

THE PROJECTS

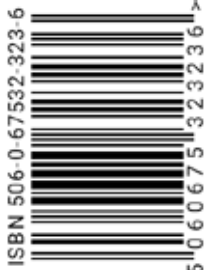
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**Botswana shifts to
prioritize Energy Security
with key projects**

**BDC injects P42.6 Million
in Selibe Phikwe based
air separation project**

**MOTHEO COPPER
MINE ON TRACK TO
START PRODUCTION
JUNE 2023**



MSc Project Management

Partnership delivery by the University of Bolton (UK) and the Institute of Development Management

MODE OF ATTENDANCE: Part time, Block Delivery (Four days, Friday - Monday, every six weeks)

PROGRAMME COMMENCEMENT: October 2022

PROGRAMME DURATION: 18 months

ENTRY REQUIREMENTS: BA (Honours)/Bachelor Degree or equivalent in relevant subject. English Proficiency.

TUITION FEE: P73, 970.00 (Deposit P20, 000.00 and pay balance on flexible terms for 15 Months)

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Closing Date: 31st July 2022

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PUBLISHER'S WELCOME NOTE

I welcome you to yet another edition of The Projects Magazine. This particular edition is dominated by news from Botswana Resources Infrastructure Energy Forum (BRIEF) conference, which was held on the 16th and 17th of May. BRIEF is one of the country's most important conference as it brings together important stakeholders in our key strategic areas of focus – mining, energy and infrastructure – to discuss pertinent issues affecting these industries. We are proud to be the conference's media partner.

Good has been happening in the mining sector. For many years, the mining sector, particularly diamonds, have been a driving force in Botswana's economy. If you think the mining sector will become less and less important going forward, it is time to think again. We are in it for a long haul.

Motheo Copper Mine, operated by Sandfire Resources, in Ghanzi district is promising to inject over P700 million per annum in royalties and taxes to the government coffers once operational. And we are not talking about the future. It is about to happen in a year's time. Its first production is scheduled for June 2023, and the project is progressing according to the timeline.

The Country Head of Motheo Copper Mine, Dale Burgess, is flamboyant about the prospects. Dale Burgess said the mine will have significant impact in Ghanzi district through creation of economic value chain activities. It is fairly common knowledge that mining is not only a capital intensive project, it is also labour-intensive. At least 650 people will be employed by the mine in an area where unemployment is estimated to be at about 25 percent. That is good news not only for Botswana, but for the Ghanzi local economy.

Morupule Coal Mine is also entering a golden period. The company is taking giant steps to become a global player. It is a moving from a fringe company, which was confined to Botswana,

to be a mainstream international company. The demand for coal has reached new heights and Morupule is ready to cash in. Morupule Coal Mine is a 100 percent state-owned mine company, through Minerals Development Company (MDC).

We have also been told to brace for more good news in the space of mining. It is not just Motheo Copper Mine and Morupule Coal Mine. At the centre of developments in new mining projects is Botswana Geoscience Institute, which has been given a clear mandate to help drive new ventures in the mining sector. Botswana and the mining are inseparable, if this exciting new developments are anything to go by.

As the adage goes, the future belongs to those who create it. We feature Debswana on its pursuit to achieve carbon-neutrality by 2030. This forms part of the conversations that took place at BRIEF conference. Taking care of the environment is an essential part of corporate social investment. Debswana is taking a lead in this regard, and we hope other companies will join the bandwagon.

We also feature some news relating to energy in Botswana. The Minister of Minerals and Energy, Lefoko Moagi has re-affirmed government's commitment to ensure energy security. Several projects are taking place, both funded by government, and those carried out through Public Private Partnership (PPP). Botswana Oil is also exerting its role, particular in relation to averting reliance on South Africa for petroleum products. It is nice ready. Enjoy!

Rearabilwe Ramaphane

The Projects Magazine is a fully registered and licensed publication specializing in engineering, mining, construction, energy, property development, manufacturing.

We deliver the latest news, in-depth analysis and cutting edge technical content on the latest developments and landmark projects unfolding in these industries.

With our team of experts, professional contributors and talented writers -well trained in business reporting , media, economics, engineering and mining – we are the reference point and source of information on project management, specifications, cost, investments, funding and contribution to the economy.

We dissect and divulge on the socio-economic impact of these projects in the host communities, the country as whole, the region and the continent.

Through paid content, The Projects Magazine gives companies the platform to profile their contribution to the economy, CSI projects; skills transfer initiatives, company achievements, strategies, and landmark projects.

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ABOUT PR GRANDEUR

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MOTHEO COPPER MINE TO ADD OVER P700 MILLION PER ANNUM TO GOVERNMENT COFFERS

Production to Start June 2023



Pic. Sand Fire

Motheo Copper Mine, developed by Sandfire Resources in Ghanzi district will inject over P700 million per annum in royalties and taxes to the government coffers once operational.

Speaking at the Botswana Resources Infrastructure Energy Forum (BRIEF) held on the 16th and 17th of May in Gaborone, Sandfire Country Head for Botswana, Dale Burgess said, in addition to over P700 million per annum in royalties and taxes to the government of Botswana, the company will create 650 jobs once operational.

Sandfire's Motheo Copper Mine is centred on development of the T3 Deposit. The T3 Deposit is a significant sediment-hosted copper and silver deposit, located in the Kalahari Copper Belt in Botswana.

The project is held through in-country subsidiary Tshukudu Metals Botswana (Pty) Ltd and was acquired through Sandfire's acquisition of MOD Resources Ltd in October 2019.

Motheo represents the foundation for Sandfire's long-term



growth plans in Botswana and currently supports over 1,000 jobs during construction.

The company's vision is that Motheo will form the centre of a new, long-life copper production hub in the central portion of the world-class Kalahari Copper Belt, it holds an extensive ground-holding spanning Botswana and Namibia. Sandfire completed a positive Definitive Feasibility Study (DFS) in December 2020 on an initial Base Case 3.2Mtpa processing capacity and open pit development of the T3 Deposit.

Based on the results of the DFS, Sandfire's Board approved the mine development, with construction commencing in 2021 and first production scheduled for the calendar year of 2023.

The DFS outlined a robust initial 12.5-year operation, underpinned by an updated Ore Reserve of 39.9Mt at 0.9% Cu and 12.2g/t Ag for 360,000t of contained copper and 15.6Moz of contained silver, producing on average ~30kt of contained copper and 1.2Moz of contained silver per annum over the first 10 years of operations, with relatively low capital intensity and robust operating margins.

The DFS was based on a forecast copper price of US\$3.16/lb, reflecting long-term consensus pricing at the time the feasibility study was completed. Since the completion of the study, the average long-term broker price forecast for copper has increased to US\$3.43/lb and the current spot price for copper is around US\$4.30/lb.

As part of the Motheo Mine development, Sandfire has

made a significant investment in additional processing capacity and infrastructure, providing a clear pathway to rapidly expand the processing facility to a planned 5.2Mtpa production rate for the Motheo Production Hub to accommodate other ore sources.

Burgess said the mine will have significant impact in Ghanzi district through creation of economic value chain activities. Unemployment in the area is estimated to be at about 25 percent.

“Motheo Copper Mine wants to be a responsible corporate citizen, responsible stakeholder within the community, particularly Ghanzi. We want to be the employer of choice. We want to look after the people and the environment, the rest will take care of itself,” said Burgess.

With copper prices having bounced back recently, Burgess has indicated, though it is the nature of commodity prices to fluctuate, the company has a bankable definitive feasibility study which has proven the economics of the mine.

“Over the journey, the mine makes significant profit. Once we start producing copper concentrates and export it, we receive revenue, and the mine will start making money and payback its debt facilities,” he said.

“We are looking at June 2023, and the mine will be cash positive from the very beginning. We have 12 years and half years in reserve. We are spending US\$20 million in exploration this year. The jurisdiction could expand to 40 years of mining copper,” Burgess said.

Burgess is happy with the progress so far, indicating that the construction of the Mine is on track, on schedule and on budget, and that it has a great workforce and competent team.

First production scheduled from the June 2023 Quarter,

with the company intending to fund the development of the Motheo Copper Mine through a combination of cash and project debt.

Sandfire Resources Credit committee has approved debt financing of US\$160 million for the Base Case 3.2Mtpa development. The company have since shortlisted potential international lenders. Selection of syndicate banks and finalisation of terms will be completed in the coming weeks.

Late June Sandfire released a pictorial update of the project. Works are proceeding on time with first production scheduled from the June 2023 Quarter

Construction activities are continuing with approximately 1,600 personnel on site and over 6,000m³ of concrete poured to date.

