

Minerals And Mining Policies In Nigeria: Implications On Sustainable Growth And National Development

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ABSTRACT

The concern for the development of the solid minerals subsector has been expressed by government in her desire to diversify and transform the economy for the better even as the full potential contribution of minerals to national economic development is far from being realized. An embattled economy arising from the plunge in international oil prices and resulting in insufficient revenue to pursue socioeconomic and infrastructural development in the nation, the fluctuations in income generated as a result of the restiveness in the oil producing region of the nation and the committed search for biofuels and other renewable sources by erstwhile major oil consuming nations as possible alternative to petroleum. These inspired domestic pressures on policy makers to devise new strategies to offset the distortion brought about by a mono-product economy, the response has been the inevitable drive to develop the non-oil sector, exemplified by the policy to harness and develop the solid mineral sector of the Nigerian economy. This culminated in the Minerals and Mining Act of 2007 operationalized by the national Policy on Minerals and Metals approved in 2009 aimed at addressing the neglects of the past, respond to the new and global development in the sector and consider possible areas of future action. In order to address these challenges, the present Government had demonstrated determination to stimulate growth in the sector by providing the enabling environment and carrying far reaching reforms that has lured foreign investors and is also encouraging small and medium scale enterprises (SMEs) to actually act as major catalyst to the over-all economic growth of the nation. There should be a robust advocacy and awareness campaigns on the vast potentials of Nigeria's minerals and on the new policies to be carried out by all the three tiers of government and other relevant stakeholders in order to meeting its aspiration of attaining a prosperous and sustained national economic growth and development.

KEYWORDS: *Mining Policies, Sustainable Growth, National Development.*

Date of Submission: 04-09-2020

Date of acceptance: 19-09-2020

I. INTRODUCTION

Nigeria is blessed with several natural and mineral resources that are widely distributed across the length and breadth of our land. However the dominance of oil as a major foreign exchange earner has completely eclipsed the over 34 other different minerals in 500 known mineral deposit sites across the 36 states and federal capital. The result has been a vulnerable economy and an underdeveloped non-oil sector, specifically the solid mineral sector. The minerals in the Nigerian landscape are distributed in all the geopolitical zones of the country and are found to be associated with the major rock types that together constitute the geology of the country. These rock types include the migmatite and gneisses, the older granites, the younger granites, the older sedimentary rocks and the volcanics.

All the 36 states of the federation and the federal capital territory have more than one mineral type with the primary minerals including gold, tar-sand (bitumen), coal, iron ore, columbite-tantalite, tin ore, wolframite, lead-zinc, sulphides, industrial minerals, precious stones, etc. (the various mineral resources in Nigeria are available on the websites of Raw Materials Research and Development Council (RMRDC), www.rmrdc.gov.ng and the Nigeria Geological Survey Agency, NGSA), www.ngsa.gov.ng.

The rationale for sound solid mineral development policies had been hinged on rise in global demand for mineral commodities. This is partly attributable to the emerging economies of Asia and Latin America as well as the burgeoning global population. Also, in the intervening time, Nigeria's mineral potential is not fully exploited owing to over reliance on oil proceeds which is vulnerable to external shocks in the global oil price. Thus, the primary objective of the current government policy on solid mineral development is to take maximum advantage of the increase international commodity prices and the global resurgence of exploration activities, coupled with the potential benefits to the Nigerian economy as a whole, that has for too long depended mostly

on oil revenues. Hence the need for diversifying the economy from over reliance on oil is intended to achieve the following objectives;

- i. Achieve sustainable increase in GDP contribution by the minerals sector
- ii. Generate quality Geoscience data
- iii. Establish transparent licensing regime
- iv. Formalize artisanal and small scale mining operators
- v. Poverty eradication through ASM operations
- vi. Employment generations
- vii. Wealth creation through value addition
- viii. Increase capacity of mineral based industries.

Nigeria's economic growth primarily comes from the country's oil sector. Although it is true that oil and gas provides more than 40% of our GDP and 85% of our foreign exchange generated revenue, the country possesses a range of solid minerals that are of value, some of them have the potential to be considered world class. According to government, the subsector is a vital part of the national economy with the potential of raising, at its full realization as much resources for the public sector and in contributing to the gross domestic product (GDP) to about as much as is currently being contributed by the petroleum subsector. The concerns have been mainly due to poor policy implementation, low private sector participation and the declining role of the subsector which despite its huge and perceived potentials for development, has failed to enormously contribute to the economy.

The full potential contribution of minerals to national economic development is far from being realized. The inability of the mineral rich countries to add value to their wealth by way of beneficiation and processing is often denied by lack of capacity, tariff and other trade barriers. In some cases, subsidies make the positions worse. Mismanagement of mineral wealth through inefficiency and corrupt practices has further aggravated the situation.

The Federal ministry of Mines and Steel Development in its 2009 annual report indicates that the government strategy is to concentrate on the development of a strategic core of seven minerals including coal, gold, bitumen, limestone, barite, iron ore and tantalite. As far as solid mineral deposits are concerned, Kogi State and Nasarawa State are the most endowed across the entire country. Kogi state alone has deposits of a total of 29 mineral resources available in commercial quantities. These include coal, dolomite, feldspar, bauxite, iron ore, tar, limestone, gold etc. Each of the 21 LGAs in the state has deposits of at least 2 minerals. One of the coal-rich areas is the Okaba District of Ankpa LGA which alone holds reserves of 99 million tonnes of coal. Kogi state alone has enough deposits of coal to supply all of Nigeria with electricity for 400 years. Kogi state alone holds enough limestone to keep 3 giant-sized cement factories (with over 15m tons annual capacity) operational for an unbroken stretch of 99 years. In the neighbouring state of Nasarawa, it has been estimated that there are commercial deposits of 25 mineral resources including tantalite, barite, copper, iron ore, tin ore, coal, columbite, aquamarine, etc.

