

Southern Africa exploration targets battery minerals

Challenges aside, Southern Africa remains one of the hotspots for mineral exploration in Africa.

By Leon Louw

With buzzwords like a just energy transition, Environmental and Social Governance (ESG), climate change and the green economy dominating the narrative on the world markets today, Southern Africa provides numerous exploration opportunities. With large deposits of lithium, copper, cobalt, tin, nickel, graphite, manganese, and rare earth elements (REE), the region could become a green energy hub.

Added to these green commodities, the mining sector is backed by exceptional deposits of more traditional natural resources like gold, diamonds, Platinum Group Metals (PGMs), coal, uranium, chrome, and diamonds.

According to Oscar van Antwerpen, CEO of mining consultant Minrom South Africa, South Africa still provides the best opportunities in terms of mineral assets, mining skill, and supporting infrastructure. This is despite regulatory failure, poor decision making, onerous approval processes, intermittent electricity supply and legislative inconsistencies hampering the development of new exploration activities, and ultimately, the development of mines. Minrom's focus is to unlock mineral assets across Africa and internationally.

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lishment of new projects world-wide. South Africa, being a country of great geological endowment and mineral superlatives can fill this demand," says Van Antwerpen.

South Africa has large deposits of PGMs, large high grade iron ore and manganese deposits and great pegmatite deposits in the Northern Cape. There are numerous tin deposits remaining at properties like Rooiberg and Zaaipplaats, and in addition gold, zinc, lead, mica, industrial minerals and even inland ilmenite, zircon, and rutile. Furthermore, the country has some of the world's largest fluorite and chrome deposits.

Although many of the mines in South Africa are depleted or at the end of their lifetime (excluding some super deposits with existing producing mines), new technology and improved geophysical methods to detect, define and locate new opportunities can extend the life of these ore bodies. Advancement of metallurgical processes greatly aid in fur-

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South Africa and Namibia hosts onshore and offshore diamond reserves. In picture are the diamond boats in Port Nolloth, on South Africa's west coast.



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ther unlocking the value of these projects.

“Furthermore, South Africa has a competent mining workforce in comparison to emerging mining frontiers, a good established mining industry, a large network of suppliers and service providers, manufacturing capabilities, institutional knowledge, universities, all types of engineers, geologists, and top operating mines.

“But sadly,” says Van Antwerpen, “South Africa is hindered in attracting investment due to a non-functional and non-transparent mining permitting system, inconsistent decision making and a lack of administrative interaction between state departments in the approval process and, in addition, the lack in support to failing infrastructure (Eskom, Transnet, Portnet, national road network).

A focused plan is required to amend these stumbling blocks and once again restore South Africa as a top mining nation it has been known for in the past. Currently Tanzania, Botswana, Namibia, and the DRC is attracting more interest.

Opportunities in Botswana, Namibia, and DRC

Botswana looks attractive for exploration companies as there are several mineral deposits locked up in the ground. However, the downside is that exploration in Botswana is expensive due to some areas being extremely remote and because the deposits are covered by a thick layer of Kalahari sand. Although there are a number of very prospective copper projects in Botswana, extensive exploration is required to unlock and determine



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Lodestones iron ore project close to Windhoek in Namibia might be an early mover in what could become a significant iron province producing green iron.

the potential of the Botswana extension of the Copperbelt with mineralisation in Zambia and the DRC remaining the largest copper resource base.

“The DRC is an absolute phenomenal country hosting super deposits in copper, lithium, tin, cobalt, and gold. The lithium, cobalt and tin deposits are spectacular in grade and size. But unfortunately, the cost to work in the DRC is extremely high. The capital equipment must be imported, and several tax challenges hinders the development,” says Van Antwerpen.

The DRC is not an easy mining jurisdiction. There is strict legislation, strict financial control, security of tenure issues, importation taxes, levies, and tax





AfriTin is mining the substantial tin and lithium deposit close to Uis in Namibia.

regimes. “Nonetheless, there are massive mines in the DRC and extremely large deposits that have not been developed yet,” he adds.

Namibia has been talked about extensively. The country hosts enormous uranium deposits and there is remaining resources of onshore and offshore diamonds as well as good deposits of gold. Although the gold concentration is lower grade in relation to the Wits Gold Basin in South Africa, a company like B2Gold has proven that it is viable to mine these deposits as the company has done at its Otjikoto operation in the northeast of the country.

Van Antwerpen says Namibia is a top mining jurisdiction. “The road network in Namibia is excellent. Although functioning, the railway infrastructure is aged, but that can be upgraded easily. Furthermore, Walvis Bay is one of the largest ports in Africa and there is sufficient electricity in the country. With the newly discovered gas fields contiguous to South Africa, Namibia will soon be an exporter of electricity as well,” he says.

