contracts. "I am very appreciative of the opportunity that Canyon Coal has granted our company and for helping to save the livelihoods of my family and employees. It is our hope to build on this relationship with Canyon Coal and be part of the company's ongoing growth trajectory," he states.

Canyon Coal group procurement manager Carmia Pretorius states, "Canyon Coal is committed to supporting local, historically disadvantaged South African companies such as Atang Logistics and integrating them into our supply chain in line with our obligation in terms of the Mining Charter."

↑ **The ABET programme at Kanye Colliery helps community members learn communication and** numeracy skills

A keen focus on education

Meanwhile, Adult Basic Education Training (ABET) forms part of the skills development commitment within the SLP for Khanye Colliery. The aim of ABET is to develop the educational levels of the community through learning.

It is with this vision in mind that Canyon Coal recently opened a newly built ABET centre at Khanye Colliery. The centre offers educational courses to local community members. The programme offers all eligible community members opportunities to become functionally literate and numerate. The courses offered at the centre include communication in English and mathematics.

"Previously ABET participants attended courses at an external venue located near the mine in Bronkhorstspruit and later moved to Khanye Colliery's training centre," explains Menar SLP manager Nthabiseng Ocia Mueti. "This was not an ideal situation, which prompted the move to build a dedicated ABET centre."

The ABET centre cost around R300 000 to build and includes a fully equipped lecture room and can accommodate a maximum number of 20 people (in accordance with COVID-19 spacing regulations), separate male and female bathrooms, as well as a lunch room. The centre was built by a small local construction firm, Zonke General Trading.

Mueti adds, "Between 2015 and 2017, 60 leaners were trained in communication through Khanye Colliery's ABET programme. While between 2018 and 2019, nine groups of 15 people received training varying from Level 1 to Level 4 in numeracy and literacy.

"Menar and Canyon Coal believe that education empowers people with the knowledge and skills needed to build a better future for themselves. ABET courses play an active role in supporting the socio-economic development of communities by investing in the future through empowering local people with improved educational standards," she concludes.

Collaboration drives sustainable economic growth

There is no doubt that transformation in mining requires a collaborative effort by both government and key mining stakeholders. One such initiative is the Impact Catalyst.

The Impact Catalyst was founded by Anglo American, the Council for Scientific and Industrial Research (CSIR), Exxaro, World Vision South Africa, the Industrial Development Corporation (IDC) and Zutari to create mechanisms that drive development

initiatives through public-private partnerships. It was first launched in Polokwane in 2019 and in June this year, the initiative was launched in the Northern Cape.

Despite significant financial investment by mining companies in Northern Cape communities, these organisations' efforts were often not meeting the real needs of communities, or were not as efficient and effective as they could have been because companies were working in isolation.

Subsequently, Anglo American's Kumba Iron Ore, Assmang, Deloitte, the Department of Mineral Resources, the Industrial Development Corporation, Kudumane Manganese Resources, the Minerals Council South Africa and South32 have joined together to collectively catalyse socio-economic impact in the region.

The programme being pursued by the Impact Catalyst follows the establishment of the Northern Cape Shared Value Project. The programme was initiated in 2017 under the auspices of the Minerals Council South Africa, Assmang, Kudumane Manganese Resources, Kumba Iron Ore and South 32, and undertaken by Deloitte.

Image: 123rf.com

A keen area of focus for the Impact Catalyst will be to provide resources for schools in the Northern Cape

"Building on the Shared Value work that has already been completed, the Impact Catalyst will provide various socio-economic actors with a transparent, efficient and effective platform to collaborate throughout the Northern Cape," says Roger Baxter, CEO of the Minerals Council South Africa.

