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ABOUT PUBLICATION

Mining Zimbabwe is the premier source of Zimbabwe Mining News. Our core focus is the Zimbabwe Mining Industry, trends, new technologies being developed and used to improve this crucial sector, as well as new opportunities and investments arising from it. Mining Zimbabwe's sole purpose is growing and empowering the Mining Industry and highlighting all its challenges as well as putting forth expert solutions

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CONTENT

Mining Zimbabwe Magazine | Issue 53

TENDO

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PRODUCTS & SERVICES

- Generators
- Energy Management
- CCTV and Access Control
- UPS and Electrical services
- Services level Agreement
- Integrated solutions
- Air Conditioning

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INSIDE MINING ZIMBABWE

- 06 Jubilation as Chitando follows through on a promise
- 08 ZMF strategises for the achievement of the US\$8 Billion gold mining industry in 2022
- 10 Relevance of the ASM in national growth
- 14 Government calls for Value addition for mining to fetch US\$12 Billion in 2022



- 16 Gold, Lithium, Importance of quantifying Zim minerals
- 18 Using characteristics of Minerals to Identify them
- 20 Harmonisation of Legislation that governs Agriculture and Mines
- 21 Premier seeks for Zulu lithium investment partner



- 22 Eddington Vere appointed BNC Mine Manager
- 24 ZCDC nearly doubles output
- 25 Caledonia to operationalise its 12 Megawatt solar plant by mid-year
- 26 The Discovery of oil and gas presents economic growth possibilities for Zimbabwe
- 28 Power interruptions affect Mimosa
- 30 School of mines to set up operations in all provinces
- 32 EPOs applications increase as Zim attracts investment



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Jubilation as Chitando follows through on a promise



Minister of Mines and Mining Development Hon Winston Chitando

There were wild celebrations after Minister of Mines and Mining Development Hon Winston Chitando deployed ten teams to clear mining title backlogs in the Mashonalandwest province.

Anerudo Mapuranga

Zimbabwe Miners Federation (ZMF) Mashonaland West Chairperson Mr Timothy Chizuzu praised the government for putting more effort in clearing backlog for the growth of the Artisanal and Small-Scale Mining sector.

"As the chairperson for MashWest I'm very happy that the government has moved swiftly to support formalization of small-scale miners," Chizuzu said.

Reviewer Consultant of Rough and Polished Diamond Gemologist, Chaotician, PhD. Cisco Net Eng, Diamond Equity Consultant said, "Quite a positive and applaudable development we see here,".

Miners WhatsApp groups were abuzz with many expressing their appreciation that finally they were going to be formally recognized as miners.

In an effort to achieve the President's Vision for the Mining industry becoming a US\$12 Billion earner by 2023, the Ministry of Mines and Mining Development is on a national tour clearing all application

backlogs ensuring that miners mine formally.

Since the coming of the Minister of Mines and Mining Development Hon Winston Chitando into office, the mining sector has attracted huge investors who have an appetite for investing in the mining sector as a result the provincial offices found themselves in a huge backlog due to the increase in mining application.



Timothy Chizuzu

At some point, the country had a backlog of 15 thousand and Ministry officials are believed to be working around the clock to ensure the backlog is cleared. Miners have been complaining over delays in the processing of mining licenses, with applications reportedly dating back to 2018.

The Ministry of Mines and Mining Development has been dragging its feet in issuing out mining licenses, with miners citing corruption at provincial mines

offices throughout the country.

Clearing the backlog on mining licenses is a roadmap to formalization and regularization of the mining sector a commendable move leading to the achievement of the US\$12 Billion industry by 2023.

The government of Zimbabwe launched the USD12 Billion Economy by 2023 in October 2019 as part of the broader macroeconomic roadmap towards an Upper Middle-Income Economy by 2030.

The USD12 billion mining industry represented a 344% increase in mining revenue. According to the roadmap, the multi-billion-dollar industry will be driven by gold, platinum, diamond, chrome, iron ore, coal, lithium, and other minerals.

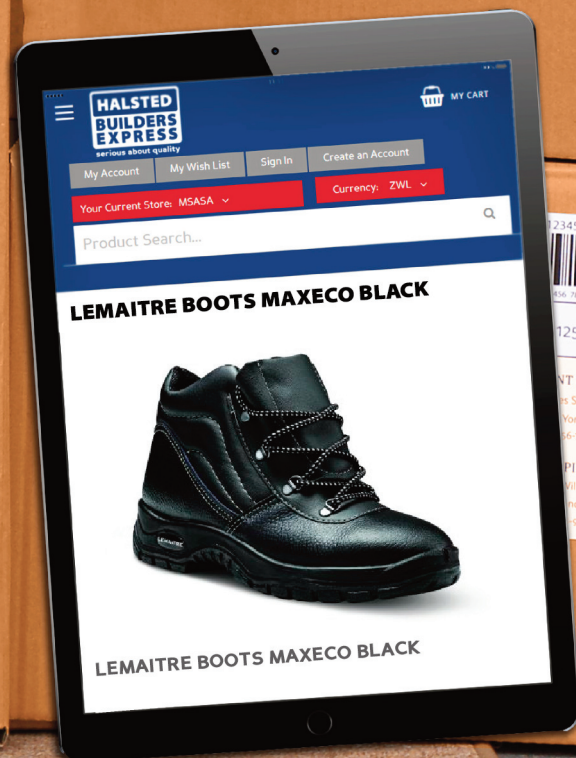
Through US\$12 billion roadmap, President Mnangagwa has put up a target of US\$4 billion for gold producers while platinum and diamonds are expected to weigh in US\$3 billion and US\$1 billion, respectively. Chrome, Nickel, and Steel are expected to generate US\$1 billion, coal and hydrocarbons are also expected to produce US\$ 1 billion. Lithium is expected to produce US\$0.5 billion while other minerals are forecast to produce US\$1.5 billion

"As the chairperson for MashWest I'm very happy that the government has moved swiftly to support formalization of small-scale miners," Chizuzu said.

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ZMF President Ms Henrietta Rushwaya

ZMF strategises for the achievement of the US\$8 Billion gold mining industry in 2022

The Zimbabwe Miners Federation (ZMF) a body that represents the small-scale and artisanal (ASM) miners in Zimbabwe has made major strides in the achievement of the US\$8 Billion gold mining industry in 2022.

Rudairo Mapuranga

The organisation's strategies have proved to be momentous and fecund as the ASM sector has already contributed 1.4 tonnes of the 1.8 tonnes of gold submissions to the country's sole gold buyer and exporter Fidelity Gold Refinery (FGR) in 2022.

Speaking at the ZMF Induction and Stakeholders Consultative Workshop held recently, ZMF President Ms Henrietta Rushwaya said the ZMF has created a round table that deliberates on mining issues.

The round table according to Rushwaya will focus on issues of corporate governance and information dissemination for the growth and development of the artisanal and small scale mining sector in Zimbabwe.

"As a mother body for the ASM sector, we attach great importance to corporate governance. We believe that for organisations to be successful, competitive and sustainable in the long term, a high standard of governance is indispensable.

"One of the key issues pertaining to good corporate governance is information disclosure and transparency. Better disclosure and transparency can help us make informed decisions and better

manage risks.

"The corporate governance regime is an evolving one. The trust and reputation our corporate governance regime now enjoys is the hard-earned result of the continuous efforts and commitment of organisations, board members, stakeholders, service providers and investors and all relevant stakeholders, who make good governance their priority," Rushwaya said.

ZMF Induction and Stakeholders Consultative Workshop was attended by the Minister of Mines and Mining Development Hon Winston Chitando, his Deputy Eng Polite Kambamura, Minister of State for Mashonaland West Hon Mary Mliswa, Minerals Marketing Corporation of Zimbabwe (MMCZ) General Manager Mr Tongai Muzenda, Fidelity Gold Refiners (FGR) Acting General Manager Peter Magaramombe among others.

In his speech at the event Minister of Mines and Mining Development, Hon Winston Chitando said the government was going to continue supporting the ASM sector for mining growth in the country for it to achieve an annual revenue of US\$12 billion by 2023.

He said incentives for gold deliveries and equipment facilities provided to miners will be availed soon.

Speaking at the same event Zimbabwe's Ambassador at Large, Ambassador Eurbert Angel said there was a need to support the ASM sector in Zimbabwe through sustainable and smart mining.

"In Zimbabwe, we have witnessed a great positive contribution to our economy by artisanal miners. The bigger part of gold deliveries is now coming from the ASM sector. To increase productivity in this sector there is a need to support artisanal miners through sustainable smart mining," Angel said.

MMCZ General Manager Mr Tongai Muzenda said it was of utmost importance for miners to value add their minerals as this would triple the mineral's value.

Muzenda encouraged miners not to blindly enter into agreements with foreign investors without a contract of value addition as this would only disadvantage the miner and benefit only investors.

"MMCZ's role in value addition is in encouraging producers to value add their products.

"In value-adding chrome concentrates are further processed to produce ferrochrome, enhancing the original value threefold.

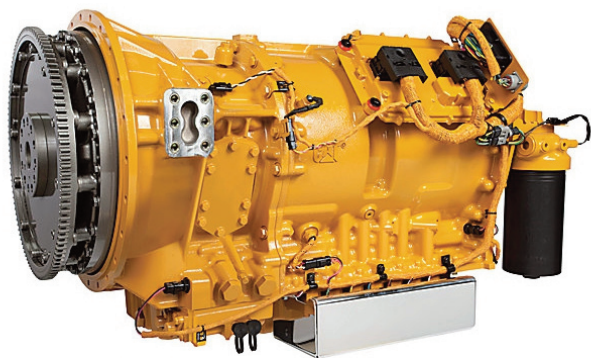
"Another example is tantalite concentrate which is converted into tantalite powder which is used in capacitors, making the incremental value fourfold," The MMCZ General Manager Mr Muzenda said.

Zimbabwe's Artisanal Small-scale and large gold producers in 2021 delivered a total of 29 629.61 kg of gold to Fidelity Gold Refinery (Private) Limited (FGR), a 55.5% increase from the 19 052.65 kg delivered in 2020. Large gold producers delivered 11 159.0 kg to FGR in 2021 whilst small-scale producers contributed 18 470.61 kg.

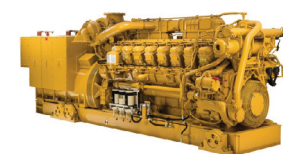


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Relevance of the ASM in national growth



Small-scale mine site near Shurugwi, Zimbabwe

The artisanal and small-scale mining sector (ASM) has for a time played a significant role in foreign currency realisation for the country, with the Reserve Bank of Zimbabwe (RBZ) recently acknowledging the importance of the sector for economic recovery.

Rudairo Mapuranga

Although the activities of the majority of the ASM have been associated with environmental degradation as well as the exploitation of labour, they have been hailed for such a major contribution to the country's forex earnings.

