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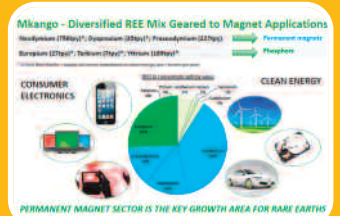
Cape Town Mining Indaba

Malawi captures investor interest

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Commissioner for Mines Mr. Charles Kaphwiyo (right) explaining to one of visitors at Malawi stand about the country's mineral potential

By Marcel Chimwala

Prospects look buoyant for Malawi to attract more investors into its mining sector as its stand at this year's International Mining Indaba held in South Africa's City of Cape Town was the centre of attraction for global investors who were swayed by the country's unique and exciting mineral potential presented by the Ministry of Natural Resources, Energy and Mining.

Malawi's Commissioner for Mines Mr. Charles Kaphwiyo, who led the Malawi delegation to the Indaba, said he was amazed by the growing interest in Malawi from investors coming from around the globe though the country does not have a rich mining history.

"This growing interest just shows that our efforts in marketing the sector cemented by our participation at these Indabas are producing results," said Kaphwiyo.

The Ministry of Natural Resources, Energy and Mining team led by Mr. Kaphwiyo vigorously marketed Malawi at the Indaba.

Courtesy of the World Bank and European Union funded Mining Governance and Growth Support Project, the team was well equipped with items to market the country's mineral potential including branded golf shirts and caps, brochures and geological reports.

With funding from FDH Bank, artisanal and small-scale miners also made the trip to the international event where they exhibited their products at the Malawi stand.

(A summary of information on Malawi's mineral potential that Malawi presented at the Indaba is contained in our exclusive article on Pages 2 and 3)



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Malawi attracts investors at International Mining Indaba

○ Govt. unveils Malawi's exciting mineral potential to mining executives

With its canals and the attractive Ocean waters, Cape Town is probably the most beautiful city in Africa. However, it was not the beauty of the city that swayed investors at the International Mining Indaba held in the resort city but rather the unique and exciting mineral potential of Malawi presented by the country's Ministry of Natural Resources, Energy and Mining.

Courtesy of the Mining Governance and Growth Support Project, which is financed by the World Bank's International Development Association and the European Union, the Malawi team was fully equipped with information on Malawi's untapped mineral potential in both raw

and digital form that was provided to the inquisitive investors, many of them previously not aware of what this tiny Southern African country has to offer.

In a report presented to the investors on the mineral potential of Malawi, Commissioner for Mines Mr. Charles Kaphwiyo said the country has a rich and diverse mineral potential, which is largely exploited.

Mr. Kaphwiyo told the investors that Malawi has, among others, unexploited mineral deposits associated with alkaline magnetism which include rare earth metals, coltan metals, nuclear metals and phosphate.

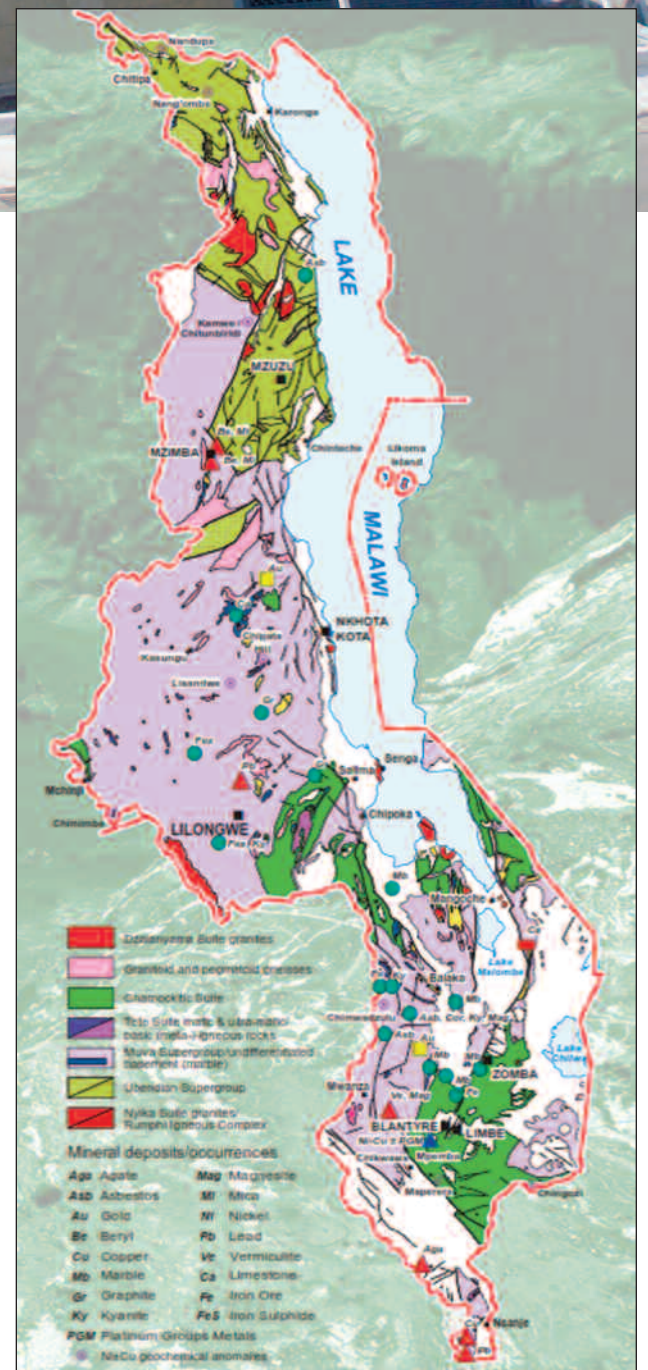
"Rare earth metals in Malawi include lathanides, scandium and yttrium. They are mainly used as catalysts in oil

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(Above) Former UK PM, Tony Blair delivering his keynote address

(Left) Malawi stand was the centre of attraction as many potential investors and gemstone buyers visited it



Map of Malawi showing mineral deposits with the Basement metamorphic and igneous rocks

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refining, catalytic converters, the glass industry, colouring agents, fibre optics, camera lenses, TV tubes, Sm-Co permanent magnets, high strength alloys, and synthetic minerals for laser applications,” he said.

