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DEUTZ

MINING& TRADE



New Lindian CEO brings 30-years of mining project development experience



Chief Executive Officer Alwyn Vorster talking with site employees at Kangankunde

From page 1

Addressing the media in Lilongwe, Vorster said the Kangankunde Project's large and high-grade orebody makes it one of the best rare earth projects under development across the world

He said: "In early July, Lindian released a feasibility study on the Stage 1 development. Results of the study showed that the Kangankunde Project is technically and financially robust and can deliver attractive future financial returns."

"The feasibility study now paves the way for Lindian Resources to secure financing (US\$40M pre-production capital cost) for the Stage 1 Kangankunde Project development." Vorster explained that when in operation, the Kangankunde Project will provide signif-

icant economic and social benefits to Malawi in form of taxes and royalties, jobs and business opportunities, and social and infrastructure investment while additional flow on benefits will be generated from bringing mining investment and development to the region.

He observed that the project has a bright future due to potential growth in rare earth market, availability of favourable transportation infrastructure in the project area and the good relationship and support that the project is getting from the Malawi Government and local communities.

Since taking over as CEO, Vorster has been extremely active in Malawi; meeting with government, community members and local Lindian employees.

"I am committed to building upon the strong relationships established by Lindian in Malawi and continuing to invest in the community," he said.

Background of Kangankunde Rare Earths Project

The Kangankunde Project is located 90km north of the city of Blantyre and 15km south of Balaka town in Malawi.

A Feasibility Study (FS) released in July 2024 on a Stage 1 development delivered out-standing technical and economic results, including that the Kangankunde Project has one of the lowest capital and operating cost structures of rare earths projects globally. FS economic results:

Pre-tax net present value (NPV8 real) of US\$794M, an Internal Rate of Return (IRR) of 99% and average annual earnings before interest, taxes, depreciation and amortisation (EBITDA) of US\$84M.

• Pre-production capital US\$40M, including 12.5% contingency, making it one of the lowest capital cost rare earths projects under development. • Pre-tax payback period of 1.25 years, and pre-tax net present value (NPV) to Capex

ratio of more than 19.

Market

The Kangankunde Project is rich in the light rare earth elements; neodymium (Nd) and praseodymium (Pr). NdPr are a critical component in the production of permanent magnets. Long-term demand outlook for rare earths will continue to be dominated by magnet applications. This growth will be driven by demand for renewable energy and electrified transport applications. As such, the magnet market will be the largest growing sector and it is forecast that it will account for almost 60% of the NdPr market by 2050. Project Blue forecasts that the NdPr market will triple in the period to 2050, requiring an increase of 2 are been 2023 curply to market by a project Blue forecast that the NdPr market will triple in the period to 2050, requiring

an increase of 2-3x above 2023 supply to maintain a balanced market. "Future production will meet up to 3% of global NdPr demand by 2030. This segment offers the best growth prospects in the REE market, and the importance of magnets in the automotive sector positions Lindian as a critical Western supplier. Lindian will be well po-sitioned to respond to the increasing NdPr demand when the time comes," said Vorster.

Kangankunde Operations – Stage 1

The proposed Stage 1 development has mine life of 45 years based on current Ore Reserves

The operation will involve an open pit mining operation and processing plant to pro-duce (on average) ~15,300 tpa premium concentrate with 55% Rare Earth Oxide (REO) grade. The premium concentrate will contain ~8,400 tpa of REO and ~1,640 tpa of NdPr. Ore will be processed mainly through a physical process of gravity and magnetic sepa-ration. to produce a high-grade premium concentrate product. The clean process of grav-ity and magnetic separation also means that water is recirculated to the plant thereby, reducing the water requirement. Vorster said: "Unlike many rare earth projects, the Kangankunde Project's concentrate products and toilings will contain very low levels of radioactive meterials and other im

products and tailings will contain very low levels of radioactive materials and other impurities. This makes the handling of the ore and waste straightforward and enables the product to be shipped to most potential buyer countries without restrictions.³

Supporting infrastructure

The Kangankunde Project is located close to good supporting infrastructure which includes proximity to the main M1 highway, rail lines to ports and high voltage transmission lines. The following infrastructure will support the Stage 1 operation.

- 3MW power to be provided by grid power connection (hydro power) with back up onsite diesel power generation.
- Water to be sourced from bore fields.
- Tailings storage facility and return water dam.

• Fuel storage and dispensing.



Asimwe Kabunga, Chairman and Alwyn Vorster CEO of Lindian Resources meeting with District Commissioner of Balaka District, Tamanya Harawa

• Various buildings and warehouse and maintenance facilities.

Development schedule

The development schedule aims to commence site construction in fourth quarter of 2024 and commissioning of the processing plant in fourth quarter of 2025.

Employment

Vorster said the Kangankunde Project will require more than 200 full time equivalent site roles during the construction phase, and more than 100 full time equivalent site roles during the operational phase.

Local community

He also said the Kangankunde Project has the support of and will significantly benefit the local economy and rural community by promoting sustainable growth, creating jobs, and investing in the community while respecting traditional Malawian customs.

Vorster said: "Lindian has been active in the local community, providing financial support for a remote policing unit and assistance to the local schools. It has worked with the local community and government on a resettlement process for community members affected by the Kangankunde Project's development.'

"A Community Engagement Plan (CEP) has been developed in collaboration with the local government, traditional leaders, communities, organisations, and women's groups in the project area. The CEP establishes a committee comprised of community leaders, local community representatives, Government District Council officials, and senior leadership of Lindian. It will act as a forum for continued community engagement and issues management."

"Infrastructure upgrades are also planned, including upgrading a 5km unsealed road from the Kangankunde Project site to the M1 Highway into an all-weather road to enhance safety and accessibility. Communication infrastructure implemented for the Kangankunde Project will also improve community access to reliable communications.'

Future expansion

The very strong economics of Stage 1 and the large resource endowment of the Kangankunde Project, plus robust market demand forecasts, provide confidence for a potential Stage 2 expansion to significantly increase annual production. Lindian intends to formally commence a Stage 2 expansion study within the year.



Alwyn Vorster, CEO of Lindian Resources addressing community meeting in Balaka July 2024

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EDITORIAL



As reported in our articles on Page 13 and 14, half of the period set by the Ministry of Mining to implement its 2022 to 2027 strategic plan to transform mining into one of the key economic sectors to immensely contribute to the country's gross domestic product (GDP) has elapsed.

But the sector is developing at a very slow pace with a myriad of challenges which Government is failing to address due to lack of resources.

