



EMBRACING EXP IS

A look into the trends shaping future exploration budg



EXPLORATION: HOW AFRICAN MINING DRIVING A SUSTAINABLE FUTURE

Investment strategies for African mining, by Michael Cronwright & Donald Gibson (CSA Group)

The mining and exploration sector over the last few years been challenged by a combination of low and volatile commodity prices, poor returns to investors, numerous environmental disasters, negative sentiment around the environment and social governance and as a result struggled to attract and grow investment into the sector. The cannabis and cryptocurrency fad that attracted a lot of investors' money throughout the last few years from the junior exploration and mining sector seems to have waned. Money is slowly coming back into the sector with much growth in minerals related to the green economy/clean energy sector.

Conventional metals thriving

However, gold and base metals continue to attract the most funding and focused mainly on mine site exploration and advanced project studies, with greenfields projects capturing the smallest part of the pie. This

is not surprising considering the number of advanced exploration projects from the last peak on exploration almost a decade ago still looking for funding.

Higher precious metal prices, due to current global political tensions and uncertainty around the effect of global pandemics like the recent Coronavirus, are also set to attract investment into exploration for these metals this year.

Gold exploration in places like West Africa and Namibia are likely to benefit the most from the renewed investment into this sector. At the same time, Zimbabwe remains an attractive destination geologically, concerns around the politics are keeping many investors away, and this is the case for several countries in Africa.

Last year saw a contraction in exploration budgets with overall spend dropping 12% in Africa. Globally there has also been a contraction (albeit only 3%) with the most significant budgets going to Latin America and Australia. One positive, according to S&P Global Market Intelligence, is the increase in active exploration companies.

Despite this budget contraction, Tanzania, Namibia and Angola saw budget increases of >30%, with Angola's doubling from US\$18 million in 2018 to \$36 million last year. This is most likely related to the huge interest in diamond exploration, which, for the first time since 2013, saw an increase of 44% from 2018 to \$85 million.



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He has a keen interest in the green energy sector and its impact on exploration and mining. Michael is a QP/CP in lithium, tin and columbo-tantalite and has a M.Sc. in Exploration Geology from Rhodes University with a dissertation reviewing the pegmatites in Northern Mozambique.

He started his career at the Council for Geoscience in 1999 where he was involved in World Bank mapping and geochemical sampling projects in Mozambique and Madagascar. In 2006 he moved into geological consulting and joined CSA Global in mid-2019.



DONALD GIBSON

Donald has consulted widely for public, private and donor organisations across numerous sectors, with over 20 years’ experience in the mining sector.

He helps firms improve their strategic and operational performance across the minerals value chain by developing leadership and organisational capabilities on sustainability management, articulating the business value of sustainability, integrating sustainability within core business practices, and providing assurance on a wide variety of topics and management processes such as integrated and sustainability reporting.

Donald also supports firms (including industry and financial institutions) on mergers, acquisitions and divestitures involving both sell-side and buy-side due diligence, deal preparation and post-merger/acquisition integration.

Next-gen minerals

Although green energy minerals make up a small part of the global exploration budget, particularly in Africa, commodities like cobalt, rare earth elements (REE), tin, lithium, tantalum, graphite, nickel and vanadium have been in the spotlight the last couple of years. This is unlikely to change with the momentum behind the decarbonisation of the energy and transport sectors. The electric vehicle (EV) story is currently dominated by Chinese demand, but once India and the rest of the world start playing catch-up, things are bound to get interesting.

Supply deficits for palladium and rhodium used in catalytic converters are currently pushing prices higher, but fuel cells also require platinum and palladium. The large platinum producers based in South Africa and Zimbabwe are investing in the technology as are the large auto manufacturers like Toyota, Daimler and Hyundai. However, it remains to be seen how the supply-demand dynamics play out once EVs replace internal combustion engines (ICEs) and thus the need for catalytic convertors.

With about a third of the world's electricity forecast to come from renewables by 2024 (according to a recent BDO report), the shift away from reliance on hydrocarbons for energy generation, centralised energy generation and the ICE is well underway and will drive demand for these commodities. This is being bolstered by government policy changes and regulations to reduce CO2 emissions and the recognition by big business to achieve the same.