Alkaline magnetism systems in Malawi are also important repositories of barite, fluorite, nepheline syenite, niobium, tantalum, thorium and zirconium, and may also be sources of copper, titanium, strontium, vermiculite and lateritic nickel.

Kaphwiyo explained to the investors that Malawi is also endowed with mineral deposits associated with the basement metamorphic and igneous rocks, which include precious, and base metals, gemstones and industrial minerals.

“Known deposits include gold, nickel, Copper, graphite, limestone/marble, iron sulphide, kyanite, gem corundum/ruby, and pegmatite hosted precious and semi-precious gemstones,” said Kaphwiyo.

The Chimwadzulu Hill and Likudzi Ultramafic bodies in the Kirk Range in the Central District of Ntcheu are Malawi’s prime sources of ruby corundum.

Kaphwiyo said the Ministry of Natural Resources, Energy and Mining through the Geological Survey Department is also in the process of analyzing several nickel prospects in order to establish an economic deposit.



Mr. Salima: Remapping exercise in the offing

5km tie line.

“Currently the data is being processed by Sanders Geophysics and delivery of the products is scheduled for early March, 2015,” said Kaphwiyo.

The current high resolution surveys followed the regional airborne geophysical survey that was funded by the United Nations development Programme (UNDP) in 1984/85, and was flown by Hunting Geology and Geophysics Limited.

The survey was flown with 1 km line spacing, 10 km tie lines and 120 m ground clearance, and the data set is available to interested clients.

“The airborne data from the current follow-up survey shall be an integral part of the geo-data management data base for the Geological Survey Department which is also being developed with assistance from the World Bank. This shall facilitate the archiving, updating and dissemination of the data to clients,” said Kaphwiyo.

Acting Director of Geological Survey Department Jaff Salima told Mining Review in an interview at the Indaba that his department has kickstarted preparations for a remapping exercise which will be conducted as a follow up to the geo-physical survey.

Salima said the remapping exercise to produce modern maps illustrating the geology of the country will be fi-



Busy as a bee: Government officials giving information to visitors at Malawi stand



“Several bodies have been investigated by Minex companies and the Geological Survey Department but economic Ni-Cu deposits have yet to be identified,” he said.

The Commissioner also reported that Malawi is investigating gold prospects in several places in the country notably Dwangwa in Nkhotakota District and Kirk Range in Ntcheu District in the Central Region of the country.

Kaphwiyo said the other mineral deposits available in Malawi, which enterprising investors can follow up are those resulting from residual weathering, placer and rift related sedimentation which include bauxite, saprolitic nickel, gold and gemstone placers.

He said a well known bauxite resource in Malawi occurs at Mulanje Mountain, which rises 600km-700km above the surrounding Phalombe Plain.

The resource has been investigated by a number of companies including the Anglo American Corporation (1934), British Aluminum Company (1951-58), and Lonrho (1969-72).

Lonrho showed that the two main deposits at the site hosts the resource amounting to 28.8-million tones using a cut-off grade of 30% Al₂O₃ with an average depth of 4.5 metres.

Kaphwiyo reported that a feasibility study by Met-Chem Canada Inc. on the resource in 1993 estimated 25.6 metric tons of bauxite at a grade of 43.3% and proposed a mining output of 200,000 tons per annum alumina for an annual production of 100,000 tons aluminum.

The Commissioner told the investors that the other group of mineral resources found in Malawi is that associated with sedimentary and volcanic cover rocks; karoo and post karoo which include coal, uranium, industrial minerals and gemstones.

“Ore deposit types range from syngenetic to syndiagenetic and typically include sediment hosted strata bound deposits of uranium, coal and limestone. The stormberg volcanics host gem quality blue agate and chalcedony. The karoo supergroup also has significant hydrocarbon potential,” reported the technocrat in the documents handed to the inquisitive investors.

Meanwhile, the Ministry of Natural Resources, Energy and Mining has said that the results of its Airborne Geophysical Survey, which was conducted from September 2013 to August 2014 are expected to be released before the end of March this year.

The survey was conducted under the Mining Governance and Growth Support Project supported by the World Bank and the European Union.

It was flown by Sanders Geophysics Limited (GSL) of Ottawa, Canada and Quality control supervision was carried out by British Geological Survey international (BGSi).

The survey was flown at 250m line spacing, 1km tie lines and 60m±20m ground clearance for Magnetic and radiometric while gravity was flown at 500m line spacing and



Part of the Malawi team captured in the exhibition hall at the Indaba

nanced by the French Government.

The theme of this year’s National Mining Indaba was: Investing in African Mining, and the keynote speaker was former British Prime Minister Tony Blair.

In his address, Blair urged mining companies to take care of the communities in mining areas in addition to fulfilling their requirement, which is to make profits out of their ventures.

Over the past 20 years, Mining Indaba has established itself as the must-attend event for professionals currently vested or looking to vest in attractive mining opportunities throughout all of Africa.

Mkango flies Malawi flag at Mining Indaba

By Marcel Chimwala

Canada-listed rare earth prospector, Mkango Resources, has described Malawi as a rare earth mineral province of strategic importance.

Mkango Resources CEO, Mr. William Dawes, said in his presentation at this year's Mining Indaba in Cape Town, South Africa, that his firm is proud to be developing a project in Malawi which remains a world class underdeveloped rare earth mineral province with historically known carbonatite deposits unearthed in a survey conducted by the Japanese International Cooperation Agency (JICA) in the late 1980s.

The firm, which is prospecting for rare earth elements at Songwe Hill in Southern Malawi, in September 2014 completed a pre-feasibility study for the Songwe Hill Rare Earth Prospect, which pegged the potential net present value of the resource at US\$293-million with a future projected 18-year mining life.

"Songwe Hill is currently the most advanced stage rare earth project," said Dawes.

He explained that the project is expected to benefit from the improvement of transport infrastructure in the region including construction of the multibillion-dollar Tete-Nacala Railway line by Brazilian multinational firm, Vale.

He said there are also road improvement and regional power development projects taking shape in the area which puts the project at an advantage.

Malawi, Mozambique and Zambia are pursuing the Nacala Road Corridor Programme and a number of electricity interconnector construction projects that are set to improve the efficiency of the road and power sectors for the region.

Dawes said in addition to ongoing infrastructure improvements, the fact that the project is located in Malawi is a big advantage since this is a stable country close to major mining sites.

The project is located only 2hrs drive from Chileka International Airport in Malawi's major commercial city, Blantyre.