T3 Open Pit Mining Continues

- AMS pre-strip work now on a 24-hour basis
- Commissioning of 2nd EX1900, 2nd water truck, 2 CAT 18M Graders and 3 additional drill rigs completed
- 862,000 BCM total material movement during May 2022
- Drill and blast activities now on full 10m benches
- Pit Dewatering has commenced

Motheo Process Plant

- Process Plant Civil works 60% complete
- Administration Office and Clinic nearing completion
- SMP Contractor mobilised and commenced steel erection

Crusher Retaining Wall Backfill and ROM area

- Crusher Retaining wall backfill underway, Crusher building final lift being formed
- ROM pad under construction





FACT SHEET

Project:	Motheo Copper Mine
Ownership:	Sandfire Resources
Location:	Ghanzi, Kalahari Copper Belt
Status:	Construction phase
Mining Contractor:	African Mining Services (AMS)
First production:	Second quarter 2023





DEBSWANA LAYS OUT STRATEGY TO ACHIEVE CARBON-NEUTRALITY BY 2030

Debswana Diamond Company, the country's leading mining company, has set itself a determined target of being carbon-neutral by 2030. This goal was highlighted by Debswana Senior Carbon and Energy Manager, Mr. Ishmael Motlhale at the Botswana Resource Infrastructure Energy Forum (BRIEF) held in Gaborone on the 16th and 17th of May 2022.

Motlhale who was a participant on the Green Energy for Botswana panel discussion, indicated that sustainability is key to Debswana, and they manage it through a framework that

they have developed called Building Forever. The framework is informed by Government of Botswana and De Beers as the shareholders. It has a number of pillars, and one of the pillars is Protecting the Natural World.

Under Protecting the Natural World pillar, Debswana's vision is to be carbon-neutral, minimize water footprint and deliver a net positive impact on biodiversity by 2030. This entails taking care of the environment and addressing issues of climate change.

“We have developed a strategy on how are we going to be carbon neutral by 2030. Our strategy has four areas of focus. The first focus area is reducing energy intensity, which is about how to make sure that our processes are more efficient, which is about how do we embed energy use in our business process and in our business design during our hours of work,” Motlhale said. “We believe that there is a lot that can be achieved from driving efficiencies.”

Another focus is finding alternative to diesel because Debswana uses diesel in large quantities and diesel is one sources of carbon emissions, and therefore the company is looking for other means to fuel their engineering assets , equipment and machinery.

“We did a consultative study. We went into the market to see what alternatives are there, and we identified hydrogen as having a potential for energy to replace diesel,” Motlhale stated.

“We also identified, biodiesel. Biodiesel is whereby you do not use diesel as it is, but you blend it with neutral oil, like cooking oil from restaurants. That idea we got it from the University of Botswana, where they have been running their vehicles on biodiesel — they blend a portion of diesel and oil from Botswana Meat Commission.”

The third focus area is decarbonizing electricity. All the electricity that Debswana uses comes from BPC, which is from a coal powered station. Debswana is looking at how it can decarbonize the electricity sourced from BPC. The company is therefore exploring several sources of energy.

“It is clearly solar, and also wind. Initially, we believed that wind is not a viable option for Botswana. There are areas in Botswana that have got very good wind potentials. So, we are doing studies to explore those areas further to a level whereby we can even put physical mast to take actually measurements. We want to develop the work to that level and that will inform what installations we put where in Botswana,” said Motlhale.

“The fourth one, we say, we acknowledge that we cannot replace everything. There may be emissions that we cannot replace, so we are looking at what interventions we can put in place to recover the carbon dioxide from the atmosphere.”

Debswana is looking at carbon recovery methodologies that are there and one of the major options that the company is currently working on, is a kimberlite, which is the rock from which the diamond comes from. It has the natural properties to react with carbon dioxide.

“One of the initiatives that we have, is to look at how we can unlock those minerals that can be free to react with carbon dioxide. By so doing, you are trapping the carbon dioxide.” Motlhale explained.

Debswana has identified key enablers and one of the enablers is partnership or effective partnerships, with the government, instead of going with it on its own. This means collaborating with institutions such as BPC and University of Botswana.

“We believe there is a lot that we can achieve by leveraging partnerships. The other enable is green financing; we are looking for institutions that will support us because some of the interventions that we are going to put in place are quite capital intensive, so we want to explore what opportunities are there. Instead of taking the money out of government coffers, we consider getting help from other institutions,” Motlhale said.

Motlhale said by 2030 Debswana should be carbon-neutral, either through emitting nothing, or if they are emitting something, they will have an alternative in place to recover or offset that emission. “Eight years from now, we want to make sure that our operations are carbon-neutral. The other targets, with regard to large-scale interventions regarding solar and windy, we have a roadmap and a plan of what needs to be done by when,” said Motlhale.

2030 CARBON EMISSION TIMELINE

YEAR	TARGET
2023	Completion of studies relating to solar
2024	Implementation – installation of large scale solar projects
2025	Production of solar power
2026	Introduction of hydrogen
2028	Introduction of wind powered energy
2029	Decision on energy storage
2030	Carbon Neutral

2030 GOALS: DEBSWANA CLIMATE CHANGE PLEDGES

By 2030, we will be carbon neutral across our operations

Replace: by 2030 we will reduce energy intensity across our business by capturing efficiencies and implementing our pioneering FutureSmart Mining™ [4] programme. Through breakthrough technology and digitalisation this programme will change the way we mine, making it more effective, efficient and sustainable.

Replace: by 2030 we will replace most of our fossil fuels with green alternative fuels to power our trucks and vessels, and we will partner to create renewable energy sources and replace nearly all fossil-fuelled electricity by developing dedicated wind and solar power plants.

Recover: by 2030 we will recover all remaining carbon emissions through innovative nature-based and technical solutions, such as our ground-breaking CarbonVault project, which captures carbon from the atmosphere and locks it away in kimberlite rock.

By the end of 2021, we will have worked with our suppliers and clients to better understand and measure our Scope 3 data across our entire value chain and include it within our carbon neutral roadmap using our Reduce, Replace, Recover framework



ENERGY INTENSITY REDUCTION HELPS DEBSWANA SAVE P274 MILLION

In a bid to become carbon-neutral by 2030, Debswana Diamond Company — the country’s flagship mining company — has to put in place intensity reduction measures, leading to cost savings amounting to an estimated P274 million in 4 years (from 2017-2020, using 2016 as baseline).

Presenting on Debswana’s success story in reduction of energy intensity, Mr. Gaenamele Mmoloki Ganamotse, Energy Manager at Debswana Diamond Company said the company is on the right track to achieve its goal.

The cumulative total of P274 million, equates to around 90 000

megawatts hours per annum, a big figure in terms of both energy and capital savings. Debswana annually spends around P240 million on power. It is estimated that without intensity reduction measure, by now, the company could be spending around P360 million per annum on power.

“If you break the P274 million into four years, you realize that it is significant per annum in terms of what we could have spent. That is the impact that it has made on the bottom line.”

The objective is to achieve reductions in energy and greenhouse gases (GHG) emissions intensity to support Debswana’s pledge of carbon neutrality by 2030.

Reducing intensity has become a key part of Debswana carbon emission strategy. Intensity refers to the amount of power used to produce a tonne of a product, in this case kilowatt-hours per tonne.

“It means you are using a certain amount in kilowatt to produce one tonne to process a material. We want to produce more material using less power. So, we put measures in place to ensure that we reduce the amount of power that we use to produce one tonne,” Ganamotse said.

“That is what we mean by reducing intensity. If you look at where we are coming from, 2016 was our baseline and our target was to reduce intensity by 8 percent by 2020. But we managed to do much more of that because we manage to reduce by 19 percent.” Gabanamotse said Debswana, since 2016, has been reducing intensity by 3, 4, and 5 percent per annum. The company’s monthly consumption was around 20 000 megawatt hours.

“So if we were using 20 000 megawatt hours to produce a certain amount of tonnages in 2017 that means I can still use the same amount to produce more because I have now reduced the intensity,” he said.

“If you look at what we have been consuming, then and now, there is a very small difference, but in terms of tonnages produced, we have increased the numbers.”

Gabanamotse said 19 percent reduction in intensity is a lot, therefore a success story for the mining company. Intensity reduction is Debswana’s short-term strategy between now and 2024. After 2024 the company is planning going into replacement. “That is where now we replace the fossil fuels, the diesel that we now have and the electricity that we produce from coal moving into cleaner energy. That is our long-term strategy,” he said.

