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INSIGHT NOTE

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Nigeria's Gold Mining Sector

by Basil Abia

Gold mining in Nigeria, especially industrial-scale mining presents a unique opportunity for investors to receive impressive investment returns. Most importantly, there are attractive ESG prospects for investing corporations given the investment template and results from Thor Explorations Ltd's investment in Nigeria's first and only industrial-scale gold mine, the Segilola gold project in Osun state.

INTRODUCTION

Nigeria's domestic mining industry is underdeveloped, despite the country's significant production and processing potential with several mineral resources. It has also underperformed over the years. For gold, it is no different. To add historical context, gold production began in Nigeria in 1913, and the country reached peak production between 1933 and 1943 when at least 1.4 tons of gold were produced for exports. However, production declined during World War II, and the mines were eventually abandoned.

It is important to note that there has since been a resurgence in gold mining in recent years. This is partly a result of the increased price of gold and government initiatives to advance the mining industry. The Nigerian government unveiled the Mining Roadmap in 2016, intending to multiply the nation's mining production capacity by at least ten-fold by the year 2025.

With an estimated total gold reserve of 200 million ounces, the creation of large-scale gold mining projects in Nigeria is one of the mines and steel ministry's primary areas of concentration in the mining roadmap.

The Nigerian gold mining business has immense potential to deliver promising returns to investors as a result of industrial-scale mining and processing. Industrial-scale miners in Nigeria can raise production levels and lessen their environmental impact by utilizing contemporary mining and processing techniques and tools. This approach would generate sustainably high returns for investors, increase tax receipts for the government, create good jobs, and generate economic growth.

Regardless, before industrial-scale mining for gold can be the mainstay of metallic ore mineral mining in Nigeria, several challenges must be overcome. These include securing land rights, utilizing domestic skilled labour, addressing the high spate of insecurity in the gold-rich Zamfara/Sokoto areas, and accessing sustainable financing for industrial-scale mining projects.

DATA POINTS

Nigeria's regulatory framework for its mining industry is robust and competes favorably with global mining countries as shown in Figure 1 below. Its mining royalty range (3-5%) for gold is just as favorable if not more attractive than that of the United States of America. What it lacks when compared to the highlighted gold mining hub countries is the presence of gold mining majors and juniors.

The tax incentives and exemptions from customs and import duties on mining equipment are just as attractive - the countries it compares to are among the largest gold producers in the world. Both the USA and South Africa each host two of the world's ten largest gold mines in the world.

¹ Gold mineralization in Nigeria, Skyline University -

<https://www.sun.edu.ng/knowledge-update/gold-mineralization-in-nigeria#:~:text=Nigeria's%20officially%20documented%20gold%20production,was%20ongoing%20and%20never%20recovered.>

² Federal Ministry of Mines and Steel Development Mining Industry Development Roadmap 2016 -

https://nesgroup.org/download_policy_drafts/Nigeria%20Mining%20Growth%20Roadmap_2016-2025_1661896687.pdf

Country	Australia	Chile	South Africa	USA	Nigeria
Corporate Income Tax	30%	20%	28%	40%	20-30%
Mining Royalty (Coal)	2.75-15%	0-14%	0.5-7%	8-12.5%	3-5%
Mining Royalty (Gold)	2.5-5%	0-14%	0.5-7%	4-10%	3-5%
Mining Royalty (Copper)	2.5-5%	0-20%	0.5-7%	4-10%	3-5%
Mining Royalty (Iron Ore)	5.35-7.5%	0-14%	0.5-7%	4-10%	3-5%
Financial Incentives	EDI encourages shareholder investment in small exploration companies by offering tax credits	Companies under stability tax agreements are charged a flat tax rate (4-5%), lower than the progressive tax rate charged by others	CAPEX by mining companies can be fully deducted against tax, e.g. spending on prospecting; mining equipment	Tax structure permits depletion deduction which can lower federal income by 3%	Tax holiday for an initial period of 3 years from commencement of operations
Custom Duty	<ul style="list-style-type: none"> 5% import duty for importing mining equipment The additional import processing charge 	6% import duty for importing mining equipment	0% import duty rate for importing mining equipment	0% import duty rate for importing mining equipment	Exemption from customs and import duties on mining equipment
Lease Duration	21 years	Indefinite	30 years	20 years	25 years
Ownership Requirement	<ul style="list-style-type: none"> Acquisition of 15% or more interest in any Australian mining company Acquisition of interest in an operational mine 	Non-discrimination between domestic and foreign-owned entities	26% stake by a local directly or via a holding company	N/A	Foreign company to incorporate local subsidiary (with exceptions)
Mining Production Index (2014)	131.2	111	98	133.9	84.1
Policy Perception Index (2013/2014)	76.61/70.47	70.86/72.23	39.78/44.47	71.8/69.08	30.54/10.63

Figure 1

Notes: EDI = Exploration Development Incentive, EPBS = Enhanced Project By-law Scheme; higher mining production index indicates better performance. The policy perception index is the outcome of surveys of investors working in the market. Nigeria's scores reflect the absence of global mining majors and juniors. Sources: Fraser Institute Annual Survey of mining companies, 2014; Literature Search and Federal Ministry of Mines and Steel Development Mining Industry Development Roadmap 2016.

