



## KANGANKUNDE RARE EARTHS PROJECT SOARS

- Lindian's mine development drilling programme intercepting rich monazite mineralisation
- Malawi Mining Minister visits project site to appreciate progress



Drilling work at Kangankunde Hill

By Marcel CHIMWALA

**A** SX-listed Lindian Resources says there is outstanding progress in the mine development drilling programme for its Kangankunde Rare Earth Elements (REE) Project in Balaka with all drill samples containing extensive visible rare earth bearing monazite from surface to current hole depths.

Lindian CEO Mr Alistair Stephens explains that the company has deployed two Reverse Circulation rigs and one Core rig on the site to fast-track the mine development early works.

Meanwhile, Malawi's Minister of Mining Honourable Dr Albert Mbawala has visited the project site to appreciate progress.

Honourable Mbawala and Lindian officials led by Mr Stephens also held an interface meeting with members of the local community to brief them on the project.

The Minister assured the community of ample benefits from the project, which include employment and business opportunities for members of the local community and corporate social responsibility projects.

The project is also expected to substantially benefit the country when it gets to production stage through payment of royalties and taxes to the Government.

Lindian Resources is expected to spend over US\$200-million to set up the mine over a period of five years.

REEs, which are expected to be mined at Kangankunde, have a growing use in the production of strong magnets for manufacturing of electric and hybrid vehicles, wind turbines for energy generation, smart phones, robotics and medical applications.

*(Read the detailed article on the progress of the Kangankunde rare earths mine development on Pages 6 and 7)*

### INSIDE



**Government advances initiative to formalize ASMs**  
Page 3



**Sovereign seals Kasiya rutile offtake deal with global market leader**  
Page 5



**The role of state-owned enterprises in developing economies**  
Page 9



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MINING

# Government advances initiative to formalize ASMs

By Tawonga MAYUNI

The Ministry of Mining says it has managed to facilitate the formation of cooperatives for Artisanal and Small-scale Miners (ASMs) in all the three regions of the country, which is a step ahead in the process of formalizing ASMs in the country.

The development comes in light of complaints by ASMs of lack of government support to develop their business.

Spokesperson for the Ministry of Mining Andrew Mkonda told *Mining & Trade Review* that government continues to work through the Ministry of Industry and Trade and the Ministry of Mining to register, license and train the miners in the cooperatives.

Mkonda said the Ministry of Mining and Technical Entrepreneurial and Vocational Training Authority (TEVETA) are working to develop a formal training curriculum tailor-made for ASMs to be trained formally in small scale mining.

Mzimba based miner and ASM activist Chikomeni Manda commented in a separate interview that production of the formal training curriculum tailor made for ASMs is very important because it will narrow the skills gap.

“This will help miners to do things in an appropriate way hence their trade will be profitable for them,” he said.

The Reserve Bank of Malawi through its subsidiary Export Development Fund (EDF) is currently buying gold from ASMs with plans in the offing to also start buying gemstones from the miners in order to curb smuggling of the minerals, which has been rampant.

The registered ASM cooperatives that the Ministry of mining is working with include: Thandizo Mining Club; Tithokoze Lime Makers; Famililjsa Women Mining; Bilira Mining Cooperative; Kamphanda Mining Cooperative; Matongwe Mining Cooperative; Chitanthamapiri Producers and Marketing Cooperative; Chisimbwiti Cooperative, Tagwirizana Mining Cooperative Society Limited; Nchalo Salt Mining Cooperative Society Limited; Nyasa Mining Cooperative Society; Mbindo Mining Cooperative Society; and Lilikoko Mining Cooperative Society.

In his write up published in the ASM handbook which was produced as part of the Geological Mapping and Mineral Assessment Project (GEMMAP), Project Manager for



**Mkonda: We are developing curriculum for ASMs**

GEMMAP Thomas Fulgraf says that the ASM sector has a significant potential to contribute towards rapid economic growth and development of Malawi through rural job creation and provision of alternative economic activities.

He, however, observes that there are several challenges that exist in the sector that need to be addressed including limited access to modern technologies, capital for investment in mining, mineral value addition and established markets.

“The ASM operators have inadequate marketing skills, their mining operations are informal, they are unable to understand geological information and usually disregard basic mining occupational health, safety and environmental consideration,” he says.

In Malawi, the number of ASM operators is estimated to range between 22-thousand and 40-thousand but the sector is dominated by informal operators engaged in the exploitation of gemstones, gold, coal, gypsum, limestones, construction stones and sand.

However, besides EDF buying gold strains from the miners, financial institutions are reluctant to support the ASMs with loans as they consider the business as risky.

It is, therefore, estimated that less than 1% of Malawian ASMs have access to bank loans.

