Solid Minerals Development in Parts of Southwest Nigeria – in the light of recent reforms

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ABSTRACT

Aims: this study aim at informing the investor in the solid mineral sector the recent reforms going on in Nigeria (Oyo State) and how these reforms promote good investment climate and ensure good Return On Investment.

Methodology: we included results from national survey and exploration works, and also some state run exploration exercises and reforms.

Results and conclusion: Mineral resources occurrence in Nigeria or any country transcends political boundaries. But the industry involved in its exploration and exploitation, thrives well in an enabling environment like; favourable economic, legal, political and technological regimes. In order to woo investors and ensure they get maximum return on investment, the government of Oyo State has taken some steps to help create an enabling environment for the mining/mineral industry. And these include: creation of a Solid Minerals Department, under the auspices of the Governor's Office; appointing a qualified and COMEG certified geologist to head the department as Special Adviser on Solid minerals to the Governor; approval of the training of all the geoscientists in Oyo State civil service to be abreast with current developments in the solid minerals industry; approval of a state wide mapping and exploration activity to generate bankable data for investors; among others. Recent mapping and exploration activities in Oyo State includes the following: Baseline Geochemical Mapping of about 90% of Oyo Sate; 100% Airborne Geophysical Survey of Oyo State; Systematic Geological mapping of 1:50,000 Shaki, Igboho, Ikomu, Lechilaku, Oyo, Igangan, Ibadan, Ogbomosho and Igbeti(NW,SW,NE and SE Sheets); Gold Exploration in Oyo State; Dimension stone project in SW Nigeria, including Oyo State; Nomination of structural zones for Gold vein mineralization, kimberlite fields and per-alkaline intrusive using Aerial Radiometric and Magnetic Data covering Oyo State. With all these, Oyo State is indeed being transformed into an irresistible Mining destination for local and foreign investors in the Solid minerals sector in the country.

Keywords: *solid minerals; business; geology; investment climate; mining; exploration.*

1.0 INTRODUCTION

The mineral industry has played vital roles in the emerging world civilisation ranging from the Iron Age to the Bronze Age, the industrial revolution and the recent electronic and information ages. Thus mankind's progress and civilization drive is directly linked with solid minerals. With the evolution of civilization and democratization and the massive drive for development of industrial economy the world over, alongside the increase in technology, construction and building activities, there has been a corresponding increase in the need and demand for solid minerals. To sustain our technology based society, demands for commodities are increasing and exploration for these commodities is a must. The greater fear is that the world stands to face a global mineral crisis if new mineral discoveries are not found. The resultant effect of all these is the increase of exploration and mining companies in the solid minerals development sector. Since mineral resources are not renewable, and there is the need to satisfy the demand for solid minerals, new firms are fluxing into exploration while the older mining firms need to expand their reserves.

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Africa as a continent is endowed with abundant mineral deposit and high in potential for precious and base metals. It is also a major producer of several strategic minerals and metals while it hosts about 30% of the planet's mineral reserves; 80% of the global platinum, chromium and tantalum; more than 40% of gold, diamond, cobalt, manganese and phosphate (1), (see also fig 1).

These abundant mineral deposit in Africa is not unconnected with the geology of the continent, as minerals are directly associated with the lithological characteristics of a place. Africa is dominated by Precambrian basement crystalline rocks of schists, gneisses, greenschists, and granites composition, which is host and source of about 80% of the world's solid minerals (2).

Despite the enormous amount of wealth, which these mineral resources ought to translate into for the African countries, the incessant wars and unstable political situation have hitherto brought an unfortunate situation where the 'potential wealth' has become a 'present course'. Most probably, these reasons have accounted for mineral exploration investment been extremely low in Africa when compared to other major mineral producing regions of the world since the 80's till date. The mining industry worldwide spends about 10% of the value of its production annually on exploration, but on the contrast Africa only spends about 1% (Keatley, 1992). Although Africa holds more than 30% of the global resources of minerals and metals, the mineral exploration budget in 2010 was about $1.4 billion (13% of 2010's global budgets (3).