The official provincial unemployment rate of the Northern Cape stood at 28,7% at the end of the fourth quarter of 2020, further emphasising how crucial a collective partnership is to bring socio-economic prosperity to the region. To address some of the socio-economic difficulties in the Northern Cape, the Impact Catalyst will prioritise the following programmes:

- **Schools and community information and communications technology (ICT):** Providing communities with the required broadband infrastructure and ICT services.
- **Health:** Implementing community orientated healthcare services and health infrastructure support, which can include support for the COVID-19 vaccination drive.
- **Economic development:** Implement and create a Northern Cape ESD programme to identify supplier and enterprise opportunities.
- **Municipal capacity development and infrastructure support:** Supporting the municipality to develop the required capabilities to enable service delivery.
- **Early childhood development:** Constructing and operationalising best practice early childhood development centres in communities.

"The beauty about Impact Catalyst is its collaborative approach," says André Joubert, CEO of ARM Ferrous. "They will assist us to collaborate with both the mining companies and communities, traditional leaders, municipalities, and provincial and national governments to ensure that we all work together towards one plan, and one objective: To uplift the economic viability of the communities in which we work."

Themba Mkhwanazi, CEO of Kumba Iron Ore, adds: "We would not exist if not for our communities; they are the lifeblood of our business. Collaborative regional development sits at the heart of our Sustainable Mining Plan, which sets out a pathway for us to build thriving communities by working collaboratively with community representatives, faith-based groups, businesses and entrepreneurs, government, academics and NGOs – to deliver on our promise. Through our collaborative efforts and the buy-in of our host communities, we hope to play a part in shaping the future of the Northern Cape and its people."

Speaking on the initiative, Northern Cape Premier Zamani Saul states, "The Northern Cape province has immense potential for development and growth, but it is also a province facing significant economic challenges. Through collaborative initiatives like the Impact Catalyst that bring in government, business, and civil society, we are building a region that is resilient, thriving and inclusive and can better serve the aspirations of our people." MRA

Lilja Hastie's designs

From rough to polished

De Beers drives true diamond beneficiation transformation

Diamond company **De Beers Group** (De Beers) has a set of core values that extends beyond recovering and selling world-class diamonds. Its greater commitment is to drive significant transformation within the diamond sector in South Africa, which entails providing various downstream beneficiation opportunities for historically disadvantaged South Africans – an initiative that has already achieved considerable success, writes **LAURA CORNISH**.

As a significant employer and economic contributor to the South African economy, De Beers has fully committed itself to bringing greater transformation to the country, and in particular those who traditionally have not been exposed to business opportunities in the past.

"Our best delivery mechanism in this regard is through beneficiation – a strategy we have in place that aligns closely with government's objectives to truly transform South Africa," starts Kagiso Fredericks, newly appointed beneficiation manager at De Beers in South Africa. At heart, the company aspires to optimise all aspects of the diamond pipeline from rough diamond purchasing and state-of-the-art manufacturing of diamonds and jewellery to marketing and distribution.

Because this is an essential part of De Beers' business make-up, the company has defined a four-pillar beneficiation strategy which consolidates various areas of the

Bheki Ngema's Ben & Co designs

business into a single, cohesive focus that ensures effective execution:

Pillar 1: Local sales

De Beers is required to sell 40% of its total production by value to local beneficiators. These local beneficiators include sight holders (or De Beers contracted customers) and are required to have a valid beneficiation licence, comply with the B-BBEE scorecard and have local cutting and polishing factories.

Local beneficiators also include SMEs that have been selected through a rigorous process to be part of the De Beers Enterprise Development Project. Over and above the development programme that they are exposed to, the owners of these SMEs (Beneficiation Project Members (BPMs) are also provided with a consistent rough supply from De Beers with the aim of managing sustainable businesses.

The enterprise development project was first launched by De Beers in 2016 and aims to facilitate the growth and transformation of diamond beneficiation in South Africa. The project has a holistic approach that seeks to optimise interventions in all aspects of the diamond pipeline from rough diamond purchasing, state-of-the-art manufacturing of diamonds and jewellery to marketing and distribution.