DEBSWANA ENERGY FACTSHEET

Debswana Carbon Footprint	877,387 Tonnes of CO2 annually
Energy sources	60 % Electricity, 40 % Diesel
Energy Cost	16 % of Total operating cost
Carbon Footprint with the De Beers Group	Debswana contributes for over 50 % of De Beers CO2 Emissions

ENERGY INTENSITY REDUCTION

2021 Avoided Consumption using 2016 as Baseline	23.88 – 19.35 = 4.53kWh/ton
2021 Production	23,350,698 tons
Total Avoided Consumption	360,586,462 kWh
Total Avoided Emissions	360,586,462 x 0.00103 = 371,404 t.CO2e
Total Avoided Cost	360,586,462 x 0.76116916 = BWP 274,467,294.39





BOTSWANA OIL PLACES FOCUS ON DEVELOPING ALTERNATIVES FOR ENERGY SECURITY

Botswana Oil Limited (BOL), the state-owned petroleum company, is pursuing several projects in Botswana aimed at countering the country's overreliance on neighbouring South Africa for petroleum products.

On the sidelines of the Botswana Resources Infrastructure Energy Forum (BRIEF) which occurred on 16th and 17th of May 2022

— Botswana Oil, Senior Manager - New Ventures, Gamu Mpofu indicated that energy security is key, and should be achieved as a matter of national priority.

Mpofu presented on considerations for improved energy security for Botswana, giving the regional and international context on petroleum products.

“We are heavily reliant on South Africa in terms of petroleum products. And this heavy reliance on a single source and single route is quite a risk for this country, and therefore we need to look at other opportunities that we can unlock within the country to ensure the security of supply of petroleum products,” said Mpfu.

“We are having storage infrastructure projects that we are working on as Botswana oil to increase our storage capacity so that we also enhance energy security. We also need to look beyond storage because as consumption grows, the storage capacity dwindles, and therefore you will have to be increasing storage time and again to ensure security of energy supply.”

Mpfu indicated that Botswana Oil has been exploring options for Botswana, and one of the key options that comes across is that Botswana has abundant coal resources. Botswana has over 200 billion tons of coal, and the 200 billion tons of coal can be converted to petroleum products.

Mpfu, who holds master’s degree in Energy Economics, is currently involved in the development of a Coal to Liquids industry, a project which is defined and structured to become a Public Private Partnership and duly registered in Botswana’s PPP office.

Botswana does not only face problem of single source for petroleum products, but it is also found wanting when it comes to energy security as well. During fuel crisis in 2020, occasioned by the outbreak of Covid-19 pandemic, Botswana struggled to keep up with local demand after facing problems in sourcing fuel from South Africa.

The International Energy Agency (IEA), which was created to ensure secure and affordable energy supplies, and it conducts analysis on current and future risks for oil supply disruption, recommends storage capacity that could ensure that a country meets fuel demand for at least 90 days.

“In terms of storage, we are sitting at 60 million litres capacity storage where we store fuel. This translates into about 18 days of national consumption. That is not enough,” said Mpfu.

“An increase in storage means you are increasing your strategic stock days cover, meaning in the event that Botswana is not able to receive fuel from the outside world, since we are an importer, we are able to run from those storage facility for a number of those days.”

Botswana Oil is working on moving the country’s capacity from 18 days to a minimum of 60 days so that if there is a supply shortfall, the country will be able to run for 60 days whilst alternatives are being sought.

The Botswana Oil Coal/Gas to Liquid (XTL) Project

Through the Coal Road Map Study conducted by Government in 2011, one of the options available to monetise Botswana coal was through exploitation of her vast coal reserves and conversion to some of the coal to petroleum products, among other project outputs.

The country imports most of its petroleum products from/through South Africa to satisfy its 1.2 billion litres per annum

consumption. The Ikaegeng XTL (IXTL) project, will be a major step towards establishing energy security for Botswana and would significantly reduce Botswana’s reliance on imported petroleum products.

The project will contribute towards the Government’s strategy to diversify the economy and create employment through the use of natural resources.

The project is a private sector-led initiative with Botswana Oil Limited’s (BOL’s) role limited to being facilitatory. Due to the project being strategic in its nature and requiring Government support, it is critical to provide oversight. BOL engaged Technical Advisory Services in the development of a framework within which the private sector has to operate in the realization of the project.

The IXTL will constitute a mega-project, characterised by large capital investments, technology complexity (involving integrated solids, gas and liquids processing), multiple stakeholder interfaces (Government and Regulatory, Business Development, Resource Development, Impacted Communities and NGO and Conservation Organisations) and extended timelines.

The IXTL is the Project Facilitation, Public-Private Partnership (PPP) Procurement and Project Development of an Ikaegeng XTL Facility and an IXTL Business in Botswana. The IXTL Facility consists of an XTL Processing Plant and Related Infrastructure. The IXTL Business is the off-take from the IXTL Facility and the wholesale distribution, storage, blending and sales of XTL diesel and gasoline.

The PPP Procurement of the IXTL will be in accordance with the PPP Policy and Implementation Framework of Botswana. The project has completed a feasibility study in accordance with the PPP Policy and Implementation Framework.





BDC INJECTS P42.6 MILLION IN SELIBE PHIKWE BASED AIR SEPARATION PROJECT

- *BDC will construct the required specialised warehouses and ancillary buildings*
- *CEDA will fund specialised equipment purchase & initial working capital*

Botswana Development Corporation (BDC), the government of Botswana's investment arm, will spend an estimated P42.6 million, through its subsidiary, Western Industrial Estate (Pty) Ltd (WIE), to construct the required specialised warehouses and ancillary buildings for Oxygas project in Selibe Phikwe.

The resurging town, once known as the capital of copper and

nickel mining in Botswana, is returning to the spotlight again, with new ventures choosing Selibe Phikwe as their base.

Oxygen Gas (Pty) Ltd, a 100% citizen-owned company, is the latest company to join the Selibe Phikwe bandwagon. The company has been set up to manufacture medical and industrial gas, becoming one of the trailblazers in this field.



A ceremony was held on the 24th of June 2022, BDC —one of the project funders, together with Citizen Entrepreneurial Development Agency (CEDA) — celebrated the ground-breaking of a specialised warehouse facility for Oxygas project in Selibe- Phikwe.

In his remarks, BDC Managing Director, Cross Kgosiidiile highlighted that the ceremony meant far more than the literal breaking of the ground and that it represents ground-breaking into a sustainable manufacturing industry, which requires rich resources and thrives on a conducive business environment.

Kgosiidiile, who assumed the reins at BDC in 2020, further noted that it emphasised the ground-breaking synergy between Oxygas, BDC, CEDA and Selibe Phikwe Economic Diversification Unit (‘SPEDU’) that will make a unique contribution to Botswana’s economy and stakeholders’ ground-breaking wisdom in choosing to invest in the future and for generations to come.

“BDC remains fully committed to fundamentally contributing to the development of a viable, competitive and profitable manufacturing industry. Through Oxygen Gas (Pty) Ltd BDC will be fulfilling its mandate of Promoting Citizen Economic Empowerment; Creating sustainable economic diversification; Promoting a self-sufficient supply of medical gas, which is key to saving the Botswana population from Covid-19; Creating jobs for Batswana; Promoting real growth of the economy; and assisting in placing the private industry in the forefront of economic development,” said Kgosiidiile.

President of the Botswana Chamber of Mines, and Chief Executive Officer of Pinnacle Nickel Resources Botswana (PNRB), Montwedi Mphathi

praised the Oxygas project, indicating that their journey is impressive.

“I really admire what Oxygas has done. It is really good to see this project coming to Selibe Phikwe because this town has gone through a hard time, and we hope us [PNRB] and companies like Oxygas can start to rebuild the economy of Selibe Phikwe to an extent that it can be resilient and withstand hardships,” he said.

Mphathi, who once led the defunct BCL during its glory days, said by the time PNRB come to light, Oxygas and other companies would have laid a solid base, and indicated that his company will be a customer of Oxygas. When delivering his keynote address, Minister of Health Dr Edwin Dikoloti remarked that the project is a demonstration of the Government’s dedication to the implementation and achievement of the 2020/21 – 2022/23 Economic Recovery and Transformation Plan (ERTP) and the Reset Agenda championed by the President of Botswana, Dr Mokgweetsi Masisi.

He indicated that through Oxygas, Botswana would be able to meet the national demand, significantly reduce its current dependence on imported medical and industrial gases and increase export potential. When achieved these would contribute to the accomplishment of strategic goals in self-sufficiency and reduction of the import bill as well as job creation. He went on to commend BDC, CEDA and SPEDU for their collaborative efforts in bringing a project of such national importance to fruition.

The minister also pledged government’s support to Oxygas in order to reduce the health sector’s dependence on imported medical gases, particularly oxygen – whose



shortage during the Covid-19 pandemic proved to be a threat to the survival of Batswana as a people. Oxygas has been co-funded by BDC and CEDA.

Through its nominated 100% owned subsidiary Western Industrial Estate (Pty) Ltd (WIE), BDC will construct the required specialised warehouses and ancillary buildings at an estimated cost of P42,6 million. CEDA will finance the purchase of the plant, specialised equipment, and initial working capital.