Though the level of minerals exploration investment is minimal in Africa, the world does certainly acknowledge its place in the global mineral reserve and role in satisfying the demand for more minerals. Surprisingly, Nigeria, a west-African country endowed with over 34 various kinds of mineral resources, have been conspicuously missing in the list of mining destinations in the world or even in Africa.

The initial temptation is to believe that the rate of corruption in Nigeria is too high and the political climate is too unstable to support mineral exploration/mining activities. But a more cursory look throws up some other salient points worth re-evaluating by the international community.

It is the intention of the authors to through this paper; evaluate the current situations in Nigeria by highlighting the recent reforms in the solid minerals sector and how these reforms can help sustain viable mineral exploration and mining activities. This re-evaluation and analysis of recent reforms will be in-line with the yardsticks for evaluating exploration and mining destination of the world as outlined by the Fraser Institute Annual survey of Mining Companies. The paper will also cover the role of artisanal miners and the FPIC factor in Nigeria.

2.0 MATERIALS AND METHODS

Materials used in this research are sourced from the Fraser Institute Annual report, World Bank journals/publications; personal communications with experts in the mineral sector the world over via social medium; recent studies and activities carried out by the Nigerian Geological Survey Agency; publications and works by the Oyo State Government; and the personal experiences of the authors in the exploration and mining of solid minerals in Nigeria.

3.0 DISCUSSION

Mineral exploration and the mining industry in Nigeria can be traced to as far back as at1903/1904 when the Mineral Surveys of the Southern and Northern Nigeria were inaugurated by the then colonial Government. Barely 40 years later, in the 1940s, Nigeria had become a major producer of tin, columbite, and coal. The extractive industry in Nigeria in the past was dominated by Government and as such the discovery of oil in 1956 hurt the mineral extraction industries. The focus of government and the industry shifted to this new resource after the oil boom and this made the nation to evolve a monolithic economy based solely on revenues from oil. Thus, other sectors like agriculture and solid minerals were relegated to the background.

In the natural resources sector, Nigeria is best known for its oil and gas production as the 6th largest oil producer in the world. However, in the solid minerals sector, Nigeria is not listed among the top mining

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destinations of the world, even though it can boast of more than 34 mineral types distributed at more than 450 locations across the country with Oyo state in particular hosting more than 60% of these minerals (4). A recent list obtained from the Federal Ministry of Mines and Steel Development showed that over 260 Exploration/Mining Licenses and Grants covering diverse kinds of mineral types have been issued to investors interested in solid minerals development in Oyo State. This richness in solid minerals is not surprising, considering the geology of Nigeria.

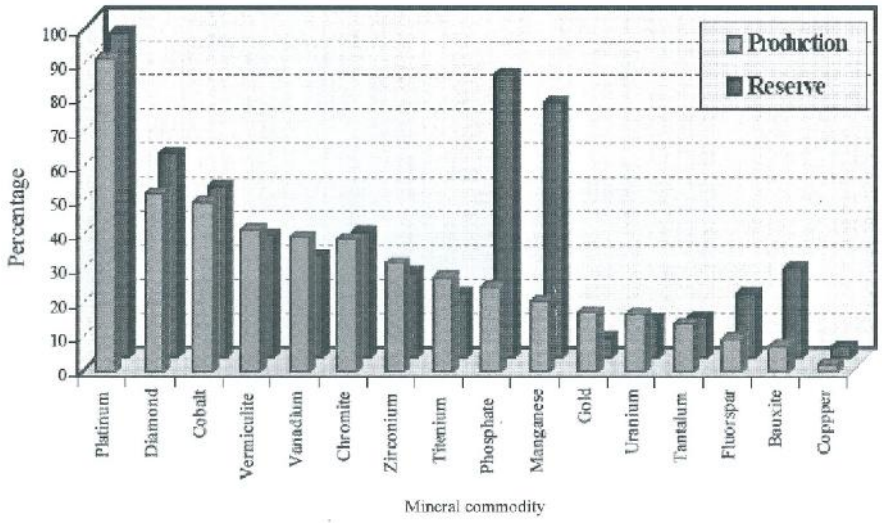

Figure 1. Production and Reserve of mineral commodities in Africa as at 2010 (1)

3.1 The geology of Nigeria

The Nigeria basement complex forms a part of the Pan-African mobile belt, which lies to the east of the West African Craton and lies between the Dahomeyan of the Benin republic at the west and Cameroun at the east.