Besides becoming an attractive mineral exploration destination, Namibia is destined to become the energy hub of Africa. The country has deposits of oil and gas (inland and offshore) and more than enough sun and wind to ensure plenty of renewable energy. With the stable political and financial system, great mining legislation, a transparent mining cadastre and permitting system and the recent petroleum finds, Namibia is most certainly a very attractive investment opportunity.

With the massive green hydrogen project planned in the south, the country is making great strides in fulfilling its ambitions to become a top exporter of electricity.

Lodestone is currently exploring proven green steel production technology to leverage on the cheap production of green energy and hydrogen planned in Namibia. They believe that they will be able to produce 1.5 million tonnes per annum of

hot rolled coil at a competitive price for the export market.

According to Van Antwerpen, Zimbabwe, Zambia, and Angola should always remain on the radar of investors in exploration. Angola is rapidly transforming and expanding its minerals sector with cost effective diesel and energy making earth moving very competitive. On the other hand, Zimbabwe remains problematic, despite its massive potential and mineral riches.

“The Southern African region can become a super-power due to its rich mineral endowment and the large mining potential in countries like South Africa and the DRC. Zimbabwe’s mining sector should be expanded, and with the substantial oil and gas fields in Namibia and Mozambique, and the hydro power in DRC, added to a functioning and expanded ports and rail network, the region can become a global powerhouse. The Southern African region’s governments, however, will have to focus on improving tenure systems and mining application processes, developing proper financial controls, establishing functional infrastructure and manufacturing capital equipment. In addition, corruption, nepotism, and a lack of transparency are serious issues that need to be addressed.

Opportunity to explore the Kaapvaal Craton

John Paul Hunt, principal exploration geologist at SRK Exploration Services says that Southern Africa’s long geological history gives the region a healthy foundation of a wide range of mineral deposits and commodities.

“The Kaapvaal Craton, for instance, is an important source of base and other precious metals. No matter what commodity is being sought, there is opportunity here due to the sheer age of rock formations – with pegmatites spanning the full scope of geological record,” says Hunt.



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Antler Gold is exploring the gold deposits in the Damara Belt.

“With the emphasis on critical metals related to battery production and the green economy, there are huge opportunities in Southern Africa. Lithium, tin, nickel, cobalt, vanadium and rare earths have all been discovered in Namibia, Botswana, Zambia, Zimbabwe, and South Africa – especially the Northern Cape. These are not just exploration plays, and many are being developed into sizeable projects,” says Hunt.

Among the largest of these is Nkombwa Hill in Zambia, where niobium, tantalum, rare earth elements and phosphates are to be mined. Smaller lithium deposits abound in Zimbabwe, such as the Zulu lithium project. In Namibia, the Uis lithium-tantalum project has been brought back online, with a few satellite deposits.

Hunt points out that there are significant phosphate deposits in the carbonatite Schiel complex in South Africa’s Limpopo province, which is currently in feasibility stage.

“Discovered even before the larger deposits at Phalaborwa, Schiel now finally looks promising due to improved infrastructure, technology, and market demand. Other phosphate sources include Elandsfontein and Phalaborwa,” says Hunt.

Furthermore, exciting progress is being made on a sedimentary nickel deposit in Zambia. The Enterprise project could reportedly become the largest nickel producer in Africa. This adds to the importance of the region for the battery mineral market – as it already a leading producer of copper and cobalt.

Battery minerals become more strategic

As a host region for battery minerals like rare earths, graphite and nickel, Southern Africa could become more strategic to the west, given that Russia and China have historically been leading producers of these commodities.

With the uncertain geopolitical environment globally, the US and Europe may be looking more to

Africa for these critical metals. This has to a certain extent encouraged explorers to invest in Southern African prospecting and development programmes.

According to Steven Bateman, senior exploration geologist at SRK Exploration Services, much of Southern Africa’s geological value cannot be realised due to insufficient infrastructure, including roads, rail, and electricity.

“Water is likely to be the greatest constraint to development in Southern Africa,” says Bateman.

“There are many valuable deposits, but their limited scale and lifespan often means they struggle to afford installing the necessary services if these are not already in place. If there was more existing infrastructure that could readily be leveraged, more of these deposits could be progressed from exploration stage to mining projects,” says Bateman.

“For example, pegmatite-hosted lithium deposits that are found across Southern Africa, tend to be high-value but small. This hampers the economics of the project in areas of poor infrastructure.

Sara Turnbull, senior exploration geologist at SRK Exploration Services says that graphite is another important battery mineral, and this is being produced in Mozambique, Tanzania, and Madagascar.

“A key component of lithium-ion batteries is graphite, as it is the primary material used in the battery’s anode. Many of these deposits also contain vanadium as a valuable by-product that enhances project economics, says Turnbull.

As the world continues searching for solutions to the persistent energy and climate crisis, Southern Africa’s battery minerals might just be the answer.

WhyAfrica visited several early-stage exploration projects across Southern Africa during our road trip in June, July, and August. More in-depth article and reports about the countries that we visited and specific exploration projects will be available to purchase on our on-line store next year. ●