As Coordinator of the Chamber of Mines and Energy in Malawi Grain Malunga is quoted, there is little progress in the formation of the National Mining Company which could have been investing in mineral resource development besides holding government equity in large scale mining projects.

We agree with Malunga that Malawi urgently needs the state-owned mining company to pursue investments in agro-minerals for fertilizer production as the country is struggling to import fertilizer with the import bill ballooning every year.

To ensure proper monitoring of government interest in large-scale mining projects, Malawi needs this stateowned mining company to represent government interests as an equity partner in these projects.

We, therefore, call upon government to urgently allocate funds to operationalize the national mining company in order to fulfill its aspirations spelt out in the Strategic Plan and Malawi 2063, which seeks to develop Malawi into an industrialized nation with mining at the core.

As Malunga is quoted, there are also infrastructure challenges including lack of access to reliable energy and unreliable transport networks that are impeding growth of the industry.

Similarly, there is need for funding to address these challenges in so doing making Malawi attractive to investors to pursue mining projects.

For example, Malawi needs to develop reliable sources of power including coal fired power stations to industrialize. The country also requires an organized railway system that connects to mining areas including coal-rich areas such as Livingstonia and Ngana coalfields in the northern region.

As reported in our articles, the Ministry's strategic plan is also missing its target on the aspect of empowering Artisanal and Small-scale Miners (ASMs) who are encountering persistent challenges that threaten their ability to contribute effectively to the country's economy.

As President of the Federation of Women and Youth in Mining Flore-Annie Kamanga is quoted, without adequate financial support, miners are forced to use rudimentary tools that are not only inefficient but also hazardous.

MINING&TRADE News

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WATER ENGINEERING **Lilongwe Water Board loses MK 1.4-billion** monthly due to non-revenue water By Modester MWALIJA

The Lilongwe Water Board (LWB) is experiencing

significant financial losses, amounting to an estimated MK 1.4-billion each month, due to nonrevenue water (NRW). This substantial loss highlights the ongoing challenges faced by the Board as it strives to manage water supply in the capital city.

NRW, which refers to water that is produced but not billed-often due to leaks, theft, or inaccuracies in metering—has long been a problem for LWB for quite a long time.

Public Relations Officer for Lilongwe Water Board Chisomo Chibwana emphasized the gravity of the situation in an interview, stating, "The costs of NRW arise from both operational costs of production and revenue losses from water that is lost before it reaches the consumer."

Chibwana said in response to the challenge, LWB has launched a 5-year NRW reduction strategy, which is a key component of their 2020-2025 Strategic Plan. This strategy serves as a roadmap to systematically reduce the volume of lost water.

"We have intensified monitoring and evaluation efforts to ensure effective implementation and progress tracking,' she said.

She explained that a crucial part of this strategy is the creation of District Metered Areas (DMAs) as these DMAs break down the water distribution network into smaller, manageable areas, making it easier to identify and address the most significant sources of water loss.

'So far, 123 DMAs have been established, and the Board has also invested in a Supervisory Control and Data Acquisition (SCADA) system, which helps detect potential leakages in real-time," said Chibwana.

She further said that LWB has conducted training programs to enhance the skills of its technicians in managing NRW. These initiatives are supported by an ongoing Japanese International Cooperation Agency (JICA) funded project aimed at strengthening the Board's capacity in this area.

However, Chibwana states that the Board's efforts have not been without challenges as the creation of DMAs, along



Chibwana: We have intensified monitoring and evaluation efforts

with ongoing road upgrading projects in the city, has led to increased water losses due to interconnection works and pipe flushing exercises. These activities have also resulted in frequent water supply interruptions, reducing the volume of water billed to customers.

Despite these setbacks, the LWB's strategy has yielded some positive results as since its inception, the NRW rate has decreased by 2%, bringing it down from 42% to 40%.

"As the LWB continues to refine and implement its strategy, it remains committed to reducing these losses and improving the efficiency of Lilongwe's water supply system," she said.



Chawezi executes road maintenance program for Nathenje community



Construction works underway

By Modester MWALIJA

ocal quarry miner Chawezi Resources has constructed an access road to its quarry mine in Nathenje in Lilongwe, which is serving the local community besides making it easy for its customers to reach the mining site.

Chawezi has contracted local construction firm Plem Construction to carry out the road construction works, which are part of its major infrastructure upgrade at the quarry mine. Chawezi Quarry Manager Leckson Chigoneka told Mining & Trade Review in an interview at the site that the Company's commitment to corporate social responsibility (CSR)

is evident in its ongoing efforts to improve the lives of those living near its operations. "As part of our CSR programme, we have executed several projects including provid-

ing access to clean water, which was a critical need in the area and improving road accessibility to help people travel more easily from the village to town", Chigoneka said.

The miner supplies tap water sourced from underground to households close to the site. In addition to these efforts, Chawezi Quarry has been involved in environmental conservation through tree-planting initiatives.

We are committed to operate in tandem with environmental laws and regulations. Planting trees is one of the ways through which we are contributing to the sustainability of the environment around us," Chigoneka said.



State of the art quarry plant in operation

Meanwhile, Chawezi Resources is working on installing an asphalt plant at the mining site. Chigoneka described the development as a major milestone to the nation as it will play a major role in the completion of road projects in the country

He said: "The new asphalt plant marks a significant step forward for Chawezi Quarry. It is a project that is not just big in scale, but also in terms of the benefits it will bring."

"We expect it to take more than a year to be completed but the longterm gains for both the company and Malawi's infrastructure development will be substantial.3

Chigoneka also said that the plant will produce asphalt specifically for road construction, ensuring that Malawi's infrastructure projects have a steady supply of high-quality materials. This in turn is expected to drive further growth in the construction sector.

try's development by providing the social responsibility projects materials needed for building and



"Our goal is to support the coun- Chigoneka: We have executed several corporate

maintaining roads. This project will allow us to do that on a much larger scale," he said. Chigoneka also said that besides the economic advantages, the new project is set to have a significant positive impact on the local community.

"We have already employed more than 40 people from the surrounding villages, and this number is expected to rise as the project progresses as the additional revenue generated by the asphalt plant will enable us to continue and expand our support to the com-munity," he said.

Chawezi Quarry Mine produces about 35,000 tons of quarry and quarry dust per month. The Mine owned by Chawezi Resources, which is a subsidiary of Akatwiri Holdings, is located on a tenement area of about one square kilometre.

Besides the Nathenje project, the Akatswiri Holdings Group owns another quarry mine in Nsanje and has plans to set up quarry mines close to cities of Blantyre, Mzuzu and Zomba.

The Akatswiri diversified resources group has mineral tenements across Malawi and also offers consultancy services in mining engineering, geology and construction.