This project is of utmost importance to the country and the SPEDU region as it strives to bring diversity into the economy and manufacturing sector, achieve import substitution, contribute to the economic resuscitation efforts for Selibe Phikwe and create much-needed employment for Batswana.

It is anticipated that the project will create 230 jobs at full operation, with 200 jobs being created during the construction phase.

Lucas Modimana, the Mayor of Selibe Phikwe, indicated that the town council has established Selibe Phikwe Business Ecosystem aimed at assisting with infrastructure and efficient service delivery to the business community. He said the ecosystem is made of business in steel, plastic manufacturing, PPE, medical device manufacturing among others, noting that Oxygas will join them and do business with them.

Modimana also indicated that Oxygas should contribute toward Corporate Social Investment, through shared value which should also benefit the informal sectors.

BDC, known as government's "investment arm" is the country's main agency for commercial and industrial development. Established in 1970, under the Companies Act, BDC is a company limited by shares and fully owned by the Government of Botswana. BDC is mandated to provide, facilitate and support the funding of commercially viable enterprises that contribute towards building a sustainable and diversified Botswana economy; to stimulate the growth of the private sector; to invest in the region and internationally; whilst generating wealth for the shareholder.

BDC invests in commercially viable projects across all sectors of the economy except large-scale diamond mining. These include Energy, Manufacturing, Industry, Property, Services, Tourism, Innovation and Technology.

Throughout, BDC intends to promote best practices in business, governance and environmental standards in the funds or companies it chooses to invest in. BDC conducts its business on a commercial basis and exercises special care and regard for economic and commercial merits.

BDC Celebrates Ground-Breaking of New and Transformational Medical and Industrial Gas Manufacturing Plant in Selibe Phikwe

Gaborone – At a ceremony hosted on the 24th of June 2022, Botswana Development Corporation (‘BDC’) celebrated the ground-breaking of a specialised warehouse facility for Oxygen Gas Pty Ltd (‘Oxygas’) project in Selibe- Phikwe. Oxygas is a 100% citizen-owned company that has been set up to manufacture medical and industrial gas and is one of the trailblazers in this field, in Botswana. The ceremony was officiated by the Honorable Minister of Health, Dr Edwin Dikoloti.

In his remarks, BDC Managing Director Mr Cross Kgosiidiile highlighted that the ceremony meant far more than the literal breaking of the ground and that it represents ground-breaking into a sustainable manufacturing industry, which requires rich resources and thrives on a conducive business environment. He further noted that it emphasised the ground-breaking synergy between Oxygas, BDC, Citizen Entrepreneurial Development Agency (‘CEDA’) and Selibe Phikwe Economic Diversification Unit (‘SPEDU’) that will make a unique contribution to Botswana’s economy and stakeholders’ ground-breaking wisdom in choosing to invest in the future and for generations to come.

“BDC remains fully committed to fundamentally contributing to the development of a viable, competitive and profitable manufacturing industry.

Through Oxygen Gas (Pty) Ltd BDC will be fulfilling its mandate of Promoting Citizen Economic Empowerment; Creating sustainable economic diversification; Promoting a self-sufficient supply of medical gas, which is key to saving the Botswana population from Covid-19; Creating jobs for Batswana; Promoting real growth of the economy; and assisting in placing the private industry in the forefront of economic development” – Said Mr Kgosiidiile.

When delivering his keynote address, Hon. Minister of Health Dr Edwin Dikoloti remarked that the project is a

demonstration of the Government’s dedication to the implementation and achievement of the 2020/21 – 2022/23 Economic Recovery and Transformation Plan (ERTP) and the Reset Agenda championed by His Excellency, the President of the Republic of Botswana, Dr Mokgweetsi Masisi. He further noted that through Oxygas, Botswana would be able to meet the national demand, significantly reduce its current dependence on imported medical and industrial gases and increase export potential. When achieved these would contribute to the accomplishment of strategic goals in self-sufficiency and reduction of the import bill as well as job creation. He went on to commend BDC, CEDA and SPEDU for their collaborative efforts in bringing a project of such national importance to fruition.

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MOHEMBO BRIDGE FINALLY OPENS FOR BUSINESS

Pic. Bashi Kikia

The waiting is finally over, after agonizing years of struggle, impatience and utter hopelessness. The 24th June 2022 marked the day Okavango River Bridge officially opened for public use.

Scores of residents of Mohembo East and Mohembo West gathered to witness the official opening of the majestic bridge, rivalled only by Kazungula Bridge as both engineering marvel and tourist attraction in Botswana.

Its opening is a sigh of relief for residents in the vicinity. It is an enabler that will transport residents from one side of the river to another, a task which has been saddling for decades.

It has been officially named Okavango River Bridge, but Mohembo Bridge is proving to be the accepted colloquial name. The bridge connects several villages, making it easier for residents to access services. In human development realm, this is progress for the people. For tourists, it's another addition to their bucket list in an

already tourism-rich area.

“The bridge is going to improve the lives of the people of Okavango. People can travel anytime of the day in the absence of a curfew brought about by the ferry,” said Minister of Transport and Public Works, Honorable Eric Molale when officially opening the bridge.

Molale said the bridge signified fair allocation of developments by government to all parts of the country. “The two bridges of Okavango and Kazungula open opportunities for other countries to come and invest in Botswana,” he said.

To mark an end of an era, one retired pioneer of pontoons from Sekondoboro in the Okavango area, Dikumbiro Makaeko drove the last pontoon to Mohembo East from Mohembo West

Like its counterpart — Kazungula Bridge — the Mohembo

FACT SHEET

Financial Cost	P1,045,510,751.77
Client and Owner	Government of Botswana
Contractor	ITINERA & CIMOLAI Joint Venture
Engineers	CPP Botswana



Bridge will be a significant contributor to trade. Ministry of Trade and Industry has been watching the project with keen interest. With the ministry having a mandate to facilitate trade, grow the economy and attract investors; the bridge is not expected to only attract foreign investment but would also benefit sectors such as tourism, agriculture, manufacturing and the film industry.

Okavango Sub-Council chairperson, Lesedi Boy said the opening of the bridge was a significant moment for the people of Okavango. He expressed hope that the bridge would improve service delivery in the sub-district and attract more tourists and investors.

“As the council we experienced challenges that negatively affected service delivery as the ferry sometimes experienced breakdowns rendering movement impossible across the Okavango River,” he said.

The construction of the bridge was awarded to ITINERA and CIMOLAI Joint Venture from Italy for the sum of P1.1 billion, fully financed by Government of Botswana. The project was supervised by CPP Botswana (Pty) Ltd as engineering consultant.

It is located in the North-Western region of the country,

spanning between Mohembo East (Kauxwi) Ferry Landing Site and Mohembo West (Shakawe) Ferry landing Site.

The civil works of the project entailed the construction of a 1,161 metre-long road bridge, with the following configuration; Left Bank: 4 spans; 32.75 45.00, 32.75m, Main Channel: Cable Stayed of 3 spans; 100, 200, 100m, Right Bank: 14 spans of 32.75, 12x45.00, 32.75m. Pedestrian walkways and lighting over the bridge and along 3 km of approach road will also be available.

The official opening of the bridge is of socio-economic importance to the Delta and Chobe areas, and the rest of the country. It now make services available to all by reducing crossing time; make it feasible for expansion of future road network, integrate tourist attraction sites and activities such as lake Ngami, Tsodilo, Aha Hills and others.

The bridge also addresses the challenges which were brought about by the pontoon service, which was unreliable due to unfavourable weather conditions and restricted working hours. His Excellency President Dr. Mokgweetsi Masisi is expected to officially open the bridge at a date to be announced soon.



INTRODUCING OUR EXPERT CONTRIBUTORS

Boykie Sebobi | CEng MIMechE CRMP CAAM

Mr Boykie Sebobi is a Chartered Engineer and top asset management professional who has worked in high-performance mining organizations and engineering operations for over 30 years, delivering complex projects and high-value stay-in-business functions.

He is currently Principal Consultant at AssetSure, an engineering asset management company that he established to help asset-reliant organizations to achieve benchmark operational levels safely, sustainably, and efficiently.