The prospects in this sector can be described as enormous looking at aspects like mineral royalty, wealth and job creation as well as industrialization and the overall growth and development of the economy. The following scenarios can easily be considered as making the solid mineral sector in Nigeria very vibrant, thus:

- An enormous Mineral Potentials for Metallic and Non-Metallic Minerals.
- Enormous Human Capital Base.
- An Emerging Political will by Government to develop the Mineral Sector & Adhere to Best International Practices
- An Emerging Confidence Building Scenario that attracts/and or Enlists International Appeal.
- Constitution of Board of Solid Mineral Development Fund, 2017
- World Bank offer of \$150 Million Credit for Mining Sector, 2017

By assessing the sector from minimum capacity of possible SMEs, estimated national demands and number of industries and manpower requirement based on RMRDC survey 2009, great potentials in the production and development of the solid minerals sector is overwhelming.

II. MINERAL DEPOSITS IN NIGERIA

Nigeria as a nation is blessed with abundant solid mineral resources distributed fairly in all the states of the federation (Table 1). According to reports by the Geological Survey of Nigeria Agency, Nigeria has some 44 known major mineral deposits distributed in locations across the country and offers considerable attraction for investors.

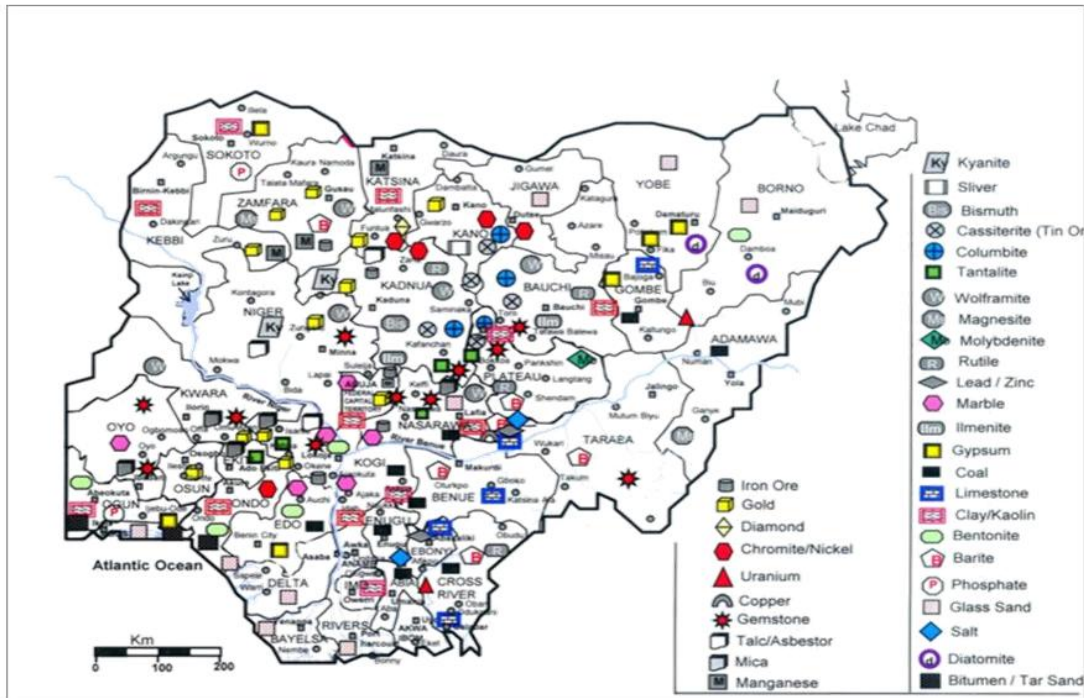


Fig. 1: An overview of the solid mineral resources distribution map of Nigeria (NGSA, Abuja)

Sn.	Mineral	Occurrences	Sn	Mineral	Occurrences	Sn	Mineral	Occurrences
1	Tantalite	Cross River, Ekiti, Kogi, Kwara, Nasarawa	12	Feldspar	Bauchi, Borno, FCT, Kaduna, Kogi	23	Silica Sand	Delta, Jigawa, Kano, Lagos, Ondo, Rivers
2	Kaolin	Akwa Ibom, Anambra, Bauchi, Bayelsa, Ekiti, Imo, Katsina, Kebbi, Kogi, Ogun, Ondo, Plateau, Rivers	13	Gold	FCT, Kaduna, Kano, Katsina, Kebbi, Kogi, Kwara, Niger, Osun, Zamfara	24	Flourite	Bauchi, Ebonyi, Plateau, Taraba
3	Mica	Ekiti, Kogi, Kwara, Nasarawa, Oyo	14	Clay	In all the States of the Federation	25	Bitumen	Edo, Lagos, Ondo, Ogun
4	Baryte	Benue, Cross River, Nasarawa, Plateau, Taraba, Zamfara	15	Silver	Ebonyi, Kano	26	Lead	Cross-River, Ebonyi, FCT, Plateau, Zamfara
5	Coal & Lignite	Abia, Adamawa, Anambra, Bauchi, Benue, Cross-River, Delta, Ebonyi, Edo, Gombe, Imo, Kogi, Nasarawa, Plateau	16	Ilmenite	Benue, Cross River, Kaduna, Plateau	27	Zinc	Cross River, Ebonyi, FCT, Plateau, Zamfara
6	Rutile	Bauchi, Cross-River, Kaduna, Plateau	17	Limestone	Benue, Cross River, Ebonyi, Edo, Gombe, Kogi, Ogun, Sokoto	28	Bentonite	Borno, Edo, Kogi, Ogun, Ondo
7	Talc	Ekiti, Kaduna, Kogi, Niger	18	Columbite	Bauchi, Cross River, Kaduna, Kano, Kwara, Nasarawa, Plateau	29	Kyanite	Kaduna, Niger
8	Bismuth	Kaduna	19	Cassiterite	Bauchi, Cross-River, Kaduna, Kano, Kwara, Nasarawa, Plateau	30	Iron-Ore	Enugu, FCT, Kaduna, Kogi, Nasarawa, Zamfara
9	Gypsum	Adamawa, Edo, Gombe, Ogun, Sokoto, Yobe	20	Diatomite	Borno, Yobe	31	Lithium	Kaduna, Nasarawa, Niger, Zamfara
10	Marble	Edo, FCT, Kogi, Kwara, Nasarawa, Oyo	21	Phosphate	Ogun, Sokoto	32	Wolframite	Bauchi, Kaduna, Kano, Kwara, Nasarawa, Niger, Zamfara
11	Gemstones	Bauchi, Kaduna, Kogi, Kwara, Nasarawa, Niger, Ogun, Oyo, Plateau, Taraba	22	Manganese	Katsina, Kebbi, Zamfara	33	Molybdenite	Plateau
						34	Dolomite	Kogi, Oyo, Edo, Kwara and the Federal Capital Territory, Abuja