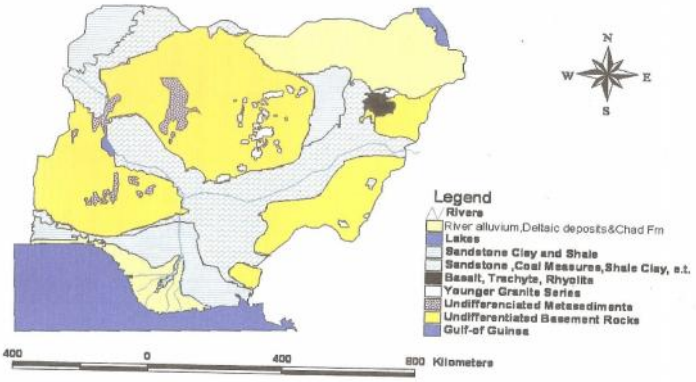

Figure 2. a simplified geologic map of Nigeria

The basement complex of Nigeria consist of predominantly archean polycyclic gray gneisses of granodioritic to tonalitic composition; remnants of uncomformable proterozoic cover now represented by variably migmatised metasediments which are preserved in syncollisional schist belts; and many syn-tectonic to late tectonic intrusions (5; 6, 7).

The proterozoic sediments have been classified into the older metasediments of early proterozoic age, and the younger metasediments of the pan-african age. Reactivated archean basement, often referred to

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as the migmatite-gneisses of the Zinder in-lier in niger Republic in the northeast; those of Obudu and Oban massif in southwestern Nigeria (8); and the migmatite gneisses in neighbouring Cameroon Republic. The migmatite-gneiss complex is dominated by quartzo-feldspathic biotite-hornblende bearing gneiss; schist and migmatite, in which minerals such as garnet, silimanite, kyanite and staurolite suggest high amphibolites facies metamorphism (7).

The evolution of the basement rocks in Nigeria is associated with the overall evolution of the African continent. And from available radiometric dating data, it is believed that the evolution of the basement rocks in Nigeria took place during five main orogfenic events, which corresponds to five major ages that punctuated the Pre-cambrian history of Africa. These are:

- Leonian Orogeny 3500-2900ma
- Liberian Orogeny 2900-2400ma
- Eburnean Orogeny 2400-1600ma
- Kiberian Orogeny 1600-900ma
- Pan-african Orogeny 600-450ma

Among all the Orogenic events, the Pan-African is the most significant. It brought about the evolution of the older granites and the subsequent reactivations, folding, deformation and metamorphism of the basement. Thus a more modified description of the basement (9) recognizes three main rock units viz:

- The Gneiss-migmatite complex
- Low to medium grade metasediments and metavolcanics of green schist facies.
- The Pan African granitoids and related rocks

3.1.1 Geology of Oyo State

The reference area, Oyo State lies within the southwestern part of the reactivated basement complex of Nigeria (fig2) and is underlain by the lithological units of the crystalline basement complex which wholly belong to the Pre-Cambrian – Cambrian Basement Complex (10)

The Basement Complex rocks covers almost 100% of the total land surface area of Oyo state, which invariably affects the metallogeny of Oyo state and its mineral potentials positively (6).

3.2 Some major setbacks in the exploration/mining sector in Nigeria

Mining and mineral use can be said to be one of the oldest economic activities in Nigeria. This claim is evidenced from historical facts of the iron works of the Nok culture around 340 BC; the bronze works by the Igbo Ukwu, Ife and Benin culture; and the gold mining activities in the Hausa kingdoms popularized by the famous 'Golden lands of Wangara'; although, these mining were done in crude and informal ways.

