



Geology and Mineral Resources of Oyo State, South Western Nigeria

Ayinla Folorunsho Musbau^{1*}

¹Department of Geology, The Polytechnic, Ibadan, Nigeria.

Author's contribution

The sole author designed, analyzed and interpreted and prepared the manuscript.

Article Information

DOI: 10.9734/JSRR/2014/11569

Editor(s):

(1) Diana E. Marco, National University of Cordoba, Argentina And National Research Council (CONICET), Argentina.

Reviewers:

(1) Nevton Kodhelaj, Energy Resources Department, Faculty of Geology and Mining, Polytechnic University of Tirana, Albania.

(2) Anonymous

(3) Anonymous

(4) Nnamdi E. Ekeocha, Department of Geology, University of Port Harcourt, Rivers State, Nigeria.

(5) Anonymous

Peer review History: <http://www.sciencedomain.org/review-history.php?iid=632&id=22&aid=5848>

Review Article

Received 23rd May 2014
Accepted 5th August 2014
Published 22nd August 2014

ABSTRACT

Oyo State lies in the south-western part of Nigeria. Underlain by three lithological units of the crystalline basement complex, comprising: (i) Migmatite-Gneiss Complex (quartzite, gneissic rocks); (ii) Low to medium grade metasediments (Green schists facies, namely quartz schist and mica schist). (iii) The Pan African Granitoids (older granites) which are syn to late tectonic intrusions. With these composite of rocks, Oyo State has various minerals ranging from metallic, non-metallic, to industrial minerals to various grades of gemstones. Prior discoveries make the northern portion of Oyo State to be predominantly underlain by complex pegmatite, which harbour a lot of gemstones ranging from Aquamarine, Tourmaline, Agate and industrial minerals like Tantalite, Marble, Talc and Granites of various forms. Later discoveries point to Ibadan axis where metallic minerals, e.g. gold, and gemstones like Aquamarine, Amethyst, Tourmaline, and industrial minerals

*Corresponding author: E-mail: farqjade@yahoo.com;

like Tantalite and Sillimante, have been discovered in economic form. Geochemical explorations are being carried out as a follow up to the airborne geophysical survey that has been conducted by the Nigerian Geological Survey Agency, to actualize the mineralization of different minerals.

Keywords: Geology; mineral resources; basement complex; geochemical exploration; mapping.

1. INTRODUCTION

Occurrences of mineral resources in any state, region or country are not controlled by political boundaries. The mining/ mineral industry is, in addition, dependent upon favourable economic, legal, political and technological regimes which constitute an enabling environment.

The mineral industry and its associated primary processing industry are integral components of the global economy. The prices of mineral commodities and their profitability depend on the interaction between the demand for mineral products and their supply which in turn depends on global conditions. Therefore there would be no reason to explore for minerals and develop mines if there were no demand for their products. Over the last three decades, there has been transformation in the mining industries worldwide. These changes are targeted at creating wealth in the mineral industry.

The mining investment companies worldwide have many countries from which to select when deciding where to spend their limited investible exploration and development funds. In selecting countries a number of factors are critical in taking these decisions. These factors classed as investment environment issues vary in developed, developing and transitional economies.

In developing economies such as Nigeria issues considered are:

- Access to land
- Over bearing government control
- Foreign participation viewed as exploiting national heritage or patrimony
- Nationalization of foreign investments to state or national investors.

In an effort to encourage increased levels of foreign participation in exploration and mining to attract foreign investment and make Nigeria the destination of mining investment, Nigeria commenced reforms to make the mining industry attractive to both local and foreign investors.

All these are meant to stimulate economic growth, employment generation, and wealth creation with the overall objective of diversifying the economic base of Nigeria.

Highlights of these reforms include:

- Increased funding and modernization of the Nigerian Geological Survey
- Increased security of Tenure
- Modern mining cadastre
- New mining law and regulation.

Nigeria is blessed with over 37 mineral commodities found in over five hundred (500) locations across the country. Seven of these have been identified as strategic mineral which the Federal Ministry of Mines and Steel Development would want to develop and promote to encourage investment. These include Iron ore, Coal, Bitumen, Gold, lead/zinc, limestone and Barytes [1].