Impressively, the first cohort of the five companies selected for the project are HDSA owned – these being Molefi Letsiki Diamonds, Diamonds Africa, Nungu Diamonds, Thoko's Diamonds and Kwame Diamonds, of which two are

“Ultimately, our objective is to facilitate the establishment of fully functioning and operating diamond cutting, polishing and jewellery businesses that are primarily HDSA owned,”

KAGISO FREDERICKS

100% female owned. The second cohort of the Enterprise Development Project includes three women-empowered businesses and two black owned businesses – B&H Mining, Irresistible Rough Diamonds, Isabella Jewellers, Outclass Crystallized Gems and Sunrise Gem Stone.

Pillar 2: Customer development

The second beneficiation pillar is 'customer development', which sees De Beers defining and enabling BPMs to effectively start and run their own businesses. The starting point for this element was understanding existing inhibitors that prevent local businesses from being successful within the diamond market. Companies selected for the Enterprise Development Project require the necessary support to grow their businesses. This support includes access to finance, access to international markets and access to sustainable rough diamond supply. "From this point we clearly know where and how to assist in these areas," Fredericks says.

De Beers has partnered with business incubator Raizcorp, which provides a three-year business development programme incorporating mentorship in business strategy, finance, sales, marketing and personal development.

Pillar 3: Industrial development

"In line with our drive for transformation in the diamond industry, De Beers also identifies and creates innovative opportunities beyond general cutting and polishing. We introduced the annual Shining Light Awards in 1996, which is a platform for aspiring designers to showcase their designs and engage with institutions around the world. Incentives for delivering innovative designs is significant – the winner receives a design internship in Milan, the runner-up a three-month internship with De Beers' Forevermark and the second runner-up an internship at a local jeweller," Fredericks outlines.

The awards have been extended beyond South Africa and now also include our other producer partner countries in Botswana, Namibia and Canada. The 2020/2021 theme for the awards was entitled "The Evolution of Love & Life". The winners will be

Ben & Co jewellery designs

2018/2019 SHINING LIGHT AWARD WINNERS

The previous Shining Light Award initiative was themed 'Heroines and Heritage' and is a reflection of De Beers' commitment to standing with women and girls around the world. When interpreting the theme, students needed to consider how to include design elements that nuanced inspirational women, evoked national pride and featured symbols of strength, heritage, wisdom and beauty.

Bheki Ngema, South Africa's Shining Light Awards 2009 winner and owner of Ben & Co

Lilja Hastie, winner of the 2015 Shining Light Awards and recipient of a training scholarship with De Beers Forevermark design team in Milan, Italy

selected per producer partner country, with the announcement to be made in October 2021.

Pillar 4: Consumer confidence

Consumer confidence is an area of increasing interest from consumers who want transparency, clarity and surety of knowing their diamonds were responsibly, and not illegally, sourced. "Our role is to ensure that we as De Beers, sight holders and BPMs adhere to the Kimberley Process, with every diamond traced from the source of extraction until the final diamond jewellery piece is certified for sale. It is imperative that we all adhere to this," Fredericks highlights.

Evolution always in play

Some of these beneficiation initiatives are clearly not new and yet there is consistent change and evolution from De Beers. "It is refreshing to see new initiatives and evolution taking place as part of the bigger programme. We recently saw a collaboration from a previous Shining Light Awards winner with one of the new BPMs to produce a new jewellery collection showcasing the enduring bonds between mother and daughter," Fredericks mentions.

The beneficiation arm of De Beers' business is also one that evolves and transforms with time. The company recently undertook a pilot study in South Africa which saw the BPMs' Enterprise Development candidates purchase diamonds from De Beers and then sell their jewellery pieces through the De Beers Group Forevermark brand which offers significant international exposure. "While COVID-19 placed some delays on this new initiative, we were happy with the results we achieved and are moving this project into a second phase," Fredericks notes.