Currently, the leading technologies driving demand for these commodities are lithium-ion batteries, H-fuel cells, wind turbines, solar (photovoltaic and concentrated solar) and Vanadium Redox Flow Batteries (VRFB). These are likely to dominate the non-hydrocarbon based renewable energy sector for the next 10-15 years.

The recent drop in lithium and cobalt prices from the highs of 2018 have put a damper



The geopolitics around rare earth elements and China's control of the market has benefited projects like Peak Resources' Ngualla project (which includes their Teeside Rare Earth processing hub) in Tanzania, which is likely to be Africa's first REE producer. Other REE projects also continue to attract interest.

OEMs vertically integrating

A major impact on the lack of investment in the exploration and mining sector is that supply for commodities like lithium, cobalt and REE is unlikely to meet future demand and is forcing original equipment manufacturers (OEMs) to integrate their supply chains vertically. An added incentive is the need to improve ESG practices in order to earn or maintain their social licence to operate while still delivering value to investors.

This is being led by OEMs like BMW, BASF, Apple, VW, Intel and Tesla. Cobalt is an excellent example of this. ~70% of the world's cobalt comes from the DRC, but this supply chain is tainted by child labour and environmental issues.

Approximately 20% of this production comes from artisanal mining activity. As a result, BMW and BASF have teamed up to clean up and source cobalt from artisanal mining rather than abandon the communities that rely on the income for their survival. Similarly, there are also talks between Tesla and Glencore regarding cobalt supply from

on investor appetite for these projects, but little has changed in terms of the positive fundamental outlook for these commodities.

However, this will negatively impact coal and oil producer nations like Nigeria who have started funding exploration through the Nationwide Integrated Mineral Exploration Programme (NIMEP), intended to promote non-oil minerals to reduce its reliance on oil.



the DRC. Commodities like tin, tantalum and tungsten sourced from the DRC and surrounding regions have similar issues.

The pressure on companies to clean up supply chains will continue to increase from the public; with initiatives like IRMA (Initiative for Responsible Mining Assurance) and the London Metal Exchange (LME) requiring every producer and brand to prove conformance for any metal sold on the exchange, irrespective of where or how it is sourced by January 2022. Full compliance is required by 2023.

With smaller exploration budgets, companies need to ensure they have experienced technical teams and technical partners able to deliver maximum value for their spend, and able to navigate through the increasingly complex ESG and reporting requirements. Similarly, mining companies are also under increasing pressure to be more efficient and deliver value to their stakeholders while also ensuring they remain sustainable.

Merging industries

In order to achieve this, we are seeing vertical integration and much cross-over between industries, with tech companies becoming vehicle manufacturers (Tesla), mining companies becoming energy producers (Bushveld Minerals using VRFB technology through Bushveld Energy) and rare earth miners becoming magnet manufacturers. Oil companies like Shell and BP are also getting involved and investing in renewables, storage and EV charging technology.

We are also likely to see mining companies going off grid and potentially becoming energy suppliers to communities in remotes areas where mining takes place. Companies are also differentiating themselves with propriety technologies, such as lithium explorer Lepidico, whose technologies can deal with non-spodumene pegmatite sources like the lepidolite rich Rubicon-Helikon Project in Namibia.



Project owners and investors need to remember the projects that will deliver value need to be high quality and low-cost. However, the factors that constituted a high-quality project in the past do not necessarily apply today in a world where ESG is important, and the geopolitics around energy shapes decisions around finance and project development.

The fact remains that with the global population growing and nations industrialising, the need for commodities will continue to grow. Changes in the way the world generates and stores electricity and travels are also afoot. As markets get used to the new normal and industries jockey for position, things are going to remain volatile for a while, and the boom-bust cycles and bubbles will continue.

With OEMs getting closer to the rock face and the entire supply chain held accountable for their actions, it can only bode well for exploration and mining. However, in the short term, it may be a bumpy ride as the various role players get used to a new way of doing things.

While Africa has its challenges, it remains underexplored and underdeveloped. Those countries with the right policies, explorers and miners with technical teams which operate sustainably and responsibly are more likely to be successful and become pioneers in a greener sustainable mining and exploration industry.