Recently the Minister of Mines and Mining Development Hon Winston Chitando said that the Government will not renew licences for non-compliant miners who are not following the dictates of the law as well as adhering to sustainable mining practices as it steps up efforts to arrest the massive environmental degradation witnessed in many districts across the country.

"Once you start mining, make sure that you comply with the provisions of the mining and environmental laws of the country. The level of environmental degradation taking place in some places is simply unacceptable.

"There will be a lot of initiatives to try and make sure that is corrected we will come up with measures to ensure that before the renewal of any mining concession,

Government is satisfied that the miner is complying with mining and environmental provisions," Minister Chitando said.

According to the Chairperson of the Parliamentary Portfolio Committee on Mines and Mining Development Hon Edmond Mkaratigwa: "The relevance of ASM is multi-pronged. Mostly that is the economic band in which most of our indigenous business people belong, they have a wish and aspiration to grow. Therefore, at this level, many households derive economic survival. That translated from the micro level to the macro level, these people contribute to the country's GDP, as they also play a huge role on the broader market in the country."

The role the ASM plays in economic recovery



Hon Winston Chitando

Through the National Development Strategy_1 (NDS-1), where the country is expected to become an upper-middle-income earner by 2030, the mining industry has been predicted to produce

annual revenue of US\$12 Billion by 2023. This means that the mining sector is considered an important player in national development.

Zimbabwe Miners Federation (ZMF) Chief Executive Officer Mr Wellington Takavarasha last year said the ASM was ready to contribute annual revenue of US\$4 Billion by 2023 making the sector a significant anchor in economic revival.

In gold which the government expects to contribute annual revenue of US\$4 Billion by 2023, the ASM has been the biggest contributor accounting for over 60 percent of total gold deliveries to the country's sole gold buyer and export Fidelity Gold Refinery (FGR). Last year the ASM gold sector contributed US\$1.7 Billion to the country and in chrome mining, the sector has been significant for the past years.

Hon Edmond Mkaratigwa small scale and artisanal miners form the future of mining due to their importance in the country's GDP.

"In economic recovery, some of them are loyal suppliers of gold to the national buyer, contributing to Gross National Product. Their activities further reduce national safety nets burden as these people as able to fend for themselves. Also, they form the future mining industry in Zimbabwe, they have demonstrated the resilience and initiative necessary for any business."

Mkaratigwa said.

Can ASM mine deep and low grades?



Patrick Takaedza

There is a perception that the ASM should never be trusted for economic revival since they will never mine deep and low grades. Speaking to Mining Zimbabwe RioZim Chief Geologist Mr Patrick Takaedza said the ASM was far away from contributing to the resuscitation of the economy.

"Artisanals will never sustain the mining industry because of these two simple facts. They can't mine deep and they can't mine lower grades" Takaedza said.

However, ZMF Mashonaland West Chairperson Mr Timothy Chizuzu said miners in Kadoma have proven that small-scale miners can sustain the economy of Zimbabwe because some are beginning to mine low grades and affording to mine over 50 tonnes of gold ore a day.

"Some of the small-scale miners are mining as low as one gram per tonne because they are pushing volumes, some are mining up to 6000 tonnes. My appeal to government and other stakeholders is that we need to support the sector so that it benefits much to the economy of Zimbabwe" Chizuzu said.

What's needs to be done to witness the transformation of the ASM.



Dep Minister Polite Kambamura

The Deputy Minister of Mines and Mining Development Dr Polite Kambamura said the government of Zimbabwe was determined to support the growth and development of the small-scale and artisanal mining sector in achieving serious and sustainable mining.

"Government will continue to support the

sector through capacitation and formalisation (this is already in the pipeline). The sector is key to national growth as it contributes over 60 percent of gold deliveries to Fidelity Gold Refineries. The government wants the sector to grow sustainably through responsible mining." Dr Kambamura said.

Hon Mkaratigwa said, "The treatment the ASM is getting from government varies from legal to economic, and a larger extent, the government is committed to turning their activities into a real business. That has not been easy as witnessed in many countries on the continent, but the cost of transforming the sector has the potential to unleash the capabilities of these giants. The support is there and mostly, their voices have been given ear to, however, there is a need for continued efforts towards strengthening cooperation and open lines of communication amongst themselves and with the government, for quicker processes and development of support mechanisms. They have to grow and we are for their growth."

Is it possible for the ASM to develop to junior mining?



Junior mining companies are currently focusing primarily on-trend metals such as gold, silver, copper, cobalt, nickel, zinc, lithium, and rare earth metals, that is base metals, precious metals, and technology metals which are currently trading at near multi-year highs or are otherwise on the upswing.

Experts have been tipping the ASM to shift their work from micro mining to exploration for the development of the mining industry in Zimbabwe. It is clear that Zimbabwe has lagged behind the rest of the world in terms of mining, Zimbabwe used to be one of the largest producers of gold in Africa but currently, it is nearly close to nowhere because no new deposits are being found like in other countries in Africa. The call to develop into junior miners of some sort is very significant. Junior miners are important in the discovery of new resources and second, they provide for preselection of promising new sources of commodities.

According to Hon Mkaratigwa, "There is that propensity and that should be done in our own way, borrowing from others' approaches then contextualizing all the wisdom to our country's socio-economic and cultural environment. The national vision must be fully shared by all in the sector as a starting point and then, we can be assured to fully move, grow and sustain our growth just as all these other countries have managed. We have the brains and we have the resources, hence we can rise, as our limits can only be our dreams."



Hon Edmond Mkaratigwa

Conclusion

ASM activities are as important as large-scale mining activities, particularly in terms of the number of people employed. ASM can play a crucial role in poverty alleviation and rural development. Most of those involved are poor and mining represents the most promising, if not the only, income opportunity available. The performance of the gold sector in Zimbabwe shows that the ASM if properly nurtured is the next big deal for mining prosperity in Zimbabwe.



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Government calls for Value addition for mining to fetch US\$12 Billion in 2022



MMCZ Boss Mr Tongai Muzenda

The Minister of Mines and Mining Development Hon Winston Chitando announced that the government of Zimbabwe is expecting the mining sector to fetch US\$8 Billion in 2022.

Anerudo Mapuranga

Through the National Development Strategy_1 (NDS-1) where the economy is expected to become an upper middle income by 2030, the mining sector is expected to earn annual revenue of US\$12 billion by 2023.

Despite Zimbabwe fetching nearly US\$6 Billion in 2021 through mineral exports, there have been calls by experts to promote value addition and beneficiation before exporting raw minerals.

The country continues to export its major minerals in a raw or semi-processed form, resulting in the country losing billions of dollars in potential revenue.

The Minerals Marketing Corporation of Zimbabwe (MMCZ) has for long discouraging miners to side marketing their produce and encouraging them to be geared to value add the minerals for sustainable returns.

Speaking at the Zimbabwe Miners Federation (ZMF) Induction and

Stakeholders Consultative Workshop on last month MMCZ General Manager Mr. Tongai Muzenda said it was of utmost importance for miners to value add their minerals as this would triple the mineral's value.

"MMCZ 's role in value addition is in encouraging producers to value add their products.

"In value-adding chrome concentrates are further processed to produce ferrochrome, enhancing the original value threefold.

"Another example is tantalite concentrate which is converted into tantalite powder which is used in capacitors, making the incremental value fourfold," Muzenda said.

The Ministry of Mines and Mining Development has been calling for the value addition of minerals with the President of Zimbabwe Dr Emmerson Dambudzo Mnangagwa emphasizes the creation of innovation hubs for the country to achieve maximum returns from their minerals.

Last month the Chinhoyi University of Technology (CUT) announced that it was on the verge of developing of lithium batteries. The University is also expected to design battery casings using its 3D printing machine. The university's lithium

battery production innovation is part of the other two energy production projects that the University's Innovation Hub has embarked on.

According to the Deputy Minister of Mines and Mining Development Dr Polite Kambamura the government is encouraging local value addition and beneficiation saying that it will have a positive effect on the growth of the lithium industry in the country. He said that local value addition can also steer investment into lithium exploration and mining.

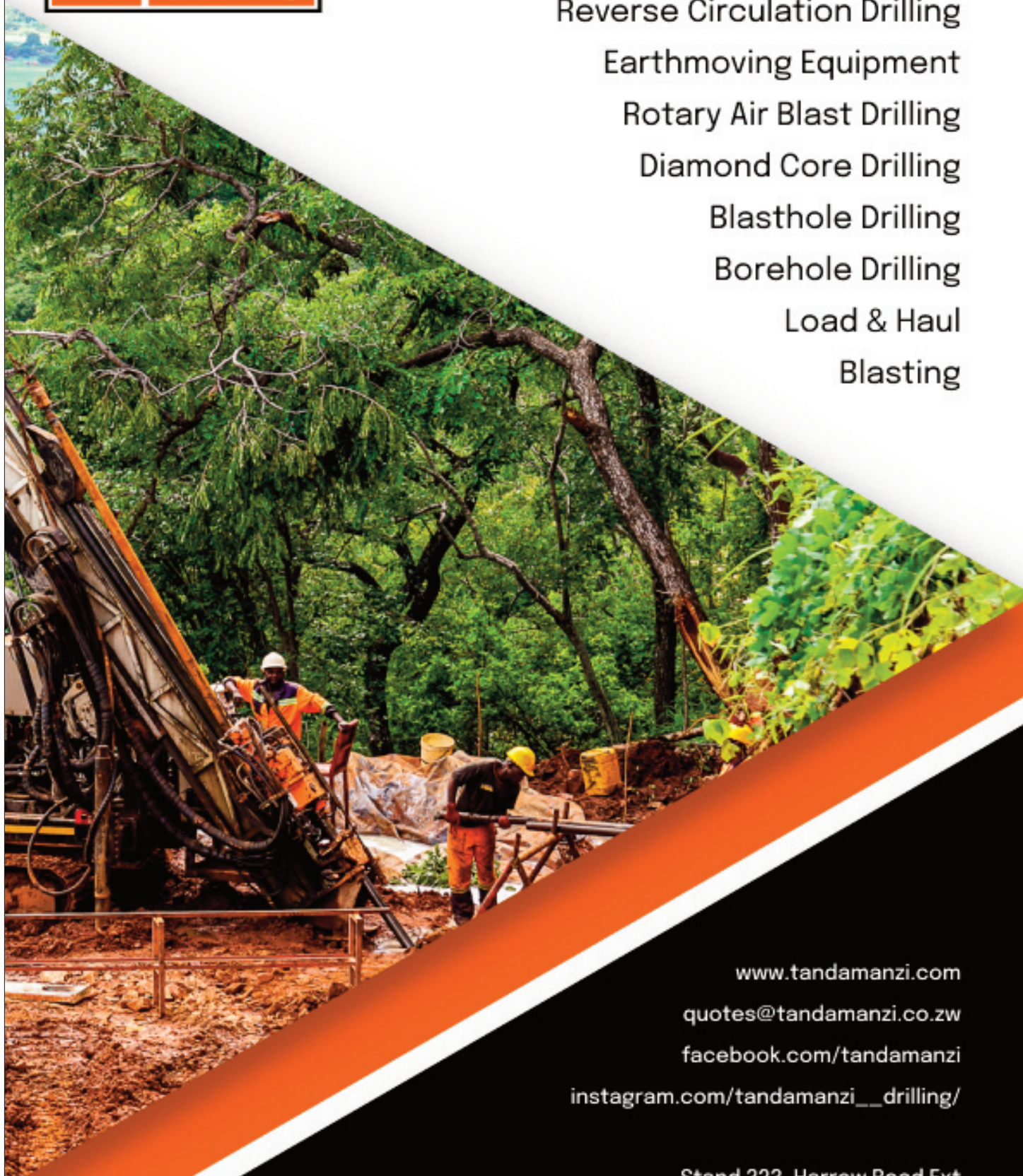
"Government is encouraging local beneficiation and value addition. We are much excited by research in the beneficiation of lithium to lithium batteries.