Chawezi Resources' tipper loading quarry



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MINING <u>ARTICLE SPONSORED BY</u> PEREKEZI MINING CONSULTANTS

Malawi Govt ready to fully operationalise Mines Law

By Wahard BETHA

he Ministry of Mining has assured players in the sector that it is ready and much prepared to fully implement the newly gazetted Mines and Minerals Act of 2023.

On June 28, 2024, Minister of Mining Monica Chang'anamuno gazetted the new Mines and Minerals Act of 2023 in so doing operationalising the Mining and Minerals Regulatory Authority, which has been formed under the new Act.

Director General (DG) for Mining and Minerals Regulatory Authority Samuel Sakhuta told *Mining & Trade Review* in an interview that the Government is ready to fully operationalise the Authority in accordance with the Act but what has remained is recruitment of the Board Members.

Sakhuta said: "The government is very ready to move the new Act. The Authority has just started working but there are just a few gaps that are supposed to be filled to be fully fledged."

"As you may be aware, the first step was to put the Act that has incorporated the Authority in place."

"When it was commenced, the Authority had no DG, had no Board Members, but by July 31 the government had appointed the DG, meaning now we have the DG but the Board Members will be announced anytime soon. That is what we are pushing for because the DG cannot fully function without Board Members."

Sakhuta said after the government announces the names of the Board Members, next will be induction of those members to ensure that all members are conversant with processes in the country's extractive industry.

He said: "They (Board Members) have to move in with common knowledge of how to conduct these things. You know that the DG will only act as head of the secretariat to make sure that all operations are done as required."

"The previous Act had no Authority. We had the Commissioner who was implementing the Act while this time we have DG as the head, with the Board Members."

"At some point the DG may also guide on how to operationalize some of the things that are technical in nature so that the Board does not make mistakes."

Commenting on the development, Geoscience Consultant Ignatius Kamwanje expressed excitement towards enactment of the new Mines and Minerals Act saying it contains some of the changes that match the current status of the mining sector.

Kamwanje said: "Am very happy to see that in the new Mines and Minerals Act there are some aspects that have been put in place which are in familiarity with the current trends."

"For example, incorporation of the Community Development Agreement (CDA) which is like now empowering communities to have that sense of ownership of the mining project within their area."

"It is one way of empowering communities at large and it is also giving communities an opportunity to have a tradeoff with the government and mining company," he said.

Kamwanje advised the government to ensure strict enforcement of the regulations in order to successfully implement the Act.

Consulting Partner for Perekezi Consultants Chikomeni Manda commented that the key reforms introduced in the new Act will significantly promote transparency, accountability and sustainability in the industry.

Manda said through the establishment of clear guidelines for mining sector, the Act seeks to attract more investment and create a more conducive environment for growth and development.

He also commended the Act for addressing pertinent issues such as community engagement, environmental protection and revenue sharing which are crucial in ensuring that the benefits of mining are shared equitably among all stakeholders.

Manda said: "The new Act is expected to bring significant changes to Malawi's mineral sector by introducing stricter regulations and increasing transparency in the industry through the Authority."

"This could lead to improved governance and accountability as well as attracting more foreign investment."



Manda: Reforms will promote transparency, accountability and sustainability

"Additionally, the Act may also help to address issues such as illegal mining and environmental degradation, ultimately benefitting the country's economy and local communities."

On implementation, he said the government needs to establish monitoring systems to track progress and enforce penalties for non-compliance.

Manda said: "It is also crucial for the government to actively engage stakeholders including businesses and advocacy groups to gather feedback and make any necessary adjustments to the Act."

"By taking these steps the government can help ensure that the Act is effectively implemented and achieves its intended goals."

In a separate interview, Programs Coordinator for Natural Resources Justice Network (NRJN) Joy Chabwera called on government to expedite deployment of District Mining officers and collaborate with different stakeholders conducting different advocacy activities focusing on mining in order to successfully implement the Act.

"It is very important to recruit District Mining Officers because when you go to the Councils, there are currently no officers to assist you on mining issues," Chabwera said. He also urged the Ministry to exercise contract disclosure in line with Extractive Indus-

try Transparency Initiative (EITI) standards. "We are also expecting collaboration with Civil Society Organizations (CSOc) in suc

"We are also expecting collaboration with Civil Society Organizations (CSOs) in successful implementation of this Act," said Chabwera.

He also tipped the government to scale up awareness campaign on mining issues so that many Malawians are able to understand how the industry can shore up the economy.



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SEPTEMBER 2024 MINING

MINING& RADEReview



Inkosi Mabilabo signing the agreement

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Inkosi ya Makhosi M'mbelwa V (left) witnessed the signing ceremony

By Tione LUWANGA

n August 2024 Globe Metals and Mining (Africa) Limited became the first mining company in Malawi to comply and implement the Community Development Agree-

Leonparty in Watawi to comply and implement the Community Development Agree-ment (CDA) with the qualified communities that surround the Kanyika Niobium Proj-ect since the new Mines and Minerals Act 2023 came into being. Section 169 subsection 1 of the Act stipulates that "a holder of a large-scale mining li-cence shall assist in the development of qualified communities affected by its operations to promote sustainable development, enhance the general welfare of the quality of the the inhabitants and shall recognise and respect the rights, customs and traditions of the local communities that are consistent with the constitution."

Subsection 3 adds that no holder of large-scale mining licence shall proceed to do com-mercial production before the ratification of the CDA by the qualified affected community. Chief Mining Engineer in the Ministry of Mining, George Maneya said the historic cer-emony demonstrates that the Ministry of Mining is ticking.

He said: "This is historic. This is in line with the current laws in the Mining Act. The CDA signing will now bring confidence to the community that this project will benefit them. It will also work as a reference point when one party has issues over the project."

Maneya added that after the signing, the documents will have to go back to the Ministry for final approval. In his speech, Paramount Chief Inkosi ya Makhosi M'mbelwa V said what was delay

ing the compensations was the CDA and now that it has been signed, the process should not take ages. "The CDA is one of the factors that the investors were looking for and now that we have

signed, I was reminding the Globe Metals officials that they should expedite the process

because the affected community has been deprived of much needed development because they know that their land has been designated for the mining project," said M'mbelwa Globe Metals and Mining Chairperson, Macleod Nyirongo, said the assessment is the company's priority.

The signing is a flagship which is saying the community has agreed and so Globe will go to the next step and the next step is to have an assessment. What do people have? Those people who are directly affected by the project. What is the value of the assets that they have? What are they going to be compensated for, so that they can continue with their lives?" narrated Nyirongo.