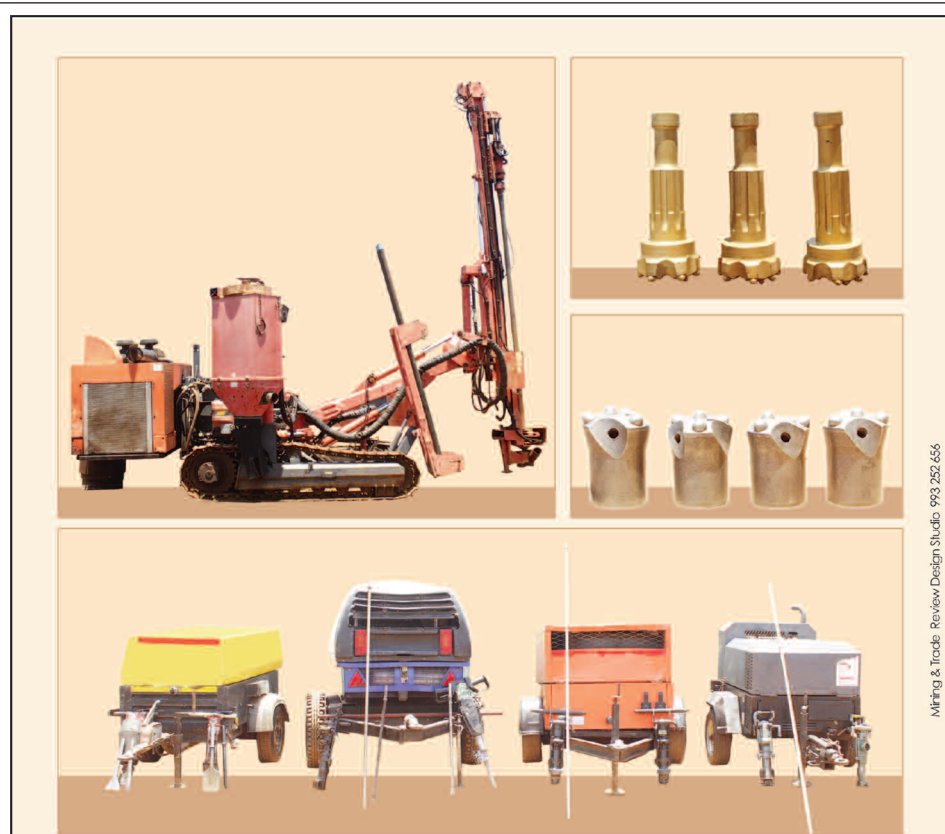
The government is, therefore, facilitating the formation of cooperatives to, among other things, ensure that the operators are self-financing through shares and collective business operations as well as acting as society security for obtaining loans from financing institutions.

Cooperatives, unlike individual ASM operators, have better opportunities to obtain grants and donations from government and other organisations as well as loans from financial institutions.

The Ministry of Trade and Industry, therefore, provides training to ASM cooperatives in Financial Management and Costing to ensure that the cooperatives effectively manage their financial resources and are able to cost their business operations to ensure that their cooperatives make business sense.



Informal ASMs mining operations



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MINING

EDITORIAL



## Kangankunde is an opportunity Malawi needs to utilise

As reported in our lead article, there is exciting news coming from the Kangankunde Rare Earth Project in Balaka where ASX-listed Lindian Resources is conducting a mine development drilling programme.

Kangankunde is showing overwhelming potential for rare earth mining as all drill intercepts at the site contain extensive visible rare-earth-bearing monazite from surface to current hole depths.

Lindian, which has taken over the project from a local company Rift Valley Resource Developments in a purchase deal, has shown seriousness to develop the project by deploying two Reverse Circulation rigs and one Core rig on site to conduct the drilling programme.

In these days when countries across the globe are competing to attract Foreign Direct Investment, we view this investment by Lindian as an opportunity that Malawi has to be proud of.

As reported in the article, Minister of Mining Albert Mbawala visited the project site which bears testimony that the Malawi Government is supporting the investment.

We urge all stakeholders including traditional leaders, civil society and media to also support the investment in order for Malawi to start enjoying full benefits of a mine at Kangankunde.

As Senior Chief Chanthunya is quoted in the article, the people of Balaka stand to benefit from the Kangankunde Mine through corporate social responsibility projects plus employment and business opportunities that the project brings which will help in poverty alleviation and socio-economic development in his area.

A visit to the project site by members of *Mining & Trade Review* team has established that what the traditional leader says in the article is indeed the truth as Lindian has already recruited some members of the local community as unskilled labour for the project development and has also engaged internees from Malawi's Universities.

This indeed signifies the beginning of a new life for members of the local Kangankunde community as Chanthunya says in the article.

The opening of Kangankunde Mine will also signify the beginning of a new life for the Malawi economy as this mine has the potential to significantly contribute to the country's economy as the demand for rare earth elements used to manufacture strong magnets for production of electric vehicles and wind turbines keeps surging on the market.

The development of a mine at Kangankunde will also work as an incentive that will attract other global investors to invest in mining in Malawi as it will portray the country as mining friendly.

# Sovereign seals Kasiya rutile offtake deal with global market leader

By Wahard BETHA

ASX-listed resources group Sovereign Metals has entered into a non-binding Memorandum of Understanding (MOU) with leading rutile market player Chemours Company for the potential supply of 20,000 tonnes of natural rutile per annum from the Company's Kasiya Rutile Project.

Chemours is a leading provider of performance chemicals that are key inputs in end-products and processes across a variety of industries and operates 29 manufacturing sites serving approximately 3,200 customers in approximately 120 countries.

Sovereign's Managing Director Julian Stephens comments: "To have signed an MOU for the supply of natural rutile to Chemours, a global leader in the titanium dioxide pigment industry, is a true testament to the quality and strategic nature of our world-class Kasiya Project in Malawi."

"We are excited to be working with Chemours as a future off-take partner for our premium, low carbon-footprint rutile products."

The MOU covers the potential supply of 20,000 tonnes per annum of natural rutile at Stage 1 nameplate capacity and an option to take additional product when Kasiya reaches Stage 2 nameplate capacity.