Dawes explained that Songwe Hill's geology and mineralogy is also another favourable attribute that supports the development of the project.

Songwe Hill is a near-surface carbonatite hosted rare earth element (REE) deposit, and its volcanic vent system has three main REE-mineralized rock types: carbonatites, fenites and breccias.

The REE mineralization is interpreted to have formed through hydrothermal alteration following the carbonatite intrusion.

"Songwe apatite contains significantly higher concentrations of heavy rare earths versus the majority of apatite in carbonatites world wide," said Dawes.

The pre-feasibility study estimated Songwe Hill's Capital Expenditure (Capex) at US\$217-million, which is in the lowest quartile compared to other REE projects of similar magnitude worldwide.

Dawes explained that Mkango's Capex advantage is driven by the existence of relevant infrastructure in the region to be utilized by the project including road, rail, and power developments.

He explained that the mineralogy of the deposit is also another advantage as high capital and energy kilns will not be required as low strength acid enables use of plastics or composite material for tanks. The project will use conventional technology – tanks, pumps and filters with a modular plant, and the Strategy is to initially start production at a modest scale with expansion options.

The pre-feasibility study was delivered by a strong in-

ternational team which included Digby Wells Environmental of South Africa which worked on environmental and social impact studies, Epoch Resources of South Africa which worked on tailings storage facility, Met-Chem Consulting of Australia and Mintek South Africa which worked on metallurgical optimization, The MSA Group of South Africa which carried out mining studies and overall Pre-feasibility Study report co-ordination, Nagrom Laboratories of Australia which conducted metallurgical optimization, and SNC-Lavalin South Africa which designed the processing plant and associated infrastructure.

The study recommended a simple open pit mining operation for the project with favourable topography as the deposit is located on a hill as opposed to a laterite deposit and hosts broad zones of mineralisation – as opposed to a narrow vein or dyke deposit.

The Songwe Hill mine is expected to produce a diversified rare earth mix geared to magnet applications including neodymium (756tpy), dysprosium (35tpy), praseodymium (227tpy), europium (27tpy), terbium (7tpy) and yttrium (165tpy). The permanent magnet sector is the key growth area for rare earths.

"The Songwe Hill deposit has a meaningful heavy rare earth content including dysprosium which is highly sought in magnetic applications," said Dawes.

Rare earths geared to permanent magnet sector have strongest market outlook with emerging neodymium, praseodymium and dysprosium price recovery underway in China, which is the largest producer of rare earths catering for up to 90% of the global supply.

Mkango Resources, which is listed on the TSX Venture Exchange, was awarded an exclusive prospecting licence (EPL) for the Songwe Hill Project in September 2010 and the licence is held through its wholly owned subsidiary Lancaster Exploration Limited.

The firm completed Phase 1 exploratory drilling at the site in May 2012 drilling a total of 2,000m while Phase 2 drilling (4,850m) was completed in October 2012.

The firm made a maiden resource announcement in January 2013.

Mkango has renewed its EPL twice in March 2013 and January 2015.

It appointed Digby Wells Environmental of South Africa to undertake an Environmental Social and Health Impact Assessment (ESHIA) in April 2013 and initiated



Mkango President Mr. Alexander Lemon captured at the company's stand

ESHIA stakeholder process in October 2014.

Mkango Resources holds another EPL for the Thambani area in Southern Malawi, where its preliminary exploration work has unveiled prospects for high grade uranium, niobium, tantalum and zircon.

The firm has been involved in a number of corporate social responsibility initiatives in Malawi including road and bridge maintenance works, and renovation and painting of school blocks.

Mkango also recently provided flood relief aid items to the value of 6.7 million kwacha to approximately 470 households in communities close to the Songwe Hill REE project.

“
The Songwe Hill deposit has a meaningful heavy rare earth content including dysprosium which is highly sought in magnetic applications.”

Mkango - Diversified REE Mix Geared to Magnet Applications

Neodymium (756tpy)*; Dysprosium (35tpy)*; Praseodymium (227tpy)

Permanent magnets

Europium (27tpy)*; Terbium (7tpy)*; Yttrium (165tpy)*

Phosphors

* Critical Rare Earths – supply risk versus importance to clean energy; tpy = tonnes per year

CONSUMER ELECTRONICS



CLEAN ENERGY



PERMANENT MAGNET SECTOR IS THE KEY GROWTH AREA FOR RARE EARTHS

At Maravi, we understand that companies involved in the mining and extractive industry are often faced with a wide range of challenges and risks. These can range from managing local stakeholders, keeping staff safe while operating in remote and arduous areas and securing assets and equipment vital to production operations. Our understanding of the extractive industry makes Maravi the ideal partner to mitigate against the numerous security challenges posed as part of these types of projects.

Who we are

Maravi is a Malawi-based, ethically-aware security risk management company, focussing on East and Southern Africa. Maravi was born out of the need for high-quality, cost-effective and responsible security risk management services in the region.

Services

Maravi offers a range of services to help protect the staff, assets and operations of companies engaged in the oil and gas, mining and other extractive industry sectors against the different types of risk to which they are exposed. Some of those services include:

Security consulting

- o Pre-market entry and path-finding services
- o Threat and risk assessments
- o Security reviews of operations and facilities
- o Compilation and updating of security specific documentation
- o Security incident investigations
- o Brand and reputational protection
- o Background and due diligence checks

Security services

- o Protective services/security coordination
- o Airport meet and greet
- o Discreet escort
- o Remote security management
- o Event security planning and management
- o Organisational security health check

Training (including bespoke courses)

- o Security awareness training
- o Training for specific security duties
- o Crisis management training
- o Training for staff for specific emergency situations

Analysis

- o Stakeholder analysis by in-country consultants
- o Pre-deployment country threat briefings
- o Analytical training for managers/heads of security
- o Regular security reporting



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Case study: Stakeholder analysis and market entry services

One of our consultants conducted a security risk assessment and carried out stakeholder analysis on behalf of an international oil company seeking to expand operations into a new region. As well as terrorist threats, there were concerns about the local population that had previously been hostile towards foreign investors. The security recommendations and stakeholder mapping produced as part of this engagement resulted in the company successfully deploying to the area and starting production without a major security incident.