Nyirongo said following the assessment, the company will develop an engagement plan involving people around Kanyika mine area.

"We need to prepare an engagement plan to ensure that people understand Globe's ac-tions are planned and predictable," said Nyirongo. Central to the CDA is the management of the 0.45% of gross revenue which will be re-

mitted back to the community as part of Corporate Social Responsibility (CSR), accord-

ing to the law. To comply with this, Globe Metals has put a landmark of 0.45 percent to which Senior Chief Mabilabo said is not bad.

"Pasono pano tawapulikiska wa mgodi kuti ka wakwamba waka kwene tili kukamba nawo wa kuti pala vinthu vayamba Kwenda makola mbwenu wazakakwezgeko ndalama iyi panji kufika pa 1 percent, apo mbwe vinthu vikwenda makola. (Currently we have agreed with the 0.45 percent because the company is just starting but we have spoken to them already to consider increasing the amount if the company starts making tangible profits)," he said.

He added that a Board of Trustees, including Trustees from the Northern and Central Regions as well as the Kanyika District, has been established and mandated to handle the resources according to the needs of the community.

The affected District Councils were represented by respective District Commissioners; Rodney Simwaka of Mzimba District Council and James Kanyangalazi of Kasungu who signed as witnesses.

aking prior to the event, Simwaka said the two councils will be to monitor the seamless implementation of the CDA. Government has already given Globe Metals the go-ahead to start the min-

ing operations through the provision of the mining licence in 2021 and approving the Mining Development Agreement (MDA) in March 2023.

The signing ceremony was supposed to take place on June 10, 2024 but was postponed due to the tragic death of the country's former vice president Dr Saulos Klaus Chilima.

Once in operation the Kanyika Niobium Project, with its large deposit of niobium, tantalum and zircon will be the first such mine in Africa as well as the fourth largest Niobium mine in the world, and has an estimated lifespan of about twenty-five years.

Niobium is used for high-tech technologies like aerospace, metal, atomic energy and electronics industries. It is also used in the medical field, optical, lighting and chemical industries.

Globe Metals plans to build the refinery plant in Lilongwe.



Group picture of the people including members of the local community who attended the event

Globe PURICENUTICE Metals & Mining

Globe Metals and Mining (Africa) Limited is pleased to announce to the general public the appointment of Mr Macleod Nyirongo as the new Board Chairman of the company replacing Mr Neville Huxham, who has retired.

Mr Huxham has been with Globe since 2012 when he first arrived in Lilongwe to finalise negotiations with Government for the Mining De-velopment Agreement to implement the Kanyika Niobium Project (KNP).

"I very much enjoyed and appreciated my time in Malawi and am well pleased with Globe's successful completion of the Mining Devel-

opment Agreement which was signed by government and the company in March 2023. I must offer high praise to my colleagues at Globe whose support was invaluable during our negotiations with Government and the com-munity," Mr Huxham said. Mr Nyirongo is a graduate of the University of Malawi and the London School of Economics. After graduat-

ing Mr Nyirongo served as Principal Economist in Malawi's Office of the President and Cabinet, responsible for economic analysis and formulation of economic and social policies to stimulate Malawi's growth.

Thereafter he pursued a stellar global career spanning more than 30 years within the United Nations Organi-sation and UNDP. His official postings as UN Country Director included the Peoples' Republic of China, Er-itrea, and Zambia, and he was also the UN's Resident Director in Sierra Leone and Kenya. Following his retirement from the UN, Mr Nyirongo held the position of Adviser to Malawi's Minister of Fi-

nance on global partnerships for effective development cooperation thereafter he left Government to launch a

highly successful events and functions company. Globe Metals believes that the appointment of Mr Nyirongo is an important step as it seeks to establish Kanyika as the premier niobium mine in Africa and calls on the general public to join them in welcoming and congratulating Mr Nyirongo on his successful appointment.



9



MINING



by Dr. Grain Wyson Phillip Malunga FIMMM Minerals, Geology, Environment & Corporate Affairs Consultant

Abstract Research work has shown that deposits for ceramic and brick clays exist widely in Malawi. These are associated with dambo sedimentation. They also lie on weathered bedrock of anorthosite and syenite bodies, quartz feldspathic gneiss and pegmatitic bodies. Some re-search work was conducted at Linthipe in Dedza, Nathenje in Lilongwe, Chintheche in Nkhata-Bay, around Mzuzu City, Liwonde in Balaka, Senzani in Nicheu and East of Bwangwe in Planture Of all these deposite only the Linthipe alay here here twidid in datail

in Blantyre. Of all these deposits, only the Linthipe clay has been studied in detail.

1. INTRODUCTION

Clays are classified into three categories according to temperature curing and final hardness. This groups them into low temperature, stoneware and porcelain clays. Clay occurs in two environments. Primary environment hosts clay in situ and produces pure and non-plastic clay which cooks between 7000C and 1,0000C. This is called kaolin and is a common component of pastes and glazes. Secondary environment hosts clay that has been deposited from elsewhere. This type of clay is more plastic due to effect of change and movement. Secondary clays are sedimentary clays commonly known as clay ball. Clay ball turns into white colour when cooked 1,2400C and 1,3500C. and produces porcelain and stoneware. By itself it is very plastic and when cooked, it adopts a white colour, being one of the basic elements for obtaining porcelain and the stoneware. 2. CLAY PROPERTIES

Clay constitutes mainly quartz, feldspar and mica. These translate respectively into SiO2, Al2O3 and (MgO, Fe_2O_3 and TiO_2). Their chemical composition dictate what product can come out of them.

Common red bricks are manufactured from clay with 50% to 60% silica (sand), 20% to 30% alumina (clay), 2% to 5% CaO, up to 7% to 6% FeO and 1% to 0.25% MgO. Refractory or fire clay is rich in silica and aluminium. These are resistant to high temper-

A teres and are therefore suitable for lining furnaces, and for manufacture of utensils used in the metalworking industries, such as crucibles and glassware. Porcelain clay contains mainly kaolin. Kaolin is used in dentistry, mechanics and pottery. Ball clay is a plastic clay that acts as a binding agent. It is mainly composed of kaolinite, mica and quartz. Table 1 displays common clay composition used in ceramic and brick industry

Table 1: Various clay composition (Source from various literature)