Table 1: Solid mineral occurrences in the federating States of Nigeria (NGSA, Abuja).

III. EVOLUTION OF MINERALS AND MINING POLICIES IN NIGERIA

The performance of Nigeria's minerals and metals sector has largely depended on the evolution of government policies over the years. Organised mining activities began in Nigeria between 1902 and 1923 following the commissioning in 1903 and 1904 of mineral surveys of the Southern and Northern Protectorates respectively, by the then British Secretary of State for the colonies. Col. H. W. Laws, a mining engineer with the Royal Niger Company of England started the exploration of Tin on the Jos Plateau with the commencement of modern mining in 1905. The mining of gold began in 1914 in areas located within present day Niger and Kogi

States. Coal at Enugu in 1916. By 1919, the Geological Survey of Nigeria was established as a department of government to take over and continue mineral surveys of the country.

The Minerals Ordinance of 1946 and the Coal Ordinance No. 29 of 1950 provided the legal basis for the development of minerals and metals in Nigeria. The former vested ownership of all minerals in the British Crown. It provides that “the entire property in land and control of minerals and mineral oils, in or under or upon any lands in Nigeria, and of rivers, streams and water courses throughout Nigeria, is and shall be vested in the state”. The Minister of Mines and Power was empowered to grant prospecting and mining rights and leases to individuals and/or corporate organizations on application and payment of appropriate fees.

Prior to 1971, British mining companies dominated the scene with up to 120 companies at the peak of tin mining. These companies were well equipped. They employed qualified staff and paid detailed attention to efficiency considerations. This led to high levels of output and significant contribution to employment. The Minerals Ordinance of 1946 and Allied Regulations which were re-enacted as the Minerals Act of 1959 applied globally to the exploration and exploitation of minerals without any particular distinction to special sets of minerals singly or in groups. However, as years passed, the development of mining particular minerals necessitated special regulations and led to the enactment of special Acts to govern the exploitation of special minerals. Such Acts included the Nigerian Coal Mining Act of 1950, the Gold and Diamond Trading Act, the Explosives Act of 1964, the Tin Act No. 25 of 1967, and the Quarries Act and Allied Regulations of 1969.

Much of the mineral potentials of Nigeria like most of West Africa have not been defined by exploration nor has it been fully developed, largely due to lack of investment in the past. After independence in 1960, the Nigerian government neglected the mining industry in favour of the more lucrative oil sector, which left the solid minerals sector underdeveloped. A variety of economic, political and other global realities had necessitated the need for diversification of the economy which had reawakened the nation to the importance of developing her solid minerals.

Nigeria’s government, even before independence, being conscious of the enormous importance of abundant minerals to its economy, set up several bodies to exploit these abundant minerals. These are, among others:

- (i) Nigeria Steel Development Authority (NSDA) was established under decree no. 19 of 1971 to hasten up the provision and opening up of mines for iron ore, to procure raw materials for the iron and steel industry just to set up the steel plants, and market the steel products.
- (ii) Nigerian Mining Corporation (NMC) set up in 1972 to engage in commercial prospecting, mining, refining and marketing of all solid minerals except coal and iron ore.
- (iii) Nigerian Coal Corporation (NCC) set up earlier before NMC to explore mine and market coal.
- (iv) NSDA was replaced by six companies through decree no. 60 of 1979;
 - National Iron Ore Mining Company Project (NIOMP) to explore and mine local deposits of iron ore suitable for Nigerian iron and steel industry.
 - Ajaokuta Steel Company
 - Delta Steel Company, Aladja
 - Jos Steel Rolling Company
 - Katsina Steel Rolling Company
 - Oshogbo Steel Rolling Company.

The results of these efforts are not quite encouraging because the Ajaokuta Steel Complex and the Delta Steel Complex failed. As a result, iron ore suitable for steel production which was once stockpiled at NIOMP, Itakpe had to be sold to cement industries and potential mining operations to feed the plant with the other necessary inputs (e.g coal, liquidified natural gas, limestone, dolomite, and refractory clays). Mining on a small scale scale, especially for industrial minerals still goes on but carried out by the artisanal miners with its attendant revenue losses.

Due to dwindling revenues from oil exports and being in need of diversifying the country's revenue base, the government from the late 1980s started repositioning Nigeria as a mining country. In 1995, the Ministry of Solid Minerals Development (now Ministry of Mines and Steel Development) was created and it quickly commissioned a three phased investigation and appraisal of Nigeria's mineral potential. In 1999, the Ministry published an inventory of the mineral potential of Nigeria which specifies the occurrence of 34 mineral commodities at about 450 locations spread in almost all the states of the Federation. Throughout the history of mining and irrespective of the differences in jurisdiction, geology, technology, and otherwise, the high-risk, mining still thrives in Nigeria.

This review will enable us see the journey so far;

Pre-Indigenization Policy (Private Sector Driven Mining Period)

This period saw the commencement of mining activities in Nigeria under the European and British Explorers, championed by the Royal Niger Company, discovering traces of tin and Columbite along the Delimi of the Jos Plateau in the early 1900's.