Case study: Development of oil and gas security management system

To better coordinate its security, our personnel helped develop a security risk management system for an international oil company operating a concession block within the region. The final procedural and physical framework complied fully with the requirements of ISO 28000 (international standard for security management systems specification) as well as national and international standards. The system that was developed has now been used as a benchmark for other companies.

Case study: Security risk assessments and design services to a national mining company

Our staff have worked with a national mining company to provide a range of security services. These have included multiple security risk assessments on different phosphate and precious metal mines, as well as security design services. The task required liaison with multiple stakeholders, including the highest levels of the government and managing a project design team split between Africa, the Middle East, Europe and Asia.

FDH Bank takes Malawian AS

Artisanal and Small Scale Miners exhibit

Malawian Artisanal and Small-scale Miners (ASMs) had a chance to exhibit their products to potential international buyers at this year's International Mining Indaba held in Cape Town, South Africa courtesy of the country's locally bred financial house, FDH Bank.

For the first time in the history of Malawi, FDH Bank flew a group of small-scale miners including Mr. John Chikokoto and Mrs. Hellen Chasowa from Blantyre, and Mr. Ian Petro Mbewe from Mzimba to one of the world's biggest annual mining events where the miners had the opportunity not only to exhibit their products but also meet prospective buyers who turned up for the mega event.

"I never dreamt of attending this big conference. We have met and established contacts with big-time buyers of our products here," said Mr. Mbewe who is the Vice Chairman of the Gemstone Association of Malawi.

He asked the Government, donors and other private firms to emulate FDH Bank's gesture in order to link the ASMs to established markets for their products.

"We hope if FDH and other stakeholders continue with these initiatives that link us up with international buyers, we will be freed from the bonds of comen (middlemen) who come to Malawi and take advantage of our poverty to



Happy ASMs who made the trip: *from left to right: Mr. John Chikokoto, Mrs. Hellen Chasowa and Mr. Ian Petro Mbewe*



Mrs Chasowa (right) talks to one of the potential buyers



FDH's Mr. Nazitwere (centre) and some prospective buyers

rob us in daylight by offering us unrealistically low prices for our products," said Mbewe.

In addition to attending the main mining indaba, FDH Bank also took the group to Waterfront in the same resort city where they attended a scoping workshop on Developing Guidance for Governments on Managing Artisanal and Small-scale Mining, which was organized by the Intergovernmental Forum on Mining, Minerals and Sustainable Development.

Cristina Villegas of PACT, a Senior Programme Officer for Mines to Market at the American NGO, coordinated the process for the Malawian ASMs to attend the workshop, which was held at Victoria and Albert Hotel in Waterfront, Cape Town.

At the workshop, the Malawian ASMs shared ideas with the participants who included representatives of governments, donor agencies and non-governmental organizations that have programmes to uplift the livelihood of artisanal and small-scale miners.

The Malawi group which included FDH Bank Official, Mr. Lastone Nazitwere, shared a desk with Ayanda Mvimbi, Programme Specialist for United Nations Women where they exchanged ideas on how to develop Malawi's ASM sector for the benefit of both the miners and the Governments.

In his presentation to the audience on behalf of the Malawi ASM team, Mr. John Chikokoto who is the Chairman for Blantyre Mining Association, explained that the problems inhibiting growth of ASM activities in Malawi include lack of access to finance, lack of proper machinery for mining and processing/polishing, improper laws and regulations, and lack of market exposure.

"Our proposal to banks is that they should develop a fund to provide loans to ASMs at low interest rates because the prevailing interest rates in Malawian banks at around 40% are extra-ordinarily high to support the growth of ASM activities," said Mr. Chikokoto.

On lack of machinery, he advised the government to work out financial arrangements with donors or banks to procure mining and processing equipment for artisanal and small scale mining cooperatives.

He also said there is need for the government to incorporate special incentives for ASMs in the laws that will facilitate legal exploitation of the resources in a sustainable way.



A female potential buyer admires precious stones that ASMs displayed at the Malawi stand

Ms to Cape Town Mining Indaba

Malawi gems to international buyers



ASMs had a chance to attend a workshop related to their trade

“ASM operations sometimes take place on deposits under land that has been licensed to others or dedicated to other purposes. These include protected areas, agricultural land, tenements for other mining companies, but also land for urban planning and other land use purposes. Government should come up with laws to legalise sustainable exploitation of deposits in these places for its own benefit and that of the ASMs,” he said.

Mr. Chikokoto was all praises for FDH Bank for organizing the Cape Town trip saying all along small-scale miners have not been able to attend such international conferences, which are considered to be for mining executives, government officials and other big players in the mining industry.

“I am thankful to FDH Bank for the trip. We were not only able to meet potential buyers of our stones and jewelry



Malawi's Commissioner for Mines Kaphwiyo chats with Mr. Mbewe, one of the ASMs

in Cape Town but we were also able to table our concerns and aspirations to top officials of international organizations who can work with our government and private firms to finance our activities including training programmes,” he said.

Mrs. Chasowa, who represented an umbrella body for women miners in the country the Malawi Women in Mining, concurred with the other two ASMs in hailing FDH Bank for the trip.

“It is interesting that it had to take a Malawian bank to stand up to our cry and start assisting us small-scale miners after many years of toiling in hopelessness. We hope the Bank will continue with its programmes to support this sub-sector,” she said.

Mrs. Chasowa said the trip was not only an eye-opener but also inspiring because it enabled her to meet representatives of regional women in mining bodies, which are willing to work with MAWIMA to promote the activities of small-scale miners in Malawi.

“It is an inspiration for me because I have been able to meet women artisanal miners from other countries who are making a fortune out of the trade. I will definitely share the experience of how they are doing it in other countries in the



ASMs also visited gemstone and jewelry shops in Cape Town to see the end-product of their miner-



Mr. Nazitwere (standing) captured with the ASMs at the workshop in Waterfront

region with my Malawian colleagues,” she said.

The small-scale miners were also able to visit some gemstone and jewelry shops in Cape Town where they bore witness to how the jewelry trade is conducted in the tourism town of Cape Town.

They also had a chat with the shops' management to map out ways on how they can start selling their products to these elite shops.

“As our Managing Director Mr. Phillip Madinga said during the launch of the national workshop for the formulation of the Artisanal and Small-Scale Mining Policy in Lilongwe last year, our brand promise “Grow With Us” resonates very well with our focus to support small businesses in the Small and Medium Enterprise Sector, a sector which the ASM segment belongs to. We are, therefore, proud to support the ASMs in Malawi and we want them not only to grow with us but also grow with the economy. This is why we have invested in this initiative,” said FDH's Mr. Nazitwere.