"Leveraging on our own technology, we will get more investment in lithium exploration and mining. By so doing Government will form symbiotic relationships with investors for the benefit of our country. Local beneficiation in that sector is key, given the high demand for lithium world over." He said.



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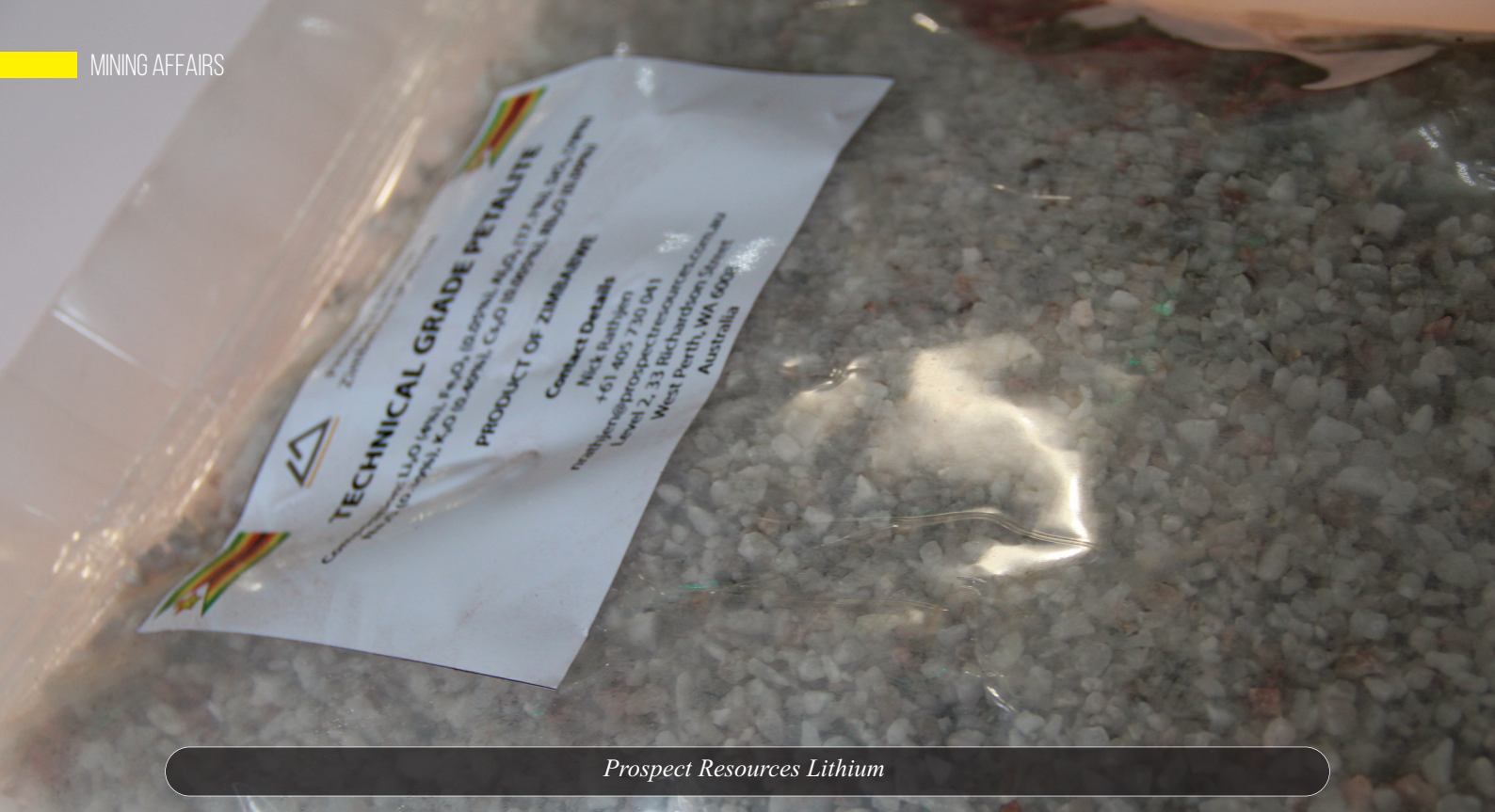
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Prospect Resources Lithium

Gold, Lithium, Importance of quantifying Zim minerals

As the world's demand for minerals like lithium and gold has been on an increase for the past years, mineral quantification through exploration becomes the only viable option to witness the growth and capital attraction of the mining sector in Zimbabwe.

Rudairo Mapuranga

Exploration is an important step in finding minerals so they can be potentially mined.

MINERALS EXPLORATION IS THE PROCESS OF LOOKING FOR MINERAL DEPOSITS IN THE GROUND. IT INCLUDES TECHNIQUES THAT HAVE NO OR LOW IMPACTS ON LAND, SUCH AS AERIAL SURVEYING, GROUND MAPPING, ROCK SAMPLING, WATER, AND SOIL TESTING, AND FOCUSED DRILLING.

The demand for minerals is increasing, for example, the rise in demand for clean energy and electric vehicles (EVs) has led lithium to be the sort after mineral in the world. This demand is helping drive an increase in exploration across the state with companies such as Prospect Resources, Premier African Minerals, and Mirrorplex investing greatly in lithium exploration.

Importance of exploration

Minerals exploration is the process of looking for mineral deposits in the ground. It includes techniques that have no or low impacts on land, such as aerial surveying, ground mapping, rock sampling, water, and soil testing, and focused drilling.

Technology, research, and scientific methods are continually evolving, which means that some exploration activities can now be done without the need to enter private properties at all (for example,

airborne surveys using light aircraft).

New mineral discoveries, if developed, bring local jobs, new investment, and other economic benefits to regional communities.

In Zimbabwe, the process of mineral exploration can be done by applying for an Exclusive Prospecting Order (EPO) where an exploration company applies for an order to explore for minerals.

An EPO is a large area of ground targeting the selected minerals for exploration. The maximum is 65,000 hectares in Zimbabwe and a minimum size is up to the company or individual to choose. In Zimbabwe, EPO's tenure is 3 years with an option to renew for another 3 years.

EPOs are used by companies as first-pass exploration areas. This means that companies after doing the highly technical exploration studies will eventually drop the EPO ground in 3 years.

Large-scale exploration is carried out under licenses issued by the Head of State and administered by the Mining Affairs Board as per the provisions of Mines and Minerals Act 12:05. Two titles are issued under large scale exploration depending on the mineral to be explored according to the act, which is Special Grant (SG) for energy minerals like Coal Bed Methane, natural gas, oil, and uranium, and EPOs for other minerals, example base metals, gold,

diamond.

The issuance of EPOs for the country to discover world-class deposits is of paramount importance for the mining industry to achieve the President's projected US\$12 billion mining annual revenue by 2023.

Globally, to replace minerals that the country is mining, around 10 percent of all capital expenditure in mining goes towards exploration, however, in Zimbabwe, it is near to 0 percent with the Finance Ministry throwing up the ridiculous budget for exploration.

The structure of the mining industry in Zimbabwe is highly skewed. There is a gap between hundreds of small-scale mines and a few large mines. There are many small mines with the potential to develop into medium and large-scale but exploration funding seems to be an impediment.

The rewards of successful exploration and development can be large if a mineral deposit is discovered, evaluated, and developed into a mine. For a mining company, successful exploration and development lead to increased profits. This means the country needs to consider investing in exploration through issuing more EPOs if the country is to achieve the projected US\$12 Billion mining sector.

Lithium Race

Zimbabwe is among the biggest lithium producers in the world for the past years with the statistics taken when the country had one producing mine in Bikita Minerals.

The acquisition of Arcadia Lithium mine

by China's Zhejiang Huayou Cobalt Limited and subsequent take over of Bilita Minerals by another Chinese-owned mine is an indication that a new energy race is underway between the United States of America and China.

China currently controls 80 percent of the global lithium market. According to a report issued by US National Security Advisor Jake Sullivan and National Economic Council Director Brian Deese in June 2021 lithium is essential to U.S. economic security and critical to U.S. national security. This may lead one to insinuate that the U.S. and China are now fighting to procure new sources of lithium – the key to transitioning away from fossil fuels to clean energy, Zimbabwe as the fifth biggest lithium producer will be central in the war.

The U.S. military has been using lithium batteries in radios, thermal imagers, and other portable devices for over a decade. Over the next five years, the Department of Defense expects to expand the use of lithium batteries into military vehicles, ships, aircraft, and missiles.

The explosive growth in EVs, mobile phones, energy storage units for wind and solar energy, and other clean technologies, suggests that lithium will be the hottest in-demand mineral for decades.

The leader in lithium raw material resources and lithium battery production could determine which country dominates economically and technologically in the 21st century.

Increasing exploration funding and approving EPOs for Zimbabwe owned companies looking to explore for this

strategic mineral is essential at this stage as the world is looking to dump fossil fuels.

Zimbabwe as the next big thing in Gold production

Zimbabwe was one of the leading gold-producing countries in Africa behind only South Africa but it has since lost its place on the African map due to low capital injection in exploration.

Zimbabwe has 4 000 recorded gold deposits with nearly all of them located on ancient workings, this is, therefore, a clear indication that the country remains under-explored to discover deposits away from these ancient workings, issuing of EPOs consequently becomes essential.

The acquisition and declaration by gold leading producers like Caledonia Mining Corporation and Kuvimba Mining House is an indication of the potential of Zimbabwe to close the gap in gold production in Africa.

The proliferation of artisanal and small-scale miners who mine blindly but produce nearly 20 tonnes of gold annually is an indication that with enough capital injection in gold, the country has the potential to turn the production by small scale mining three to four-folds.

In countries like Ghana, South Africa, the Democratic Republic of Congo and Uganda among others, exploration has been a key factor in the growth of the gold industry in those countries. This means the Finance Ministry should invest greatly in mineral exploration.



Diamond Drilling at Mirroplex Mine in Shamva, Zimbabwe

Using characteristics of Minerals to Identify them



Most minerals can be characterized and classified by their unique physical properties: hardness, luster, color, streak, specific gravity, cleavage, fracture, and tenacity.