Stephens explains that the volumes of rutile may be varied up or down by mutual agreement and pricing will reference market prices of the day both to be included in the definitive agreement.

He says: "The MOU is non-exclusive and non-binding and remains subject to negotiation and execution of the definitive agreement."

"The MOU will expire two years from the execution date but can be extended by agreement by both parties should a definitive agreement not have been reached by that time."

Chemours's Titanium Technologies segment is one of the



Air-core rig drilling its first hole at Kasiya

world's largest producers of high-quality titanium dioxide (TiO<sub>2</sub>) pigment and aspires to be the most sustainable TiO<sub>2</sub> enterprise in the world.

Using its proprietary chloride technology pioneered in 1931 and improving ever since, Chemours provides innovative TiO<sub>2</sub> solutions for coatings, plastics, and laminates.

The company operates four TiO<sub>2</sub> pigment production facilities: two in the United States, one in Mexico, and one in Taiwan totaling TiO<sub>2</sub> pigment nameplate capacity of 1.25 million tonnes per year.

In the year ended 31 December 2021, Chemours' Titanium Technologies segment reported net sales of US\$3.4 Billion.

Kasiya is the world's largest rutile deposit and one of the world's largest flake graphite deposits.

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MINING

# KANGAKUNDE RARE EARTH DRILLING ADVANCING WELL

- Two Reverse Circulation rigs and One Core rig now on site
- All drill samples contain extensive visible monazite from surface to current hole depths

By Marcel CHIMWALA

**A** SX-listed Lindian Resources says Phase 1 mine development drilling programme for its Kangankunde Rare Earths Project in Malawi's Balaka District is progressing well with two Reverse Circulation rigs and one Core rig now on site.

CEO for Lindian Resources Mr. Alistair Stephens explains that five holes have been drilled to date with four RC holes totalling 581 metres and one Core hole currently at 88 metres.

All drill intercepts contain extensive visible rare-earth-bearing monazite from surface to current hole depths at Kangankunde.

Stephens comments: "Observations of extensive green monazite from surface to depth in all drill intercepts is consistent with our expectations and we look forward to receipt of the first assay results in due course. We are very pleased with how the programme is progressing. The project teams are pushing hard to complete as much of the programme while weather conditions permit."

"With three rigs now on site, we have the necessary equipment to now add significant metres and thus better demonstrate Kangankunde's compelling potential."

"With mine development drilling ongoing, we expect to report a steady stream of results from mid-December through to the end of February barring any unforeseen delays. I reiterate that the Kangankunde Rare Earths Project is globally significant and the drilling programme now underway can be expected to confirm and build on previous historical work."

He reports that samples from the first drill hole have arrived in South Africa for preparation ahead of despatch to Western Australia for assay as the next batch of samples are also set to leave project site.

Kangankunde is a rare earths project of global significance with the carbonatite host having outstanding grades of up to 237,000 ppm (23.7%) TREO.

## Phase 1 Drilling Programme

The Phase 1 mine drill program consists of 44 holes for a total of 12,500 metres, comprising 10,000 metres of RC and 2,500 metres of core drilling. These are designed to provide geometric definition and the tenor of mineralisation in the upper 300 metres from surface and allow mine design and planning to commence.

The drill pattern is based on 50 metre East-West sections, and as radial fans perpendicular to the interpreted carbonatite boundary where topography provides access.

Stephens explains that the objective of this programme is to provide initial definition of the mineralised carbonatite and surrounding carbonatite breccia rocks within an area of 800m long and 800m wide.

"No chemical assays are available from this current drill program and correlation to historic data, both mineralogical and chemical assay, will be undertaken once data is available."

He reports that the Phase 1 will be limited to the Kangankunde hill top using two RC rigs and one core rig to complete as many holes as possible until the wet season, typically from December to March, limits access.

## Phase 2 Drilling Programme

Under this phase, two additional deep drill holes are planned from drill pads near the base of the Kangankunde hill and are designed to allow drilling to continue during the early stages of the wet season.



The pen point to a large monazite mineral in drill core



Extensive pale green monazite seen in drill core



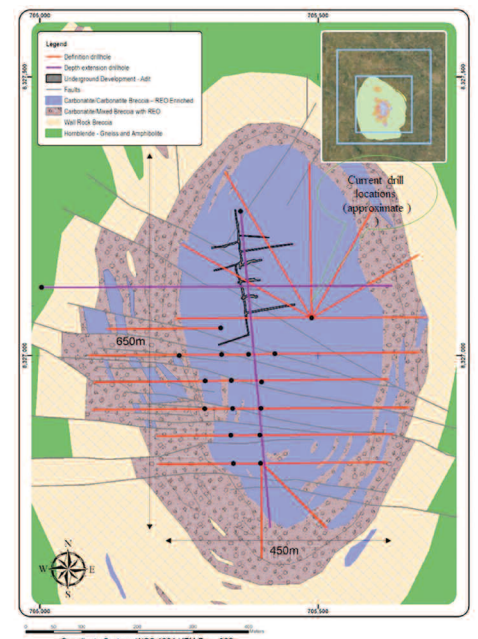
A rough exposure of drill core demonstrates the extent of pale green monazite mineral occurrence



Extensive pale green monazite seen in drill core



Pale green monazite mineralisation in drill core



Interpreted geology with Phase 1 drill program hole location and planned drill traces (red) and Phase 2 (purple)

## MINING



Sampling at Kangankunde hill

These two drill holes, each planned to be 1,000 metres in length, are designed to test the N-S and E-W axis of the carbonatite between 300 metres and 800 metres below the hill top. These drill holes provide an insight into the long term-potential for a long life open pit mine progressing to an underground mine

**Kangankunde Project**

Lindian has taken over the project through a purchase agreement it has signed with Rift Valley Resource Developments Pty Ltd, a local company that holds the mining licence for the Kangankunde deposit.