2. HISTORICAL BACKGROUND

Mineral exploration and the mining industry in Nigeria are linked to the inauguration of Mineral Surveys of the Southern and Northern Nigeria in 1903 and 1904 respectively by the colonial government. By the 1940s, Nigeria was 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. The Nigerian Civil War in the late 1960s also contributed to eclipse of the erstwhile thriving mining industry as many expatriate mining experts left the country. With this background the solid mineral industry has been underdeveloped and its contribution to the GDP is less than 1% due to the vast oil resources discovered in the country.

The current national drive towards breaking the much dependence on oil as the only foreign exchange earner necessitates that steps be taken to develop the natural resources in all the states in the country. Oyo state, in view of its geographical location and geology, is endowed with abundance of both metallic and non-metallic minerals which when properly harnessed would transform the economic base of the State [2].

In this paper, I shall concentrate on solid mineral resources of the state within the context of national and global development. We shall look at the minerals available, the exploration, exploitation and developmental status. We shall consider the activities of the government to resuscitate the sector and restore it to its pride of place and particularly the role of the sector in the realization of the Transformation Agenda and Vision 20-2020 initiatives of the present administration.

3. OVERVIEW OF SOLID MINERALS IN OYO STATE AND NATIONAL DEVELOPMENT

The Geology of Nigeria is composed of 4 main groups:

- i. Basement Complex
- ii. Younger Granites
- iii. Sedimentary series and
- iv. The Tertiary-Recent Volcanic rocks

The Basement Complex comprises the Migmatite-Gneiss complex, the schist belts are composed of metasedimentary and metavolcanic rocks and the pan-African Granitoids comprising the Older Granites and associated Charnockitic rocks (Fig. 1).

The Younger Granites are found within the basement complex. They were emplaced in the middle or surface Ring complexes of Triassic – Cretaceous (mostly Jurassic) Age.

The Sedimentary rocks are found in seven basins located in the northeast, (Chad basin), northwest (Sokoto basin), Benue Trough, Niger, Anambra, southwest (Dahomey basin) and the Niger Delta [3,4,5].

Minerals can be classified into metallic, non-metallic or industrial, mineral fuels and gemstones. The metallic minerals can be further classified as precious, ferrous and non-ferrous (Fig. 1).



Fig. 1. Geology and mineral resources in Oyo State

4. GEOLOGY

Oyo state is located in the southwestern part of Nigeria and is underlain by three lithological units of the crystalline basement complex which wholly belong to the PreCambrian-Cambrian Basement Complex (Fig. 2 and Table 1).

Table 1. General geology of Oyo State

Rock types	Rock category	Era
Syenite/Biotite granite/Hornblende granite/Porphyrific biotite granite Pryrozone Diorite	Older Granites	Pan African Pre- Cambrian to Cambrian Basement Complex Rocks
Amphibolites/schist/Mica schists/undifferentiated schists Amphibole schist/Marble	Older Meta sediments	
Granite-gneiss/Migmatitic Granite-gneiss, Banded Gneiss	Geniss-Migmatite Complex	
Adapted from NGSA Geological Map of Oyo State		