Hardness

The ability to resist being scratched—or hardness—is one of the most useful properties for identifying minerals. Hardness is determined by the ability of one mineral to scratch another. Federick Mohs, a German mineralogist, produced a hardness scale (table below) using a set of ten standard minerals. The scale arranges the minerals in order of increasing hardness. Each higher-numbered (harder) mineral will scratch any mineral with a lower number (softer).

HARDNESS	MINERAL	MINERAL COMMON FIELD TEST
1	Talc	Easily scratched with a fingernail
2	Gypsum	Scratched by a fingernail (2.5)
3	Calcite	Scratched by a penny (3)
4	Fluorite	Difficult to scratch by a nail (4); scratched easily by a knife (5)
5	Apatite	Difficult to scratch with a knife (>5); barely scratches glass (5.5)
6	Feldspar	Scratched by a steel file (6.5); easily scratches glass
7	Quartz	Scratches a steel file and glass
8	Topaz	Difficult to test in the field
9	Corundum	Difficult to test in the field
10	Diamond	Difficult to test in the field

A rough measure of mineral hardness can be made by assembling a kit of handy objects (table 6). A fingernail has a hardness ranging from 2 to 2.5, a penny is a little harder than 3, window glass ranges from 5.5 to approximately 6 in hardness, and a knife blade is generally in the range of 5 to 6.5.

Creating a Mineral Hardness Test Kit

items in a mineral hardness test kitA mineral hardness test kit can be easily created from common household or hardware items (table 6). Parents should help children make the kit. Wear safety glasses and gloves when cutting glass. All pieces in the hardness test kit should be compared to one another and specific minerals with a known hardness.

Approx Hardness	MINERAL
1	Blackboard Chalk
2.5	Fingernail
3	Copper penny
4	Common nail
5.5-6.5	Pocket knife
5.5	Window glass (2 inches square; use caution making this scratchplate. Tape the edges of the glass with duct tape. You may be able to get this cut at a local hardware store.)
6.5	Steel file or tempered steel. Try to find an old, broken or worn flat file

Luster

Luster is how a mineral reflects light. The terms metallic and nonmetallic describe the basic types of luster. Table 7 lists the most common terms used to describe luster and an example of a corresponding mineral. Some minerals that don't exhibit luster are referred to as "earthy," "chalky," or "dull."

Color

One of the most obvious properties of a mineral is color. Color should be considered when identifying a mineral, but should never be used as the major identifying characteristic.

Streak

Streak is the color of the powdered mineral, which is usually more useful for identification than the color of the whole mineral sample. Rubbing the mineral on a streak plate will produce a streak. A streak plate can be made from the unglazed back side of a white porcelain bathroom or kitchen tile. Some minerals won't streak because they are harder than the streak plate.

Specific Gravity

Specific gravity is the ratio between the mass (weight) of a mineral and the mass (weight) of an equal volume of water. A mineral's specific gravity (SG) can be determined by dividing its weight in air by the weight of an equal volume of water. For instance, quartz with a density of 2.65 is 2.65 times as heavy as the same volume of water.

$$SG = \frac{\text{mineral mass}}{\text{water mass}}$$

Cleavage

The way in which a mineral breaks along smooth flat planes is called cleavage. These breaks occur along planes of weakness in the mineral's structure. However, if a mineral breaks along an irregular surface, it does not have cleavage.

Fracture

When a mineral breaks irregularly, the breaks are called fractures. The breaks can be described as grainy, hackly (jagged), conchoidal (curved), or splintery.

Tenacity

How well a mineral resists breakage is known as tenacity. Tenacity is described using these terms:

Brittle - Mineral crushes to angular fragments (quartz).

Malleable - Mineral can be modified in shape without breaking and can be flattened to a thin sheet (copper, gold).

Sectile - Mineral can be cut with a knife into thin shavings (talc).

Flexible - Mineral bends but doesn't regain its shape once released (selenite, gypsum).

Elastic - Mineral bends and regains its original shape when released (muscovite and biotite mica).

Other Diagnostic Characteristics

Other characteristics may be useful in identifying some minerals:

Transparency - Objects are visible when viewed through a mineral.

Translucency - Light, but not an image, is transmitted through a mineral.

Opaqueness - No light is transmitted, even on the thinnest edges.

Taste - Taste can be used to help identify some minerals, such as halite (salt).

Acid reaction - Object reacts to hydrochloric acid. The most distinguishing characteristic of calcite is that it effervesces when hydrochloric acid is applied.

Dolomite shows a reaction on a freshly broken or powdered surface. Testing for calcite, limestone, or dolomite calls for 10% hydrochloric acid, but strong white vinegar can be substituted for the acid.

Magnetism - Magnetism is a distinguishing characteristic of magnetite.

Crystal shape - Cubic, rhombohedral (tilted cube), hexagonal (six-sided), etc. Some crystal shapes are illustrated below.



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TABULAR CRYSTAL

Harmonisation of Legislation that governs Agriculture and Mines



There is a need for harmonisation of legislation that governs the mining industry and rural district councils to tackle inconsistencies between the local authorities and the ministry of mines, a cabinet minister has said.

Prince Nkosingithi Sunduzani

Local authorities are an integral part of the parcelling out and management of land for mining activities.

In an interview on the sidelines of the Zimbabwe Miners Federation (ZMF) stakeholder meeting in Darwendale last week, Deputy Minister of Mines and Mining Development Polite Kambamura,

said the existing inconsistencies and communication breakdown between the two entities needed to be addressed to create order and ease of doing business in mining.

He called on the local authorities to work hand in glove with the ministry of mines so that they can synchronise their operations. "The legislation which governs the mining industry and rural district councils should be harmonised. So there is a need for RDCs to work hand in glove with the mining provincial offices in different provinces so that they have information of miners operating in their jurisdiction," he said.

"I understand the RDCs have a department of environment and that department should be moving around with our inspectorate department to control mining activities, especially those that are not environmentally friendly. So we should work as a team."

The deputy minister said his Ministry has put in place a condition where miners will have to get certification from RDCs before they can renew their mining licences.

"Also we have put some conditions on the renewal of mining licence that a miner should present a certificate of compliance from RDC before renewing a mining title. Also, there is need for RDCs to go around together with our inspector of mines so that we appreciate the work being done by artisanal small-scale miners in their area." Association of Rural District Councils of Zimbabwe president Mr Isaac Matsilele told this publication that there was an information gap between local authorities and the Ministry of mines.

He said the department of mines withholds information on mining activities in their jurisdictions which has been creating confusion, hence the need to bridge the information gap.

"There is an information gap between the ministry of mines which is responsible for licensing operators. So if the left hand does not know what the right hand is doing there is bound to be confusion. We want to bridge that information gap so that the department of mines provides information on who is owning a claim in a particular district," said Mr Matsilele.

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“When accuracy matters”

Premier seeks for Zulu lithium investment partner

London Stock Exchange-listed mining and exploration junior Premier African Minerals is determined to secure direct trade investment into the Zulu Lithium project from a potential leading industry partner, the company CEO George Roach has said.

Rudairo Mapuranga

According to the Premier African Minerals CEO, although the company is looking for some kind of selling agreement, it is solely interested in a joint venture development that will see a mine brought as expeditiously as possible in Zimbabwe.

Roach said his company is receiving drill results for its exploration stage that show that the mineral resource body of the project has the potential to grow.

He said the company was working to ensure an upgrade of the resource.

"I am pleased to see that drill results are now starting to come in, and particularly that these results announced today are from an area not included in our initial resource estimates. They do support our expectations of further discoveries and a

probable increase in the mineral resource at Zulu. At the same time, considerable work is focussed on refinement and upgrade of the resource. Further updates will follow.



**Premier
African
Minerals**

"Our current objective is to secure direct trade investment into Zulu from a potential leading industry partner and while there is no certainty that a final investment agreement will be concluded, negotiations, together with legal, corporate, and technical due diligence, continue," Roach said.

Recently Premier African Minerals board announced that the company has signed a non-binding Heads of Terms ("HoT") with a leading Lithium manufacturer for direct investment into Premier's wholly-owned Zulu Lithium Mauritius Limited and which owns the Zulu Lithium project.

"The Board has also noted the recent speculation regarding possible third-party interest in Zulu and announces that Premier has signed a non-binding Heads of Terms ("HoT") with a leading Lithium manufacturer for direct investment into Premier's wholly-owned Zulu Lithium Mauritius Limited and which owns the Zulu. The HoT outlines the basis of cooperation between the parties to negotiate the detailed terms and conditions of a direct Investment and is indicative at this stage for discussion purposes only. Under the HoT, it is envisaged that the partner may invest in Zulu in a series of tranches.

"The HoT remains subject to further negotiations, legal, corporate, and technical due diligence currently underway. Shareholders should note that discussions with the Partner are at a very early stage and there is no certainty that there may be any final agreement, nor that due diligence will conclude successfully. Discussions also continue with other potentially interested parties. Further announcements will be made in due course as appropriate," the company said through a press release.




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*Lyman Mlambo***INTRODUCTION**

The Constitution of Zimbabwe provides rights for public participation by all in the economic decisions of the country. This includes mining communities. Generally, there is an increasing awakening now, characterized by mining communities demanding to benefit from the extraction of resources in their localities. But there is still a wide gap between the rich and the poor, while we witness acceleration in mineral exploitation. Thus, communities still wonder what is really happening in the sector. It is quite surprising that, when undertaking Environmental Impact Assessments (EIAs) and one talks to communities, even the Chief of the area, and one is told they do not even know what goes on there at the mine. All they know are the noise of blasting, the pollution, the environmental degradation, their livestock falling into pits and seeing big trucks coming in and out. It is clear the participation of communities in the extractive sector is very low. There are two ways in which communities can participate: by influencing what happens in the sector or by directly going into mineral production in own right or as equity holders. This article briefly looks at how both channels can be used and the issues that need to be addressed to make them more effective channels of participation.

Transparency and Community Influence

For communities, without transparency on the goings on in the sector their ability to influence the processes is limited. They can only speculate about the amounts of money mines are making from exploiting their resources. Transparency eliminates speculation, and would ensure that community rights can be championed from an informed position. Communities are also, in addition to Parliament, supposed to play an oversight role on the activities of the mines. This means they should be aware of information pertaining to: (a) the very inception of the project –

Strengthening Community Participation in the Extractives Sector in Zimbabwe

By Lyman Mlambo, Mineral Economics and Policy Consultant

terms of contracts, which should incorporate their views; (b) the amount of the natural wealth (mineral resources) in their locality because it is their wealth; (c) the sharing of benefits between the mine, the community, the local authority (RDCs) and Government; and (d) implementation of the Environmental Management Plans (including mitigating the social and economic negative impacts to the communities). Without information oversight is difficult, even for Parliament.