This was later followed by companies such as Ex-lands Nigeria, Gold and Base Metals Company, the Gamaras, mining huge gold deposit in Iperindo area of Ilesha, and the Amalgamated Tin Mining Company of Nigeria (ATMN). The mining methods adopted by some of these companies were characterized by crude shovel and digger type. However, later, modern mining machinery and equipment such as bulldozers, power shovels, draglines, caterpillars, heavy duty haulage trucks, dredging equipment were used. In addition, mineral processing equipment, etc, were also deployed to several mine sites.

During this period, other policy steps recorded were as follows:

✓ 1914: Mineral Oils Ordinance - This policy sort to regulate the right to search for, win and work mineral oils in Nigeria.

✓ 1919: Government established the Geological Survey of Nigeria. This was a Government department established to take over and continue mineral survey of the country after the amalgamation in 1914.

✓ 1946: Government re-enacted the Mineral Oils Act of 1914. The main cardinal principle of this policy was the non – investment of public funds in the risk of mining activities, was again re-enacted in 1959. All these policies introduced, applied globally to the exploration and exploitation of minerals without any particular distinction to special sets of mineral, single or in groups.

Indigenization Policy of Nigeria, 1971 (Public Sector Driven Mining Period)

This period witnessed in the early 1970's, led to the emergence of the Consolidated Tin Mining Company of Nigeria (CTMN), the Nigeria Mining Corporation and the Nigeria Coal Corporation. The sole aim of Government in establishing the two corporations was for Nigerians to take total control of the mineral sector, apart from providing employment to the batteries of professionals being produced at that time. The Nigerian Mining Corporation established many parastatals, which later became drain pipes without any visible returns of the investments ploughed into them. The establishment of these parastatals was a serious error without which the Nigerian Mining Corporation could have concentrated on its oversight functions of providing an enabling, buffer between the mineral explorations and exploitations.

In 1971 the mining policy was drastically reviewed. Government decided to act as catalyst in the Mining sector through the establishment of the Nigeria Mining Corporation which would use government funds for mining. The main policy thrust was the rejection of the concept of private sector-led development of the solid mineral subsector. Other remarkable efforts of government during the period were:

✓ 1972- Government established the Nigeria Mining Corporation, NMC, to engage in direct investment in the exploitation of known economically viable minerals other than coal and marble.

✓ 1995 - Government establishment the Ministry of Solid Minerals Development.

✓ 1999 - Government promulgated the Decree on mining. The policy was to re-structure the mining industry to offer viable alternatives to petroleum for foreign exchange earnings as well as to contribute to the country's over-all economic development.

In a policy statement that looked like the turning point, Government then, stated thus;

In brief, the objective of government's Mining policy would be to secure the development, conservation and utilization of the mineral resources of Nigeria in the best possible manner so as to bring about economic benefit for the largest possible period, and there is no reason to suppose that the private investor is the best instrument with which to achieve this.

The foregoing policy statement implied that if prospecting and exploitation of minerals were to remain solely in the hands of the private sector as was under the existing policy, the country would not enjoy the best advantage that could be derived from the revised policy. To achieve the objectives of the new policy, government which had hitherto refrained from direct participation decided to participate directly in the Mining industry, thus;

1. It expanded the Geological Survey Department and Mines Division of the Ministry of Mines and Power to play a more intensive role in the scheme of things. Specifically, the departments were to promote the diversification of primary mineral products through extensive geological exploration and mineral beneficiation and appraisals, respectively.

2. The issue of prospecting permits was decentralized to Inspectors of Mines in State Mines Offices.

3. To encourage intensive exploration over large areas for specific minerals, government offered incentives by way of concessions.

4. Finally, government upgraded the training in Mining Engineering by establishing a new Institute to take in the graduates of the School of Mines (established at Jos in 1952 as an in-house training centre for the Mines department) to train them further in Mining Engineering.

With the exit of multinational companies and their expatriate professionals following the indigenization Decree of 1971, the bulk of mining operations by the private sector rested on the shoulders of small-scale indigenous miners. The surface, near surface and shallow depth deposits of the minerals had by then been depleted. These factors were largely responsible for production decline particularly in the metallic minerals. As a consequence, there was a shift of the tempo of mining activities to industrial non-metallic minerals needed for construction, building and industrial application for domestic industries. Furthermore, the downturn of the economy adversely affected the exploration as well as exploitation of even the non-metallic minerals. The Inspectorate Department of the Ministry of Mines and Power was ill-equipped to function properly. It lacked adequate and suitable manpower to carry out surveillance of the minefields with a view to ensuring compliance to safety standards and to man the exit points to identify mineral commodities being exported.

Illegal mining, pig cropping and speculative pegging by legal title holders were rife. These problems were further compounded by administrative bottlenecks which included cumbersome procedure in processing mining applications leading to long delays, difficulties in obtaining consent to enter for the purpose of prospecting and mining, and procedural reports necessary for the approval of applications

Despite the heavy public expenditure involved in the maintenance and operation of the above corporations, the expected economic advantages that informed the 1971 review of mining policy were still far from being realized. The production capacities of these bodies have been characterized by poor or negative returns on investment. It is therefore in the desire to counter these negative returns on investment and other negative tendencies that motivated the Ministry of Solid Minerals Development to set up a committee in 1995 to advise it on administrative, legal and fiscal strategies that would facilitate orderly and continued development of the subsector.

The Mining Sector Reforms Leading to Minerals and Mining Act., 2007

This Act is the principal legislation that regulates the Nigerian mining sector. It liberalizes the mining sector with the sole purpose of regularizing all aspects of the exploration and exploitation of the solid minerals in Nigeria. The thrust of this policy was anchored on the need to develop a private sector led mining industry with Government restricting its role to that of administrator/regulator.

Major Highlights of the Act (2007).

- Security of mineral rights/title
- Reduction of administrative discretion
- All minerals are covered under the same license
- Time frames for administrative decisions are clearly spelt out.
- Unfettered rights to transfer and mortgage titles
- No excessive obstacles to private investment; simple eligibility requirement for minerals rights.
- Non-discretionary and non-discriminatory procedures for grants and administration of mineral titles.
- Provides procedures for setting disputes in the courts or by arbitration.
- Creates a stable and competitive fiscal regime for investment.