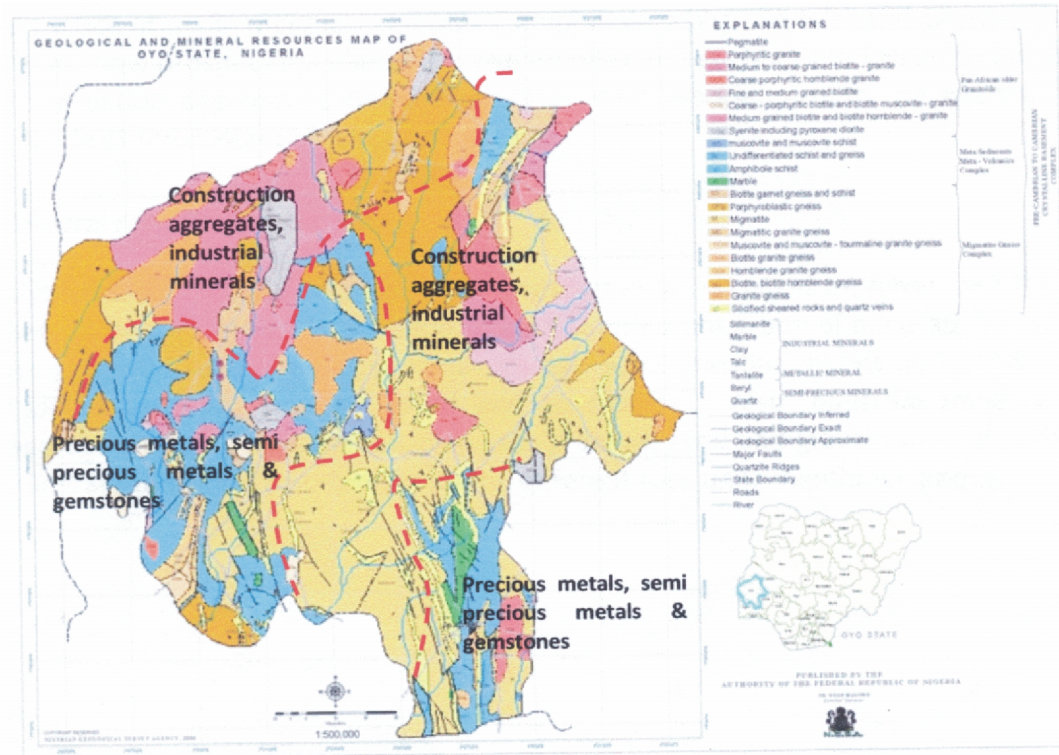


Fig. 2. Geology of Oyo State. After Nigerian Geological Survey Agency (NGSA), 1982

The crystalline Basement Complex rocks are subdivided into four units namely:

- i. Migmatite -Gneiss complex (Granite gneiss, biotite gneiss)
- ii. low to medium grade metasediments of green schist facies (quartz schists, mica schists).
- iii. The Pan African granitoids (Older granites) which are syn to late tectonic intrusions occurring as stocks or large batholithic bodies intruding into the basement gneisses and the supra crustal rocks. They are generally composed of granites, biotite hornblende granites, syenites, pyroxene diorites and the late Pan African intrusive pegmatites [6].

The Basement Complex rocks cover almost 100% of the total land surface area of Oyo State; this has its implication.

The schist belt which is known for its complex geology and mineral resources endowment hosts the semi precious metals, precious metals, base metals and gemstones. These mineralizations are mostly intrusions of ore bearing veins of gold, and pegmatite veins which are also host to gemstones such as (beryl, garnets and tourmaline), tin, tantalite and columbite. Also the presence of mafic rocks (amphibolites, amphibole schist and talc) and gneisses associated with them show prospect for sillimanite. The granites and gneisses are known to be good sources of construction aggregates, ceramic feldspars. Also associated with the gneisses are lenses of marble at the contact of schist and gneisses.

5. MINERAL RESOURCES POTENTIAL

Oyo state is endowed in solid mineral resources which could be developed for the economic benefit of the state and the nation. The most important group of minerals Oyo state is noted to be endowed with are the, precious metals, semi-precious metals and gemstones which are typified by gold, tantalite, beryl and tourmaline. Also industrial minerals and building aggregates such as sillimanite, clay, talc, granites, sand and gravels abound in the state (Table 2). These mineralizations are associated with the different rock units mentioned above.

5.1 Recent Developments

The commencement of Regional Baseline Geochemical Mapping of the country constitutes a landmark achievement of the Agency. The fact that most outcropping or near-surface mineral deposits have been discovered and mined in most parts of the world, necessitates that exploration technologies suited to deeper targets must be developed. In the light of this, Association of European Geological Surveys developed a new concept which has the capacity to change mineral exploration strategy and methodology and resultantly provide a powerful tool for global mineral potential assessment. This new concept is referred to as 'Baseline Geochemical Mapping of the environment', [1].

The international Union of Geological Sciences (IUGS), in its International Geological Correlation Program (IGCP) directed that each country should produce geochemical atlas of its land surface that would serve as reference materials for investors and researchers. The global reference network is made up of 5000 cells out of which *44 are contained wholly or partly in Nigeria*. The Federal Government of Nigeria in fulfillment of its commitment to the development of the solid mineral sub-sector of the country's economy and other sectors obtained a grant from the International Development Association and World Bank. Part of the grant was devoted to the Sustainable Management of Mineral Resources Programme (SMMRP) from which the geochemical mapping of Nigeria is being financed. Incidentally sheets covering wholly or part of Oyo state were mapped in the course of this exercise. These sheets are namely Igangan, komu and Ibadan (Tables 3 and 4).