The Cape Town scenario bears evidence that this corporate social responsibility venture by this home grown bank is indeed bearing fruits.



TECHNICAL FILE

Project Profile by Grain Wyson Phillip Malunga FIMMM
Mining and Environmental Management Expert

Agrominerals for Agriculture Productivity and Economic Development

Agrominerals are minerals of importance to agriculture and horticulture, are usually essential plant nutrients. Strategic planning to exploit these minerals will save foreign exchange through import substitution and reduce unemployment rate in the rural areas. Significant agrominerals in Malawi include limestone, apatite rock, pyrite, gypsum and vermiculite.

LIMESTONE

Limestone is used to reduce the acidity level in the soil so that the plant can absorb the nutrients that are available in the soil. Significant deposits have been evaluated at Chikoa-Livwezi in Kasungu, Chenkumbi in Balaka, Makoko in Nsanje, Njereza in Mangochi, Golomoti in Ntcheu.

Table 1: Limestone/marble deposits

LOCATION	ANALYSIS %			ESTIMATED RESERVES (million tonnes)
	CaO	Mgo	SiO2/Insolubles	
Chikoa-Livwezi	51.0	0.7	11.5	28.0
Golomoti	49.0	4.5	0.7	40.0
Chenkumbi	46.1	6.3	-	300.0
Makoko	45.1	6.1	8.2	20.0
Njereza	53	2.0	-	100.0
Nkhungumalo	45	8.0	-	20.0

APATITE ROCK

Apatite is a source of phosphorous (P). Adequate P availability for plants stimulates early plant growth and hastens maturity. In Malawi apatite is found mainly in carbonatites and as eluvial deposits in ring structures.

Apatite exists in commercial quantity at Nanthache Hill near Nambazo in Phalombe. It can also be processed as a byproduct of rare earth processing at Songwe in Phalombe and Kangankunde in Balaka.

Figure 1: Nanthache Hill near Nambazo in Phalombe



The chemical analysis of a typical composite apatite rock from Nanthache is as follows:

P2O5	17.4%
REO	1.1%
Nb2O5	0.35%
White fine-grained matrix of apatite in a sideritic carbonatite	

Figure 1

The deposit is rich in medium weight rare earth oxides with 1.35 kg of yttrium, 2.5 kg of neodymium and 6 grams of gallium per tonne each. The potential of recovery of niobium and rare earths makes this deposit attractive to foreign partnership investment.

The demand for fertilizer products is estimated at 350,000 metric tones. The main required fertilizer is compound 23-21-0 4S (phosphatic-NPK+S). Its demand is in excess of 90,000 tonnes. Most of this fertilizer is imported and landed costs are beyond the reach of the smallholder farmers who account for 85% of the agricultural sector.

PYRITE

Pyrite and pyrrhotite are potential raw materials for the production of sulphuric acid that can be used for production of fertilizer. Substantial deposits occur at Nkhanyu in Dowa and Malingunde in Lilongwe.

Table 2: Pyrite Deposits

LOCATION	S %	ESTIMATED RESERVES (million tonnes)
Lilongwe		
• Malingunde Dowa	10.7	10.0
• Nkhanyu hill	8.0	34.0
• Kadamsana	8.9	5.5

GYPSUM

Gypsum improves soil quality. It dissolves more quickly than lime. Calcined granular gypsum is also used as a carrier for insecticides/pesticides.

In continental environments, such as central Malawi, gypsum forms where there is a source of the sulphate ions and calcium ions to form gypsum (CaSO4.2H2O). The gypsum deposits in the Lilongwe and Dowa dambos of Malawi fall in this category. In this area nearby hills rich in pyrite (FeS2) minerals and other sulphide minerals are an excellent source of (SO-4). Calcium ions are derived from the dambo clays.

Figure 3: Mdika Dambo at Kayembe in Dowa

Gypsum crystallises in khaki grey to medium brown sandy clays within a depth of 0.2 to 2.0 metres. This is a zone in which water table fluctuates during dry and rainy season.

Table 3 gives estimated reserves in 6 dambos of central Malawi. A total of 664,400 tonnes of gypsum is obtained. An inferred reserve of 5.5 million tonnes for the 50 dambos with an average grade of 7.33 (wt %) is anticipated.



Figure 3

Table 3: GYPSUM RESERVES IN CENTRAL MALAWI (Malunga and Nkhoma)

Dambo	Reserves (Tonnes)	Grade (Wt %)
Livuno	650,000	10
Debza	4,000	8
Mantchenche	3,500	5
Linthembwe	1,000	10
Katete	3,600	5
Kasangadzi	2,300	6
Total	664,400	44
Average	110,733	7.33

Figure 4: Women grading gypsum at Kayembe in Dowa.

VERMICULITE

Vermiculite has a high water holding capacity and absorbs excess nutrients. It insulates and minimizes soil temperature fluctuations. This mineral is free from disease, weeds and insects and it has a good air holding capacity. These characteristics render it a good soil conditioner in sand and heavy clays that swell when wet and shrink/crack when dry. It is a good moisture keeper in areas that are affected by frequent drought and improves soil fertility.

15 deposits were identified around Feremu in Neno. A pitting and drilling exercise delineated reserves amounting to 2.5 million tonnes. The vermiculite forms a core surrounded by hydrobiotite and phlogopite. An expansion ratio of greater than 10 was observed on vermiculite from Garafa, Phate, Matembe north and south, Kapirikamodzi and Njiza.

Figure 5: Exfoliated vermiculite



Figure 5



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Mkango launches programme to uplift education standards to help empower Phalombe local communities

● Rare earth prospector presents six decorated learner-friendly classrooms to three primary schools

By Chiku Jere

Mkango Resources has embarked on a programme to uplift educational standards for the local communities surrounding its flagship Songwe Hill Rare Earth Project through, among other interventions, improvement of infrastructure and provision of learning materials to primary schools in the area.

The programme has seen the Canadian listed firm, through its wholly owned local subsidiary Lancaster Exploration, partnering a non-governmental organisation boNGO World-wide, in renovating and painting six classrooms for primary schools in the area.

The painting work involved putting artistic educational expressions depicting what is in the school curriculum to develop the classrooms into learner-friendly facilities.