Systematic and controlled mining started to evolve in Nigeria with the establishment of the Mineral Surveys Agency of the Southern and Northern Protectorates in 1903 and 1904 respectively, during which period Nigeria rose to be a major producer and exporter of important minerals like Tin, Columbite and Coal. But this did not continue for long.

Factors which triggered the decline in solid minerals development in Nigeria and are most likely responsible for its absence in the Fraser Institute Annual Survey 2011/2012 (11) and 2012/2013 (12) can be attributed to:

- The sudden discovery and total dependence of the Nigerian economy on oil since 1956. This factor alone has affected not only the mining sector, but also areas like agriculture, which was earlier the main stay of the Nigerian economy.
- The Nigerian civil war on one hand and the dis-interestedness of the Nigerian Government in mining caused a great number of the miners/investors (who were mostly foreigners) to leave

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the country. Thus the money and manpower were no longer available to drive the sector forward.

- The depression experienced by the world economy in the 1970's and a consequent crash in the mineral/metal prices further negatively affected mining as the few miners left in the country no longer had any reason to continue mining.
- Still another factor which seems composite in nature is that the fleeing of the expatriates who had the investment funds and technical no how, led to an almost zero level of exploration activities for solid minerals in the country. This further means that no 'big time' mining work/company is present in Nigeria, therefore the question arises; who would give answers to the questions raised in the Fraser Survey? Coupled with this factor is that most of the big names in mining are either mining diamonds or gold, in which Nigeria is not known to be a major player.

3.3 Nigeria against the Fraser Institute Annual Survey's checklist

The Fraser Survey (12) was designed to capture the opinions of respondents (managers, senior executives, consultants and the likes), and they were asked to score only in jurisdictions with which they were familiar and only on those policy factors with which they were familiar. Unfortunately, since all or most of these respondents are unfamiliar with Nigeria or its mineral policies, based on factors enumerated earlier, Nigeria was understandably unrated.

This section would attempt to evaluate Nigeria (Oyo State) and its mineral policies side-by-side the 17 yardsticks/checklists in the Fraser's Survey questions in the 2011/2012 and 2012/2013 rating.

The response to the checklists would be mainly drawn from the recent activities and reforms by the Nigerian Federal Ministry of Solid Minerals Development, the Nigerian Geological Survey Agency, Oyo State Government and the 2 major instruments in the mineral sector of Nigeria i.e the Nigerian Mining Regulations 2011 and the Nigerian Minerals and Mining Act, 2007, which were produced in order to tackle the concerns of investors and to make Nigeria a mining destination, thus making Nigeria relevant in the global mining business .

The general running and administration of the exploration and mining sector in Nigeria is under the purview of the Federal ministry of Solid Minerals Development with 4 viable sub-departments:

i) The Mining Cadastre Department whose main objectives are: i) Promotion of the private sector investment in solid minerals sector; 2) Improvement o f the investment climate and attraction of foreign investors; and 3) Generation of appropriate revenue for the government. They are the autonomous body with the sole responsibilities to:

- Receive and dispose applications for transfer, renewal, modification, relinquishment of mineral titles or extension of areas
- Maintain a chronological record of all applications for mineral titles
- They also address issues of transparency in the grant/access to titles as well as deals with matters of overlapping titles

ii) The Mines Inspectorate Department: this is the technical department of the Ministry charged with the responsibilities to:

- Supervise all reconnaissance, exploration and mining operations
- Conduct inspections and investigations to enforce all health and safety regulations as approved by law at mine sites

iii) The Mines Environment and Compliance Department: this department is responsible for:

- Reviewing all plans, studies and reports required from holders of mineral titles in respect of their environmental obligations

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- Monitoring and enforcing compliance by holders of mineral titles with all applicable environmental requirements and obligations
- Performing periodic environmental audits to ascertain that all regulations and obligations are being met by mineral title holders

iv) The Artisanal and Small-Scale Mining Department; monitors and oversees small scale mining activities in the country. Though artisanal miners are usually seen in bad light, their overall importance in the development of the solid minerals sector cannot be overlooked. They serve invaluable pathfinders to the occurrence of minerals and can be used effectively to indicate areas of prospectivity. For these reasons and more, this department was created to legalize, aid and control their activities nationwide.