The purpose of the Baseline Geochemical survey is to provide baseline geoscientific information for mineral exploration and environmental management through a study of the spatial distribution and concentration of important metallic elements on the Nigerian near surface environment. The Geochemical dataset when produced would underpin crucial economic, social and environmental decision making, such as searching for energy mineral resources, allocating land use to particular applications, assessing crop productivity and health impact of soil composition and producing rehabilitation guidelines (Table 3).

The application of geochemical mapping technique in mineral exploration has been elucidated in People Republic China. In the course of its Regional Geochemical National Reconnaissance (RGNR) mapping project, China discovered 817 new mineral deposits. 71% of these were discovered by Prior to the World Bank/SMMRP intervention programme in 2007 Nigerian Geological Survey Agency commenced a pilot baseline geochemical mapping of some parts of the country and a portion of Oyo State covering wholly or parts of Oyo, Iwo, Lechilaku, Ogbomoso and Apomu. Striking anomalies of some metallic minerals like silver were made in Oyo sheet. An aggressive follow-up of these anomalies which could result in the discovery of more mineral deposits will soon be commenced by the Agency (Table 4) [1].

Table 2. Mineral occurrences in Oyo State (Curled from department of solid minerals, Oyo state)

Commodity	Class	Location	LGA	Geology	Status	Types
Amethyst	Semi Precious Stone	Baba-Ode	Atisbo	The mineral occur in the pegmatite bodies of the Basement Complex.	Prospect	Vein type
Aquamarine	Gemstone	Ibudo-Are	Saki West	The mineral occur in the pegmatite bodies of the Basement Complex.	Prospect	Vein type
Aquamarine	Gemstone	Falansa	Oluyole	The mineral occurs in the pegmatite bodies of the Basement Complex.	Prospect	Vein type
Aquamarine	Gemstone	Falansa	Oluyole	The mineral occurs in the pegmatite bodies of the Basement Complex.	Prospect	Vein type
Aquamarine	Gemstone	Saki	Saki East	The mineral occurs in the pegmatite bodies of the Basement Complex.	Prospect	Vein type
Aquamarine	Gemstone	Akoya	Ibarapa	The mineral occurs in the pegmatite bodies of the Basement Complex.	Prospect	Vein type
Dimension stone	Industrial	Bare	Oluyole	Basement Complex	Occurrence	Intrusive
Dimension stone	Industrial	Ikija	Oluyole	Basement Complex	Occurrence	Massive
Aquamarine	Gemstone	Olode	Ona Ara	The mineral occurs in the pegmatite bodies of the Basement Complex.	Prospect	Vein type
Topaz	Semi Precious Stone	Baba-Ode	Not available	The mineral occurs in the pegmatite bodies of the Basement Complex.	Active	Disseminated
Marble	Industrial	Igbeti	Olorunsogo	Quartzite-mica-schist and marble within migmatitic gneisses suites and intruded by granitoids.	Mine	Dolomitic
Marble	Industrial	Igbeti	Irepo	Gneiss-migmatite-schist truncated by granitoids.	Deposit	Dolomitic
Tantalite	Metallic	Baba Ode	Atisbo	The mineral occurs in the pegmatite bodies of the Basement Complex.	Prospect	Vein type
Garnet	Gemstone	Komu	Saki West	The mineral occurs in the pegmatite bodies of the Basement Complex.	Occurrence	Disseminated
Garnet	Gemstone	Olode	Ona Ara	The mineral occurs in the pegmatite bodies of the Basement Complex.	Occurrence	Disseminated
Garnet	Gemstone	Olorunsegun	Oluyole	The mineral occurs in the pegmatite bodies of the Basement Complex.	Occurrence	Disseminated
Talc	Industrial	Baba-Ode	Atisbo	Weathered schist of the Basement Complex.	Occurrence	Lensoidal
Talc	Industrial	Saki	Saki West	Weathered schist of the Basement Complex.	Occurrence	Lensoidal
Talc	Industrial	Saki	Saki West	Weathered schist of the Basement Complex.	Occurrence	Lensoidal
Kaolin	Industrial	Iregun	Ona Ara	Migmatitic gneisses intruded by pegmatite.	Occurrence	Residual
Tantalite	Metallic	Arigidana	Kajola	The mineral occurs in the pegmatite bodies of the Basement Complex.	Active	Vein type
Tantalite	Metallic	Irawo Owode	Saki West	The mineral occurs in the pegmatite bodies of the Basement Complex.	Active	Vein type
Tantalite	Metallic	Komu	Itesiwaju	The mineral occurs in the pegmatite bodies of the Basement Complex.	Active	Vein type
Tantalite	Metallic	Akoya	Ibarapa North	The mineral occurs in the pegmatite bodies of the Basement Complex.	Active	Vein type
Tourmaline	Gemstone	Ofiki (Ibu-Are)	Saki East	The mineral occurs in the pegmatite bodies of the Basement Complex.	Active	Disseminated
Tourmaline	Gemstone	Ofiki (Ibu-Are)	Saki West	The mineral occurs in the pegmatite bodies of the Basement Complex.	Active	Disseminated
Sapphire	Precious Stone	Baba-Ode	Atisbo	The mineral occurs in the pegmatite bodies of the Basement Complex.	Active	Disseminated
Marble	Industrial	Alagutan	Olorunsogo	Quartzite-mica-schist and marble witin migmatitic gneisses suites and intruded by granitoids.	Mine	Dolomitic