COMPOUND	BRICK CLAY	PORCELLAIN	BALL	FIRE
		CLAY	CLAY	CLAY
Si ₂ O ₃ %	40 - 56	66 - 77	45 - 55	47.6 -65.1
Al ₂ O ₃ %	12.5 - 15.9	18 - 20	30 - 40	22.2 -
				29.5
MgO %	1.3 - 3.4	0.5 - 5	0.1 -0.5	0.09 -1.91
TiO ₂ %	0.5 -0.9	0.4 - 0.9	0.5 - 2.0	
Density	2.4	2.3	2.6	1.3
(g/cm^{3})				
Firing	>1,100	1,220	>1,162	
Temperature				
0C)				

able 2: Some Clay localities in Malawi (Source: Geological Survey)

NAME OF DEPOSIT	LOCATION	DELINEATED
		(TONNAGE)
Linthipe	Dedza	15.0 Mt
Senzani	Ntcheu	0.5 Mt
Nkhande	Ntcheu	0.6 Mt
Kumbachenga Hill	Dowa	
Chintheche	Nkhata Bay	
Chiula River	Chitipa	
Rivi Rivi River (Head waters)	Ntcheu	
Bwangwe Area	Blantyre	
Chadza Area	Lilongwe	

3.1 LINTHIPE CLAY

.6 kilometres. The clay has a density of 1.86 t/m3 and an estimated

This clay covers an area of 7.6 knowed and the serve of 14.1 million tonnes. The clay is a weathering product of an anorthosite body. It has a higher firing shrinkage of 5-13 % and therefore requires addition of silica sand and feldspar fillers to a proportion of 25 % for each to reduce the shrinkage to 1.8 %. The clay has the following chemical composition:

The clay	has the	tollowing	chemical	compositio
*	SiO2	e		46.7 %
*	Al_2O3			33.8 %
*	Fe ² O3			2.0 %
*	CaΌ			1.1%
*	MgO			0.26 %
*	$K_{2}O + 1$	Na2O		0.28 %
D (4 1	· 4 i i		1 D M

Reports on Linthipe clays by L. Chapola, B. Manda and D. Piper cover a lot on this clay deposit and can be obtained from Geological Survey in Zomba. **3.2 CHINTHECHE CLAY**

F.R. Phiri of Geological Survey Department did some work on this deposit in 1980. He noted

that the clay has quartz, muscovite, small grains of iron oxide and tourmaline as its impurities. He further observed that suitable additives are necessary to avoid its limited ceramic applications

The deposit covers a very large area. He also recommended that reliance should be placed on ant mounds which he said could be suitable for brick making. **3.3 SENZANI CLAY**

This is found in Ntcheu along Zalewa road. R.S. Mshali of Geological Survey mapped the area and carried out some firing tests. The clay is a result of weathering of feldspar in anorthositic gneisses near Senzani into kaolinite. tion:

he clay	has the following chemical	composit
2	SiO2	46.9 %
	A12O3	28.7 %
	TiO2	0.26 %
	CaÓ	2.94 %
	MgO	0.83 %
	K2O	0.28 %
	Na ₂ O	1.55
	/	

3.4 BWANGWE EAST CLAY

D. P. Piper (1982) from the same Department described resource of soils suitable for brick

 D. P. Piper (1982) from the same Department described resource of softs suffable for brick making east of Bwangwe in Blantyre. The area is between Bwangwe and Nguludi mountains. These soils cover about 40 km².
 The soils are derived from underlying perthite gneisses and perthosites. He estimated that about 17,500 million bricks could be produced by traditional methods and about 26,500 million bricks could be made by mechanised brick plants. These bricks can be produced in those areas that contain about 50 % silt and clay. 3.5 CHADZA CLAY

Chadza area, South of Lilongwe, occupies about 95 km². Dambo clays and lateritic clay oils provide materials for brick making. **3.6 CHIULA CLAY**

A kaolinized pegmatite hosts good quality of kaolin near Chiula stream in Chitipa. It is loa cated 3 km east of Kaseye mission and can be a source of porcelain clay. 3. CHARACTERISATION OF CERAMIC CLAYS

Due to demand for brick clays as a result of urbanisation, research work on brick and ceramic clays was done close to urban areas. This gave birth to establishment of Brick and Tiles section within Ministry of Works and Supplies. Main establishments were put in Mzuzu, Lilongwe and Blantyre. The Geological Survey did some exploration work for clays as shown above. Most work was in dambos and weathered bedrock of anorthositic and syenitic bodies, above. Most work was in dambos and weathered bedrock of anorthostic and syenitic bodies, quartz feldspathic gneiss and pegmatitic bodies. These bodies continue to be attractive prospects for ceramic and brick clays. Dambo clays and red brown lateritic clays offer raw materials suitable for brick and tile making. To characterise these clays for industrial application ceramic and brick making there is need to undertake additional analysis that includes particle size distribution (PSD), X-ray Diffractometer (XRD) and Fourier Transform Infrared Spectroscopy (FTIR).

Chemical analysis of Linthipe and Senzani clays indicate that they belong to ball clays (Table 3). They are mostly suitable for producing dinner ware and water holding vessels. FTIR method identifies organic, polymeric and inorganic materials in the samples while Scan-Table 3: Comparison between com clay characteristics with that of Malawi clay

COMPOUND	BRICK	BALL	LINTHIPE	SENZANI
	CLAY	CLAY	CLAY	CLAY
Si ₂ O ₃ %	40 - 56	45 - 55	46.7	46.9
Al ₂ O ₃ %	12.5 - 15.9	30 - 40	33.8	28.7
MgO %	1.3 - 3.4	0.1 -0.5	0.26	0.83
TiO ₂ %	0.5 -0.9	0.5 - 2.0	-	0.26
Density (g/cm ³⁾	2.4	2.6	1.86	-
Firing	>1,100	>1,162	11050	-
Temperature ⁰ C)				

ning electron microscope (SEM) can be used to understand the external morphology (tex-ture), chemical composition, and crystalline structure and orientation of materials of the samples too. XRD is used to determine the crystallographic structure of the clay body. Some additives are added to clay to improve strength and lower firing temperature. Grog is a granular material that is added to pottery to add strength, reduce shrinkage and cracks and to add texture. Grog is firesand or chamotte rich in silica and alumina. Flux is also added to lower firing temperature. Elux can be federate neghalized to reach a strength of the clay class of the strength of the streng lower firing temperature. Flux can be feldspar, nepheline syenite, iron and talc. Glaze is also added to ceramic materials to colour, decorate and waterproof them. Glazing ceramics is also to make them food-safe. It forms a finishing coating layer melted and fused permanently dur-ing firing. Glazes can be formulated through addition of zinc, calcium, aluminium, beryllium, zirconium, rutile, barium and tin.

4. CONTRIBUTION TO MALAWI 2063 VISION

Ceramic and brick clays are used in many industrial applications such as paper, paint, ce-ramic, cement, adhesive, and food and health-care industry due to their versatility, abundance, and low cost.