Availability of information to communities is per se useless, if the communities cannot interpret that information. So, how can this issue of transparency and subsequent oversight be made a reality for the communities? There is need for awareness training of communities on their economic and environmental rights. Power begins from the point a community is conscious of its inalienable rights. Communities, particularly community leaders, community-based organizations and local authorities have the right to access a mine's exploration reports, contract documents, EIA reports (including environment management plans), reports on payments to RDCs and Government, the mine's policy towards community benefits, et cetera. Community leaders must be able to access mine facilities and processes. Strong community groups should also be set up to complement community leaders in their oversight role and to also demand their rights. In all this the need for capacity of the community champions to interpret mining-related information is critical, for example, understanding the mining project life cycle, right from title acquisition, exploration data, mine development, mining, processing, beneficiation if any, marketing, et cetera. This can be done in the form of simple literacy guides that could even be translated into vernacular language. This will enable them to interpret the information they are given and also to effectively play their oversight role. The capacity for the community to play its oversight role can also be improved by creation of a database by government on all mining operations in the country, which can be publicized.

Empowerment Through Government Assistance in Mining

One way of enhancing community

participation in the benefits of mining is to support artisanal and small-scale miners (ASMs) in the mining areas, including promoting linkages between ASMs and the large-scale mines. Artisanal and small-scale mining tends to be poverty driven, closely linked to communities in which it happens, and hence can benefit the communities directly. But there are so many constraints (technical, economic, financial, management, et cetera) and problems such as negative environmental impacts, child labour, gender imbalance, and low social security levels that need to be addressed to make this a viable and sustainable form of empowerment.

In the past Zimbabwe Mining Development Corporation (ZMDC), which was formed in 1983, was created not only to be a producing arm of government, but also to render technical assistance to small-scale miners in the form of co-operatives. These co-operatives faced several problems most of which are still being faced today, including frequent machine breakdowns, inability to operate during rainy seasons, poor road conditions, and lack of reliable transport. The story of ZMDC has, however, been an unpleasant one, with its assistance to co-operatives almost now non-existent, and the mines ZMDC itself accumulated over the years got either closed or were saddled with huge debts or were operating at losses, until the intervention of Kuvimba Mining House recently.

Mining, when it started in Zimbabwe, was mainly small-scale. However, before and several years after independence, the Government of the day gave significant assistance to the industry through the various departments of the Ministry of Mines and Mining Development. Examples of this assistance included advisory support to small-scale miners, frequent monitoring of safety standards, plant hire schemes for artisanal and small-scale miners (ASMs), mobile diamond drilling facilities, loan schemes, export promotion schemes (tax incentives for export market development), the Mining Project Fund (which facilitated mining equipment import), export revolving funds to assist export performers to import capital goods and spares, and so forth. Most of these facilities, which would have helped

indigenous miners, have since stopped or been scaled down due to the budgetary constraints the government is facing, especially since the late 1990s. There is need to reconsider all these brilliant past initiatives. The government can also empower the community through promoting ASMs by making information available on deposits appropriate for ASMs

Community Equity Participation

The question of community equity participation in existing mining operations has always remained vague even after the revision of the Indigenization and Economic Empowerment Act in 2018. It was a good idea right from the beginning and there was agreement on this even from the mining industry. It was a question of how this was to be implemented. In practice, this requirement essentially translated to Community Share Ownership Trusts (CSOTs). The mining industry as a whole is now exempt from the requirements of the Act, especially as regards the 51%. The 10% for CSOTs was part of the 51%. As indicated, the position of the Act is now vague. Proceeds paid into any CSOTs are supposed to be used for community infrastructure projects as determined by the priorities of the community. The previous government of Robert

Mugabe failed to convey the indigenization principle and to explain the model, which model was conflated with political agenda. There was no trust-building, transparency and consistency in the way the model was explained - with various arms of government explaining it differently. Failure in government on transparency and accountability resulted in corruption under the guise of indigenization and, indeed in perceptions that it was just meant to benefit a few connected people. One great weakness of the CSOT arrangement, as was the same case with Employee Share Ownership Trusts (ESOTs), was that it lacked legal backing as the principal Indigenization and Economic Empowerment Act did not mention it. A later Statutory Instrument 21 of 2010 which brought in the CSOTs as an afterthought still did not make the 10% community share compulsory. Thus, without the important legal backing, the establishment of each particular CSOT and the continued existence of CSOTs in general remained the Minister's discretion, and this seems to remain the case today.

In their (CSOTs') establishment, there was no consultation with the communities, to the extent that some communities were not even aware of their existence. Without the awareness of the community, it was anyone's guess if the majority of the

community would benefit from the Trust or if the Trust would effectively address the community's priorities. There were many things that were not clear in law, pronouncement and practice, which authors like Showers Mawowa in his 2013 report published by ZELA on Community Share Ownership Trusts (CSOT) in Zimbabwe's Mining Sector clearly explain. Shared understanding and clarification were required on a number of things including: (a) meaning of complying; (b) how CSOTs would relate to the company's Corporate Social Responsibility (CSR); (c) how they were to be financed (donated or purchased, and if purchased, which model - carried interest or free shares?); (d) how the CSOTs would benefit the communities when companies declare losses, something that could be recurring; (e) how to stream-line CSOTs with already existing community-based organizations which were not represented in the CSOTs; and (f) how to gender mainstream the model. All this vagueness and all these questions still need to be addressed today.

(This article is extracted (with slight changes) from the author's Reactions to presentations on "The State of the Extractives Sector in Zimbabwe: A Critique of the state of advocacy work in the Extractive Sector", made at the "Review and Mapping out of strategy for the Extractives Sector Advocacy in Zimbabwe Workshop", hosted by ZIMCODD in conjunction with Friedrich Ebert Stiftung on 20 February 2018 at the Management Training Bureau (MTB), Msasa, Harare).



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ZCDC nearly doubles output



Zimbabwe's biggest diamond producer Zimbabwe Consolidated Diamond Company (ZCDC) produced over 4.1 million carats in 2021, a nearly 100 per cent increase compared to 2020 which had a production of 2.3 million carats.

Rudairo Mapuranga

The company's higher production comes as the global diamond industry recovers from the onset of the coronavirus pandemic. In 2020, Zimbabwe's diamond production amounted to 2.7 million carats. This was an increase of 28.6 per cent compared to the previous year.

According to ZCDC Chief Executive Officer Mr Mark Mabhudhu for the first time in the history of mining for the company, ZCDC achieved a profit and is expecting to make more profits this year.

"We produced 4.1 million carats in 2021 of course selling is a different ball game

because it will always lag behind so we did not manage to sell all of it. The important thing is that for the first time in the history of mining for ZCDC we made a profit and we are going to make more this year," Mabhudhu said.

The country's biggest diamond miner said it will be able to increase the production of rough gems by about 10 per cent to million carats this year thanks to improved capital injections and mining methods.

According to Mabhudhu ZCDC is projecting to produce 4.5 million carats in 2022 with the expectation that it can exceed the target.

"This year we are targeting 4.5 million carats because we have a lot of revenue improvement and acceleration project on

the ground that we have put into our budget which has got a direct impact on the production capacity for the mine. We

know exactly that if we do this and finish it. We will not only achieve but exceed the target." The ZCDC chief executive officer said.

Zimbabwe which is ranked eighth among the world's largest diamond producers by volume, expects the diamond industry to become a US\$1 BILLION

industry by 2023 a target that has been labelled over-ambitious.

Before the formation of the country's biggest diamond producer, the country's diamond production in carats was over 8 million yearly that is between 2009 and 2014.

"The important thing is that for the first time in the history of mining for ZCDC we made a profit and we are going to make more this year,"

Mark Mabhudhu

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Caledonia to operationalise its 12 Megawatt solar plant by mid-year

Plans to construct a solar farm by Caledonia Mining Corporation are on track as the company is expecting to operationalize its 12-megawatt solar plant at its Blanket mine by mid-year.

Prince Sunduzani

The equipment, for the solar farm, meant to counter the erratic power supply by ZESA, has started arriving at the mine, located in Gwanda, with more material being expected in the country in time for the completion of the project.

The solar plant, which will help Blanket mine deal with crippling power outages, will exclusively supply the operation with approximately 27% of its daily electricity usage.

The project is vital in the company's ambitious target to increase production to

80,000 ounces of gold per annum from 2022 onwards, almost double the level of production achieved in 2014.

Speaking on the sidelines of a media interface organized by the Victoria Falls stock exchange listed company, Chief Financial Officer and Director, Mark Learmonth, said all that was left was for equipment to arrive.

"The site is cleared, the equipment is being delivered, it's on a boat right now so it's just a question of it turning up and connecting it," he said.

"So in the next few months, you should be able to see a lot of activity. We have cleared the sites and a bit of leveling. The critical thing is that the equipment is on the ship right now."

The country has been experiencing an

unreliable power supply owing to a raft of challenges facing the power utility ZESA.

The persistent power cuts have affected the mining industry and businesses have been finding innovative ways to stay operational with most using diesel generators as backup.

The company on its website said load-shedding and outages arising from unstable electricity supply have economic and safety implications for an underground mine such as Blanket.

In the meantime, they are relying on 18 MVA of standby diesel generators to counter arising challenges.

The solar plant is expected to ease the economic, environmental, and logistical challenges of running large-scale diesel generators for extended periods.



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The Discovery of oil and gas presents economic growth possibilities for Zimbabwe

Despite world leaders employing a more radical stance for a reduction of the use of fossil fuel in favour of clean energy, the discovery of oil and gas in Zimbabwe presents economic growth possibilities.

Rudairo Mapuranga

At present, the country is spending a lot of foreign currency on oil and gas imports.

In 2019, according to Oil Exploration Company (OEC) Zimbabwe imported US\$1.35 Billion in Refined Petroleum, mainly from Singapore (\$1.09B), South Africa (\$214M), Mozambique (\$21.3M), Zambia (\$5.61M), and United Kingdom (\$3.74M).

The discovery of oil and gas in Muzarabani, if followed through, has the potential to reduce fuel spending and the money can be channelled to other strategic sectors leading to economic growth.

Invictus Energy Limited (The company exploring for oil and gas in Muzarabani) Managing Director Mr Scott Macmillan last year said Gas and oil deposits in Muzarabani could be a game-changer for the local economy as they are comparable in size to the recent gas find by a French energy major, Total, in neighbouring South Africa.

Experts have been calling for third-world countries to exploit their fossil fuels to fund the adoption of green energy. They believe that third-world countries are not yet ready

at the moment to go green as this would leave the government coffers with a very huge debt.

Therefore, what needed to be done was to exploit the fossil fuel at their disposal to fund green energy.

According to the Deputy Minister of Mines and Mining Development Dr Polite Kambamura, the discovery of oil and gas in Muzarabani will be of importance to economic growth as it can lead to rapid industrial growth.

"Oil and gas are riches and that is why their discovery is of strategic importance to us economically as a country. Specifically, as far as I know, these assets usually create more jobs, contribute to industrial growth and overall economic growth. Shifts in global markets is a key component of every strategic business plan and those are factors that the boards will consider when deciding on feasibility issues." Kambamura said.

Former Confederation of Zimbabwe Industries (CZI) president Sifelani Jabangwe said although the world was moving away from fossil fuels towards clean energy there is still time for countries like Zimbabwe to exhaust their fossil fuels since the world has not properly adapted or developed green technologies.