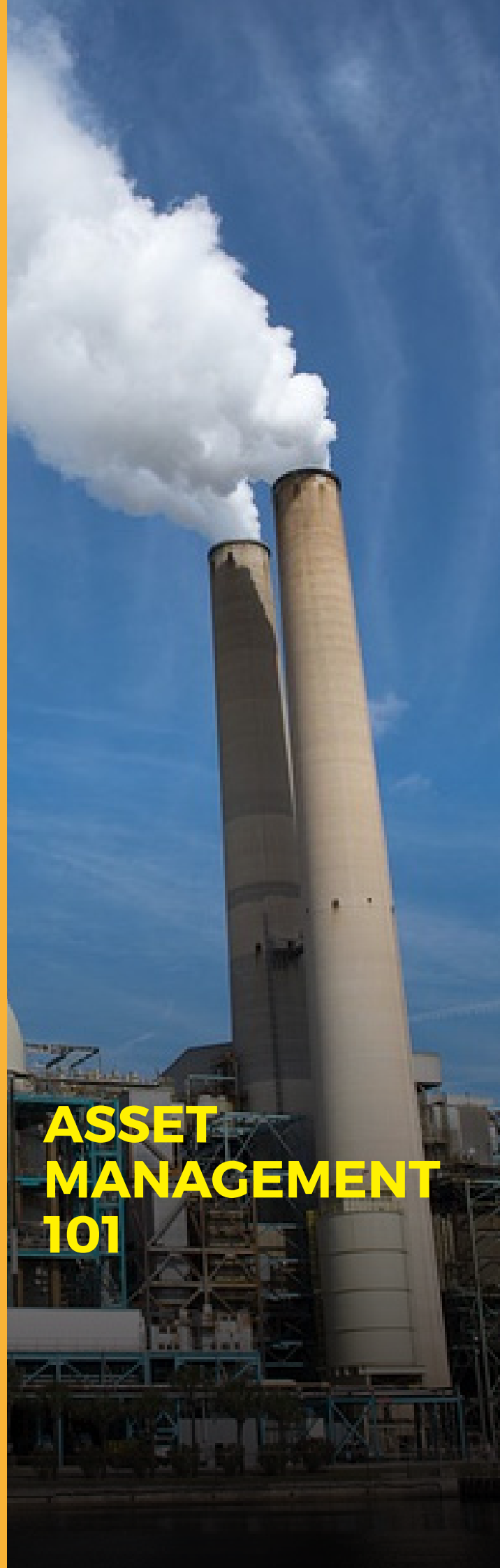
Boykie Sebobi started his career in the mining industry nearly four decades ago as an engineering apprentice, before obtaining an honours degree in Engineering Technology (Mechanical) from De Montfort University Leicester, United Kingdom in 1997.

Throughout his varied experience at different levels of responsibility, he has worked for ICI Polyurethanes (UK), BCL Limited where he was Mechanical Services Superintendent from 2010, before moving to Debswana Jwaneng Mine under Majwe Mining JV to take up the role of Maintenance Superintendent from 2011- 2014.

Mr. Sebobi later joined Lucara Botswana as Engineering Manager at Karowe Diamond Mine in 2014 before being appointed Head of Production at Kwena Concrete Products from 2015 to 2018, and later serving as Resident Engineer at Bothakga Burrow Botswana until November 2021.

Boykie Sebobi is a Chartered Engineer professionally registered with the Engineering Council (UK). He is also a registered Professional Engineer (PrEng) with the Engineers Registration Board (ERB) Botswana. In addition, Mr. Sebobi is a Certified Maintenance and Reliability Professional (CMRP) and a Certified Associate in Asset Management (CAAM) He holds memberships of professional associations including the Institution of Mechanical Engineers (IMechE), Botswana Institute of Engineers (BIE), Asset Management Council and the Southern African Asset Management Association (SAAMA).

Mr Seboi will share insights and deliver cutting edge articles on engineering asset management for both our print and digital platforms.



ASSET MANAGEMENT 101

Part 1: Introduction to Asset Management

Background. In 2004 the first Publicly Available Specification (PAS 55) for asset management was published. PAS 55 sought to assist organisations and businesses whose physical assets were critical to their continued operations. Physical assets were classified into four major groups, viz. plant and production, infrastructure, mobile assets, and real estate and facilities.

An increasing industry demand for an asset management standard later saw the Institute of Asset Management's (IAM) collaborative work with the British Standards Institution

(BSI) culminating in the publication in 2008 of PAS 55:2008 (latterly BSI PAS 55:2008). Based on a familiar format of other internationally adopted standards e.g., ISO 14001 and OHSAS 18001 (now ISO 45001), PAS 55 was published in two parts: Part 1. Specification for the optimised management of physical assets, and Part 2. Guidelines for the application of PAS 55-1. Its development was a result of wide-ranging consultations with leading organisations and industry experts. The International Organisation for Standardisation (ISO) then later adopted PAS 55:2008. The result of the work done by ISO was the 2014 publication of ISO 55000 suite of standards for international use by asset intensive organisations industry wide.



Fig. 1: The typical priorities and concerns evident when integrating and managing assets and asset systems. (Source: <https://www.assetmanagementstandards.com/pas-55>)

Figure 1 shows the framework of an asset management system as originally conceptualised by PAS 55.

In this the first of a six-part series of articles, I shall explore the concepts of physical asset management in the context of ISO 55000. Although physical asset management is still fairly new in our part of the world it is a concept that has been in existence for well over twenty years. What is not new, however, is ‘facilities management’ – a term or concept that should not be confused with asset management. Though not entirely dissimilar in context, I shall draw parallels to these two concepts where appropriate.

What is an asset?

The Oxford English dictionary describes an asset as “a useful or valuable thing or person.” I underscore ‘valuable’ here because value will be the keyword for this discussion henceforth. PAS 55-1:2008 defines assets as “plant, machinery, property, buildings, vehicles and other items that have a distinct value to the organization.”

In the context of infrastructure and physical assets, ISO

55000:2014 defines an asset as an “item, thing or entity that has potential or actual value to an organisation.” Productive machinery and other equipment owned by an organisation fall under this definition. Of course, the definition can be extended to things owned by individuals like you and me. For example, the device I am presently using to type this text is an asset. The motor vehicle, or any property you may possess, is an asset.

The ISO 5500x family of standards is aimed at helping organisations to establish, implement, and maintain a system of “coordinated activities” focused on the management of their assets. This suite of standards (ISO 55000, ISO 55001, and ISO 55002) is intended primarily for use by organisations planning to improve their ways and means of realising value from their assets.

So, how does an organisation realise value from assets? Realisation of value is an organised and coordinated undertaking. Firstly, it must be the stakeholders’ intent and the organisation’s objective to realise value from their assets. Secondly, a system through which value is realised from the assets must be established. Remember that an asset has “potential” or actual value. If an asset stands idle or is neglected, its actual value may not be



realised. Value is realised from an organisation's assets through the establishment, implementation, and maintenance of an asset management system.

What is asset management?

Asset management is a term that most people associate with investment funds and or finance. However, this series of articles will be discussing the management of physical or infrastructure assets. At a personal level, we all practice asset management one way or another even though we may not realise we are doing so. The regular servicing of your car or repairing a leaking water pipe in your house's plumbing system, is practising a form of asset management. We do this to not only maintain a certain level of performance but also extend the useful service life of the assets. However, infrastructure asset management is more than just maintenance. It is a deliberate undertaking that recognises that assets have a definite life cycle and will deteriorate with use over time. It is a systematic process allowing for the planning, design and acquisition, operation, maintenance, upgrading and ultimately disposal of assets. Asset management is providing the desired level of service at the lowest asset life cycle costs.

This process is achieved through the application of sound technical and socio-economic principles that consider both present and future needs of the organisation's stakeholders, and the level of service of the asset.

Stakeholders include shareholders, legislation, regulatory

authority, customers, employees, and the community. ISO 55000:2014 defines asset management as the "coordinated activity of an organisation to realise value from assets." It coordinates the financial, operational, maintenance, risk, and other asset-related activities of an organization. Asset management involves the balancing of costs, risks, opportunities, and performance benefits. An asset management system is established to implement asset management objectives, underpinned by an asset management policy.

What is an asset management policy?

In simple terms, a policy is a statement of intent. Therefore, an asset management policy is a statement outlining principles describing how asset management practice will contribute toward achieving asset management objectives.

It is an overarching high-level document that forms the foundation of an organisation's approach to asset management. Asset Management policy broadly outlines the principles and mandated requirements for undertaking asset management across the organisation in a systematic and coordinated manner, consistent with the organisation's strategic plan. The policy provides the basis of a framework for asset management strategy and asset management plans.



An asset management policy statement states clearly:

- How the organisation intends to manage its assets
- The principles it will adhere to in making decisions, and
- The top management's commitment to the policy

As a key element of the organisation's overall plan the policy document adopts an integrated and multidisciplinary approach to asset management. An integrated approach enables resources to be allocated cross-disciplinary. A multidisciplinary approach allows for the design, engineering, finance, procurement, construction, operational and maintenance teams to be fully involved throughout the asset life cycle.

An asset management policy recognises that assets exist only to support service delivery objectives as determined by the organisational strategic plan. This is particularly significant and most relevant in asset intensive organisations. For without assets these organisations cannot deliver value for stakeholders. Thus, an asset management strategy is necessary to help develop an asset management framework.

What is an asset management strategy?