These four departments in the Federal Ministry of Solid Minerals Development work together, to ensure best international practice in the mineral sector. As working tools, 2 instruments were produced to aid in the control and management of the mineral sector. These are the Nigerian Minerals and Mining Act, 2007 and the Nigerian Mining Regulations 2011.

Major highlights of these instruments are:

- To qualify for a title, you don't need to belong to any tribe, race or colour. It is open to all without discrimination.
- The application for title over same mineral site is done on 'first-come, first-serve' basis. So that no unnecessary jostling is done by applicants over a particular site.
- The license granted is expected to run for certain period and the tenure is secured and guaranteed in that same period.
- The regulation also emphasizes the 'use-it or lose-it' principle. Si that people do not acquire licenses and sit on it without development.
- To renew an old license, a minimum work obligation for exploration and mining phases is expected.
- As it relates to Free, Prior, Informed Consent, before licenses are issued, it is expected that a 'consent to mine' letter/form is filled and signed by both the applicant and the concerned host community. This ensures that a community development agreement is amicably reached to avoid oppressive exploitation of the local resources.
- The legislation also informs on the issues of Environmental Impact Assessment, Protection and Rehabilitation Programmes, which the applicants must have before licenses are issued.

Aside from these highlights in the Mining Act and Regulations, there are some other reforms in the solid minerals sector, which further helps to make Nigeria a favorable climate/environment for mining investment. These include:

- ✓ The establishment of a State Mineral Resources and Environmental Management Committee, which is meant to handle all mining matters at the state level, without recourse to the national.
- ✓ The establishment of the Nigerian School of Mines, Jos, to make locally available all the labour/skills required in the mining industry.
- ✓ Creation of the Solid Minerals Wealth Fund to help make available the required financing for local miners.
- ✓ Empowering the Nigerian Geological Survey Agency in their objective of providing quality and reliable geological data/information and making same available to interested investors at the least possible cost.

In the aspect of political stability and corruption, the world knows that Nigeria has had unstable governance in the past. But for the last 14 years (since 1999), it has had a stable democratic rule. And all evidence indicates that it will continue to be so for a very long time to come. This shows that Nigeria is on the right track. There is no denying the fact that corruption has been the bane of Nigeria – from the leaders to the led. Every aspect of the society has been affected by the 'cancerous' stigma. And it is believed that this had hitherto affected the choice of investors in choosing Nigeria as a mining destination. But the good part is that efforts to fight this corruption are yielding some positive results. The 2005 Governance Report by the World Bank shows that

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- There is a massive drop in the percentage of firms that report of bribery (from 98% in 2002 to 60% in 2005);
- The major constraints in doing business in Nigeria used to be corruption, but it has now changed to inadequate infrastructures.

Even though corruption cannot be totally eradicated (because there is no nation on earth free from this vice) it can be reduced to its barest minimum. And if efforts continue in the right directions, corruption would be greatly reduced.

3.4 Recent reforms and geological data acquisition in Nigeria and/or Oyo State

In order to boost investor confidence and give them an initial 'landing-platform' the Nigerian Geological Survey Agency (13), embarked on a nationwide exploration activity. This is to provide quality and reliable geological data to investor. Results of the survey are summarily outlined below:

- ✓ Baseline Geochemical Mapping of the country covering about 90% of Oyo Sate;
- ✓ Airborne Geophysical Survey of Nigeria which covers 100% of Oyo State;
- ✓ Systematic Geological mapping of 1:50,000 Shaki, Igboho, Ikomu, Lechilaku, Oyo, Igangan, Ibadan, Ogbomosho and Igbeti(NW,SW,NE and SE Sheets) all in Oyo State;
- ✓ Gold Exploration in the Schist belt of Nigeria and Oyo State;
- ✓ Dimension stone project in SW Nigeria, including Oyo State;
- ✓ Nomination of structural zones for Gold vein mineralization and per-alkaline intrusive using Aerial Radiometric and Magnetic Data covering Oyo State

The mapping exercises were carried out to provide investors with certain feasibility foundation so that investors will not venture blindly into the solid minerals sector in Nigeria.

