

The Need for Diversification of the Nigerian Economy through a Low-Carbon Energy Mix Programme Using Nuclear Power

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ABSTRACT: Numerous structural issues, such as poor infrastructure, trade and non-tariff barriers, investment barriers, a lack of trust in the currency's worth, and restricted foreign exchange facilities, limit Nigeria's economic potential. Since the late 1960s, when the oil and gas industry replaced agriculture as the primary driver of expansion, there has been very little progress made in diversifying the economy and laying a stronger foundation for rapid, steady, and productive growth. Despite massive oil earnings, the nation remains among the World's poorest in terms of important development indicators. Prosperity and progress have not followed as expected. The economy continues to grow in an unpredictable manner, devoid of steady or constant growth, and is influenced by fluctuations in the price of oil and gas, despite a multitude of plans, frameworks for policy, and reforms. While incompetence, corruption, and inefficiency remain at the core of economic management, every plan, programme, vision, and change raises high aspirations but never achieve the desired impact. Nigeria's economic dependency on crude oil and other commodities makes economic diversification difficult. Nigeria's economy must diversify in order to support employment, economic growth and human development to meet up the country's fast expanding population needs. In order to have a life beyond oil and gas, there is therefore the need for an efficient energy programme using nuclear power base load option for the country's rapid industrialization; this research looks at an overview of Nigeria's economy, its various sectors, its challenges, and the role of nuclear power as a possible solution to those challenges.

KEY WORDS: Nigerian economic potentials, economic diversification, framework for policy, rapid industrialization, efficient energy program, nuclear power, energy mix

INTRODUCTION

Crude oil is readily apparent in Nigeria's economy, as the country is a major provider of this valuable commodity. The oil industry has taken the lead in the economy since the early 1970s. Before crude oil was discovered, agriculture was the main industry and determined the rate of the nation's economic, political, social, and cultural advancement. Crude oil quickly followed agriculture. Nigeria's overall economic health has benefited greatly from oil industry profits, but oil production and exploration have also brought about a number of social, economic, and environmental issues [1]. Nigeria has become a mono-economy, or a one-sided economy, as a result of the dominance of oil and the apparent neglect for all other non-oil industries. Due to

the reliance on crude oil as the principal commodity, most emerging nations including Nigeria continue to struggle with economic diversification [1]. The process by which a nation's economy shifts from one source of income to many streams from an increasing variety of sectors and marketplaces is known as economic diversification, and this is required in Nigeria. Economic diversification has historically been used as a tactic to promote constructive economic development and growth. As a tactic to diversify away from susceptible goods, markets; and to create employment in favour of low-emission and more climate-resilient revenue streams, economic diversification through a Low-Carbon Energy Mix Programme gains increased significance in the context of climate change adaptation. Nigeria, one of the wealthiest nations in Africa, wants to effectively diversify its economy away from its reliance on oil. Presently, the service sector makes up almost half of the GDP, and currently represents the largest economic sector. Three economic sectors are typically used to analyse a nation's economic activity: the primary sector, which includes forestry, agriculture, and fishing; the secondary sector, or industry, which includes manufacturing, processing, or transforming goods; and the tertiary sector, or services, which is the provision of information or services to consumers in the tourism, banking, or IT industries. An examination of the performance of these three sectors makes it easy to determine a country's contribution to GDP and, by extension, its own economy. About 23.69 percent of Nigeria's GDP came from agriculture in 2022, compared to 30.78 percent from industry and 44.04 percent from the services sector [2].

In the third quarter (Q3) of 2023, Nigeria's GDP grew by 2.54% from the previous year, following a 2.51% increase in the previous three months. This quarter's economic growth is the 12th in a row, supported by the non-oil sector (+2.75%), particularly the services sector (+3.99%). The industries with the biggest improvements were finance and insurance (28.2%), information and communication (+16.7%), and lodging and food services (3.6%). The industrial sector (+0.5%) and agriculture (+1.3%) both made additional positive contributions. Despite increased oil output, the leading oil industry shrank significantly more slowly (-0.85% versus -13.43%). In Q3, the average daily production of crude oil was 1.45 million barrels, compared to 1.22 million barrels in Q2 and 1.20 million barrels during the same period last year [2, 3, 4]. Table 1 clearly shows the various sectors of the economy and its contribution to the GDP of the Country.