Speaking at Mphembezu Primary School during the handover ceremony of the six classrooms, two from each of the three primary schools of the area namely Mphembezu, Changa and Mangazi, Mkango Resources' Country Director for Malawi, Mr. Burton Kachinjika, said the project is part of the firm's vision to help build an empowered and educated society in the area.



Mr. Burton Kachinjika

“We are building a foundation for the would-be future employees of Mkango. Our aim is to educate and train children from the area, so that when we roll-out the actual mining works, we should not go elsewhere to look for workers; rather, we should recruit from within.”

He said: “We are building a foundation for the would-be future employees of Mkango. Our aim is to educate and train children from the area so that when we roll-out the actual mining works, we should not go elsewhere to look for workers; rather, we should recruit from within.”

“We believe that the transformation of these school blocks will make both learning and teaching easier and we envisage improved grades on the part of pupils.”

He said the company will join hands with parents and teachers in closely monitoring the performance of the pupils and make necessary interventions to inspire them to greater heights.

As a way of inspiring the pupils, Kachinjika reiterated that Mkango will grant primary, secondary school as well as tertiary education scholarships to the top performing pupil in mathematics and science subjects at each of the three primary schools.

In his remarks, a visibly excited Deputy District Education Manager (DEM), Godfrey Kubwense, was full of praises for Mkango for what he described as a visionary initiative.

“We at the Ministry of Education are really humbled and excited to have Mkango Resources invest in the sector, particularly here in Phalombe. This is a very meaningful investment and I urge all stakeholders to avoid frustrating such kind of investors because doing so will be denying our children a better future,” he said.

He said he foresees the changed classroom environment acting as a motivation tool for pupils as the expressional pictures on the wall will compliment what they learn from their teachers.

Kubwense observed that Phalombe, as a district, had few historical role models to inspire students and said that Mkango's investment in education would start to actively empower the pupils to become future role models.

He then advised the communities surrounding the three schools to shoulder the responsibility of taking good care of the

renovated school blocks so that they are not damaged by vandals. “Let us preserve this development so that more and more children will be able to use the facilities in the next ten years to come,” he said.

Headteacher for Mphembezu Primary School Charlestone Mulewa was all smiles explaining that the painting of the school blocks with educational expressions would reduce the problems that teachers were facing in terms of sourcing practical and demonstrational teaching materials.

“I am failing to express my gratitude to Mkango because I am overwhelmed with joy as regards what they have done for our school and the other schools. Teachers and pupils will find a breathing space as they will not spend time going around looking for material for practical teaching or learning any more. Every-



Inspired guests



Mr. Kachinjika flanked by DEM for Phalombe district Mr. Kubwense at the opening ceremony

thing they need has beenprinted on the walls of these blocks and we really appreciate the job well-done on the part of boNGO Worldwide which was tasked to do the job,” said Mulewa.

Other dignitaries who talked highly of the project during the ceremony included Senior Group Village Headman Maone, Group Village Headman Namalamba, Mauzi Ward Councillor as well as a representative of the Primary Education Administrator (PEA), Christopher Chazinga.

Speaking on behalf of all traditional leaders GVH Namalamba expressed profound gratitude to Mkango Resources as well as the contractor, boNGO (based on Need-driven Grassroots Ownership) for the initiative dubbed “Happy Classrooms Project.”

“There is no need for me to emphasise that in Mkango, we have found a true partner and a friend who has sincerely shown clear interest of helping us to develop our area, and we hope this will continue,” Namalamba said.

boNGO's Programme Director Justin Namizinga explained that the main aim of the ‘Happy Classrooms’ initiative is to improve the learning and teaching environments in infants

school section (standards 1,2,3 and 4) of Malawi primary schools through relevant educative decorations (paintings) on the walls.

“The objectives of the project is to provide pupils with a learner-friendly environment that helps them to concentrate better and learn faster and also to help teachers with lasting teaching aids so that their lessons can be more understandable and easier,”he said.

According to Namizinga, the renovation and decoration of classrooms has technically cut cost by 75% in terms of what the schools spent on educating the pupils.

He said the investment has a 10-year life span and would cater for two to three generations



Mr. Godfrey Kubwense

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Clear pupil-participation and interaction



Mr. Justin Namizinga

“The objectives of the project is to provide pupils with a learner-friendly environment that helps them to concentrate better and learn faster and also to aid teachers with lasting teaching aids, so that their lessons can be more understandable and easier”

of pupils to come.

boNGO is a Malawian Non-Governmental Organisation which was established 2007 with the sole aim of raising education standards in the country mainly focussing on Early Childhood Development (ECD).

The organisation also addresses HIV and Aids issues through the production of awareness-raising motion pictures.

Though mine construction is yet to start at Songwe Hill, Mkango Resources has undertaken a number of corporate social responsibility (CSR) projects at the site to assist the communities in different sectors.

The CSR projects have included construction of access roads and bridges, construction of boreholes to provide portable water for the communities and donation of seeds and tree saplings to members of the communities for subsistence and commercial farming purposes.

Mkango Resources has also donated 6.7 million kwachas worth of items to 470 households in the communities surrounding Songwe who were most affected by the recent floods.