Table 2 continued.....

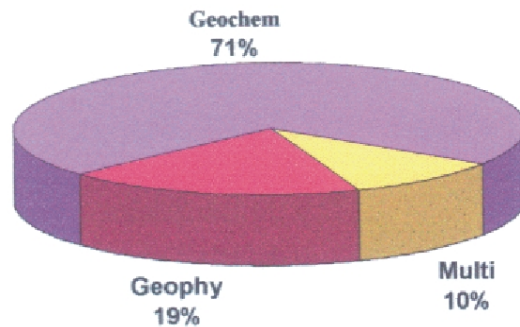
Marble	Industrial	Alagutan	Olorunsogo	Quartzite-mica-schist and marble within migmatitic gneisses suites and intruded by granitoids.	Active	Dolomitic
Marble	Industrial	Igbeti	Irepo	Quartzite-mica-schist and marble within migmatitic gneisses suites and intruded by granitoids.	Active	Dolomitic
Tourmaline	Gemstone	Baba-Ode	Atisbo	The mineral occurs in the pegmatite bodies of the Basement Complex.	Active	Disseminated
Tourmaline	Gemstone	Falansa	Oluyole	The mineral occurs in the pegmatite bodies of the Basement Complex.	Active	Disseminated
Tourmaline	Gemstone	Saki	Saki West	The mineral occurs in the pegmatite bodies of the Basement Complex.	Active	Disseminated
Sapphire	Precious Stone	Ikomu	Itesiwaju	The mineral occurs in the pegmatite bodies of the Basement Complex.	Active	Disseminated
Sapphire	Precious Stone	Ikomu	Itesiwaju	The mineral occurs in the pegmatite bodies of the Basement Complex.	Active	Disseminated
Tourmaline	Gemstone	Akoya	Ibarapa	The mineral occurs in the pegmatite bodies of the Basement Complex.	Active	Disseminated
Sapphire	Precious Stone	Alata-Idiyan	Ibarapa	The mineral occurs in the pegmatite bodies of the Basement Complex.	Active	Disseminated
Sillimanite	Industrial	Olode	Ibadan Egbeda	Sillimanite occur with the quartzite rock	Occurrence	Massive
Clay	Ceramic	Omi Adio	Ido	Weathered schists and gneisse	Occurrence	Residual
Dimension stone	Industrial	Ijaiye	Akinyele	Older granite	Occurrence	Intrusive
Dimension stone	Industrial	Sokuro	Oluyole	Older granite	Occurrence	Intrusive
Tourmaline	Gemstone	Olode	Egbeda	The mineral occurs in the pegmatite bodies of the Basement Complex.	Active	Disseminated
Sillimanite	Metallurgical	Olodo	Olodo	Sillimanite bearing quartzites associated with schists and gneisses, transversed by pegmatitic veins.	Prospect	Massive
Talc	Industrial	Fadan Kaye	Fadan Kaje	Weathered schists of the Basement complex.	Mine (operational)	Lensoidal
Talc	Industrial	Iregun	Iregun	Weathered schists of the Basement complex.	Mine (operational)	Lensoidal
Dimension stone	Industrial	Saki	Saki East	Basement complex	Occurrence	Intrusive
Dimension stone	Industrial	Saki	Saki East	Basement complex	Occurrence	Intrusive
Dimension stone	Industrial	Saki	Saki East	Basement complex	Occurrence	Intrusive