This brought about some fundamental shifts like:

1. Government no longer acting as owner/operator
2. Private sector now driving force in mining investment and development
3. Follows global trends in mining sector reforms, (Latin America, Chile, Argentina, Peru, Africa – Ghana, Guinea, Mali, Botswana, Namibia Tanzania, Burkina Faso).

Previous policy decisions and instruments, although well meaning, did not produced the desired results and the outcomes for which they were developed. As a result, for the sector to develop beyond its low level, it became apparent that a reform of the policy is required. The neglect of the minerals industry led to disorder in the mines field with strong presence of illegal miners whose activities are characterized by inefficient mining, illegal trading of highly priced minerals, severe ecological degradation, spread of diseases and huge loss of revenue to the government through smuggling.

While these were the scenario in Nigeria that led almost to the comatose state of mining and mineral development, on the other hand, Mining continues to play a key role in the development of Africa's economies. Countries like South Africa, Ghana and Tanzania, remain critically dependent on the earnings of solid minerals. As a result, countries introduced liberal reforms to meet intense competition to attract investment funds. Ghana for example undertook significant reforms both in legal and institutional frame-work and to the general organization of the sector. The result has been growth in mining investment. Tanzania is now a leading destination for exploration funds due to the deliberate government attention to the development of mining. Burkina Faso and Mali have also become strong mining countries.

The administration of the mining industry is vested in the Ministry of Mines and Steel Development (MMSD), operating through the following four departments:

- a) Mines Inspectorate Department
- b) Mines Environment and Compliance
- c) Mining Cadastre Office
- d) Artisanal and small-scale Mining Department.

The provisions of the National Minerals and Metals Policy and the Minerals and Mining Regulations also regulate the sector. The Mining Regulations contain specific provisions with respect to royalties, fees and compensation payable by holders of mining rights.

Mines Inspectorate Department (MID)

The MID has overall responsibility for operations in exploration, evaluation, mine development and production. Some of the functions include:

- General supervision of mining, quarrying and explosives matters to ensure safe mining operation and enhance high production of minerals and revenue generation.
- The development of a database of all mining and quarrying operators.
- Ensuring preparation of mineral returns by operators as required by the government prescribed by regulations.
- Supervision and enforcement of compliance by mineral title holders with all work programmes and safety regulations prescribed under the Act and any other laws in force.
- Production of records of all mineral production nationwide.

Mines Environmental and Compliance Department (MEC)

The main function of the MEC is to ensure that companies adopt and maintain procedures that are environmentally friendly in their operations. It performs the following other functions:

- Establish environmental procedures and requirements applicable to mining operations.
- Review all plans, studies and reports required to be prepared by holders of mineral titles in respect of their environmental obligations under the Act.
- Monitor and enforce compliance by holders of mineral titles with all environmental requirements and obligations as required by law.
- Maintain regular environmental audits to ensure the adoption of environmentally sound practices in all mining operations.

Mining Cadastre Office (MCO)

The functions of the MCO include, but not limited to, the following:

- Consider applications for mining titles and permits.
- Issue, suspend and may revoke mining titles, subject to government's rules and regulations.
- Receive and dispose applications for transfer, renewal, modification and relinquishment of mineral titles.
- Maintain a chronological record of all applications for mineral titles in a priority order.
- Maintain a register, and a general registry book.

Artisanal and Small-scale Mining Department (ASM)

The ASM carries out the following functions, amongst others:

- Organize, support and assist small scale mining operations
- Provide extension services to mining cooperatives on exploration, exploitation, mineral processing, entrepreneurial training, environmental management, etc.
- Improve sustainable livelihood in ASM communities.

Road Map for the Growth and Development of the Nigerian Mining Industry, 2016

The Road Map is Nigeria's comprehensive plan for the Growth and Development of the Mining Industry, put together by a Multi-Stakeholder Committee formed in March, 2016 and was approved for execution by the Federal Executive Council (FEC) in April, 2017. It is intended at rebuilding the sector, unlocking its full potential and making it one of the key sectorial sources of our future prosperity. The Road map is aimed at the transformation of the minerals, mining and metals sector for the sustainable development of Nigeria in order to create a globally competitive sector capable of contributing to wealth creation, providing jobs and advancing our social and human security. Its main objective is to feature Nigeria as a serious mining destination in the international mining community by addressing the identified key constraints and challenges and outline a country level sustainability in order to reach its full potential. These include;

- i. Building a stronger regulatory framework by improving institutions and governance

- ii. Increase the engagement of communities, professional associations and state governments with the mining sector
- iii. Attract major industry participation and improve Artisanal & small scale miner's conditions for (ASM)
- iv. Improve the quality of geosciences data, which is very limited
- v. Create an enabling environment by building skills and capacities, mainstream gender, creating ancillary infrastructure and increasing access to finance.

The Road Map states that Nigeria should develop a range of enablers such as bulk handling terminals, railroads and other infrastructure, technical and engineering capacity, regulatory reforms, assess to financing that drives the sector transformation and human resources development, hinged on eight success factors, thus;

- Integrated Strategy, Proactive Communication
- Coordinated Infrastructure Investment
- Investment Funding
- Geoscientific/Value Addition
- Investment Friendly Environment
- Partnership Approach to Stakeholders and Communities
- Institutional Reforms
- Mining Growth as a Development Catalyst

The present emergence of the strategic plan brought into fruition detailed exploration and exploitation of the following seven strategic minerals:

- ▶ Gold – Many prospects have been identified and pegged by investors for exploitation.
- ▶ Bitumen (Tar sand) – Estimated Reserve of over 27 billion barrels of heavy oil equivalent.
- ▶ Limestone – Estimate stood at 2.23 trillion tones.
- ▶ Iron Ore – Estimate of 3 billion tones recorded.
- ▶ Coal – Estimated Resource of 2.7 billion tones.
- ▶ Barytes – Estimated at 14 million tones.
- ▶ Lead/Zinc – Estimate over 1 million tones.