3.4.1 Strategies by Oyo State Government

In order to compliment the actions of the Federal Government of Nigeria and put Oyo State in a better position to exploit and benefit from her abundant mineral resources, the Oyo State government has made some unparalleled reforms in the solid minerals sector.

Major highlights of the recent reforms of the Oyo State government include:

- ✖ Development of a new state policy that clearly defines the role of the government as 'administrator/regulator' and the private sector as 'owner/operator' and charts the direction of future activities in the sector;
- ✖ Create conducive environment for investors with incentives and mobilization of work-force to assist investors operation in the state.
- ✖ creation of a Solid Minerals Department, which is under the auspices of the Governor's Office; and appointing a qualified and COMEG certified geologist to head the Department as Special Adviser on Solid Minerals to the Governor;
- ✖ training of all the geoscientists in Oyo State civil service to be abreast with current developments in the solid minerals industry;
- ✖ Registration of a state owned company to carry out a state wide mapping and exploration activity to generate bankable data/feasibility report for investors;
- ✖ Strengthening geological data generation and dissemination capability;
- ✖ Creating a stronger public-private partnership for mutual benefit – profitability to investors and developmental impact to the people of Oyo State;
- ✖ Promotion/marketing of investment opportunities such as represented by this paper.

All these reforms will no doubt ensure that would be investors get security and good returns on their investment in Oyo State.

4.0 CONCLUSION

4.1 Investment Potentials in the Solid Minerals Sector of Oyo State

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Investment opportunities abound in the solid minerals sector of Oyo State, and there is plenty of room for small, medium or large scale entrepreneurs. Areas of investments include the following:

- **Exploration and Mining:** with various minerals in commercial quantity spread across all the local governments in Oyo State, opportunities abound for investors to explore and mine these resources. More so, these resources are presently mined mainly by the locals and artisanal miners in small and crude state so that anybody coming with mechanized mining stand a better chance of benefitting from these resources.
- **Trading and Gemstone marketing:** going by the list of mineral resources in the state (table 1) it would be seen that gemstones in diverse form are abundant in the state. This presents a great opportunity for the trading and marketing of these gemstones. Even a person without finance to buy and trade gemstones can still broker deals and get paid in commission.
- **Dimension stones - cutting and polishing of granites and marbles:** from the geology of Oyo State, Basement Complex rocks covers almost 100% of the total land surface area of Oyo state. With proper investment feasibility studies, an investor could benefit much from this venture as raw materials are in abundance and the market is readily available since most dimension stones used in the country are imported.
- **Lapidary – polishing and faceting of stones:** Oyo State is blessed with abundant gemstones. Unfortunately most of the gemstones are exported to foreign lands in their rough form without any pre-working. So this throws open a wide window of opportunity for investors to establish a lapidary to process the gemstones. This would greatly add value to the gems and create a wide profit margin for the investor.
- **Consultancy:** with the recent influx of investors both foreign and local into the solid minerals sector of Oyo State, the need for expertise in on the increase. Qualified and seasoned geoscientists and mining engineers who are COMEG certified have their hands full as their demand is on the increase.

Even though Nigeria may not be the 'bride' of the mining industry for now, it is hoped that given time and adequate positive support by the global mining community, Nigeria would grow to become a major mining destination of the world. And just by the way, despite the reported insecurity level in Nigeria, the oil companies operating in the country have not left since 1956!.

It is the authors' belief that if the global mining community can shift their searchlight to Nigeria – Oyo state and focus on exploration/mining, they would be adequately rewarded for their investment.

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