Clays are used in pharmaceutical formulations and aesthetic medicine. They are also used in paper production, as well as in paints and coatings. The construction industry consumes a lot of ceramic products such as tiles, sanitary ware

d paint. Promotion of cera mic industries will bring about i foreign exchange reserves. The youth should be encouraged in undertaking research and de-velopment at academic institutions and they should be supported with seed capital to go into

entrepreneurship. The Malawi 2063 emphasizes the need to create Malawi Development Bank and Malawi Mining Company that should lay the foundation for wealth creation and divesture of mature projects to Malawians in order to promote wealth and job creation. **REFERENCES**

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MINING



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Tailings and Tailings Storage Facilities Management from Mining of Metals from Ores

Tailings are a by-product or waste stream of mining after the ore containing an economically-recoverable commodity is mined from the earth, extracted from a process plant or mine mill. Typically, mill tailings range from sand to silt-clay in particle size and sometimes occur as a paste material during settling. Tailings management during mine operation and post mine closure period is the responsibility of mining companies themselves, while ggovernment agencies regulate tailings and set minimum design standards. Tailings management and storage facilities are engineering projects which comply with safety and environmental control requirements including compliance to global standards. 1. Origin of Tailings into Storage Facilities

with Ignatius Kamwanje

Tailings originate from processing of mineral commodities mainly from processing plants. When an economic mineral of value is extracted, the mineral itself is sold leav-ing the by product that is thrown into what is called the Tailings Storage facility which is merely a dam. These mineral commodities of economic value could be uranium, copper, gold, silver, iron, lead, zinc, coall etc. Due to a number of factors, not all of the metal content is recovered during the extraction process and some remain as residuees which means the tailings may become valuable in the future depending on technologi-cal improvements and market conditions allowing them to be reprocessed for gains.

After processing, tailings are directed and stored so that their effect on the environment is minimized. There are several methods used in the mining industry for constructing tailings facilities which among others include:

Filtered tailings.

 Paste tailings including underground backfill
 Conventional tailings facility, including in-pit disposal methods; the Kayelekera Uranium Mine type in Malawi.

Each of these tailings impoundments utilizes a dam and engineered containment to minimize seepage of solutions into the environment. Generally, a pump system is used to collect any errant seepage and return it to the process or impoundment.

2. Regulation, Management, Good Practice of Tailings and Tailings Storage Facilities

All mining companies with modern tailings facilities must submit and obtain a govern-ment regulatory approval of an operating, closure and bio-remediation plans. Tailings management during mine operation and afterward are the responsibility of mining companies. Government agencies or institutions must regulate tailings and set minimum design standards. Tailings management and storage facilities are engineering projects which comply with safety and environmental control requirements including prudent management of other effluents, water and dust

As a good practice, there is need for a holistic and comprehensive approach across the Life of Mine cycle for safe and responsible management of tailings. These approaches must encompass implementation of good engineering practices and also good governance of tailings management. These should be implemented together in a fully inte-grated manner throughout all phases and activities of the mining lifecycle, Good engineering practices, including a risk-informed approach throughout the life

cycle of a mine, are needed to improve the safety of tailings facilities. In some cases, improvement can be achieved through enhancing current practices while others may adopt a performance-based approach which provides a more rigorous technical basis for decision-making.

Effective governance of tailings management ensures accountability for decisions, provides a management structure with checks and balances for decision-making, provides the means to effectively manage tailings on a day-to-day basis, and provides input to mechanisms to respond effectively if an emergency occurs. Implementing these elements together helps to achieve the best outcomes for tailings management and helps ensure effective communications. Most importantly, this approach helps to mitigate the human element in tailings management and reduce the likelihood that human error will lead to ineffective tailings management, or worse, a failure of a tailings facility.

3. Global Industry Standard on Tailings and Tailings Storage Facility Management Most catastrophic dam collapses may occur due to human, natural, induced and environmental factors that demand decisive and appropriate action to enhance the safety and strengthen the governance of tailings facilities across the globe. There is therefore need for a profound action that seeks to address the complexity and multi-disciplinary nature of sound tailings management. Mining companies, governments and investors are encouraged to use global safety standards and continue to working together in improving the safety of tailings facilitiess. The Standard should be supported by an independent body that can maintain the quality over time.

Globally, there have been accidents arising from tailings and tailings storage facility mismanagement. It is important to note that catastrophic tailings facility failures are unacceptable and mine operators must have zero tolerance for human fatalities and strive for zero harm or accidents to people and the environment from the earliest phases of project conception. To be compliant with the Standard, mine operators must use specified measures to prevent the catastrophic failure of tailings facilities and to implement best practices in planning, design, construction, operation, maintenance, monitoring, closure and post closure activities.





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Mining sector shows steady growth

By Modester MWALIJA

Since 2021 the mining sector has experienced steady growth due to a supportive legal and regulatory environment that welcomes both local and international players, this is outlined in the 2023/2024 annual economic report published by the Ministry of Finance and Economic Affairs.

The report states that in 2023, the Mines and Minerals Act of 2019 was repealed to accommodate the establishment of the Mines and Minerals Regulatory Authority (MMRA).

"The MMRA has been established and has been assigned the licensing, inspection, and geological surveying functions to improve regulation and enforcement in the mining sector," the report reads.

The report says that the Ministry launched its strategic plan for 2022–2027 and began its implementation, reaffirming the Ministry's mission and strategic objectives.

"One of the initiatives implemented under the Strategic Plan was the completion of a mineral processing and research laboratory in Lilongwe and the installation of key equipment."

The report further says as of December 31, 2023; the Ministry of Mining had collected 2023/24 revenue amounting to MK747,012,957.80. In total, the Ministry was expected to collect MK1,002,336,233.75, representing 3 percent growth over 2022/23 collection, largely due to increase in the number of mining license applications and revenue enhancement.

During the year under review, the Government, the Ministry of Min-

ing granted 546 various licenses to prospecting mining companies and individuals.

"378 licenses were given to small scale operators namely 61 Non-Exclusive Prospecting Licenses, 168 Small-Scale Mining Licenses, 149 Reserved Minerals Licenses and 164 licenses were given to larger and medium operators including 106 Exploration Licenses, 28 Medium-Scale Mining Licenses, 1 Large-Scale Mining License, 32 Retention Licenses, 1 Reconnaissance License," reads the report.

However, the report notes that despite these positive developments, the mining sector currently contributes only 1 percent to the national income as the sector still faces challenges including unreported income, smuggling, environmentally damaging practices, and health hazards associated with substandard mining methods, which pose significant concerns.