3.1 Nigeria's Industrial Minerals Roadmap, 2018

Nigeria is highly dependent on imports of some industrial minerals. In 2016 Nigeria imported more than 51,000t of calcium carbonate and lime, alongside substantial imports of mica and dimension stones. The value of the imports of these minerals exceeded 28 million USD, i.e., 60% of the total value of imports of industrial minerals. Alongside the construction and water treatment sectors, the industrial minerals imported are used in steel, oil & gas and in a wide range of other industries.

The Industrial Minerals Roadmap, 2018 was put together to redress the excessive import bills on industrial minerals in the face of high abundance of the materials in Nigeria. This document is intended to be executed through Strategic pathways with major objectives to;

1. Promote the provision of construction minerals needed to meet the growing demand of the construction industry;
2. Promote the provision of industrial minerals used in industrial sectors considered critical to Nigeria's economy;
3. Maximize the potential of world-class recognized deposits (dimension and quality) of industrial minerals creating conditions to compete on quality and cost versus global peers.

The first pathway addresses the needs of the construction industry (providing housing and communication infrastructure), and it encompasses cement producers (that consume limestone, gypsum, shales, dolomite), dimension stones producers (granite and limestone, in blocks and tiles) and many medium and small size companies or individual entrepreneurs mining and selling gravels, sands and clays.

The second pathway aims to provide industrial minerals to sectors that are considered vital to the Nigerian industry, such as the oil & gas industry (still the most relevant industry in Nigeria, consuming mica, bentonite, barite, calcium carbonate), the steel industry (consuming limestone, dolomite quartz, manganese), the water treatment industry (consuming lime and calcium carbonate) and agriculture (consuming phosphates and carbonates).

The third pathway aims to maximize the wealth that can be created by the sustainable mining of (already recognized) first-class mineral deposits (e.g. kaolin and mica), requiring low investment efforts to create value-added products fitting the needs of the global market. The first and second pathways benefit from the existence of a large (fast expanding) domestic market, strengthening the prospects of a successful implementation of the roadmap actions and its impact.

IV. IMPLICATIONS ON ECONOMIC GROWTH AND NATIONAL DEVELOPMENT

The effect of efficient policy reform should no doubt bring about growth and overall economic development. Nigeria has great potentials in both metallic and industrial minerals if the policies are properly implemented. When the African Mining Vision (AMV) was approved by the African Union (AU) in 2011, Nigeria projected that the Solid Minerals Sector would contribute 5% to GDP by 2015 and 10% by 2020. With the commencement of the Road Map for the Growth and Development of the Nigerian Mining Industry in April, 2017, it is expected that with its successful execution, the Solid Minerals Sector will contribute 17%, 20%, 27% to the GDP in 2020, 2022 and 2025, respectively. Current contribution of the Solid Minerals Sector to GDP is 0.60%.

Today, mineral production data and revenue in Nigerian mining is unclear and inadequate. A reasonable conclusion can be drawn that the industry is constrained through under-reporting of production figures and returns. Even at that, local consumption, which accounts for majority of the market, contributed about 0.02% to GDP in 2012 and had steadily improved to about 0.60% in 2018. It is however, evident that from available statistics and production revenue data there are a lot of leakages in that sector, thereby creating loop holes in assessing and determining actual contribution to the National Economy. For the analysis of the performances of the various policies enacted in the mineral sub-sector over the years, the following tables and graphs will be used to elucidate the forgoing, thus;

Table 2: Principal Solid Mineral Production (per tonnes)

YEAR	CASSITERITE	COAL	COLUMBITE	LIMESTONE	MARBLE
1974	7,373	304,035	1,312	1,810,870	5,936
1975	6,288	248,791	991	1,650,264	5,680
1976	5,009	298,765	673	1,553,427	1,433
1977	4,400	267,075	816	1,436,968	8,087
1978	4,080	218,860	567	1,184,191	8726
1979	3,824	172,144	568	2,064,067	1,031
1980	3,570	175,977	554	2,518,205	640
1981	3,178	104,225	377	1,508,899	3,735
1982	2,428	56,110	167	1,510,472	2,736
1983	2,102	53,573	79	1,510,472	981
1984	1,776	76,077	81	1,541,236	1,104
1985	1,100	139,743	100	1,891,457	2,137
1986	193	144,411	13	1,847,376	14,820
1987	213	114,598	49	2,627,409	72,691
1988	234	82,487	51	1,712,073	5,445
1989	350	80,882	46	1,314,843	1,377
1990	334	77,520	44	1,135,692	32,268
1991	347	100,074	36	174,750	10,951
1992	108	86,657	38	2,402,383	11,279
1993	175	28,282	17	5,406,373	3720
1994	208	25,000	17	2,908,641	7,797
1995	357	20,000	37	3,127,726	66,582
1996	3,584	7,800	57	209,520	28,608
1997	3,964	9,830	496	2,430,720	22,050
1998	2,648	11,801	9	1,950,130	88,534
1999	3,046	16,213	22	2,892,047	101,814
2000	3,502	2,712	469	3,325,854	117,087
2001	3,677	2,712	610	3,392,371	128,795
2002	1,004	43,482	156	11,414,927	1,551,329
2003	2,341	23,089	383	7,408,287	840,820
2004	2,379	23,089	390	7,772,629	851,117
2005	2,379	23,089	390	7,772,629	851,117
2006	2,341	23,094	383	7,405,195	840,315
2007	2,366	23,091	387	7,650,151	847,516