The Company is advancing the project after its Chairman Mr. Asimwe Kabunga and Mr. Stephens held meetings with Malawi's Minister of Mining Honourable Dr Albert Mbawala MP and Principal Secretary for the Ministry Dr Joseph Mkandawire who expressed their support which culminated in the Minister and his entourage visiting the project site.

The Lindian officials also met with local district authorities for Balaka, Traditional Authority (TA) for the area Senior Chief Chanthunya and the local area Chief Makolela who expressed support for the project while urging the investor to carry out corporate social responsibility projects.

Speaking when he toured the project site; Honourable Dr Mbawala, who conducted a meeting with members of the local community to brief them on the project, said the Malawi Government is very committed to develop the mining sector to become a key sector to shore up the economy.

Mbawala urged the community to do away with unrealistic expectations over the project and always seek any information they want regarding the whole project.

"We are doing everything transparently and you are welcome at our Ministry if you want to hear anything regarding this project," he said.

In his remarks, Senior Chief Chanthunya welcomed the project saying corporate social responsibility projects plus employment and business opportunities that the project brings will help in poverty alleviation and socio-economic development in his area.

"I will work hand in hand with Balaka District Council to make sure that people of this area indeed benefit from the project especially when it moves to production stage. We have the hope that this marks the beginning of a new life for the local community," he said.

Mr Stephens assured the community that the company will prioritise offering employment and business opportunities to members of the local community where ever possible.

A visit to the project site by members of *Mining & Trade Review* team established that Lindian has already recruited some members of the local community as unskilled labour for the project development and has also engaged internees from Malawi's Universities.

Stephens also said the company will execute corporate social responsibility projects based on the need of the local community.

"As a good corporate citizen for the area, we will always be in touch with the community as they will be our neighbour. We will carry out many corporate social responsibility activities for the communities mostly when the project reaches production stage, and a lot of jobs will be created for the people of this area starting from mine construction stage," he said.

The Kangankunde Project has been subject to significant historic exploration by Lonrho Plc (Lonrho) in the 1970's and the French Geoscience Bureau de Recherches Géologiques et Minières (BRGM) in the 1980's.

The project has an underground adit (a horizontal drive with cross cuts extending at least 300 metre underground) and historic sampling by trenching and drilling has identified significant non-radioactive monazite mineralisation over a footprint of 800m by 800m.

Metallurgical test work by Lonrho and BRGM identified a process flowsheet that achieved a 60% recovery to a 60% concentrate grade using gravity separation (water only). Lindian is undertaking test work to determine if this recovery can be improved to increase productivity, resource utilisation, project revenue, with a flow on effect to taxes and royalties.

## MINING

## MALAWI'S TOP MINING PROJECTS OF 2022

**Kasiya Rutile Exploration Project****Description**

The project which is located in Kasiya in Lilongwe District is owned by ASX-listed resources group Sovereign Metals.

**Latest Developments**

Sovereign Metals has fast-tracked exploration work at Kasiya. In the year, the Company announced a new JORC Mineral Resource Estimate (MRE) for Kasiya which confirmed the Project as the world's largest rutile (titanium dioxide) deposit and one of the world's largest flake graphite deposits.

Sovereign Metals also released results of an Expanded Scoping Study based on the April 2022 MRE which confirmed that Kasiya will be one of the world's largest and lowest cost producers of natural rutile and natural graphite with a carbon-footprint substantially lower than current alternatives.

The study also indicated that the project will significantly contribute to the social and economic development of Malawi as it has the potential to become a major producer in both the natural rutile and graphite markets with steady production of 265,000 rutile and 170,000 tonnes of graphite within a 25-year mine life.

Sovereign has commenced a Pre-Feasibility Study (PFS) for Kasiya with a 12,000m drilling programme now completed and key globally recognised consultants appointed to the study team.

Though the project is expected to benefit Malawi at a large scale when it reaches production stage, initial benefits from the project are already visible including employment of locals at the rutile processing laboratory which Sovereign Metals has established in Area 4, Lilongwe.

Sovereign is also creating employment benefits by recruiting and training employees from its respective exploration project areas. Local people are also employed for additional assistance on a temporary basis during exploration drilling programs.

Besides, Sovereign has constructed and repaired a number of boreholes in its exploration areas to enable the community have access to safe drinking water.

**Kayelekera Uranium Mining Project**

The project is located at Kayelekera area in Karonga District. It is owned by Lotus Resources, an Australian company listed on the Australian Stock Exchange (ASX) which owns an 85% interest in the project while the remaining 15% is owned by the Government of Malawi. Lotus acquired major stake in Kayelekera in March 2020 from another Aussie firm Paladin Energy.

**Latest Developments**

Lotus has completed a Definitive Feasibility Study (DFS) which has confirmed Kayelekera Uranium Mining project as one of the lowest capital cost uranium projects globally whilst also having the ability to quickly recommence production once a Final Investment Decision (FID) has been made.