Every organisation is guided by definite objectives (often stated in the corporate plan) it has set out to achieve. A strategy is formulated to guide the organisation to achieve these objectives. The asset management strategy defines how organisational objectives are to be converted into asset management objectives.

Asset management objectives in turn define asset performance requirements, levels of service, and asset management capabilities – these being outputs that are required of the asset portfolio.

In the context of ISO 55000 the asset management strategy is a Strategic Asset Management Plan (SAMP) that specifies the role of the asset management system in supporting achievement of the asset management objectives. We all know that for objectives to be met they must be specific, measurable, attainable, relevant, and time-bound (SMART). For example, an organisation may plan to increase the output of a certain piece of equipment by 30% in a given time period. For this to happen, an asset management plan is required to set out actions, allocate responsibilities and resources, and define timescales within which to implement the strategic asset management plan and deliver the asset management objectives.



Vision

The benchmark for effective and sustainable delivery of end-to-end asset management consultancy services.

Mission

We promote and provide appropriate services for good asset management practices, and encourage clients to measure their competency to ISO 55000 International Standard.

List of Services

AssetSure helps asset reliant organisations through strategic, tactical, and operational levels and provides services as follows:

- Strategic Asset Planning and Life Cycle Management
- Asset Management Improvement Programme
- Asset Health Condition Monitoring & Assessment
- Risk Based Inspections & Reporting
- Planned Maintenance Optimisation / Focused Improvement
- Maintenance & Reliability Advisory Service



BGI PROSPECTING DATA AVAILABLE FOR MINERAL EXPLORERS

Botswana Geoscience Institute (BGI), a state-owned organisation established for the purpose of undertaking research in the field of geosciences and providing specialised geoscientific services, is reaching out to prospective minerals explorers to utilize their services.

BGI is the custodian of geoscience information; promoting the search for, and exploration of any mineral in Botswana, and acts as an advisory body in respect of geohazards.

“Our role basically is to motivate, facilitate, and provide baseline information for prospecting in Botswana. We also have the

obligation to manage the geo-science information throughout the whole country,” said Chief Executive Officer of BGI, Olefile Cisco Mashabila.

Mashabila, who was taking part in the recent Botswana Resources Infrastructure Energy Forum (BRIEF) conference, said as per their mandate, all exploration activities that are happening in the country, the data is sent to BGI, and it resides with the institution. “To people who are doing prospecting, we encourage everyone to come to us to get the data. That data helps you as you do your base lining; your ideation and all the way to developing your

prospecting projects,” he said.

“We also have a well-developed lab facility, with sophisticated equipment. That, of course, requires continuous maintenance and fixing here, there and there, but we do provide the technical analysis.”

BGI Laboratory Testing Services consists of the Physical and Chemical testing on geological raw materials such as soil, rocks, ores and water. The laboratory is adequately equipped with a wide range of modern instrumentation and competent personnel that enables it to produce quality and timely analytical results.

Mashabila said BGI also provide assessments, for example, for the whole rock geochemistry, industrial minerals testing, and all physical testing relating to rocks.

The Physical Testing Laboratory prepares geochemical samples through drying, crushing, milling and sieving. Primary treatment is also possible for removal of organic matter, calcium carbonate and chlorides.

“We provide our data at a very minimal cost, which is for cost recovery. We are happy that through BDI, a lot of prospecting activities are now moving towards the western part of Botswana,” Mashabila said.

The BGI CEO said initially, prospecting was based on the eastern side of Botswana because there is surficial geology expression there.

“The rocks are exposed, you are able to sample the rocks, get and feel the rocks. In the West you have to go through sands. It is risky and expensive,” he said.

“Prospecting is risky and capital intensive. The technology is now enabling everyone to go out there and start doing the real prospecting, which initially would have been difficult when you look at conventional types of exploration.”

Prospecting normally involves drilling, but in the Sandveld and western side of Botswana, and because of thick sand, drilling would not be an option. It comes later in the projects stage when the explorer has established what they are drilling and what they are looking for.

“Prospecting have started in the South Western side of Botswana, and we are seeing a lot of critical mineral identification there; energy minerals,” Mashabila said

“It is a boom of exploration and mining. We have two major mines; Sandfire and Kavango. There is also Khoemacau. They are all setting up on the westerns side of Botswana, which was unheard of before. There is an opportunity and Botswana is endowed with minerals.”

BGI is the successor of Department of Geological Survey, and was established to improve efficiencies in carrying geoscience research, in line with the best practices expected of a geological survey organisation (GSO).

The decision was also based on the Government of Botswana’s aspiration to achieve its primary imperative of successfully implementing programmes and projects within time and costs that transform the lives of Botswana’s citizens for the better.



MINING INDUSTRY REMAINS KEY IN BOTSWANA'S ECONOMIC DEVELOPMENT

Minister of Minerals and Energy, Lefoko Moagi has reaffirmed the importance of mining sector in the economy of Botswana, indicating that government takes seriously its responsibility to develop relevant policies and programmes that will ensure smooth and sustainable development of the local mining industry.

Moagi, who was officially opening the Botswana Resources Infrastructure Energy Forum (BRIEF) conference, held on the 16th and 17th of May, said the mining industry has provided a foundation for the development of Botswana and its people.

“To drive the mining sector, MME is committed to the development and implementation of fiscal, legal and policy frameworks for mineral exploration and exploitation that are investor-friendly, and business friendly,” Moagi said.

The minister stated that to achieve some of its objectives, the ministry is doing research in the field of geosciences, providing specialized geo-scientific services and promoting the search for, and development of, more minerals in Botswana.

The Botswana Geoscience Institute (BGI), together with the

Department of Mines, in collaboration with other key operational institutions, continues to provide the necessary guidance and coordination for achieving economic prosperity.

He highlighted that the mining industry is now showing signs of recovery after the devastating 2020 Covid-19 pandemic affected both production and sales of minerals. Moagi said the signs of recovery are mainly due to companies re-arranging their operations and recovering from the COVID-19 impact which had earlier led to restrictive containment measures, including social distancing, remote working and the closure of commercial activities that resulted in operational challenges.

The minister, however, said the geopolitical situation in the West, Ukraine in particular, is an emerging challenge contributing to growing uncertainties in global markets, noting that it would not be unusual if these events could have an influence on the mining industry as it would on other industries.

“There are several scenarios that could play out for the mining industry as a result of Russia-Ukraine conflict. While it is too early to understand the full impact of the crisis, the longer it





goes on, the deeper its effects will be felt on the world markets, including minerals,” he said.

“Considering the volatile state of the minerals market, concerns are understandable. Our hope and prayer is that a speedy resolution of the conflict will be reached.”

MINERALS POLICY REFORMS

Moagi said the Botswana Minerals Policy has been recently adopted by Parliament on 31st March 2022. The policy solidifies and focuses Government’s commitment, to plan, develop and manage minerals for the benefit of Botswana and mining industry. The Minerals Policy provides guiding principles for the development and growth of the minerals sector, taking into account current and emerging issues.

The Diamond Cutting Amendment Bill and the Precious and Semi-Precious Stones (Protection) Amendment Bill were passed into Acts before Parliament on 16th August, 2021. Amendment of the Mines and Minerals Act is also in progress, the minister said.

Moagi contended that through recent policy developments, the Government is positioning herself to make Botswana a conducive environment for mining and ultimately achieving its goal of being a mining destination of choice.

“Proper management of resources is an equally important exercise that should be reflected in our policies and legislation; Government is therefore continually improving its processes so that we can keep pace with the ever-changing world that is largely influenced by technology, and consequently refine the ways and means of mining through the Environment, Social and Governance (ESG) protocols,” he said.

KEY MINING PROJECTS

Moagi highlighted that there are numerous projects being undertaken to sustain the mining industry, noting that the Jwaneng Cut 9 Project, whose mining contract was reviewed in

2020, to switch over from contractor mining to owner operated mining, is progressing well.

The project will extend the mine life for Jwaneng to 2035. To further extend the life of Jwaneng Mine, feasibility study work on Post-Cut 9 Project is ongoing, with a focus on underground mining as an option.

“I can only urge all concerned to ensure we do not delay the underground project to avoid potential revenue gaps come 2035. Orapa Mine Cut 3 project, which is still at feasibility phase, is anticipated to extend the life of the mine from 2031 to 2046,” he said.

Karowe Mine, which is owned by Lucara Botswana, commenced the construction of its underground mine, to prepare for transition from open pit mining to underground mining in 2025. The underground project will increase Karowe mine life to 2041.

Morupule Coal Mine, which started development and expansion of its open cast mine — the ‘Motheo Project’, commenced stripping of the over-burden in 2021, and production of coal from the open cast is anticipated to start in the Second Quarter of 2022. MCM is urged to move boldly beyond the anticipated name plate capacity to take advantage of global coal demand, especially from Europe and the Far East.