Source: CBN Annual Report, 2007

Table 3: Mineral Production, 2016

S/N	Types of minerals	Production {Ton}	Value of production N
1	Limestone	26,996,568.74	16,197,941,246.80
2	Granite	7,458,238.09	10,277,942,050.98
3	Laterite	2,074,013.29	1,244,407,976.20
4	Sand	1,508,705.29	1,206,964,234.00
5	Shale	1,882,675.56	941,337,779.60
6	Clay	1,646,011.72	658,404,688.40
7	Tin	3,625.37	906,341,933.33
8	Manganese	70,106.67	701,066,666.67
9	Lead / Zinc	5,794.59	521,513,250.00
10	Columbite	1,044.04	417,614,600.00
11	Coal	104,424.86	261,062,158.33
12	Feldspar	35,092.00	105,275,990.00
13	Gold *	0.025	159,487,592.00
14	Tantalite	28.949	144,744,000.00
15	Marble	22,648.96	67,946,870.00
16	Kaolin	26,710.00	66,775,000.00
17	Tourmaline *	0.139	55,695,500.00
18	Topaz *	7.174	35,868,375.00
19	Dolomite	33,364.00	33,364,000.00
20	Lead Ore	700	31,500,000.00
21	Baryte	1,712.04	13,696,320.00
22	Wolframite *	15.333	15,333,333.33
23	Zircon	1,072.50	6,435,000.00
24	Aquamarine *	0.005	4,940,000.00
25	Gypsum	720	3,600,000.00
26	Iron	665	4,322,500.00
27	Talc	666.67	2,000,010.00
28	Amethyst *	0.001	2,100.00
		41,874,611.02	34,085,583,174.64

Source; NEITI 2018.

Table 4; Comparizm of Production by mineral type (2016/2015)

S/N	Types of minerals	Production in 2016 {TON}	Production in 2015 {TON}	Difference in volume of production %	Value of 2016 production {N}	Value of 2015 production {N}	Difference in value of production %
1	Limestone	26,996,568.74	21,454,966.03	25.83%	16,197,941,246.80	12,055,518,786.00	34.36%
2	Granite	6,245,684.63	6,368,192.10	-1.92%	9,368,526,959.80	6,505,219,426.00	44.02%
3	Laterite	2,074,013.29	2,377,975.31	-12.78%	1,244,407,976.20	1,274,038,887.00	-2.33%
4	Sand	1,508,705.29	2,008,035.00	-24.87%	1,206,964,234.00	1,446,988,356.00	-16.59%
5	Shale	1,882,675.56	1,075,869.70	74.99%	941,337,779.60	474,437,456.00	98.41%
6	Granite Dust	1,212,553.46	4,015,866.38	-69.81%	909,415,091.18	2,344,763,238.00	-61.22%
7	Tin	3,625.37	472.54	667.21%	906,341,933.33	92,699,100.00	877.72%
8	Manganese	70,106.67		100.00%	701,066,666.67	-	100.00%
9	Clay	1,646,011.72	1,178,068.73	39.72%	658,404,688.40	384,263,916.00	71.34%
10	Lead / Zinc	5,794.59		100.00%	521,513,250.00	-	100.00%
11	Columbite	1,044.04	288.92	261.36%	417,614,600.00	69,088,000.00	504.47%
12	Coal	104,424.86	121,316.00	-13.92%	261,062,158.33	264,044,570.00	-1.13%
13	Gold *	0.025		100.00%	159,487,592.00	-	100.00%
14	Tantalite	28.949	31.85	-9.11%	144,744,000.00	119,250,000.01	21.38%
15	Feldspar	35,092.00	13,238.00	165.09%	105,275,990.00	38,683,190.00	172.15%
16	Marble	22,648.96		100.00%	67,946,870.00	-	100.00%
17	Kaolin	26,710.00	25,280.00	5.66%	66,775,000.00	58,999,215.00	13.18%
18	Tourmaline *	0.139		100.00%	55,695,500.00	-	100.00%
19	Topaz *	7.174		100.00%	35,868,375.00	-	100.00%
20	Dolomite	33,364.00		100.00%	33,364,000.00	-	100.00%
21	Lead Ore	700		100.00%	31,500,000.00	-	100.00%
22	Wolframite *	15.333	52.44	-70.76%	15,333,333.33	26,220.00	58379.53%
23	Baryte	1,712.04		100.00%	13,696,320.00	-	100.00%
24	Zircon	1,072.50		100.00%	6,435,000.00	-	100.00%
25	Aquamarin *	0.005		100.00%	4,940,000.00	-	100.00%
26	Iron	665		100.00%	4,322,500.00	-	100.00%
27	Gypsum	720	34,620.67	-97.92%	3,600,000.00	160,714,220.00	-97.76%
28	Talc	666.67		100.00%	2,000,010.00	-	100.00%
29	Amethyst *	0.001		100.00%	2,100.00	-	100.00%
30	Marl		595,043.58	-100.00%	-	267,904,797.00	100.00%
31	Rea Alluvium		3,273.50	-100.00%	-	1,561,506.00	100.00%
		41,874,611.02	39,272,590.75		34,085,583,174.64	25,558,200,883.01	

* Quantities produced converted to TON

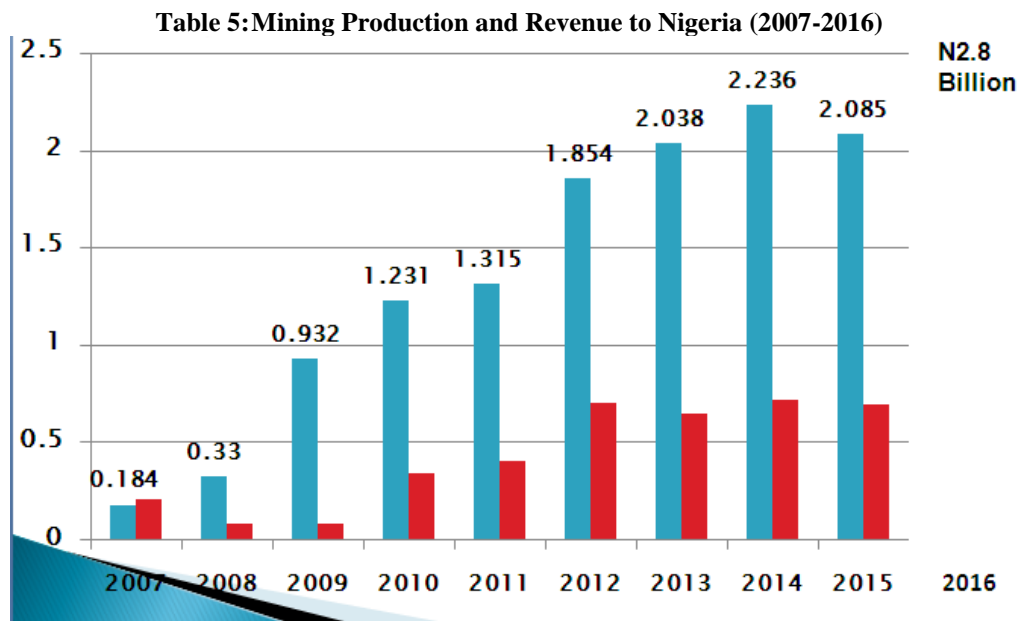
Source; NEITI 2018.