TABLE 1.NIGERIA GDP INDICATORS

Indicator	Data	Period
GDP Value	477 USD Billion	2022
GDP Annual Growth Rate	2.51 %	2Q/23
GDP Growth Rate	-15.65 %	1Q/23
GDP per capita	2450 USD	2022
GDP Constant Prices	17719336 NGN Million 23.206 B USD	2Q/23
GDP per capita PPP	4963 USD	2022
GDP From Agriculture	4077716 NGN Million 5.34 B USD	2Q/23
GDP From Construction	573058 NGN Million 0.751 B USD	2Q/23
GDP From Manufacturing	1528006 NGN Million 2.001 B USD	2Q/23
GDP From Mining	946739 NGN Million 1.24 B USD	2Q/23

GDP From Public Administration	383786 NGN Million 0.503 B USD	2Q/23
GDP From Services	7576045 NGN Million 9.922 B USD	2Q/23
GDP From Transport	157034 NGN Million 0.206 B USD	2Q/23
GDP From Utilities	199723 NGN Million 0.262 B USD	2Q/23

An economy that depends on oil sees ups and downs in its level of health. Although services, telecommunications, and agriculture all contribute to Nigeria's moderate economic growth, nearly 60% of its over 200 million people still live in terrible poverty [1, 4]. Africa's largest economy is that of Nigeria. Its foundation has primarily been the oil sector since the late 1960s. The international economy has experienced tremendous growth in transportation, building, manufacturing, and public services due to a series of spikes in oil prices since 1973. Due in large part to the inability of those who could not afford the high cost of living and accommodations, a large number of people from rural areas moved into larger, overcrowded urban centres, resulting in the spread of slums and the emergence of suburban slums in most major urban centres. Crop productivity slowed to the point where cash crops like cotton, peanuts, and palm oil were no longer significant export goods. Furthermore, Nigeria has been compelled to import necessities like rice and cassava for local usage since around 1975. This arrangement was effective as long as oil prices stayed steady, but since the late 1970s, changes in oil prices have caused a persistent crisis in the agriculture industry. Despite the fact that a large portion of the population continued to farm, insufficient food production necessitated increasingly expensive imports. Numerous governments, the majority of which are military-run, have attempted to address this issue by outlawing agricultural imports, but their efforts on indigenous and agricultural programmes have yielded little success [1, 5].

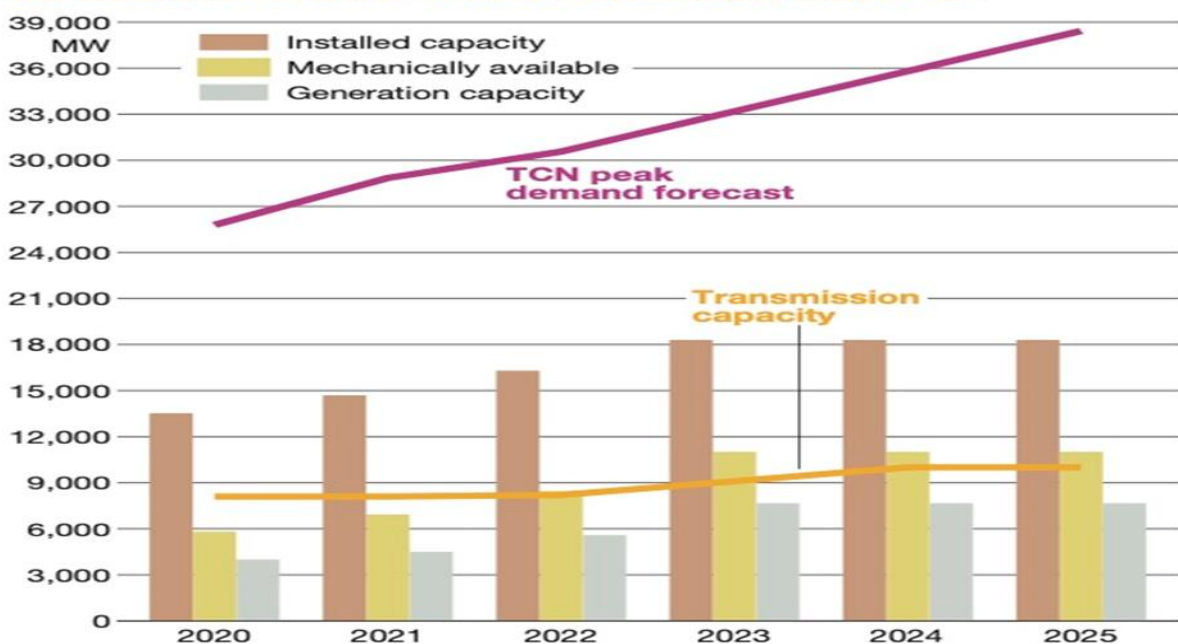
A high rate of industrialization is necessary for the country's unemployment rate to be eliminated or drastically reduced. Industrialization is directly related to economic growth and development, better infrastructure, technical advancement, and economic diversification—all of which depend on the nation having a steady and sufficient supply of energy [1, 5]. Take a sophisticated nation like South Korea, for instance. The economy of South Korea ranks fourth in Asia and eleventh globally. Their mixed economy is dominated by chaebols, or family companies; a prime example is the Samsung family. Their primary sectors are automotive (Hyundai-Kia), telecoms (SK group), and electronics (LG, Samsung). In terms of ease of doing business, South Korea is ranked fourth in the world as of 2018. They have favourable government policies, a trained staff, a dependable power supply, and other advantages. Nigeria on its part has experienced power outages from the beginning of time. Regrettably, there hasn't been much of an improvement in the availability of electricity since the energy firm was privatised (See Figure1). An essential and vital instrument for industrialization is electricity [5]. The majority of manufacturing operations are automated, and since electricity rather than water powers computers and other machinery, production activities will unavoidably encounter difficulties in the event that this vital component fails.