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EYE ON MALAWI'S

EITI

Extractive Industries Transparency Initiative

With Rachel Etter



Examining Malawi's journey towards EITI compliance

EITI in Malawi's Neighbouring Countries

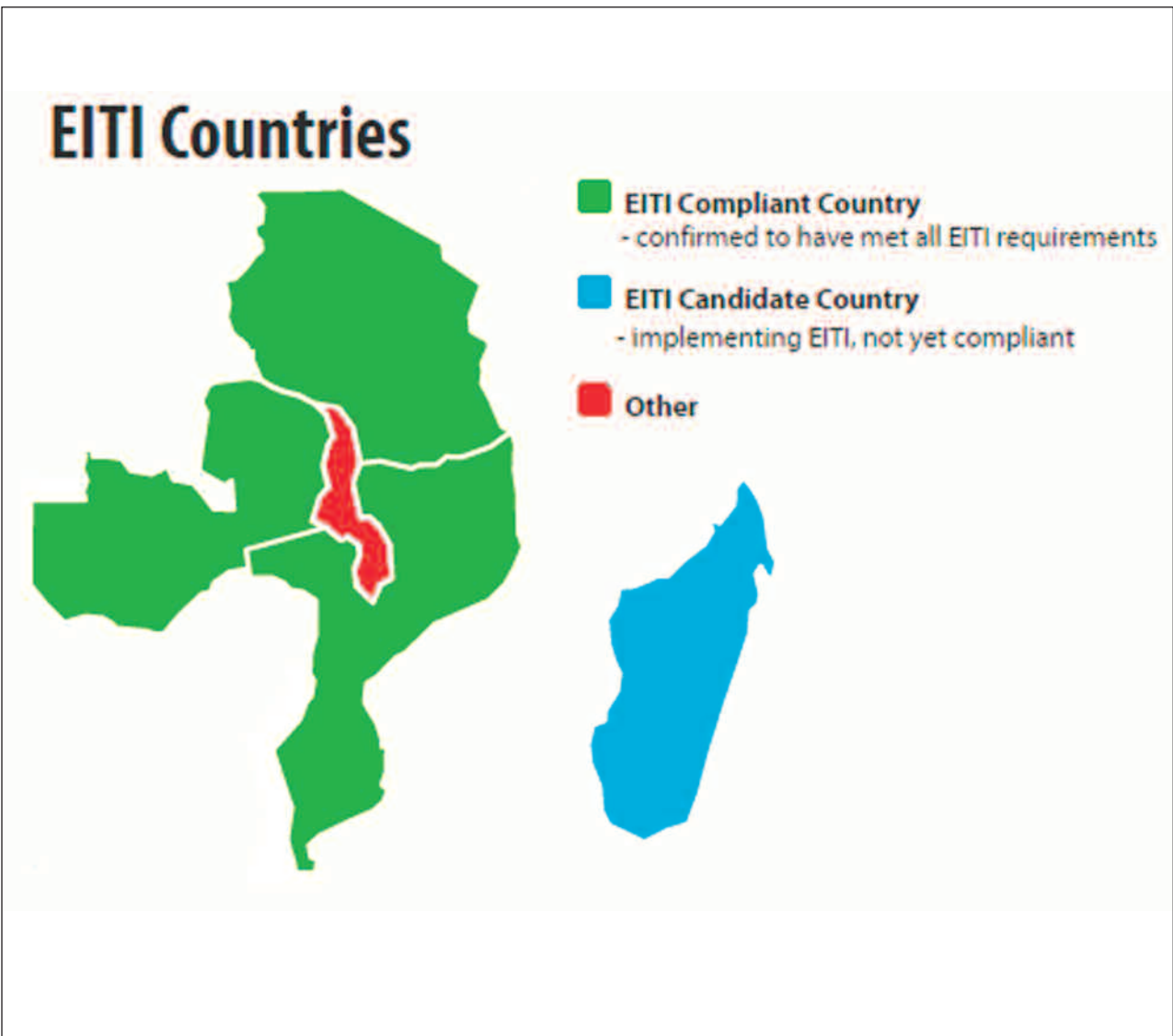
Malawi is an island, surrounded by countries that have signed-up to, passed the candidacy stage of and complied with the Extractive Industries Transparency Initiative (EITI). Malawi's neighbours – Tanzania, Mozambique and Zambia – were declared compliant by the EITI Board three years ago in 2012. The move to join the voluntary initiative was taken by these countries to ensure the extraction of minerals contributes to their national socio-economic development.

The multi-stakeholder groups in the three countries have guided the publishing of reports which allow citizens to follow the value and price paid for the country's natural resources, from production until the money reaches government coffers. Companies report payments to government (including taxes and royalties) and the government reports what it has received. An independent administrator, usually an auditing firm, reconciles these figures, compares the data sets, and investigates and explains any discrepancies between company and government reporting. This is published in the EITI report.

To date, Tanzania has produced four reports, Mozambique has produced five reports and Zambia has produced six reports and in each country the number of companies included in the process has risen. The information from these reports is used to stimulate debate among citizens and provides evidence for policy makers in determining the best fiscal regimes for oil, gas and mining in their countries.

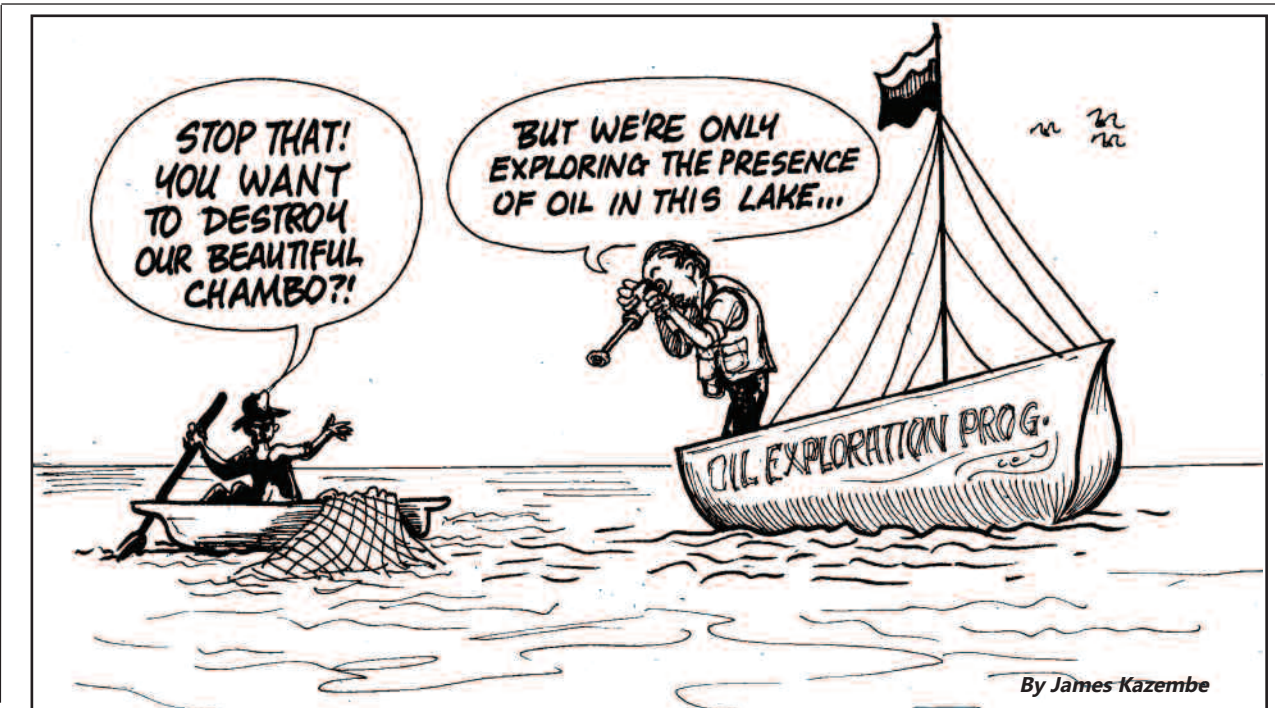
"Information is power. By making information on payments by mining companies and revenue received by government public, we are empowering all stakeholders to participate in the management of mineral resources," the Southern Province Permanent Secretary Margaret Miyoba said, according to the Lusaka Voice, at the launch of the Zambia's fourth EITI Reconciliation Report last year.