"If the mining deal has been structured

properly it can improve the economic status of the country. We are still many years from totally moving away from fossils as green technologies are still being developed. Oil is also a source of many other products in addition to fuel.

Zimbabwe can become a low-cost producer of these goods derived from petroleum" Jabangwe said.

The discovery of oil and gas in Muzarabani, if followed through, has the potential to reduce fuel spending and the money can be channelled to other strategic sectors leading to economic growth.

Chairperson of the Institute of Mining Research at the University of Zimbabwe, Lyman Mlambo said the discovery of oil and gas in

Muzarabani will present opportunities for the growth of the economy as well as investing in clean energy.

"It is important because we are spending a lot of foreign currency importing the same oil and gas when we have resources. It is also important because that will create jobs, produce revenue for the government, and the funds to diversify the economy, for example, we need money for the Gemology Center and Diamond Evaluation Centre in Mutare to promote local beneficiation and valued addition in the gemstone sector. You might also want to know that the global north industrialized on the back of using these fossil resources.

"The discovery of gas amidst the thrust towards greener technology isn't an issue at all for a number of reasons:

1) we still have more than two decades, perhaps more than 3 decades, before fossil fuel can be phased out completely from the market, so the strategy is to accelerate our exploitation while demand is still there - remember a resource is a resource because there is demand for it;

2) these resources belong to both this generation and next generations right now when they still got value; we don't want to leave something useless to the next generations when we had the opportunity to convert it into income before it became obsolete;

3) there are many countries whose economies are dependent on fossil fuel and wars are actually still being fought today for that resource, so the world is still so much interested in it;

4) we can actually use the proceeds from fossil fuel to fund the development of cleaner and greener energy - that happens to be one of the wisest things to do;

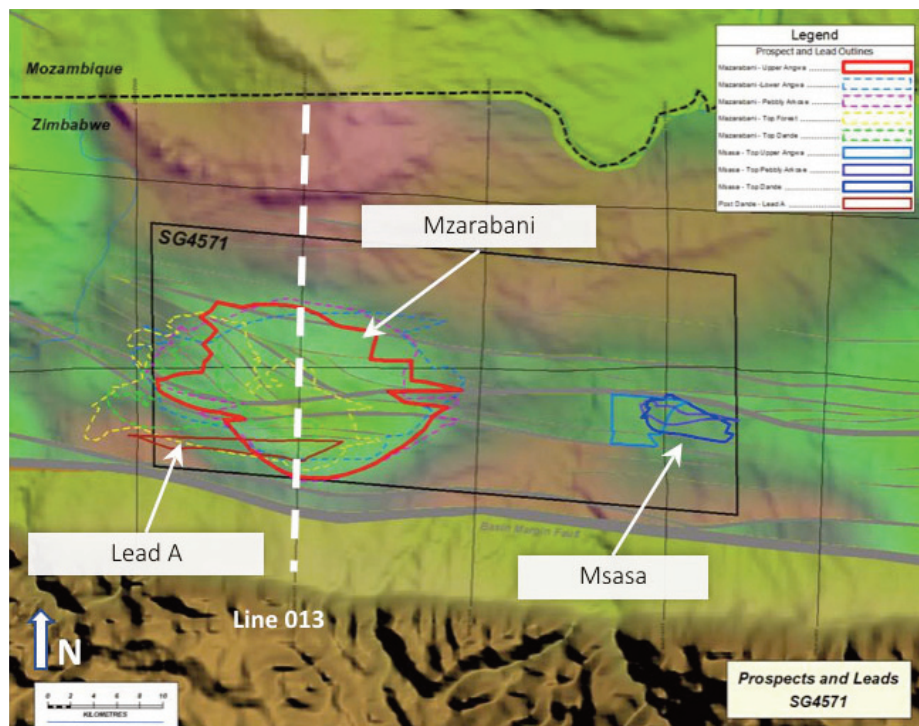
5) another is to invest in offshore investments that can earn interest for the country in forex and the fund can expand overtime to catalyze long-term development of Zimbabwe;

6) an interesting thing to note is that the global north is the one with the capital that is being invested into fossil fuel in the global south, especially in Africa that should tell you something - where is Invictus Energy-based?;

7) Zimbabwe needs energy NOW to meet its current energy deficits." Mlambo said.

According to the chairperson for Parliamentary Portfolio Committee on Mines and Mining Development, Edmund Mkaratigwa: "Discovery of oil and gas will be a game-changer to our economy. Value chain industries will bring infrastructural development and vast job opportunities. the world still depends on fossil fuels and Zimbabwe will experience exponential growth in this regard, as we will be self-sufficient on energy and many other associated by-products.

"What we need is a humongous amount of funding for National programs that result in immense social impact and economic development.



"Responsible, transparent and accountable Domestic Resource Mobilization (DRM) is the only answer we need as a country right now and Oil discovery and immediate exploitation will accord that big leap forward. Your concerns are understandable but require a lot of wisdom, engagement, and negotiation at the global stage so much that we are not prejudiced as a nation yearning for means and capacity for turnaround and yet endowed with mineral wealth and like you rightfully put it amidst shifting from fossil fuels. It calls for firmness and diplomatic but candid and smart approach.

“The discovery of oil and gas in Muzarabani, if followed through, has the potential to reduce fuel spending & the money can be channelled to other strategic sectors leading to economic growth.”

"Zimbabwe must undertake to audit, assess, quantify and verify fossil fuel

reserves and use the financial value scientifically established there-off to negotiate for an offset arrangement if those promising funding for climate change mitigation and adaptation financing are going to meet their part of the bargain immediately following our oil discoveries.

"This might prove to be a pie in the sky given the callous situation and urgency of our socioeconomic needs as a country. We can't be apologetic in our endeavors because the so-called developed nations have already enjoyed their natural resources to the fullest as evidenced by their status and meantime continue to be heavy polluters to the environment and yet they posture as angels of this world.

"Global warming and carbon footprint through greenhouse gas emissions is a serious threat to our future and that of our descendants and offsprings. As we map up our oil extraction let us embrace net zero pathways in order to protect our planet as a nation." Hon Mkaratigwa said.



Newly acquired equipment delivered to Muzarabani

Power interruptions affect Mimosa



Johannesburg Stock Exchange-listed platinum producing company, Impala Platinum (Implats) said Platinum Group of Metals process recoveries at its Joint Venture ownership mine, Mimosa, dropped due to plant instability caused by power interruptions and a change in reagents.

Business reporter

The company said, in the first half-year ended 31 December 2021 6E concentrate production from its Joint Venture operations declined by 4 percent to 271 000 ounces.

"Production volumes at Two Rivers were impacted by safety stoppages, with mined throughput supplemented by a drawdown in ore stockpiles, while at Mimosa, plant instability due to power interruptions and a change in reagents led to a drop in process recoveries. 6E concentrate production from JV operations declined by 4% to 271 000 ounces. In total, mine-to-market 6E concentrate produced decreased by 4% to 1.43 million 6E ounces." The company said.

Implats said it faced several operational challenges in its first half-year which includes extended safety stoppages, intermittent industrial action and power supply interruptions at the South African operations, and a shortage of critical skills.

The company said tonnes milled from managed operations declined by 4% to 11.30 million tonnes, with lower reported volumes at Impala Rustenburg and Impala Canada offsetting improved throughput at Marula.

While Concentrate production at managed operations decreased by 4% to 1.16 million 6E ounces.

"Implats said it faced several operational challenges in its first half-year which includes extended safety stoppages, intermittent industrial action and power supply interruptions at the South African operations, and a shortage of critical skills."

According to Implats third-party 6E receipts of 188, 000 ounces were 4 percent lower and gross 6E concentrate volumes declined by 4% to 1.62 million ounces.

"Group refined production of 1.62 million

6E ounces, including saleable production from Impala Canada, declined by 5%. Refined volumes in the previous comparative period benefitted from increased availability of processing capacity due to the timing of annual processing maintenance.

"Inflationary pressures were compounded by additional working cost labour and the payment of the previously signalled discretionary employee bonus but benefitted somewhat from the impact of rand strength. Total cash operating costs increased by 12% from the previous comparable period, while unit cost inflation was compounded by lower production volumes and, on a stock-adjusted basis, increased by 17% to R16 756 per 6E ounce.

"Capital expenditure at managed operations rose by 34% to R3.6 billion as investment accelerated across the mining and processing operations at Impala Rustenburg following Covid-19 related delays in the previous comparable period, and several Group replacement and growth projects were initiated during the period," the company said.



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School of mines to set up operations in all provinces



In a bid to enhance operations of artisanal and small-scale miners and support the gold sector the Zimbabwe School of Mines (ZSM) will set up operations in all ten provinces of the country, a cabinet Minister has said.

Artisanal small-scale miners have been a significant part of Zimbabwe's gold deliveries, accounting for over 60% of gold sent to fidelity gold refineries.

The Zimbabwe School of Mines is a mining school that provides a higher education qualification in mining providing competency-based training for high calibre, hands-on technicians.

The school has in the past been identified as key in training miners and providing critical skills to miners regardless of their education qualifications.

Minister of Mines Winston Chitando is on record saying skilled manpower is critical to realising an upper-middle-income economy by 2030; challenging the Zimbabwe School of Mines (ZSM) to align its programs to support the Government's US\$12 billion mining industry target by 2023.

The deputy minister of Mines and Mining Development Dr Polite Kambamura said the move is meant to boost the gold sector as the government races to reach a \$12 billion economy.

"We are also working on having the school of mines having a stamp in every province. We want the school of mines to be found in every province. So that this gold sector is not disadvantaged," he said.

He reiterated the government's commitment to setting up gold centres and mining extension officers in every province to provide technical support to miners.

These will also act as a link between the Ministry of mines and the miners.

The assumption is that if ministry officials are on the ground they are also able to

ensure compliance with mining regulations and also help plug mineral leakages.

"We want to ensure that mining is done in an orderly manner. Very soon the Ministry of mines and mining development is going to rollout mining extension officers. Their main duty is to link the ministry with the miner who is right on the ground and to see that there is proper mining according to the laws of the country to see that all miners are registered and that all miners are accounting for production and they are selling to the legal markets. Everybody should be involved especially your sector, that's why the government will continue to support your sector," said the deputy minister.

"As we speak the min of mines has rolled out a facility for gold centres. This one will be a special milling centre whereby all the services a small-scale miner needs are found at the centre. Be it consumables, explosives, Fidelity printers also will be stationed at that milling we will be having miners, geologists, and surveyors who will be helping."