The total value of minerals produced in 2016 was N34.09billion. The value shows a 33% increase or N8.53billion over N25.56billion reported in 2015 with possibility of upward increase. This therefore, is evident that the recent policy direction is yielding positively on the sub-sector and the economy generally.

In 2010, 15 activity sectors registered stronger growth rates compared to their 2009 performance. These sectors recorded aggregate average growth rate of 10.40 per cent in 2010 on the back of an equally robust growth rate of 10.05 in 2009. These included solid minerals, 12.28 per cent, oil and gas, 4.98 per cent, telecommunications, 34.93 per cent, building and construction, 12.08 per cent, oil refining, 7.01, cement manufacturing, 10.85, electricity, 3.0 per cent and hotel and restaurants, 12.01 per cent.

The States Disaggregated Mining and Quarrying Data released by NEITI (2018), indicates that Nigeria produced 55,810,964.53 tons of solid minerals. Ogun State produced the highest tonnes of solid minerals among the 36 States and the FCT, which produced 16,497,405.04 tonnes of solid minerals representing 30% of the total tonnes of solid minerals produced in the year under review. Kogi and Cross River States followed closely with 15,134,541.35 and 3,493,458.00 tonnes of solid minerals produced representing about 27% and 6% of the total tonnes of the minerals produced while Bayelsa and Borno States produced the least tonnes of solid minerals

with zero and 8,403.30 tonnes of minerals produced respectively. Limestone is the most produced solid minerals in 2018 with 27,195,278.76 tonnes of minerals representing about 49% of the total tonnes of minerals produced. Granite and Laterite followed closely with 9,627,160.29 and 5,076,092.07 tonnes produced representing 17% and 9% of the total tonnes of minerals produced in 2018. However, Garnet and Gold are the least produced solid minerals in 2018. This, also is a commendable stride towards actualizing the development aspirations of the present government.



Source: NEITI, 2018

CHALLENGES

The Nigerian economy continues to grapple with a number of generic challenges that have hampered efforts at economic transformation. Some of these general challenges are capture below.

First, the economy is yet to achieve the necessary structural changes required to jump-start rapid and sustainable growth and development. Aside disarticulated and narrow productive base, sectoral linkages in the economy are weak.

Primary production comprising agriculture, mining and quarrying inclusive of oil and gas dominate national output while the manufacturing sector role in the economy is decidedly small in terms of share of gross output, contribution to growth, foreign exchange earnings, government revenues and employment generation.

The economy also confronts monumental challenges in form of dilapidated and chronically non-functional infrastructure. The decay in the country’s infrastructural base reflects decades of poor maintenance and weak technological base. The weak technological base is a consequence of low research and development efforts and disconnect between research findings and industry.

The private sector is equally weak and diffuse with poor response record to industrial incentives.

The narrow base of government revenue and the near monolithic nature of exports constitute additional challenges confronting the economy.

Of particular note are the following;

- The dearth of mining Engineers and the need for continuous training of same in the country.
- Underfunding of the Mining Sector leading to non-Development of the Sector.
- Provision of infrastructures to Mine sites
- Poor implementation of the Artisanal and small-scale mining programme.
- Solid Mineral Resources Development in the exclusive legislative list of the Nigerian 1999 Constitution as amended.
- Value addition on mining of solid mineral resources
- Marketing and investment in solid mineral resources.

V. RECOMMENDATIONS

This paper is of the opinion that frequent policy summersault is not healthy for national growth, and that the policy frameworks put in place if not stringently followed is likely to lead us nowhere. We need to deepen our diversification efforts and policy implementation strategy. Therefore, the paper would like to recommend as follows:

- That there should be robust advocacy and awareness campaigns on the vast potentials of Nigeria's Minerals and the new policies to be carried out by all the three tiers of government and other relevant stakeholders, on a continuous basis.
- That there should be easily accessible sources of Solid Minerals Venture Risk Funds, and possibly a specialized "Mineral Development Bank" adequately supported by Government guarantees and grants;
- There is the need for the Federal Government to declare an "Integrated Mining Revolution (IMR)" in the Solid Minerals Sector, and identify ways to support and fund minerals' rapid development through strategic Public Private Partnership (PPP) collaboration;
- That "Minerals Technology Development Fund (MTDF)" should be created and legislated from the present "Petroleum Technology Development Fund (PTDF)" to use 50% of the monies presently accruing to the PTDF to address Solid Minerals Development and Mining Technology – acquisition issues;
- Government should sustain the ban on Barites, Bentonite, kaolin, limestone, etc while enhancing their production capacity and indeed other minerals in the country;
- Government should support Environmental Impact Assessment (EIA) Reports and Mitigation costs for Artisan and Small Scale Miners, as a form of Public and Private Partnership using funds from the Ecological Fund and other sources;
- The Geological Survey Agency of Nigeria should be mandated by Government to provide services to support Small-scale Miners through exploration studies and information acquisition on their Mining Deposits by reducing the present cost of maps.
- Government should create Standard Laboratory with International certification to service the sub-sector;

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