To follow its neighbours, Malawi's EITI process will be guided by the multi-stakeholder group, described in last month's column. Representatives from government, industry and civil society who will form this group have now been confirmed. As explained in last month's column, government representatives will come from the Ministry of Fi-



nance, Economic Planning and Development, which is leading EITI implementation, the Ministry of Natural Resources, Energy and Mining, the Reserve Bank of Malawi, and the National Audit Office. ActionAid Malawi, the Catholic Commission for Justice and Peace, Citizens for Justice, and the Foundation for Community Support Serv-

ices were chosen in December 2014 through the Natural Resources Justice Network to represent civil society. This month, the private sector announced its representatives: Bwanje Cement, Globe Metals & Mining, Mkango Resources and Paladin. We await the first meeting of the group.



MINING REVIEW

VOICE OF THE MINERAL SECTOR IN MALAWI

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Tribute to Fallen Friends

Mineral sector mourns Phiri, Kamperewera

By Mining Reporter

Stakeholders in Malawi's minerals sector have expressed shock over the death of former Director of Geological Survey Department Mr. Fraser Phiri and Director of Environmental Affairs Department Dr. Aloysius Kamperewera, who passed away last month.

President of Mkango Resources, Alexander Lemon, says it is sad for Malawi, which is developing its minerals sector to lose the two great persons who invested their time in mineral resource development and environmental protection respectively.

"Fraser played a great role in mineral resource development which is evident in many geological reports for Malawi, while Aloysius contributed much to the environmental work in Malawi," says Lemon.

Geologist John Nkhoma of Chiwandama Geo-Consultants who worked with Mr. Fraser Phiri says he will live to remember Mr. Phiri as a friend and working colleague while he will remember Dr. Kamperewera as an environmentalist who could accommodate views of all stakeholders including mining companies.

"I shared a lot with Fraser as a fellow professional and friend. He was one of the pioneers in geology in Malawi. In particular he introduced me to real hands-on field work when I was on attachment from University of Malawi waiting for a scholarship to study Geology in UK. He was carrying out exploration for ceramic clays at Linthipe and he taught me pitting, pit logging and sampling. He carried out a lot of surveys for brick clays countywide and some of the clays he identified in Lilongwe area were used in the production of bricks which were used to build the Capital City!"

"On Aloysius, I knew him as one of the great environmentalists in Malawi who was very accommodative to views of all stakeholders. I worked closely with him when I was in the civil service, mainly during discussions relating to the development of the Kayelekera Uranium mine where he gave very constructive advice on the best approach. May the souls of these two patriot gentlemen rest in eternal piece," says a grieved Nkhoma.

Deputy Director for Mines Department Ackim Atilemi Wona also expressed grief over the passing on of the two gentlemen.

"It is a shock for me to bury these two gentlemen in one month. I just interacted with Dr. Kamperewera a few days ago. Though a respected professional, the man was jovial to everybody. May the souls of the two rest in peace," says Wona.

Former Minister of Natural Resources, Energy and Mining, Grain Malunga, also added his sorrowful words in the following extract:



Mr. Fraser Phiri



Dr. Aloysius Kamperewera

Tribute to fallen friends - By Grain W. P Malunga FIMMM

FRASER PHIRI

I joined Geological Survey of Malawi on 6th April 1986 with no experience in geological mapping. I was accommodated in an office where John Nkhoma and Late Philemon Gondwe were. The following day I met this Fraser on the corridor on ground floor smoking his cigarette looking like a philosopher in deep thought. He looked at me and spoke nothing and I thought "Am I going to be like him talking to rocks, photographing my geological hammer or coin every time I want to take a photo of a rock?" Yes I joined a family of rare species with a gifted mind of trying to beat God's theory of evolution and relative age determination in rocks. A week later I heard from John and Philemon that Fraser was a Principal Geologist and Editor who had studied geology and later hydrogeology. I recalled that every time I went into villages there were messages on boreholes reading "Drilled by F. R. Phiri". When I went into the Library most Technical Reports were authored by either Fraser Phiri or James Chatupa.

I decided to follow their footsteps and on top of technical guidance by John and Philemon. Fraser developed my geological career when he became Chief Geologist because he kept on sending me on exploration activities and establishing new Geological Survey Offices. First I thought that he never liked me to be at Headquarters but later I realised that he was building my career and preparing me to always be in deep thoughts solving the mysteries of geology and mining. Thank you Fraser and **MAY YOUR SOUL REST IN PEACE.**

ALOYSIUS KAMPEREWERA

The Environmental Affairs Department enacted the Environmental Management Act in 1996 a few years after the Department was established. I remember undertaking Environment Impact Assessment (EIA) for "Establishment of Bwanje Valley Lime Project" and "Mulanje Mountain Bauxite for establishment of an Alumina/Aluminium Industry". The persons I interacted with were Ralphael Kabwadza and Aloysius Kamperewera. Aloysius was the contact person and we adopted the World Bank Standard of undertaking EIAs and that was the time we both came closer and worked together understanding various aspects of EIA and drafting of Environmental Management Plans sectoral guidelines". He was so passionate at what he was doing and wanted that to be thoroughly done.

Malawi became an African leader on issues of environment and climate change because of his leadership. Malawi represents Africa and other Least Development Countries because Aloysius had bred and led a team of young men and women who became so dedicated and became good negotiators on various conventions on climate change, phasing out of ozone depleting substances and biodiversity. Malawi should be proud to have had such a hardworking and loving person. Aloysius has left such traits in our young professionals and **MAY HIS SOUL REST IN PEACE.**

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