"Limited power supply, bad road and railway infrastructure, and other economic constraints elevate overhead and production costs, deterring investors and hindering sector

Kayelekera Uranium mine is the only large scale mine that operated in Malawi

growth," says the report.

The report notes that to unlock mining sector growth, further policy reforms are necessary including streamlining the legal and regulatory framework, optimizing administrative procedures, enhancing oversight capabilities, and fostering local participation.

"Establishing robust support structures like reliable infrastructure and power supply is crucial to attract and retain investors," it says.

The report also acknowledges that the ongoing projects in the form of strategic roads, railways, and power plants, which started in 2022/23 financial year, offer a positive outlook for the coming year."

In the 2024/25 Fiscal Year, the government plans to undertake a number of interventions to foster productivity, transparency, and accountability in the sector so that it contributes significantly to inclusive wealth generation and economic growth in line with Malawi 2063.

Govt strategic plan missing target on ASM empowerment

By Modester MWALIJA

Indications on the ground show that the Ministry of Mining is missing its target in implementing its 2022-2027 strategic plan on the aspect of empowering Artisanal and Small-scale Miners (ASMs) who are encountering persistent challenges that threaten their ability to contribute effectively to the country's economy.

The strategic plan aims to increase investment in the mining and upstream petroleum sector by adopting the Integrated Rural Development 2017 approach which aims to promote entrepreneurship and environmentally sustainable mining practices among ASMs.

mining practices among ASMs. "By the year 2025 targeted ASMs should be trained in mining and value addition and formalized into recognisable cooperatives, "reads the plan

However, our investigations show that ASM operators continue to struggle with issues ranging from regulatory barriers to financial limitations, potentially disrupting these efforts.

President of the Federation of Women and Youth in Mining Flore-Annie Kamanga says in an interview that while the strategic plan outlines a clear vision, the implementation process is stumbling due to the complex regulatory environment.

"The current legal framework is not ASM-friendly. The high cost of licenses and the bureaucratic problems make it nearly impossible for small-scale miners to operate legally. This situation forces many ASM operators to work informally, putting them at odds with authorities and limiting their access to formal markets," she says.

their access to formal markets," she says. Kamanga also highlights the problem of lack of access to finance which impedes ASMs' ability to invest in modern equipment and technologies. "Without adequate financial support, miners are forced to use rulimentary tools that are not only inefficient but also

"Without adequate financial support, miners are forced to use rudimentary tools that are not only inefficient but also hazardous," she says. She says lack of access to established markets is another critical issue as many ASMs frequently face challenges in accessing fair markets and are often exploited by middlemen who offer low prices for their minerals.

Kamanga advocates for better market structures and value addition initiatives, emphasizing that "there should be systems in place to provide real-time market information and support for forming cooperatives to enhance bargaining power."

Noah Alfred, an artisanal miner, provides a ground-level perspective on the challenges. He dwells on the financial constraints faced by small-scale miners, stating, "The lack of adequate funds for running a small-scale mining operation is a significant barrier. Despite government pursuing strategies like the Agriculture, Tourism and Mining (ATM), ASMs are not fully recognized or supported."

Alfred also expresses concern over government's restrictions of ASMs to use heavy machinery, which he believes hinders progress.

"The use of heavy machinery should be allowed as it would enhance productivity and efficiency. Relying on shovels and picks is too primitive and limits growth," he says.

Noah suggests that government intervention is necessary to support ASMs. "There needs to be a revolving fund program that provides soft loans to small-scale miners. This financial support is crucial for sustaining operations and preventing miners from diverting to other businesses due to financial difficulties." he explains.

financial difficulties," he explains. He also advocates for increased education and training, emphasizing that "government-led workshops and training programs are essential to equip miners with the knowledge needed for better mining practices and market access."

By implementing the strategies outlined in the 2022-2027 Strategic Plan more effectively and inclusively, Malawi could empower ASM's to transition from subsistence mining to sustainable, profitable operations that adequately benefit both the miners and the broader economy.



Kamanga: The current legal framework is not ASM friendly

Slow progress in Malawi mineral sector development irks stakeholders

By Modester MWALIJA

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s Malawi approaches the half way mark of the period for the implementation of 2022-2027 Mining Strategic Plan, concerns are growing over the sector's slow progress. Chamber of Mines and Energy in Malawi and Civil Society Organisations (CSO's) express concern that deep-rooted challenges are delaying efforts to move the

country's mining industry forward. The strategic plan was designed to transform the mining landscape and boost economic growth. The plan sets forth a range of objectives aimed at increasing production, enhancing transparency, and ensuring that local communities benefit from mining activities.

"The strategic plan's mission is to coordinate, facilitate and promote participation of all stakeholders in the sustainable development, utilization and management of mineral and petroleum resources for socioeconomic growth and development", reads the plan Grain Malunga, Coordinator for the Chamber of Mines and Energy, says the mineral sector is developing at a very slow pace due to insufficient financial and human resources. "We still have not seen significant progress in actabilizing law institutions like the Min

"We still have not seen significant progress in establishing key institutions like the Min-ing Development Corporation and the National Mining Company and there has been no specific targets in investments, exploration and mining," Malunga says. He also says the sector is facing infrastructure challenges including lack of access to re-liable energy and unreliable transport networks.

Malunga, however, acknowledges that the current regulatory frameworks are adequate to promote transparency in the mining sector. These include Mines and Minerals Act 2023, Access to Information Law and Anti-Corruption Act.

Kennedy Rashid, National Coordinator for Natural Resources Justice Network (NRJN), raises concerns over the environmental impacts of unregulated and illegal mining activi-ties, particularly in areas like Makanjira where some parts of the Namizimu forest have been cleared, and the chemicals that are being used by Artisanal and Small-scale Miners (ASMs) in Nkhatabay and Nkhotakota in streams where gold is being panned.

"The main concerns on the environmental side include deforestation, water pollution, air

pollution, land degradation, and siltation," says Rashid. He says the challenges can only be addressed if the Ministry of Mining is financed and adequately staffed to carry out its functions and provide services to all scales of mining activities.

"There is a need to mainstream training or capacity building on responsible mining, and increased inspections and audits by both the Environmental Protection Authority, Malawi Human Rights Commission, and Mining Regulatory Authority," says Rashid.



Rashid: Challenges can only be addressed if the Ministry of Mining is financed

He also calls on government to mainstream open contracting, beneficial ownership dis-

closure, revenue transparency, environmental and social impact accountability. "This can best be achieved if we could mainstream the Extractives Industry Transparency Initiative (EITI) standards and the African Mining Vision framework (AMV). We need to localize both the AMV and EITI standards but in consideration to our context thus in respect to our laws and regulations", says Rashid.