"Ultimately, our objective is to facilitate the establishment of fully functioning and operating diamond cutting, polishing and jewellery businesses that are primarily HDSA owned and we have had great success. To date, we have helped develop 10 new HDSA businesses. The first five have graduated and the other five have started their three-year incubation period and are specialising in cutting, polishing and jewellery manufacture and sales," Fredericks concludes. MRA

Molefi Letsiki of Molefi Letsiki Diamond Holdings is an alumnus of the De Beers beneficiation project

2019 Shining Light winning ring designs from South Africa

FURTHER BENEFICIATION SUPPORT AVENUES

De Beers also provides financial support to the Kimberley International Diamond Jewellery Academy, established in partnership with the Northern Cape Government, which teaches cutting and polishing skills to learners across the Northern Cape. It also helped establish the Harry Oppenheimer diamond trading school in Johannesburg.

"By 2030, we aim for every one of our diamonds to be a catalyst for thriving, resilient communities and to support more diverse voices to shape the future of our industry."

Katie Fergusson,
Senior Vice-President of Sustainable Impact for De Beers.

Find out more about our 2030 Goals here:

Learning and development is individually focused regardless of race or gender

Weir Minerals Africa

Transformation embedded in company ethos

For the Weir Group Plc, transformation and employment equity are key priorities that are inculcated on a global level. In line with this, **Weir Minerals Africa** has embarked on a transformation journey that has borne fruit and has created a more diverse and inclusive workforce. **GERARD PETER** finds out more from **TSHIDI ANYA**, regional human resource director: Africa and Middle East.

Anya states that the aim of the company is to create a diverse workforce that is representative of each and every country that it operates in. She readily admits that in South Africa, unlike other countries, the transformation and equity related legislation helps to ensure compliance.

"Africa has plenty of talent and the question is: How do you unleash this talent? So, where the laws are not clearly written, companies will operate within their own vague parameters. However, at Weir Minerals, it is clear that in terms of our inclusion and diversity strategy, we need to nurture local talent in all the countries in which we operate regardless of the enforcing legislation. In the absence of regulation, the only thing that we need to remind ourselves of is doing the right thing at all times," Anya adds.

Anya firmly believes that legislation which encourages transformation and employment equity is necessary. "Over the past 20 years, legislation in South Africa has nudged and encouraged companies to go out and look for talented individuals who come from diverse backgrounds and nurture their talent."

Empowerment deal a sign of commitment to transformation

In May 2020, Weir Minerals Africa concluded an empowerment deal with Medu Capital, whereby the black empowerment company now owns 25.1% of Weir Minerals South Africa.

A year since the deal was finalised, Anya says the partnership has been tremendously successful and is also an indicator that the company is committed to transforming its South African business unit by empowering Medu Capital. "It has been a remarkable achievement that showcases Weir's true commitment to the country's transformation agenda.

"The conclusion of this empowerment deal has created an organisational structure that is more representative of the demographics of South Africa. Medu Capital is now an integrated partner in guiding and fostering the future success of Weir Minerals Africa."

In addition, Weir Minerals is actively striving to achieve employment equity within the company. For example, Weir Minerals Africa has employment equity forums where employees can actively engage. The company also has an employment equity plan that guides the transformation process in three areas. These are recruitment, promotion and development processes. "Since 2019 we have significantly increased black talent across our professional categories, especially in middle and senior management. This is as a result of strategically formulated plans that have been successfully implemented," Anya adds.

Creating equal opportunities for all employees

When it comes to recruitment, Anya states that if a shortlist of candidates is not a true representation of the demographics of the country, then it is back to the drawing board to find suitable individuals who can fulfil this objective. "Also, recruitment is not just a HR function in the company. Rather, we encourage our employees to be 'talent magnets'. This referral system has helped us to uncover new talent and bring them into our workforce."

Meanwhile, the company also places great emphasis on developing current employees, particularly women and previously disadvantaged individuals. This is mainly achieved through its graduate development programme. "This is our flagship learnership programme and most of the time those that complete the programme are absorbed into our permanent workforce. However, at the same time, learning and development is individually focused, regardless of race or gender. So, if we see potential in a person, then a development programme will be individualised for that person in terms of their growth potential."