Table 3. Application of geochemical data (After NGSA, 1982)

Areas of application	Applications	Relevance to the 7-point agenda of the fed. Govt.
Mineral exploration	Recognition of new mineral potentials	☐ Wealth creation
Health and environmental issues	Establishing baselines against which future changes can be quantified Identification of potentially geohealth risks zones Identification of environment of metal contamination	☐ Health
Agriculture	Assessing comparative suitability of particular land uses	☐ Food

Table 4. Percentage of 917 new ore deposits discovered in China

Statistics Year 1981-1995	
Geochemical Anomalies Delineated 42880	Follow-up 12089
Drilling 2314	Mineral discoveries 1662



6. GOVERNMENT REFORMS

Some key reforms were carried out to build both institutional and infrastructural capacity within government agencies to provide the necessary geo-scientific support required to provide fiscal and legal/regulatory frameworks that are both equitable and manageable in order to attract new private sector investment into the sector.

The World Bank/SMMRP approval and funding to implement Sustainable Management of Mineral Resources Project was to among other things carry out:

6.1 Legal Reform

The mining code was revised to bring it in line with global best practice.

6.2 Characterisation Studies

Studies with a view to understanding both the informal and organised mining activities in the country.

6.3 New Institutional Capacity Building

Formalizing artisanal and small-scale miners into mining cooperatives/quarry associations

6.4 Registration

Mineral Buying Centres.

- About 1,000 applications have been received, 300 mining cooperatives and quarry associations registered.

6.5 Airborne Geophysical Survey

Airborne survey of the entire country comprising three components: radiometric, gravity and magnetic which are useful for the following:

- Mineral and hydrocarbon exploration
- Groundwater exploration.
- Engineering and land use planning
- Pollution monitoring
- Mapping and monitoring of potential hazards

7. FUTURE OF NIGERIA'S SOLID MINERAL RESOURCES

The future is very bright for the Solid Minerals sector. Though there are key issues affecting the sector globally like skills shortage, finance, global economic downturn, alternative technology, compliance with Regulations and legislations, there are other local issues like, lack of a Mining Cadastre for administration of Mineral titles, Artisanal Mining, Environmental issues and Credible Geological Data and information affecting the sector.

A new Minerals and Mining Act was passed and assented to by the President in 2007. The key elements of the new Act are:

- i. Access to mineral title open to all big and small, foreign and local on a level and equitable playing field; and on first come, first served basis.
- ii. Guaranteed security of tenure and transferrability of mineral rights.
- iii. The application of 'Use it or lose it' principle in Mineral title administration.
- iv. Provision for sound environmental control and Community Development agreements.
- v. Involvement of other stakeholders through the creation of States Mineral resources and Environmental management committees to facilitate access to land.

In line with international best practice, an independent institution, the Mining Cadastre Office was established to grant and administer mineral titles in an efficient, objective and transparent manner.

Geological Surveys worldwide are responsible for the collection, documentation and dissemination of geoscience data to investors and other stakeholders. The continuous investment by Government in geoscience data generation would largely determine the attraction of Direct Foreign Investment in the sector. The Nigerian Geological Survey Agency has produced geological, geophysical and mineral maps for the country using cutting edge technology and highly skilled professionals. The works of the Agency are disseminated through the publishing of Maps, Records, Reports, Bulletins and Occasional papers. Airborne Geophysical Survey of the country covering 100% of the country has been completed. Ground follow-ups are being carried out to complement the airborne survey. Specific minerals like Gold, Manganese, Barytes and Bentonite are being targeted and evaluated based on global and local demands (Table 3), [1].

Devastation of the environment are fallouts of the informal mining activities as seen in areas like Jos plateau and the incident of Lead poisoning witnessed in some parts of Zamfara state and other mining areas. To achieve sustainable development, a Mines Environmental Compliance department has been put in place with a mandate of:

- i. Monitoring and enforcing compliance by holders of mineral titles;
- ii. Monitoring compliance to community social and economic benefits.