Despite the current challenges, the future of Malawi's mining sector appears promising, as stakeholders continue to push for reforms and improvements that will unlock the full potential of Malawi's mineral wealth.

IRANSPORT

Novemb P



State President Lazarus Chakwera inspecting the construction project

By Francis TAYANJAH-PHIRI

Construction of Likoma Port is scheduled to finish by November 30 this year, when it will immediately start operating, the Marine Department in the Ministry of Transport and Public Works says.

In an interview with Mining & Trade Review, the Department's Chief Surveyor of Vessels Wilson Luwani rated the project at 85% completion.

He said the facility will be capable of handling two big ships at a time.

Luwani explained that currently there are ongoing construction works taking place for a fence, warehouse, and immigration/customs offices; and immediately after this, the port will be ready for operations.

'Apart from the docking bay, the facility [port] will have a warehouse, storage facilities, waiting shelter, jetty, and cargo handling equipment, among other things," said Luwani. He said the port was designed in a manner that it would not be prone to floods, as is the case with the Nkhata Bay one, which is currently submerged in water, following this year's

rising of water levels in most parts of Lake Malawi.

"This Likoma port was designed to handle the highest water levels ever recorded," remarked Luwani.

However, he said the construction of the Port was not without challenges, citing, among others, shortage of fuel supply at the early stages of construction works.

"Other challenges were; water levels making it difficult to do works under the main platform and weather patterns including heavy winds on the lake which made it difficult to supply building materials," said Luwani.

He said the other challenges included difficulty to find locally qualified personnel to do special professional works for instance underwater works, and the devaluation of the Malawi Kwacha along with inflation, which kept the contract sum rising.

Luwani disclosed that the total cost of this project was initially projected at MK10 billion, but rose to MK22 billion, due to the stated factors.

The Government of Malawi funded the project, and the contractor is Mota-Engil," he said.

Luwani stated that the port, once operational, will impact positively on the development of the Island district by ensuring improved efficiency in cargo handling. "This will translate into increased trade operations; as it will enhance time saving and





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Malawi Government reports progress in energy projects

Joint venture partner sought for Kammwamba Coal fired Power Project

By Modester MWALIJA

There is substantial progress in a number of energy projects that are being implemented in Malawi in order to increase availability of power in the country, which will help a number of mining projects currently struggling to roll out operations due to lack of power, to pass the feasibility test. This is outlined in the 2023/2024 annual economic report pub-

This is outlined in the 2023/2024 annual economic report published by the Ministry of Finance and Economic Affairs.

The report says that the government handed over the Kam'mwamba Coal-Fired Power Project to the Electricity Generation Company (EGENCO), after unfulfilled expectations from the EXIM Bank of China. EGENCO has since revised the feasibility study, estimating the project cost at US\$600-million.

"The project's completion, anticipated by 2030, is dependent on securing a joint venture for EGENCO to partner with a 50:50 possible share of the project cost between EGENCO and the joint venture partner," reads the report.

joint venture partner," reads the report. The report highlights that despite some setbacks, the Mozambique-Malawi 400kV Interconnector Project is now expected to come online in October this year. The report reads: "The progress achieved at the end of the

The report reads: "The progress achieved at the end of the 2023/24 financial year include compensation pay-outs for Project Affected Persons on the Malawi side and the revision of the Power Purchase Agreement with Electridade de Mozambique (EDM), which will increase power imports from 50MW to 120MW when the project is completed."

The report also notes that in the period under review, ESCOM

and Zambia Electricity Supply Corporation Limited (ZESCO) initiated a joint feasibility study, including Environmental and Social Impact Assessments and a Resettlement and Compensation Action Plan, on the Malawi-Zambia Interconnector which is aimed at integrating Malawi into the Southern African Power Pool (SAPP) by connecting to Zambia's electricity grid.

"The initial phase will inject 50MW into Malawi's grid, with the potential for future increases. Both companies have signed the Project Implementation Framework, marking a critical step towards realizing this project," reads the report.

The report also says that the government is implementing the Mpatamanga Hydropower Project, set to deliver 361MW of clean energy under a Public-Private Partnership (PPP) arrangement.

The achievements in the 2023/24 financial year include incorporation of Mpatamanga Hydro Company Limited; ongoing negotiations for Power Purchase Agreements; Completion and approval of the Project Freeze Designs, continuation of environmental studies; and development of Resettlement Action Plans scheduled for completion by May, 2024.

The report says the government is also prioritizing the rehabilitation of the Kapichira Hydropower Station, which suffered extensive damage from Tropical Storm Ana in January 2022.

Funded by a \$60 million World Bank grant, EGENCO successfully repaired all four damaged machines, restoring 129.6MW of power.

The report reads: "Phase I of the restoration is nearly complete, paving the way for Phase II, which will involve constructing a more resilient structure to protect against future storms. This project is crucial for safeguarding Malawi's energy security, with com-



Kapichira Power Station will have more resilient structure

pletion expected by May 2027."

On integrating solar energy into the national grid, the report says Malawi is implementing a 20MW Battery Energy Storage System (BESS) at the Kanengo substation in Lilongwe. The project, funded by a US\$20-million grant from the Global Energy Alliance for People and Planet (GEAPP), reached financial closure in July 2023. It says installation is expected to be completed by March 2025, providing essential

It says installation is expected to be completed by March 2025, providing essential additional services to stabilize the grid.

Furthermore, the report indicates that EGENCO is advancing the Nanjoka Solar Power Plant in Salima, a project expected to contribute 50MW to the national grid by 2029. Following the completion of feasibility studies and environmental assessments, construction began with the installation of an initial 10MW. The project, which had its groundbreaking ceremony in November 2023, marks a significant step towards diversifying Malawi's energy sources.

As detailed in the report, EGENCO also plans to double the capacity of the Wovwe Hydropower Station from 4.5MW to 9MW. In 2023, the Malawi Environmental Protection Authority (MEPA) approved the extension.

"Negotiations for the Power Purchase Agreement are nearing completion. Once finalized, construction will commence using EGENCO's internal resources, further strengthening the country's energy resilience," states the report.

ening the country's energy resilience," states the report. These projects represent a crucial investment in Malawi's energy future, addressing both immediate needs and long-term sustainability goals. The successful completion of these initiatives will significantly enhance the country's power generation capacity, reduce reliance on imports, and improve the overall stability of electricity.

duce reliance on imports, and improve the overall stability of electricity. The Ministry of Energy expects planned investments of approximately US\$3.5 billion in order to meet the estimated energy demand by 2040.