When it comes to Weir Minerals Africa, Anya admits that while the company does have 100% black representation at board level, more needs to be done to increase female representation in these senior roles. That said, the company is fully committed to giving women a voice in the workplace.

To that end, to celebrate International Women's Day in March this year, the company launched its #womenofweir campaign. Launched globally, the campaign puts the spotlight on those female employees in the company who are challenging stereotypes and are making strides in those sectors that are dominated by men.

"Furthermore, the objective of the campaign is to give a voice to all women in the company. It gives women the opportunity to challenge any bias in the company. This year's campaign allowed women from all ranks within the company to share their inspirational stories so that others could relate to these stories and also share their own experiences."

In addition, the company has launched the Weir Women's Network – dedicated to the attraction, retention and continued development of women in the Weir Group. Here members can engage in quarterly global networking events, as well as locally organised events. Closer to home, Anya explains that plans are also afoot to launch a Weir Minerals Africa Women's Network before the end of the year.

Another key initiative that is being undertaken at a group level is the measurement of diversity targets, in particular female representation at senior management levels. "We are also focusing on individualised career plans for all our female managers to help promote them to senior management roles. We recognise that women are capable of doing any job, but our main focus now is to get them into leadership roles where they can influence decision making," she concludes. MRA

↑ **Weir Minerals is focused on developing black** female talent

Fraser Alexander

Championing the cause for gender equality in mining

Founded over a century ago, 100% black-owned and predominantly black women-owned outsourced mining and industrial services provider **Fraser Alexander** has a keen understanding of what is required to build a successful and sustainable business with a workforce that is both diverse and inclusive.

According to Claire McMaster, Executive Head of Human Resources at Fraser Alexander, the company is fast building #Futurefraser which provides unlimited opportunities to diversify its workforce, in terms of profile of employees, skills, ways of working, and the technology being applied.

To this end, the company strives to increase female representation at all levels in its business. Fraser Alexander is led by a board whose membership is 43% black female. Further to such representation, all board committees – which comprise the Audit and Risk, Social and Ethics, and Remuneration Committees – are chaired by women of colour.

According to Enock Ramoabi, General Manager of Tailings South Africa, there has been significant improvement in people, production, safety and plant management when compared with previous periods in the business due to the deployment of diverse teams. He highlights two projects in his division in which performance has improved dramatically. He puts this down to a different approach to employee management at the workplace, and to the deployment of well-qualified and experienced professionals on both projects.

Another key initiative that is driving female empowerment in the company is Women in Mining Fraser Alexander (WIMFA). "This is a voluntary organisation within our company that was established to provide support to women at all levels while they tackle the challenges presented by an industry that is historically male dominated. The forum makes use of a regional approach to ensure data flow and support to and from all operations," explains McMaster.

"Our employee value proposition ensures a working environment that is free from bias and discrimination, ensures safe working conditions and actively values diversity."

CLAIRE MCMASTER

Equal opportunities for all

McMaster adds that the company is heavily focused on eradicating any form of discrimination, including gender discrimination. This is achieved through strong transformation policies and training. She states that every employee has a development plan, and all training initiatives experience equal representation. The annual intake of graduates and learners include a representative number of women. "Our employee value proposition ensures a working environment that is free from bias and discrimination, ensures safe working conditions and actively values diversity."

According to Kholofelo Masunga, Head of Procurement at Fraser Alexander, in 2020 the business outperformed its targeted spend for black female-owned businesses. The organisation continues to identify and empower women-led businesses to participate in its supply chain through ESD initiatives.

In addition, Fraser Alexander has been an ongoing sponsor of Women in Mining South Africa (WIMSA) for the last few years, primarily through the support of its annual career fair, which aims to encourage women to join the mining industry by highlighting the various careers that are available.

Recently the business added support to its proactive approach against Gender Based Violence by contributing to the *GBVF Response Fund1*, a national fund set up to eradicate GBV.

Fraser Alexander is proud of its role as a sustainability partner and remains committed to its multifaceted strategy to drive diversity in the mining industry. MRA