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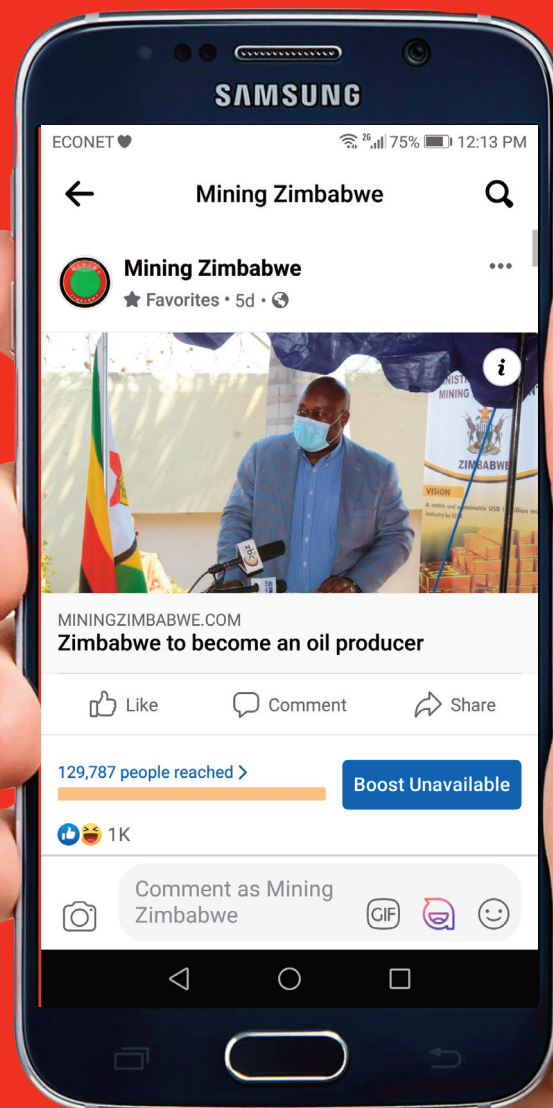
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EPOs applications increase as Zim attracts investment



Hon Winston Chitando

There has been an influx of mining title and Exclusive Prospecting Orders (EPOs) applications since the coming in of the Second Republic and the Ministry of Mines and Mining Development is working tirelessly to accommodate all investors seeking mining opportunities a Cabinet Minister has said.

Anerudo Mapuranga

According to the Minister of Mines and Mining Development, Hon Winston Chitando, investors should praise the government for taking the mining business seriously by ensuring that mining title and EPOs backlog are cleared as the government inherited a 10-year backlog which it has already cleared and is now working on current applications.

"We should commend the government for moving fast in the processing of EPOs... admittedly there is still some backlog and it's a factor of volumes of what was inherited at the onset of the second Republic and the massive influx of application that are coming and with EPOs we are dealing with a backlog of about 10 years but we have managed to reduce that backlog and right now there are very few EPOs that are outstanding," Chitando said.

Zimbabwe's mining sector plays a very significant role in the development of the country as it has continued to bring much-needed income into the country. It contributes to foreign exchange, Gross Domestic Product (GDP), government revenues, capital formation and

infrastructure development. Minister Chitando also said that the government has put in place a host of measures to boost gold production this year as it angles the sector to contribute significantly towards the attainment of a US\$12 billion mining industry by 2023.

The mines Minister expressed confidence the 2022 gold output level will likely surpass the 40 tonne mark, adding his Ministry was working closely with the Chamber of Mines of Zimbabwe and the Zimbabwe Miners Federation (ZMF) to coordinate efforts and ramp up production of the yellow metal.

"We are hopeful that we will go way beyond 40 tonnes this year as we are working closely with the Chamber of Mines of Zimbabwe and ZMF to promote production. We are also addressing the issue of backlog in the issuance of mining titles, opening of new mines, and reopening of old mines, these are all-inclusive measures to scale up production," said Minister Chitando.

An EPO is a large area of ground targeting the selected minerals for exploration.

LIST OF SUCCESSFUL EPOs

Perseverance Nickel Mine, Delcia Gold Mine
Sheckleton Copper Mine, Avondale Copper
Sandawana Emerald Mine
Mhangura and Nora Mine
Silverside Copper Mine
Umkondo Copper Mine
Buchwa Iron Ore Mine
Opheus Ore Deposit
Alaska Copper Mine
Empress Nickel Mine
Inyala Chrome Mine
Chegutu Limestone Deposit
Shamrock Copper Mine
Trojan Nickel Mine
Madziwa Nickel Mine
Shamva-Cymric Mine
Jonnasch Gold Mine
Gwaai River Copper Mine
Inyati Copper Mine
Epoch Nickel Deposit
Shangani Nickel Deposit
Copper Queen and Copper King mines
Lubimbi Coalfields
Tuli Coalfields
Bubye Coalfields
Great Dyke Investments Platinum =Nickel – Copper Deposit
Zinc Mineralisation in the eastern portion of the Zambezi Metamorphic belt
Sengwa Coal Deposit
Kanyemba Uranium Deposit
Royal Family Gold Mine
Freda Rebecca Mine
Expansion of Golden Kopje Mine
Expansion of Blanket Mine
Platinum Resources in the Snakehead (Great Dyke)
Considerable Gold resources in the Dindi Greenstone Belt
One Step gold deposit
Maligeen gold mine
Peech Tree Mine
Impanema and Hungwe gold deposits
Bubi Gold Mine
Renco Mine
River Ranch Diamond Mine

An EPO is a large area of ground targeting the selected minerals for exploration. The maximum is 65,000 hectares in Zimbabwe and a minimum size is up to the company to choose. In Zimbabwe, EPO's tenure is 3 years with an option to renew for another 3 years.

EPOs are used by companies as first-pass exploration areas. This means that companies after doing the highly technical exploration studies will eventually drop the EPO ground in 3 years.



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Safe Mining Practices: 18 Mine Safety Tips

Navigating below surfaces and in large chasms is a unique occupation, and it takes special preparation to mine.

Underground and even in open channels, workers run into new problems and a strange environment.

Because the areas feature extremes in temperatures, air quality and impacts, safety is a major consideration for mining operations. Factoring in the range of risks on the job can be difficult, but improving mine safety can be easier with these safety tips.

Through testing and experience, the mining process has been tweaked to add resources and safety. The best practices in mining are less dangerous, more conscientious and more productive than previous procedures. The following 18 tips can increase the safety of your mining facility.

1. Prioritize Planning

Whether in surface or underground projects, it's critical for miners to develop thorough plans before beginning work. Taking time to calculate the best approach can help the process to go more smoothly and protect the well being of the whole crew.

Assessing the environment can inform drilling design and blasting operations. Careful investigation of the rock characteristics, stresses and probable aftermath can decrease the unknowns and improve the sequence of events.

Surveying the area can be easier with mining technology because the right software can display the various outcomes for your proposed plans. Consulting digital models can help you explore a variety of scenarios. You can have more confidence moving forward with well-thought-out steps.

2. Maintain Rigorous Standards

Exercising regular inspection and adherence to mining regulations can set high expectations for workers. You can instill a sense of responsibility and attentiveness on your job site by meticulously enforcing safety rules.

Generating a positive perspective on safety standards can make checklists and protocol a necessity in the eyes of workers rather than an extra step.

Encouraging feedback from workers on

areas for improvement can create a better setting. A culture of safety can get everyone behind the endeavor to secure mining practices.

3. Wear Personal Protective Gear

Labor intensive jobs all have specific personal protective gear needs, and mining is no different. Head-to-toe protection can shield miners from impacts, chemicals and extreme temperatures.

Sturdy clothing and accessories like steel-toed footwear are essential to keep workers safe. Hard hats tailored to the nature and purpose of the mining project can protect from severe injuries, as rock fall is a common cause of incidents. Don't forget to put on your equipment before entering hazardous zones.

Adequate fits in personal protective equipment can maximize the defense capabilities of the gear, and defective clothing should be replaced immediately.

4. Pay Attention to Equipment Upkeep

Unchecked, aging parts can go unnoticed, and worn-out valves or brakes can lead to loss of control. Old or defective equipment can open up dangers to a site, but regular cleaning and repair can keep machinery in optimal shape.

Dirt and grime can rapidly build up on tools, slowing them down and compromising their systems. Wash and lubricate equipment to restore them to their former glory.

Excavators, drill rigs, rock dusters and ventilation devices all need regular service to continue functioning correctly. Proper upkeep can increase the life of these tools and heavy machinery, posing less danger to miners.

5. Improve Visibility

From on-site vehicles to underground tasks, a clear view of the surroundings can minimize accidents. Dark pathways and work areas can put you in jeopardy because it's more likely for you to make mistakes with low visibility.

Underground illumination can enhance visual examinations of an area, which is vital for pre- and post-blasting procedures. Ensure personal lighting devices and stationary lamps can withstand all weather conditions. This can offer constant light sources and keep mining crews from

unexpected blackouts.

Enough visibility can avert crashes for vehicles, too. Working headlights on machinery and mobile equipment can alert drivers to nearby personnel, preventing perilous collisions.

6. Take Lifting Precautions

Working in confined spaces can require unusual positioning, and awkward stances and motions can cause musculoskeletal injuries. Mining is demanding work, and the strenuous activity can result in uncomfortable stresses.

Lifting is a significant role of miners, but extended wear and tear can make lifting even more difficult. Heaving large amounts of weight and lifting objects can put pressure on the back and neck, hampering workflow.

Underground operations entail overhead tasks and repeated movements, which can bring muscle fatigue, but precautions like assistive devices and correct form can limit strain injuries. It's also wise to ask for assistance from fellow miners to pick up bulky loads.

7. Manage Vibration and Noise Levels

Controlled explosions in quarrying reverberate through the earth and emanate loud sounds, and powerful mining machinery also adds elements of vibration and noise.

Strategic drilling can ease the tremors, especially in techniques where buffer holes are inserted in advance. Millisecond blasting can delay the explosions slightly with a series of holes to reduce the intensity of sound and shaking.

Suppression supports can take the noise down to an appropriate level. Blast mats can absorb the force from the detonation and help contain strong emissions of gas.

8. Account for Harsh Temperatures

The spectrum of temperatures that miners spend time in can impose stresses on the body. Gold, diamond and coal mines can drop to negative temperatures, while deep mines that are closer to the earth's core can rise to exorbitantly hot conditions.

Long work hours in an intense setting can weaken miners, leading to heat exhaustion, dizziness and confusion. Freezing areas can also impact workers with cold-related sicknesses like lack of

coordination and inconsistent breathing. These kinds of impairment in crew members could influence the well being of others if they can't carry out their duties.

Hydration, sufficient coverings and periodic breaks from these conditions can lessen the risk of cold or heat stress.

9. Ventilate Harmful Gases

As noxious vapors naturally occur in mines, workers can inhale these and suffer from poisoning. High concentrations of particular gases can collect, and in certain cases, they can combust.

Knowing the signs of gas poisoning can allow you to catch leakage before it hurts anyone. For instance, overexposure to carbon monoxide can cause headache and breathlessness. Gas detection devices bring more dependable monitoring.

Effective ventilation systems can redirect the gases and increase air flow. More air dilutes the gases to an acceptable and breathable proportion for suitable air quality.

10. Shut Down Old Shafts

Shafts that are out of commission yet not closed can eventually cause problems. Mines need maintenance and reinforcement to sustain their structure, and without care, the unused shafts deteriorate.