According to data from the United States Geological Survey collated by Nigeria's Ministry of Steel and Mines Development, Nigeria has total gold reserves put at 200 million ounces, and proven gold reserves set at 600,000 ounces, but only an average of 140,000 ounces of gold is produced yearly.

Gold is found in Nigeria in several locations, including primary veins, alluvial as well as eluvial placer deposits, and along schist belts. Schist belts are a type of rock formation that is rich in minerals, including gold. In addition, a schist belt is a type of rock formation that is characterized by its flaky appearance. These Schist belts are formed when layers of rock are compressed and folded, and the minerals in the rock are aligned in parallel layers. This alignment of minerals makes schist belts more likely to contain gold deposits.

The most significant gold occurrences in Nigeria are found in the schist belts of the northwest and southwest regions, including the Maru, Anka, and Malele areas of Zamfara state, Tsohon Birnin Gwari-Kwaga in Kaduna state, Gurmana in Niger state, Bin Yauri in Kebbi state, Okolom-Dogondaji in Kogi state, and Iperindo in Osun state. The Iperindo area in Osun state, Nigeria, has a geological setting similar to the Ashanti and Salwi gold systems in Ghana. This means that the Iperindo area has the potential to host significant gold deposits. The Ashanti and Salwi gold systems are two of the largest gold-producing regions in Africa. They are both located in the Birimian greenstone belt, a geological formation rich in gold. The Birimian greenstone belt is also present in the Iperindo area.

BENCHMARK: A Segilola-Thor Explorations Case Study

Nigeria is actively striving to diversify its revenue sources. This is evidenced 2016-202 mining industry development roadmap where it is actively aiming to increase the contribution of the mining sector to Nigeria's GDP from 0.3% to 3% by 2025, with some success recorded already. The development of the \$100 million worth Segilola Gold Project is expected to increase the contribution of the mining sector to the country's GDP.

Furthermore, a simplification of the mining licensing process in Nigeria and the institutionalization of a more competitive mining royalties regime together with attractive tax incentives are widely acclaimed to be responsible for Thor Explorations's successes in the country's niche gold mining industry. This provides the needed benchmark on which other investors and the incoming Bola Ahmed Tinubu presidency can build on for Nigeria's gold mining industry to transition from the artisanal-scale mining industry it currently is to an industrial-scale gold mining major. It can also be the benchmark for similar industrial-scale gold mining and processing projects that enables Nigeria to achieve its mining industry development ambitions, together with its ambitious economic and revenue diversification drive.

The Segilola Gold Project is fully owned by Segilola Resources Operating Limited (SROL) which is a wholly owned subsidiary of Thor Explorations Ltd, a Canadian gold exploration company with a sole West African market focus. The Segilola Gold Project is

⁴ NIGERIAN GEOLOGICAL SURVEY AGENCY, 2010

located in the gold-rich Iperindo gold schist area of Osun State, Nigeria. The project has a total probable reserve of 517,800 ounces of gold grading at 4.02g//t as of March 2021. It is Nigeria's first commercial gold mining project.

The construction of the Segilola Gold Project was a major investment by Thor Explorations Ltd. The company invested over \$100 million in the project, which included the construction of a processing plant, the development of an underground mine, and the creation of a new community. The mine, at full operational capacity, is expected to create over 1,000 jobs and generate over \$100 million in revenue per year.

For the entirety of 2022, the gold mine in Segilola, Iperindo, produced 98,000 ounces of gold according to its corporate presentation to its investors in the first quarter of 2023 – earning the exploration company (Thor Explorations) \$71.7 million in its earnings before interest, taxes, depreciation, and amortization (EBITDA). For the first quarter of 2023, it sold 21,553 ounces of gold at an average realized price of \$1,902 per ounce and at a cash operating cost of \$899 per ounce. Its EBITDA for the first quarter of 2023 was \$16.06 million.