An Artisanal and Small-scale Mining Department has also been put in place. The department is responsible for organising, supporting and regulating artisanal and small-scale miners to generate wealth in an efficient and environmentally-friendly manner. The department assists these group of operators to

- i. Improve skill and efficiency of mining and processing techniques
- ii. Increase level of production and income
- iii. Provide extension services to finance and product markets
- iv. Facilitate healthy relationship with community and stakeholders.

To address the problem of skills shortage in the sector, the Nigerian Institute of Mining and Geosciences, Jos has been established. It had commenced academic activities since October, 2007.

The Sustainable Management of Mineral Resources Project (SMMRP) is a unit in the Ministry set up to manage the \$120 million IDA facility from the World Bank. The SMMRP has funded the activities of the Ministry that are related directly to attracting investment in the solid minerals sector. These include: The Mining and Minerals Act, 2007, Mining Regulations, sponsoring of mineral promotions, acquisition of field vehicles, Airborne Geophysical surveys, geochemical mapping, setting up of the Mining Cadastre office to mention a few.

As a result of the discussions held with some financial institutions' representatives notably First Bank of Nigeria Plc, at the one-stop-shop, work is at an advanced stage towards the creation of a financial window for investors in the solid minerals sector.

The Ministry is now properly aligned with the Transformation Agenda of the present administration and the Vision 20-2020. The solid minerals sector has solutions to some of the key points of the Transformation agenda of the present administration. On power and energy, the exploration of raw materials like Uranium for nuclear energy and the development of our coal resources. On food security, exploration and development of agro minerals like limestone, phosphate. Job creation can be solved through the attraction of foreign capital and the participation of the citizens in artisanal mining. On transportation, the sector is able to provide aggregates and stones for road construction. On land reforms, the sector is poised to provide credible geological data and information. The strategy for achieving the vision for the minerals and metals sector in 2020 would be anchored on five (5) pillars of growth, and two key enablers. The pillars are Quality Geoscience Data, sustained mineral exploration, ease of access to minerals and capital, functional cross-sectional linkages and sustainability. The enablers are Institutional and human capacity and legal regulatory framework. The following strategic objectives are being put in place to achieve the first pillar by developing an effective mechanism for the consistent and systematic generation of quality and reliable geoscience data to support exploration of mineral resources. The goal of this strategy is to achieve 50% coverage of regional mapping on the scale of 1:100,000 by 2015 and 100% by 2020, [1].

The strategic objective for the second pillar is to put in place effective mechanisms and structures to support sustained mineral exploration to achieve resource valuation on 50% of all prospective mineral deposits in Nigeria by 2015 and 100% by 2020.

8. CONCLUSION

From the foregoing Oyo state has a rich endowment of solid mineral resources and potentials for more discoveries to be made. If these resources are optimally developed, they will contribute immensely to the development of the state and the Nigerian nation in general.

The strategic objective for the third pillar is to become an internationally competitive and attractive destination for capital (local and foreign) for the profitable exploitation of the nation's mineral resources. This is aimed at developing or attracting at least 200 reputable junior mining companies by 2015 and 500 by 2020.

The strategic objective for the fifth pillar is to entrench sustainability as a fundamental principle in the exploitation of mineral resources and in developing the metals sector with a view to achieving 50% compliance to global environmental best practices by 2015 and 85% by 2020

COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCES

1. Nigerian Geological Survey Agency (NGSA) Report. Mineral inventory of Oyo State. GGS Publication; 1982.
2. Solid Mineral Resources Department. Publication on Mineral Resources of Oyo State. 2013;13-14.

3. McCurry P. The geology of the precambrian to lower paleozoic rocks of Northern Nigeria: A Review. In Kogbe CA, (ed.), geology of Nigeria. Lagos: Elizabethan Pub. Co. 1976;18-40.
4. Peters SW. Precambrian geology of Africa. Lecture Notes on Fourth Sciences, Springer Berlin, Heidelberg. 1991;40. DOI 10, 10071BFb0020577.
5. Rahman MA. Review of the basement geology of Southern Nigeria. In Kogbe CA, (ed.), geology of Nigeria. Lagos: Elizabethan Pub. Co. 1976;45-58.
6. Oyawoye MO. Occurrence of Fayalite Qtz Munzonite in the basement complex around Bauchi. Northern Nigeria Geol Mag; 1965.

© 2014 Musbau; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/3.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:

The peer review history for this paper can be accessed here:
<http://www.sciencedomain.org/review-history.php?iid=632&id=22&aid=5848>