Khoemacau Copper Mining, which started production of copper-silver concentrate in July 2021 is continuing to ramp up production, which is expected to reach full capacity in the second quarter of 2022.

Other developments are in the Kalahari Copper belt, PNR Copper Nickel, Iron ore in Ikongwe and prospects in the North West, Manganese prospecting in KgwaKgwe and Otse areas and a whole host of heightened exploration for various minerals across the country.

BID FOR KIMBERLY PROCESS CHAIRMANSHIP

In January, this year, Botswana assumed the Chairmanship of the Kimberley Process for 2022. The Chairmanship revolves among participating countries on an annual basis. As Chair, Botswana will host the Kimberley Process Intercessional meeting in June 2022 and a Plenary session in November 2022. The Kimberley Process, which is a United Nations mandated initiative, continues to play an important role in ensuring, through its certification system, and peer review mechanism, that conflict diamonds do not enter the legitimate trade in rough diamonds.



BOTSWANA SHIFTS TO PRIORITIZE ENERGY SECURITY WITH KEY PROJECTS

Minister of Minerals and Energy, Lefoko Moagi has said moving Botswana away from energy supply dependency to being an energy surplus nation is a national priority, as part of attaining adequate energy supply security.

He said pursuant to such vision, key initiatives in the Power sector are being undertaken, through implementation of the

Integrated Resource Plan (IRP), to ensure the realisation of this important vision.

“Currently some of the projects under the IRP already being implemented include development of 2 x 50MW Solar Photovoltaic Power plants in Jwaneng and Selebi-Phikwe; development of 12 Mini-grid tied solar PV with a total generation



technologies.

“The government continues to promote and support the engagement of Independent Power Producers (IPPs) as part of its efforts to improve energy security, hence the IRP remains an important instrument to guide coordination of IPPs’ investor interests in the electricity generation sector,” he said.

“Currently, the IRP is being reviewed to bring forward some of the envisaged projects.”

He said in terms of national electricity coverage, the country stands at more than 78 percent, and it is considered that those areas which are inaccessible to the national grid shall be considered for servicing through the solar off-grid programme. Moagi indicated that Government will continue to provide financial support to BPC (tariff support) so that the Corporation meets its commercial obligations in the foreseeable future.

With regard to liquid fuels, the minister said, the development of Tshele Hills Strategic Oil Storage project is ongoing. Stage 1 of the project was completed in December 2018 and since then, lack of adequate Government funding necessitated the need for alternative implementation through the Public Private Partnership (PPP).

“As a result, in May 2019, implementation of this project was transferred from the Department of Energy to Botswana Oil limited. Completion of the Tshele Hills project will increase Government National Strategic Fuel Stock Cover from the current Eighteen (18) days to more than forty-five (45) days, and at least 60 days for the southern consumption envelope,” he said.



capacity of 35 MW and an Off-grid solar PV generation plants in areas inaccessible to grid power,” the minister told delegates at Botswana Resources Infrastructure Energy Forum (BRIEF) conference.

Moagi said commercial operation of the 2x50 MW solar PV plants is scheduled to have commenced before the end of financial year 2022/23 while that for the two (2) of the twelve (12) grid tied solar PV plants are likely to commence their commercial operation before the last quarter of the financial year 2021/22.

A re-tender for the remaining ten (10) grid tied solar PV plants is in progress and their commercial operation is also scheduled to commence before the last quarter of financial year 2021/22. The minister said the Implementation of this IRP which was launched in December 2020 started in January 2021. The objective of the plan is to develop local power generation capacity to meet electricity demand over the next twenty (20) years through Solar, Coal Bed Methane (CBM), Coal, Wind and other green energy



BOTSWANA'S FIRST GAS TO-POWER PROJECT TAKES SHAPE

The 7th July 2022 marked a major milestone in Botswana's natural gas industry. Tlou Energy, the country's most advanced natural gas energy development company officially kick-started the construction of 100 km power transmission line, marking a significant event Botswana's alternative energy ambition.

Botswana consumes around 600 megawatt of power annually, half of which is imported, by in large from South Africa's coal fired power giant Eskom, followed by Zambia Electricity Supply Corporation Limited (ZESCO), Electricidade De Mozambique (EDM), Southern African Power Pool (SAPP), Cross-border electricity markets and Namibia's Nampower. Cross border connections is whereby villages and settlements along the border tap directly from neighbouring countries.

Botswana's local power generation is anchored by Morupule Coal fired power plants, and a diesel power plant in Orapa.

TLOU ENERGY'S GAS - TO- POWER

Tlou Energy Limited is developing power solutions in Sub-Saharan Africa through gas-fired power, solar power and

hydrogen projects. The company is listed on the ASX (Australia), AIM (UK) and the BSE (Botswana).

The 100% owned and operated Lesedi Power Project is the company's most advanced development. Located in central Botswana, Lesedi has independently certified gas reserves, a production licence and all key government approvals in place to commence development.

Lesedi is located approximately 100 km from the existing power grid with work underway to connect the project.

THE 100KM, 66KV KILOMETRE PIPELINE

On the 7th of July Minister of Minerals and Energy Lefoko Moagi officiated at the ground breaking ceremony of the construction of the Tlou Energy 66kv Transmission Line.

"Gas not only adds to Botswana's mineral base but it can also be a feedstock and many industrial processes which include production of hydrogen, solid carbon, fertilizers, liquid fuels, and many other products. I am informed that Tlou Energy is already looking at production of solid carbon and hydrogen,



with pilot production plant likely to be in place by the end of the year,” Moagi said.

Grid connection will allow Tlou to sell power into the existing Botswana Power Corporation (BPC) grid as well as providing access the Southern African Power Pool (SAPP).

The line will tap power from Tlou Energy’s Coal Bed Methane Lesedi power generation project at Nyamakatse Ranch and run for 100km to Serowe Sub Station delivering power into the Botswana Power Corporation grid. The transmission line contractor is citizen owned ZISMO Energy.

Tlou Energy’s single largest shareholder is Botswana Public Officers Pension Fund (BPOPF). BPOPF has provided debt financing to resource this project.

Tlou was last year awarded a power purchase deal by Botswana Power Corporation, the company will be producing 10 Megawatt for BPC.

Once in full production the 10 Megawatt project is expected to generate revenue of up US\$ 10 million (over P120 million) annually meaning from the first five-year deal the Tlou will rake in over P600 million revenue from the project. Tlou Energy says it expects to have the first power into the BPC grid by December next year.

When officially ground breaking the project Minister of Minerals and Energy, Moagi said the Tlou Energy Lesedi power project will not only contribute to the country’s energy mix but also

birth other industries that come with natural gas such as fertiliser manufacturing, hydrogen and solid carbon production.

PROJECT FINANCING

Tlou Energy announced on 30 November 2021 that it has signed a Convertible Note Agreement with the BPOPF and has also agreed terms for an equity investment by the same Fund.

In a statement floated on its website, Tlou Energy revealed that the funds are planned to be used to finance construction of transmission line infrastructure to connect the Lesedi Project to the BPC power grid and to fund installation of generation assets and ancillary costs to facilitate power generation and sale of electricity.

BPOPF’s Assets Under Management sits at 90 billion with about 60 percent invested outside Botswana and 40 percent in Botswana. Speaking at the Transmission Line project ground breaking BPOPF Chief Executive Officer (CEO) Mr Moemedi Malindah said diversification is very important to BPOPF and the fund will continue to invest outside Botswana.

“However, we want to invest more in Botswana,” he said. “The biggest impact, we believe, is achievable through investing in infrastructure development in our country.” Malindah explained that when the call to take the business from point A to point B through the Lesedi Project, BPOPF did not hesitate.

“This project is important to us from many different standpoints, we expect an attractive return for our members. The success of this project will directly contribute to enhancement on the retirement of more than 155 thousand members who are not yet pensioners,” he said.

He explained that by backing the Tlou infrastructure component directly BPOPF is not only going to get what was agreed contractually but will also be unlocking value on the listed space, BPOPF owns 8 percent of Tlou’s listed stock.

Mr Malindah further underscored that the project will contribute significantly to creation of good quality jobs for Botswana, unlocking new revenue stream for Government.

UPTAKE BY BPC

For, his part BPC CEO Mr David Kgoboko said a gas fired power station reduces carbon emissions by up to 50 percent when compared to a coal-fired power station of equal capacity.

He explained that introduction of Coal bed Methane to BPC’s primary sources of energy, will significantly contribute to the decarbonization of the country’s energy mix and enable Botswana to meet COP26 goals.

“We have made notable strides on this path and are proud to have signed a 10MW coal bed methane power purchase agreement (PPA) with Tlou Energy on the 18th of October last year.”