Figure 2: Segilola Gold Project Operating Performance for 2022.U

Terms	Units	2022
		Total
Mining		
Total Mined	Tonnes	16,106,033
Waste Mined	Tonnes	15,048,436
Ore Mined	Tonnes	1,057,996
Grade	g/t Au	3.56
Processing		
Ore Processed	Tonnes	929,760
Grade	g/t Au	3.45
Recovery	%	95.1
Gold Recovered	Oz (Ounces)	98,006

The strong production and financial performance of the Segilola mine should be a benchmark for other mining companies and investors. Nigeria's gold mining sector is a promising investment opportunity, and the Segilola mine is a good example of the potential for success in this sector.

CHALLENGES

The gold mining sector in Nigeria is currently facing a myriad of challenges that are preventing it from being an attraction for global gold mining majors. They include

Insecurity: In recent years, there has been an increase in insecurity in Nigeria's gold mining regions, particularly in Zamfara, Sokoto, Kebbi, Niger, and Kaduna states. This insecurity has been caused by several factors, including the rise of banditry and the Boko Haram insurgency. The insecurity has made it difficult for mining companies to operate safely and efficiently, and it has also led to the displacement of local communities.

- **Dearth in infrastructure:** Nigeria's gold mining sector lacks the necessary infrastructure, such as roads, railways, and power supplies. This lack of infrastructure makes it difficult and expensive to operate a mine in Nigeria.
- **Dearth in skilled workers:** Nigeria's gold mining sector lacks the necessary skilled workers. This lack of skilled workers makes it difficult to find qualified people to operate mines and manage the mining process.
- **Lead poisoning:** In 2010, there was a widespread outbreak of lead poisoning in Zamfara state that led to the deaths of at least 163 people. The outbreak was caused by the use of rudimentary methods of gold mining, which led to the release of lead into the environment. The outbreak led to the deaths of hundreds of children and the displacement of thousands of people. Since then, lead poisoning has affected more than 7,000 people and caused the deaths of 700 people in Zamfara and Kebbi states alone.
- **Failure of regulatory enforcement:** The glaring state capacity failure of Nigerian authorities is a driving force for artisanal gold mining in Nigeria to cause widespread ecological damage in prominent gold mining areas across Nigeria. In particular, wastewater pollution caused by the incessant artisanal gold mining in Osun state is now affecting the Osun River which is pivotal to the importance of the UNESCO world heritage site at the Osun Osogbo Groove. In some cases, this damage has been severe, leading to the pollution of rivers and the destruction of forests. The ecological damage has harmed the environment and the livelihoods of local communities.
- **Securing land rights:** Land ownership in Nigeria is complex and fragmented, making it difficult to secure the rights to mine on a large scale.

STEPS TO TAKE

The following are some steps that can be taken to address the challenges facing Nigeria's gold mining sector:

Address insecurity: The government can work to improve security in Nigeria's gold mining regions by working with the state governments where the gold mining areas are sited to localize security, by working extensively with local communities to build trust and then addressing the root causes of insecurity, such as poverty and unemployment.

Improve infrastructure: The government can improve infrastructure in Nigeria's gold mining sector by investing in roads, railways, and power infrastructure. State governments where these mining areas are located should also invest in rural-urban

roads—the Iperindo-Ipetu-Ijesha road to serve the mining region constructed by the immediate past Osun state government is a perfect example of what state governments ought to do. State governments with significant gold mining activities should also invest in state electricity generation and distribution markets to enable the ready availability of electricity in the gold mining and processing areas within their respective states. The fifth alteration bill No.33 (devolution of powers) signed into law by the immediate past president of Nigeria, Muhammadu Buhari, now makes it legal for states in Nigeria to generate, transmit and distribute electricity to industrial and residential consumers. This would make it easier and cheaper to operate a gold mine and refinery in Nigeria.

Train skilled workers: The government can train skilled workers for the gold mining sector by working with universities and polytechnics to develop training programs. This would help to address the lack of skilled workers in the sector.

Prevent lead poisoning: The government can prevent lead poisoning by enforcing regulations on the use of lead in gold mining. This would help to protect the health of workers and the environment.

Enforce regulations: The government can enforce regulations on environmental protection and land use to prevent ecological damage and secure land rights for mining companies. This would help to protect the environment and the rights of local communities.

By taking these steps, the government can help to address the challenges facing Nigeria's gold mining sector and make it a more attractive investment for global gold mining majors.