Following the development, Lotus is now focusing on accelerating engagement with various nuclear energy utilities and securing offtake agreements with the necessary volumes and pricing mechanisms to support the restart of Kayelekera whilst also considering various financing options to fund the restart.

With the Restart DFS now complete the Company looks forward to continuing its work with the Malawi government to secure a Mine Development Agreement that will support the Project financing and shareholder returns appropriate for the scale of investment.

This work will be undertaken in parallel with work on securing funding for the restart. The Company is looking at locking in prices that ensure long term profitability and good returns for its investors.

Since take over from Paladin Energy, Lotus completed a positive Re-Start study in October 2020 that confirmed the viability of the project based on a US\$65/lb uranium price (current price US\$46/lb).

Lotus also completed multiple technical studies to improve project economics and commenced the first exploration drill program at site in over 20 years.

As part of Corporate Social Responsibility, Lotus has repaired access roads, supported University students with internship; assisted Kayelekera Health Centre, a Police check point at Chiwondo and Kayuni Secondary School.

Despite the mine being on care and maintenance, Lotus has 17 local employees and 41 local contractors onsite.

**Songwe Hill Rare Earths Project**

The project is located at Songwe Hill in the Southern District of Phalombe. It is owned by a Canada's TSX Venture Exchange and the AIM Market of the London Stock Exchange listed UK firm, Mkango Resources through its subsidiary Lancaster Exploration.

**Latest Developments**

Mkango Resources has announced exciting results of a Definitive Feasibility Study (DFS) for the Songwe Hill Rare Earths Elements (REE) Project in Phalombe, which has pegged the net present value ("NPV") for the project at US\$559.0-million post-tax, using a 10% nominal discount rate, with an internal rate of return ("IRR") of 31.5%, payback period of 2.5 years from full production (5 years from start of capital expenditure) and post-tax life-of-operations nominal cash flow of \$2.1 billion.

Songwe is now confirmed as one of the very few REE projects globally to have reached the DFS stage, with a full Environmental, Social, Health Impact Assessment ("ESHIA") completed in compliance with International Finance Corporation (IFC) Performance Standards and The Global Industry Standard for Tailings Management (2020) ("GISTM") adopted for design and management of the tailings storage facility.

The project is targeting rare earths such neodymium, praseodymium, dysprosium and terbium which are critical for the green transition, used in permanent magnets for electric vehicles, wind turbines and many electronic devices.

The DFS results show that Songwe Hill will have a long operating life of 18 years, with mining assumed to commence in February 2025, production ramping up from July 2025 and averaging 5,954 tonnes per year total rare earth oxides ("TREO") for the first five years of full production (September 2025 – August 2030), including 1,953 tonnes per year of neodymium and praseodymium oxides, and 56 tonnes per year of dysprosium and terbium oxides, in a mixed rare earth carbonate ("MREC") grading 55% TREO, generating nominal earnings before interest, taxes, depreciation and amortisation (EBITDA) of US\$215 million per year.

Mkango has applied for a Mining Licence for Songwe Hill, and is currently waiting for the Malawi Government to grant the licence; approve its Environmental, Social and Health Assessment (ESHIA); and Mine Development Agreement.

Throughout exploration stage, Mkango has carried out a great number of Corporate Social Responsibility (CSR) projects at Songwe Hill including supporting local primary schools namely Changa, Mphembedu and Mangazi with educational and sporting equipment.

The Company has also decorated the walls of the 24 classrooms at the schools with the school syllabus to facilitate easy learning; working in collaboration with a local non-governmental organisation, boNGO Worldwide and pays full secondary school fees for 42 academically achieving girls and boys selected from the three primary schools. There are now eight learners who have gone onto University whom Mkango are also paying University fees for.

Besides, Mkango helps in development of various infrastructure in Phalombe including boreholes, roads and bridges, and makes donations to communities affected by disasters such as floods.

**Kanyika Niobium Mining Project**

The project is located at Kanyika south of the northern district of Mzimba. It is owned by ASX-listed Africa focused resources group Globe Metals and Mining.

**Latest Developments**

Globe finalized feasibility studies at Kanyika which is a multi-commodity deposit containing niobium, tantalum, uranium and zircon.

The project will produce high purity niobium pentoxide and tantalum pentoxide powders which will be used as additives to steel to enable steel mills to produce high-margin products through enhanced flexibility, weight reduction and strength.

In August, 2021, Globe was granted a Mining License by the Malawi Government and up to date they are in the process of finalizing the Development Agreement with the Government.

In July 2022, Globe received formal communication from the Ministry of Mining advising the Company that the negotiations and attendant review of the draft Mine Development Agreement (MDA) of the project has been consummated, following a recommendation for approval by the Malawi Government MDA Steering Committee.

Two months later in September 2022, Globe confirmed that the review of the MDA by the Ministries of Mining and Finance had been completed to their satisfaction and now the MDA is with the Ministry of Justice and Attorney General for final vetting prior to signature.

While the company is awaiting the approval of the MDA, exciting developments involving the application of niobium continue to be published. These include the application of niobium in the next generation electric vehicles.

In January, 2022 Globe Metals' senior executive team commenced investigations into a phased approach to its operations which aimed at identifying a quicker pathway to production with reduced up-front capital costs.

This would allow Globe to de-risk the operations and to build market for its products in line with the anticipated upsurge in demand for niobium oxides.