They can act unpredictably and collapse, affecting adjacent shafts. Gas accumulation can also increase the risk of explosions, and the presence of methane and toxins can replace oxygen.

Securing abandoned shafts can preserve the framework, and a reliable sealing method can block gas from entering the used passages of the mine.

11. Implement Rock Burst Prevention Measures

Environmental changes and humanmade blasts can shift rocks and dislodge large pieces from rock walls. Falling rock can strike workers and induce serious injuries, so it's beneficial to set up protective systems. Fastening anchors and barriers in vulnerable areas can hold back fragments to protect miners.

On the outskirts of a site, ditches and berms can soften the decent of dropping rocks in surface projects. However, bolting, scaling and barring the overhanging rock faces can serve as early deterrence. Attaching steel mesh draping or mats to the sides of the mine could also intercept

stray chunks of rock.

12. Stay Aware of Fire Risks

The materials in mines increase the possibility of fire, and if you're mining coal or working in a gas-rich region, this elevates your risk for tragic scenarios.

Because underground shafts and tunnels are tightly enclosed, smoke and flames can quickly become overwhelming. The compact pathways also can provoke the spread of fires, covering ground swifter than workers may notice.

Fire suppression apparatuses can combat the flames, and sensors can alert workers to the danger. Remaining vigilant to fire stimulants and hazardous conditions can ready workers to react to the initial moments of the fire. Wearing fire-resistant protective gear can reduce the extent of burns, too.

13. Watch for Dust Hazards

Loose silica dust or coal particles can travel through the air in denser portions than normal when mining. These specks can disturb the respiratory system, depending on their size and makeup.

Vacuum devices, screens, transfer shoots and wet fan scrubbers can capture the tiny bits and clear the air for workers.

Respiratory protection is also critical because miners are susceptible to lung issues. Respirators and ventilation masks can ward off airborne impurities that miners might confront.

14. Keep Electrical Safety in Mind

Like most other job sites, mines use power tools, lights and other electrical equipment, which need electricity. Sending electricity through these locations and transporting machines litters the space with extension cords and wires. These cords and electronics in damp mines can raise the risk of electrocution or electric shock, but maintaining electrical safety can protect workers from the hazard. Grounding the system, incorporating resilient cords and insulating the connections can manage the currents.

You can also bundle the cords to prevent tangling and move them out of walkways to avoid tripping.

15. Prepare for the Possibility of Slips and Falls

Miners frequently stumble or fall from high places, and people can travel down several feet onto hard surfaces due to lengthy shafts.

Workers can also slip on liquid, mud or loose rock while walking, but high-traction footwear can give you a better stance on uneven ground. Sizable work boots might affect your gait, but they can keep you upright.

Toppling off ladders is another possibility, and ladder securing equipment could solve it. Underground mining uses fixed ladders, and safety belts and lines can draw workers back if they end up slipping on far-reaching shafts. Surface mining branches out to other types, but toe clearance and strong materials are requirements across the board.

16. Consider the Potential for Cave-Ins

Cave-ins have been a prevalent accident in mining operations for years, and they can be fatal. Weighing the likelihood of collapses in different scenarios can develop awareness in mining crews.

While cave-ins can happen without warning, workers can methodically complete their duties without cutting corners. Compliance with mining regulations and attentiveness can keep workers from getting trapped.

Tracking emerging technology for mining can also amplify safety and strengthen subsurface structures. Devices that can pinpoint liabilities early can help crews deal with the risks right away.

17. Emphasize Communication

Relaying information about the conditions and progress of mining activities is crucial. Lines of communication should be handy so workers can warn others about questionable areas or accidents as soon as possible.

Signs designating hazardous areas can visually convey safe areas, and clear labels can clue workers in on how or when to use their equipment and tools.

Mobile devices are currently used to pass on updates, but the signal for these can be weak or nonexistent underground. On-site communication systems are another technique for transferring messages to miners.

18. Take Advantage of Professional Training and Refreshers

After learning the routine, workers can start to feel comfortable in their roles, but they can also forget vital procedures. Refresher training courses can also help you to go through the process with confidence. Knowledgeable miners can push the industry forward in safety measures.

Minerals and areas of verified deposits in Zimbabwe

Agate	Nyamandhlovu, Chikomba, Lupane
Aluminum	Mutare, Nyanga, Mwenezi
Amazonite	Nyamandhlovu, Rushinga
Amethyst	Nyamandhlovu, Hurungwe, Hwange, Makonde, Lupan
Antimony	Kwekwe, Bubi, Mberengwa, Kadoma, Shurugwi
Arsenic	Bubi, Shurugwi, Mutare, Gwanda
Asbestos	Masvingo, Gwanda, Matobo, Mberengwa, Insiza, Makonde, Umzingwane
Aventurine	Masvingo, Beitbridge
Barites	Kwekwe, Mwenezi
Beryl	Hurungwe, Kariba, Goromonzi, Harare, Mudzi, Rushinga, Mutoko, Bindura, Marondera, Gutu, Buhera, Bikita, Chegutu, Hwange, Mberengwa, Gweru
Bismuth	Gwanda, Insiza, Goromonzi, Hwange
Cesium	Mudzi, Bikita, Goromonzi
Calcite	Hwange, Bindura, Chiredzi, Mwenezi
Chromium	Mberengwa, Guruve, Makonde, Gweru, Kwekwe, Shurugwi, Chegutu, Kadoma, Gwanda, Insiza, Masvingo, Chirumanzu
Citrine	Marondera, Harare, Goromonzi
Clay	Harare, Bulawayo, Gwanda, Gweru
Coal	Gokwe, Chiredzi, Beitbridge, Mwenezi, Hwange, Lupane, Binga, Kariba, Hurungwe, Bikita
Cobalt	Kwekwe, Insiza, Shamva, Bubi, Bindura
Copper	Makonde, Kadoma, Mutare, Chirumanzu, Chegutu, Kwekwe, Shurugwi, Beitbridge, Gokwe, Bindura, Chipinge, Bikita, Insiza, Makonde, Harare, Bulawayo, Shamva, Chiredzi, Nkayi, Mudzi, Chegutu, Bindura, Kwekwe, Hurungwe, Bubi, Makonde, Bikita, Gwanda, Masvingo.
Cordierite	Hurungwe, Beitbridge, Chimanimani, Rushinga, Makuti
Corundum	Beitbridge, Chiredzi, Shurugwi, Marondera, Mberengwa, Mazowe, Rushinga, Insiza, Goromonzi, Wedza, Makoni
Diamond	Gweru, Bubi, Beitbridge, Binga, Mwenezi, Mutare, Chivi
Diatomite	Hurungwe
Dolomite	Mutare, Beitbridge, Makonde, Mudzi, Masvingo, Rushinga.
Emerald	Gutu, Masvingo, Insiza, Mberengwa, Hurungwe.
Feldspar	Harare, Bikita, Umzingwane, Goromonzi
Fireclay	Hwange, Chiredzi, Kwekwe, Lupane, Nkayi, Kadoma, Kwekwe
Flint clay	Mwenezi, Beitbridge
Fluorite	Hwange, Guruve, Binga
Garnet	Beitbridge, Hurungwe, Mudzi, Guruve, Rushinga, Marondera
Graphite	Hwange, Hurungwe, Kariba, Makonde
Gypsum	Beitbridge
Gold	Every district in Zimbabwe
Iron	Kwekwe, Mberengwa, Harare, Kwekwe, Buhera, Gweru, Charter, Chiredzi, Masvingo, Mazowe, Kadoma.

Minerals and areas of verified deposits in Zimbabwe

Jade	Masvingo
Kaolin	Kwekwe, Mutare, Bubi, Hwange, Kadoma, Mazowe, Harare, Umzingwane, Nkayi, Chegutu
Kainite	Hurungwe, Nyanga, Mudzi, Rushinga
Lead	Mberengwa, Kwekwe, Gokwe, Mutare, Wedza, Hwange
Limestone	Mberengwa, Gwanda, Bindura, Shamva, Mazowe, Kadoma, Umzingwane, Gweru, Chegutu, Chimanimani, Mudzi, Harare, Hurungwe
Lithium	Goromonzi, Mudzi, Buhera, Bikita, Chegutu, Hwange, Harare, Insiza, Rushinga, Mutoko, Mutare, Hwange
Magnetite	Gwanda, Nyanga, Kadoma, Mwenezi, Insiza, Buhera, Mberengwa, Beitbridge, Gweru
Manganese	Kwekwe, Gweru, Makonde, Mberengwa
Mercury	Bubi, Kadoma
Mica	Hurungwe, Rushinga, Kariba, Hwange
Molybdenum	Kwekwe, Insiza, Shurugwi, Makonde, Chipinge, Gweru, Mutare
Mtorolite	Guruve, Mutare
Nickel	Bubi, Makonde, Kwekwe, Insiza, Guruve, Shamva, Shurugwi, Matobo, Chegutu, Bindura, Gweru.
Ochre	Gweru, Kwekwe
Palladium	Kwekwe, Makonde, Shurugwi, Chegutu
Phosphate	Buhera
Platinum	Kwekwe, Makonde, Shurugwi, Chegutu, Centenary
Pyrite	Shurugwi, Gwanda, Mazowe, Kadoma, Bulilimangwe, Shamva, Hwange.
Salt	Mwenezi
Sapphire	Mudzi
Selenium	Makonde
Silica	Gweru, Kwekwe, Makonde, Chegutu, Gokwe, Harare, Goromonzi
Sillimanite	Hurungwe
Silver	Makoni, Makonde, Kwekwe
Talc	Bubi, Guruve, Insiza, Nyanga, Mutare, Mt Darwin, Mberengwa, Goromonzi, Mutoko, Wedza, Kwekwe, Makoni
Tantalum	Hurungwe, Guruve, Kariba, Mudzi, Mutoko, Shamva, Bindura, Harare, Goromonzi, Murehwa, Mt Darwin, Rushinga, Mazowe, Marondera, Gutu, Masvingo, Buhera, Bikita, Mutare, Hwange, Chivhu, Mberengwa, Chimanimani, Makoni, Insiza
Tin	Hurungwe, Mudzi, Shamva, Bindura, Goromonzi, Harare, Rushinga, Mt Darwin, Nyanga, Gutu, Bikita, Hwange, Masvingo, Mutare
Topaz	Hurungwe, Gweru, Mutare
Tungsten	Hurungwe, Kariba, Shamva, Mazowe, Rushinga, Bindura, Guruve, Mt Darwin, Harare, Mudzi, Goromonzi, Bulawayo, Insiza, Matobo, Gwanda, Umzingwane, Bubi, Buhera, Mberengwa, Kadoma, Bikita, Shurugwi, Mutare, Chipinge, Chegutu, Kwekwe, Chiredzi, Wedza, Gweru, Hwange, Masvingo, Makoni
Vanadium	Mt Darwin, Guruve, Bulawayo
Vermiculite	Buhera, Mudzi
Zinc	Kwekwe, Gokwe, Nyanga



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