Promoting Investment in Gold Mining in Nigeria

Supporting the development of local communities: The government can support the development of local communities by ensuring compliance with the Community Development Agreements (CDAs) by industry operators as stipulated by the Nigeria Minerals and Mining Act of 2007. This will help to ensure that the benefits of gold mining are distributed more equitably. The Segilola Gold Project has demonstrated an impressive continuous roll-out of its own CDA commitments, including employing 27% of the total workforce on the mine from the immediate community which is in line with the CDAs, and should be the template for replication by gold mining projects and investors in the nearest future.

Promoting responsible mining practices: The government can promote responsible mining practices by working with mining companies to implement the delineated mining codes of conduct in the Nigeria Minerals and Mining Act of 2007. These codes of conduct set out standards for environmental protection, social responsibility, and labor practices. Adopting the Thor Exploration codes of conduct, particularly for its Segilola gold mine operations would be a welcome addition.

Ensuring transparency: The government can ensure transparency in the mining sector by publishing data on mining production, revenue, and investment. This will help to build trust between the government, mining companies, and local communities.

State governments like the new Zamfara and Osun state governments can also contribute to the sector promotion drives while also concurrently improving the business environment in their respective states.

By taking these steps, the government (state governments and the federal government) can help to ensure that the gold mining sector in Nigeria contributes to sustainable development and economic growth.

INVESTMENT CASE: Commercial Gold Mining and Processing

Gold mining in Nigeria especially industrial/commercial-scale mining & processing presents a unique opportunity for investors to receive impressive investment returns. Most importantly, there are attractive ESG prospects for investing in gold mining and processing corporations. The investment template and results from Thor Explorations Ltd's investment in Nigeria's first and only industrial-scale gold mine, the Segilola gold project in Osun state is proof of the impressive ESG prospects. The country has a strong legal framework for environmental protection, and there is a growing focus on social responsibility and labor practices in the mining sector.

The Segilola deposit on which the Segilola Gold Project is situated to exploit is a system of stacked, steeply-dipping, parallel quartz-pegmatite veins that contain high-grade, sometimes visible, free-milling gold. The combination of immense geological potential as estimated and currently exploited in the Segilola Gold Project, an industry that is still not crowded, and a sound mining regulatory framework make Nigeria an attractive investment destination for gold majors and juniors. Gold majors are large, well-established companies with the resources to undertake large-scale exploration and mining projects. Gold juniors are smaller companies with the potential to make high-grade discoveries. Both types of companies can find opportunities in Nigeria's gold mining sector. Early in-country first-mover advantage can help contribute to very strong investment returns for investing corporations, similar to the impressive numbers reported by Thor Explorations Ltd on its Segilola gold project in Osun state. A year after completion, in 2022, the Segilola Gold Project in Iperindo, Atakunmosa East Local Government Area, Osun State made \$71.7 million in EBITDA, and \$40 million in operating profit for Thor Explorations and is now on track to make \$100 million (EBITDA) in 2023 at an upside-case market scenario, at least. Using the impressive returns and performance of Thor Explorations on the Segilola Gold Mine Project as a template, gold mining majors and institutional investors should look at Nigeria as a prime investment opportunity.

In addition, there are several investment opportunities in commercial-scale gold mining in Nigeria. These opportunities include:

Partnering with existing title holders: Several companies already hold mineral titles in Nigeria. These companies are looking for partners to help them explore, mine, and market their gold resources. This is an opportunity for gold mining companies to get involved in the Nigerian gold mining sector without having to go through the process of applying for mineral titles.

Joint ventures: Joint ventures are another way for gold mining companies to get involved in the Nigerian gold mining sector. This is an opportunity for companies to share the risks and rewards of exploring, mining, and marketing gold in Nigeria.

CONCLUSION

As previously highlighted, gold occurrences in Nigeria are concentrated in the northwest and southwest regions, including areas like Maru, Anka, Malele, Tsohon Birnin Gwari-Kwaga, Gurmana, Bin Yauri, Okolom-Dogondaji, and Iperindo. Iperindo, in Osun state, has similarities to Ghana's Ashanti and Salwi gold systems, indicating significant gold deposit potential. In addition, the Segilola Gold Project on the Iperindo Gold Schist Belt sets a benchmark for production and financial performance, highlighting Nigeria's promising gold mining sector for investors.

The Nigerian government has set a target of multiplying the country's mining production capacity by at least ten-fold by the year 2025. This is an ambitious target and looks almost impossible to achieve at current industry levels, however, if the Segilola Gold Project template can be adapted and replicated, Nigeria could witness a high spate of economic activity in its niche gold mining sector. Regardless, the Nigerian gold mining sector has the potential to be a major driver of economic growth and job creation in the country. With the right policies and investment, Nigeria can become a significant player in the global gold mining industry.