Within the year, through a consultation with both Globe technical partners and Namibian Consultants, the Company selected Walvis Bay in Namibia as the refinery location and more specifically the Walvis Bay Heavy Industrial Zone.

The location was selected as both Namibian Government and Namibian Uranium Industry are well-versed in the protocols of dealing with radioactive materials and the safe storage of residues.

Additionally, Namibia and Walvis Bay in particular have an active engineering contractor community and labour force well versed in the construction of sophisticated plant and with working with processes similar to the proposed chlorination process.

Due to low voltage of power which trails at 33kV, the project is expected to start at production of 90 000tpa lower than 15 000tpa as anticipated in the feasibility study.

The project requires an investment of US\$350 million and will rake in gross revenue of US\$70 million per year over a mine life of over 20 years, employing about 1000 workers.

**Kangankunde Rare Earths Project**

The project located at Kangankunde Hill in Balaka is owned by ASX-listed Lindian Resources, which has signed a purchase deal with the local tenement holder for Kangankunde, Rift Valley Resource Development.

**Last Developments**

Lindian has launched Phase 1 mine development drilling programme at Kangankunde which is progressing well with two Reverse Circulation rigs and one Core rig now on site. All drill samples from the project contain extensive visible monazite from surface to current hole depths, monazite being the rare-earths-bearing mineral at the Kangankunde deposit.

The Phase 1 drill program consists of 44 holes for a total of 12,500 metres, comprising 10,000 metres of RC and 2,500 metres of core drilling. These are designed to provide geometric definition and the tenor of mineralisation in the upper 300 metres from surface.

The Phase 1 drilling will be limited to the Kangankunde hill top using two RC rigs and one core rig to complete as many holes as possible until the wet season, typically from December to March, limits access.

In Phase 2, two additional deep drill holes are planned from drill pads near the base of the Kangankunde hill and are designed to allow drilling to continue during the early stages of the wet season. These two drill holes, each planned to be 1,000 metres in length, are designed to test the N-S and E-W axes of the carbonatite between 300 metres and 800 metres below the hill top.



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# MINING & SOCIAL ISSUES

with Ignatius Kamwanje



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## A Brief outlook into Mineral Economics and Financing (With reference to Malawi)

**M**ineral economics deals with application of economic principles to various aspects of the mineral industry. A mineral extracted from an ore is only viable if it has an economic value and can be extracted at a reasonable profit.

### 1. Mineral Economics

In trying to understand the economics of a mineral, several aspects come into play and this requires accurate evaluation and optimization through integrated technical assessment. Extraction of minerals requires a value chain which constitutes a series of sequential operations such as drilling, hauling, grade control, milling, mine to mill reconciliation, blending, processing etc and some of the economic determinants of a mineral include calculations of the tonnage, grade, variability, metal content etc.

Some approaches used for technical understanding of mineral economics.

- ✓ Production of financial models for comparative assessment of economic performance
- ✓ Technical evaluations used in mineral resource and ore reserve estimations, reporting.
- ✓ Benchmarking for comparative cost of production analysis
- ✓ Project value verification and model audits for due diligence.

Technical economic models help to understand optimization planning throughout the mining cycle and provide sound predictive models. In Malawi mineral economics determination is somehow at a low ebb since most of the mining companies are still in exploration stage and there is still need to reach a bankable feasibility study to ascertain whether to mine or not. There are some areas where minerals in terms of grade and tonnage have been evalu-

ated and quantified in Malawi but still not many people are aware since they are unable to access this information although it is available.

### 2. Financing

In Financing, locally there is a very low likelihood of companies seeking funding from either lending institutions or local banks and insurances. There have been situations where banks like National bank and standard bank made initiatives that they can be able to assist mining companies financially be it medium to large, locally. Some mining companies may have tried and there is a probability that others may have retracted due to huge collaterals that are put forward. Another reason may be related to the fact that mining is a high risk venture, as a result some banks are not willing for fear of losses hence financing is still a problem. However, mining companies are not obliged to source funds locally alone. Some banks like Standard Bank are also strategic in operation, as a result they may be willing to fund mining companies also using strategic areas like Johannesburg, Honk Kong, Beijing, New York etc

Recent information from the MITC (Malawi Investment and Trade Centre) has revealed that about \$808 million investments in the form of pledges have been recorded in the economic sectors from July 2021 to March 2022. This indicates a jump recorded the same period form 2020-2021 period. Out of these pledges, the mining sector alone has contributed \$202,199,000 representing 25%. This has also been boosted by the gold buying initiative. However, the government planned or is spearheading the establishment of a state owned Malawi Mining Company /Mining Regulatory body but it has been a long wait. All these initiatives have been established in order to bring sanity to the

mining sector in Malawi but the problem for the long wait or delay may also be related or linked to low or no funding.

In the case of Artisanal small scale miners, the source of funding in Malawi has been an uphill task. This may be because they are unable to form cooperatives, have not been encouraged to do so or lack of knowledge to access loans for mining from the institutions. There are some institutions that can assist financially for these small scale miners to operate. There is a strong indication that even for a local lending institution like NEEF (National Economic Empowerment Fund), no single group/cooperative has applied for funding for mining. There is need for small scale miners to be encouraged to source funds so that the economy of the country can transform. Some of the claimed areas under ASMs are staying idle because the holders who are the anticipated miners lack the financial muscle to invest in, kick start and operate a mine,

### 3. Way Forward for Malawi.

1. Countries like Malawi should strive to have all areas where minerals have been evaluated based on grade and tonnage made known to the public. This will create awareness in terms of mineral economics and ultimately look for funding.
2. Financial lending institutions like banks, insurance companies, and government lending institutions should assist local mining companies/cooperatives to get funds using soft collaterals and utilize the payback period amicably.
3. Mineral economics should outline and dictate the best possible practices and undertakings to minimise project risks.
4. Licenced Artisanal Small Scale Miners should be assisted with loans to boost the production base.