In the solar power generation space, BPC has procured 6 projects of solar PV plants with a total capacity of 66MW. Two of these projects are under construction, three (3) are at financing stage while 1 is at PPA signing stage. A further 69MW from 8 solar PV projects is under procurement.

Mr Kgoboko, however, highlighted that Solar PV technology without battery storage, can only produce electricity during the day when the sun is shining.

“This intermittency of solar power generation has to be augmented with other sources of generation which can be dispatched at any time of the day and are not weather dependent,” he said.

“A gas fired power station, such as the one Tlou Energy is developing, provides a perfect hybrid with the solar PV projects which have limited operating time.”

One of BPC’s emergency power generation facilities is the Orapa 90 MW Turbine Power Plant. This plant has dual fuel capability - meaning it can run on either liquid fuel or gas.

“Therefore, we support developments such as the one which we are gathered here to witness as this provides an opportunity for us to convert the Orapa Power Plant from diesel to a gas-fired station,” Mr Kgoboko said.



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MORUPULE COAL MINE AIMS FOR P3 BILLION REVENUE AS GLOBAL DEMAND RISE

- Targets 10 million tons per annum to meet global demand
- Demand for Botswana coal at an all-time high — regionally and globally
- Opportunities in the Middle East, Asia and European markets.

Buoyed by the rising coal demand globally, Morupule Coal Mine aims to generate P3 billion in revenue by 2027, a goal that is reinforced among others by; technological capacity, sustainable partnerships, operational excellence and capacity development.

A strategy is currently being coiled to transform Morupule Coal Mine into a significant player in the global coal space. Under the captainship of General Manager Mr. Edwin Elias, former Debswana Head of Ore Processing, MCM intends to produce 10 million tons of coal per annum in response to increasing coal demand across key global markets.

Mr Elias has been utilizing every opportunity to project the company's vision, including recently at the Botswana – Poland Business Forum, which was organized by the country's investment promotion agency, Botswana Investment and Trade Centre

(BITC) in collaboration with Embassy of Poland in Pretoria.

At the forum, held in Gaborone on the 5th of July, Mr Elias indicated that Morupule Coal Mine is aiming to improve revenue from P1 billion to P3 Billion by 2027. Morupule is currently producing 2.8 million tons of coal per annum from its underground mining operation. Annual output will increase to 4.2 million tons per annum when Motheo Project, the P1.7 billion expansion project, starts to produce in August 2022.

In May this year, during a media tour, Mr Elias revealed that the 10 million tons of coal per annum by 2027 is a target in response to the increasing coal demand.

“The way our coal is in demand, we might need to ramp up production to 10 million tons per annum before 2027, countries, industries and lucrative markets are demanding our coal and the prices and very good,” he said.



EXPORT MARKET

In April 2021, Morupule Coal loaded its first train of coal to supply overseas global markets. The first trial run coal to reach Maputo Port by rail via Zimbabwe was successfully delivered, to date eight (8) train loads have been delivered to the global markets via Maputo seaports.

Botswana's coal production has been limited, for years just over 2 million tons mostly used in electricity generation by Botswana Power Corporation at its Morupule power plants and in small quantities exported to neighbouring countries. MCM says it is now looking into ramping up production in order to cash in.

The coal mining industry has experienced a significant increase in coal prices since the beginning of the year, companies including Morupule Coal Mine are now scrambling to pump up production and benefit from high prices.

“Our current production may not be enough for us to take advantage of the current global demand,” Mr Elias told members of the media in May this year.

We have lots of coal traders who have been sending enquiries, MCM has been identified as a potential solution, we have a lot of countries lined up, and we are exploring potential partnerships with them. We believe we will be able to harvest this opportunity,” he said.

MCM recently signed two contracts to export P54 million worth of coal to Asia and P190 million worth of coal to Europe through Maputo, Mozambique. In addition, they are also in talks with Poland to export coal to their country.

“We are selling to coal traders who are targeting the European markets. We are not specific to any country and are currently selling to Glencore, which supplies European markets. Our clients are mostly in Europe and Asia,” he said.

MCM is currently exporting to Namibia, South Africa, and Zimbabwe. COVID-19 has completely reshaped global coal markets, as coal is expected to be the next major source of power generation. To meet the demand, the GM said they are working on ramping up production. The mine is in plans to build an additional plant.

“We are currently in an optimization drive to double our capacity with 10 million tons per annum, we believe if we can push ourselves, we will be able to capitalize on the opportunity at the end of the day. And that is possible and can be done in the shortest time possible. The board has challenged us to accelerate these plans so that we don't miss out on the opportunity,” he said.



Pic. Bashi Kikia



Pic. Bashi Kikia

COAL INTERCEPTED AT MOTHEO PROJECT

On 4th of June 2022 Motheo Project intercepted its first coal, marking a significant milestone in the project that will expand Morupule Coal Mine production from the 2.8 million tons per annum to 4.2 million tons.

To date, all components of the project are in shape with the coal handling plant and conveyor system being prepared to receive the first coal next month (August 2022). Speaking to The Projects Magazine, Motheo Project Manager Mr Lefika Moagi said with the increasing demand of coal, Morupule is still going to be quite busy.

“There might be need for another coal handling and processing plant because the key thing is the plant,” he said. “With open cast we can increase tonnage anytime when a need, arise, so depending on our economics there might be another project in

the offing to build another plant because our coal is top grade and lucrative markets are calling.”

The Morupule Motheo Project was officially kick-started by President Dr Mokgweetsi Masisi in November last year. When official ground breaking the P1.7 billion project, President Masisi said that mining remains one of the most important economic sectors which holds the key to transforming Botswana to an Upper Income Country.

“Our mining industry, as you may all know, is dependent on diamonds, which is limited in scope for our revenue base. It is against this backdrop that, Government is pursuing measures to expand its revenue base to other minerals, including coal”

He noted that the 212 billion tons is largely untapped coal reserves

that Botswana sits on therefore require the country to take steps to sustainably use them for the socio-economic development. He highlighted that Botswana is experiencing a shortage of electricity with only 60 percent being generated locally, and thus coal from Morupule Mine remains the predominant source of energy, feeding both Morupule A and Morupule B power plants, to meet the country's power demands, mainly base load generation.

The President hailed the Motheo expansion project, noting that it assist Government's efforts to increase rural electrification and village connectivity as per its promise to Batswana.

President Masisi said his government was aware of the sensitivity surrounding coal mining and the utilization of natural resources, particularly from the point of view of sustainability.

"For us to maintain a sustainable environment does not mean that our natural resources should not be used. Rather, sustainability requires a balanced approach to development, that is; to sustainably harness and manage the natural resources, which we are endowed with, for sustainable economic growth and for the benefit of our people," he said.

Masisi reiterated Botswana's commitment to sustainable energy sources: "I want to emphasize that we are committed to our international obligations, to contribute to the reduction of carbon emissions, some of which result from the conventional generation of electricity using coal. We have developed an Integrated Resource Plan (IRP) and a Coal Road Map to guide efforts for the sustainable exploitation of the vast coal resources, through the use of clean technologies, while at the same time deriving maximum benefits for sustainable economic diversification and job creation."

Botswana is a signatory to the United Nations Convention on Climate Change and has signed the Paris Climate Change Agreement.

Masisi noted that the Government has committed to reduce carbon dioxide emissions by 15 percent by 2030. Morupule Coal

Mine drives a programme towards this national effort to reduce its carbon dioxide emissions from 45 kilotonnes per annum to circa 30 kilotonnes per annum, through deploying technologies such as electric utility vehicles in the mining areas from January 2022.

Speaking during the official groundbreaking 6 months ago Morupule Coal Mine General Manager Mr Edwin Elias Speaking during the official groundbreaking ceremony of the Motheo Project Morupule Coal Mine newly appointed General Manager Edwin Elias said for almost 50 years, the role that coal has played and continues to play in securing Botswana's energy needs and the economic potential the resource has in supporting the Botswana's economic diversification efforts, as well as maintaining the country's socio-economic stability can never go unnoticed.

"We are very proud of what coal has done to our economy and the limitless opportunities it presents to us going into the future. We are determined to maximize on the utilization of the vast coal resource endowment which our country enjoys, and the Motheo Project must bear testimony to the actualization of that determination," he said.

Elias underscored that the Motheo Project will catapult Morupule into new global heights, the likes of which the company has never reached before.

"We want to increase our share in the regional market and eventually increase our presence in the seaborne and international markets. The demand for coal globally has increased, and we wish to fulfil the prevailing demand while at the same time thinking of alternative uses which can be undertaken using modern mining methods and coal beneficiation techniques that are environmental-friendly and sustainably adaptive," he noted.

He said MCM's vision is to be a leading coal energy business: "Therefore, we will transition towards this through introducing new technologies, promoting innovation and digitization to our mining methods and business processes."





THE PROJECTS