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# TECHNICAL FILE

by Dr. Grain Wyson Phillip Malunga *FIMMM*  
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## THE ROLE OF STATE-OWNED ENTERPRISES IN DEVELOPING ECONOMIES

### Abstract

While it is universally accepted that State Owned Enterprises (SOE) face challenges of poor governance, they can also reduce dependency on manufactured imports through import substitution and offer speedy industrialization through public-private partnerships. SOEs can manage state equity well if the personnel is recruited on merit and they operate in an autonomous environment.

### INTRODUCTION

Countries whose economies are underdeveloped face infrastructure development challenges and often rely on primary industries such as agriculture and natural resource extraction. These countries are faced with illiteracy, poverty, diseases, and unemployment.

In order to get out of this situation they come up with a public policy that promotes private sector development and social development. Private sector development is triggered by the availability of good infrastructures such as energy, transportation systems, water supply, communication, education, and health. This public policy entails the establishment of state-owned enterprises (SOE) or state corporations (SC) that promote the development of the private sector and mixed economies that trigger economic development.

In Malawi, this saw the birth of the Electricity Supply Commission (ESCOM), Agriculture Development and Marketing Corporation (ADMARC), Water Boards, Malawi Telecommunication Limited, and Mining Investment and Development Corporation (MIDCOR).

In this paper, we dwell on the role MIDCOR played and would have continued to promote the development of the minerals sector.

### MINING INVESTMENT AND DEVELOPMENT CORPORATION

Prior to 1994, the mineral sector contributed less than 1% of Malawi's GDP. With aggressive campaigns both local and external, between 1995 and 1998, the sector's contribution rose to nearly 3% of the GDP. The activities of MIDCOR established in 1985, and the Ministry of Energy

and Mining led to increasing in foreign investment in the mineral sector and equally showed the confidence foreign investors had in developing Malawi's minerals sector. The following table proves this point:

When mining investment was increasing, in terms of exploration, both the Ministry of Energy and Mining and MIDCOR were abolished. This was a result of Structural Adjustment Programmes (SAPs) that forced African governments to adjust their economic policies in order to benefit from debt relief and conditional financing in terms of loans. This disturbed the African Development Bank's assistance through the development of Mulanje Bauxite and Bwanje Valley limestone deposits.

The European Union sponsored a Southern Africa Development Community (SADC) Mining Investment Forum in December 1994. The purpose of this forum was to enable the European Mining Companies to look at mining investment opportunities in each of the member states of the SADC. A similar forum was hosted in mid-2000. This had an effect also on an increase in investment interest in countries of the SADC. The abolition of the two institutions in 1997 sent wrong signals to the private sector on the seriousness of the Government in developing the minerals sector. FDI in the mining sector rose in 1998 due to investment in uranium mining and processing, a commitment that was already met during MIDCOR days.

The security of high-risk investment was at stake in a situation where there was no full-time ministry responsible for mineral development affairs. Economic policy reversals were rampant. MIDCOR was mandated to look at import substitution and investment into strategic minerals such as coal, iron and limestone (for lime and cement) for Malawi's energy and infrastructure development. Investment promotion in major mining investment events was undertaken.

The government's direct participation in the mining sector such as uranium mining and ruby mining has not been effective due to poor governance representation and monitoring of mine revenue. The situation has raised interest in the reinstatement of a state mining company to develop

the available mineral resources and become a vessel for mineral development. No organization wanted to develop Mchenga Coal Mines, but after MIDCOR, with the assistance of the Department of Mines and Geological Survey, many companies presented their bids when the government decided to divest. This showed public sector participation in strategic investment is vital for the economic development of emerging

economies.

The mineral sector will continue to attract development cooperation if the government continues to put mining a priority just like agriculture.

### CHALLENGES IN MANAGING PUBLIC INSTITUTIONS

It is widely claimed that SOEs face immense challenges in terms of accountability and the presence of multiple authorities offering oversight roles, lack of new technology, weak internal controls marring the corporate governance practices, mindset issues and lack of motivation to work in private sector environment. SOEs also suffer from unnecessary heavy expenditure on social and political overheads leading to unnecessary over capitalisation. Recruitment of personnel is not based on sound merit and planned labour projections. Productivity is low on account of poor materials management or ineffective inventory control. Absence of proper price policy forces SOEs to effect price subsidies that meet socioeconomic objectives of their shareholder (government).

### OPPORTUNITIES FOR ECONOMIC DEVELOPMENT

A SOE in the mining sector should be viewed as a holding company that will promote the minerals sector, oil and gas, participating in state equity and provide leadership for divestiture in order to promote local participation in the mining sector.

The Company will be managed by professional managers recruited on merit and with autonomy to offer maximum return to the shareholder (government). This arrangement will help promotion of development of strategic minerals necessary for import substitution, youth employment creation, trigger the development of economic linkages and bring about technological advancement.

The company could also help in formalisation and marketing of mineral products from small scale mining.

### CONCLUSION

The development of the minerals sector requires the establishment of an SOE to manage state equity, develop low value minerals with strategic importance and foster a cooperative relationship between government and private sector for the provision of infrastructure services effectively. This will bring technical and managerial expertise and injection of huge capital, which the government may not possess. The SOE can also act as a development bank for the minerals sector to assist with formalisation of the artisanal small scale mines and marketing their mineral products.

YEAR	Government Expenditure	Private-Foreign Expenditure	Local-Private Expenditure	Total
1993	2,468,590	Nil	191,040	2,659,630
1994	3,197,270	Nil	226,905	3,424,175
1995	4,652,040	10,750,000	825,125	16,227,165
1996	5,489,410	12,850,000	2,001,814	20,341,224
1997	11,117,946	20,500,350	1,007,903	32,626,199
1998	7,200,000	3,606,733,333	2,210,495	3,616,143,828



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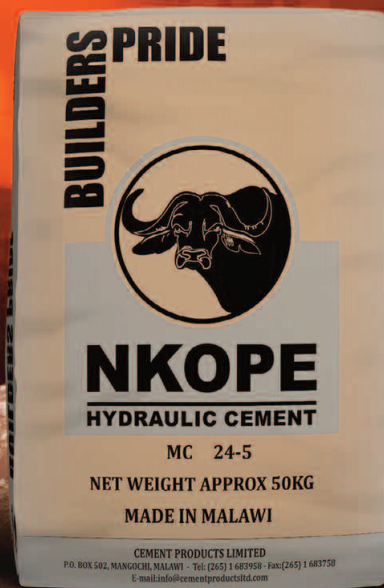
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## PROJEX GROUP THRIVES IN RAILWAY CONSTRUCTION

By Wahard BETHA

Local civil engineering firm ProjEx Group has managed to swim through Malawi's murky economic waters to emerge as a giant in the field of railway maintenance and construction.

Corporate Director for the Group Phillip Tembo says in an interview that commitment to quality is the reason for the growth of the firm, which was established in 2011 as company providing both building and civil engineering services.

"ProjEx is able to execute any kind of job in railway construction and maintenance with expertise. We also have the expertise to work on projects related to water, roads, bridges, building and any other construction and civil works," Tembo says.

The Company is, currently, executing various projects including: Upgrading and expanding of Chintcheche Water Supply System for Northern Region Water Board (NRWB); rehabilitation of Section Chipala (KM507) to Mchinji (KM696 -Chipata Border) Railway Line in Malawi for CEAR and; construction of civil works on rail line at Blantyre Depot for National Oil Company of Malawi (NOCMA).

Tembo says the Company has a well-established Quality Management System (QMS) that aims at identifying prin-

ciples and processes that ensure quality assurance and quality control of their work.

He says the primary focus of the QMS is to meet the clients' specifications and requirements and to strive to exceed their expectations.

Tembo says: "ProjEx uses structured processes, with controls at all levels from the managers to the personnel performing each task.

"The aim is to make sure that the different activities are performed according to specifications and requirements and to continuously improve each process."

"Quality assurance is achieved through our control of documents and records, internal quality audits and internal control of non-conformances."

"As one way of ensuring quality control and delivering high-quality testing of construction and civil engineering materials, the company invested in establishing a well-equipped materials laboratory."

"To adhere to specifications, testing of materials is critical and crucial. ProjEx Materials laboratory provides vital testing on soils/gravel, aggregates and concrete. We also have equipment for testing materials on site."

On Occupational Safety, Health and Environment (OSHE), Tembo says the Company has a full department headed by a qualified manager dedicated to look after OSHE issues.

He says before acquiring or renting a new machine for projects they are executing, they always perform a pre-inspection that enables them to check if the machines conform to different standards regarding OSHE.

Tembo says operators for the machines are also required to undergo through trainings before they operate the machines.

He explains "While on the work front, operators are required to perform daily inspection checks on the machines to see if they conform to different OSHE guidelines or standards.

"If the machines are found to have nonconformities, quick efforts to correct them are implemented immediately."

"ProjEx Group also commits itself to maintaining its equipment as specified by different machine specifications."

"Whether maintenance is



Tembo: We are delivering high quality

done in the field or workshop, efforts to manage the environment are implemented. For example, if there are spillages, control is done with the presence of spill kits and a waste management plan is also followed to allow proper disposal of the waste."

However, Tembo describes business in the year 2022 as tough as the prices of most construction materials have risen due to the 25% devaluation that the Reserve Bank effected within the year.

He also says scarcity of foreign exchange contributed to challenges for the Group as the contracts they execute rely on imported materials.

Tembo says: "Things have gotten worse now with fuel supply shortages which have caused distraction of major works for the projects we are doing especially the rehabilitation of the railway line from Chipala to Mchinji."

"This project uses a lot of machinery and fuel is one of the major commodities being used so our business has been affected badly."

"Nonetheless, we appreciate the efforts government is doing to overcome these challenges and it is our belief that things will improve and get back to normal."

ProjEx Group has offices in all regions of the country and this year has registered a branch in Mozambique and later plans to extend to Zambia.

With over 450 employees, the company has a steel profiling factory currently producing three types of iron sheets under the brand name 'Mudzi Malata' namely: Mudzi tile, IBR and corrugated including producing top rolls.



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