To enhance service quality and lessen reliance on the government, the government has recently started to privatise a large number of state-owned businesses, particularly in the energy, transportation, and communications sectors. While some businesses have been effectively

privatised since the turn of the twenty-first century, others are still owned by the government [1]. The nation also benefited from the 2005 debt relief plan, which stipulated that after a predetermined payment amount was made, the majority of the debt owed to the Paris Club, a consortium of creditor nations, would be waived. In 2006, Nigeria fulfilled this requirement and became the first nation in Africa to settle its debt with the organisation. The nation then saw a recession in 2016 as a result of declining oil prices globally. The state-level property registration and title procedures are complicated, dishonest, and poorly regulated, which makes it difficult for the government to enforce secured property interests like mortgages. In rural places, land ownership disputes are frequent. Due to a lack of resources, supplies, and expertise, the courts are also susceptible to political meddling. It is evident that corruption permeates both governmental and private institutions [1]. Corruption among port and customs officers, among others, impedes the freedom of commerce. In communities where murder and violence are widespread, it is hard to establish business or make money. The government's large and excessive monthly expenditure on consumer fuel subsidies is also a cause for further concern.

The global energy industry's rapid development and each state's economic expansion are intimately related. Industrialization, agricultural development, economic diversification, and sustainable development may all easily follow from this in any nation [6, 7]. Since an efficient and dependable energy supply is a prerequisite for the nation's economic development, Nigeria, one of the growing nations with all the positive major economic growth, has been facing several challenges related to this issue [6, 7]. Solving this issue also solves other significant political, economic, and social issues. Nigeria is one of the largest economies in Africa, but its energy is less efficient than the nation's overall economy because it currently produces less than 5,000 MW (See Figure 1) of electricity—even less than what India produces from nuclear power plants alone [1, 7]. This has a detrimental impact on the growth of certain industries, agriculture, and, eventually, the population's standard of living.

NIGERIA: MEDIUM-TERM FORECAST, 2020–25



Source: Nigeria Power Report 2021/22 (<https://www.africa-energy.com/report/nigeria-power-report-202122>) © African Energy 2021 (www.africa-energy.com)

Fig. 1 Nigerian Electricity: Improvement but not transformation expected by 2025.

This deficit had grown to crisis proportions, undermining the state's ability to develop sustainably as expected [5, 6, 7]. Figure 2 illustrates this, showing how power shortages drive Nigerian small-business owners to improvise when it comes to lighting their establishments. Nigerian firms are suffering due to the inadequate power supply, which is increasing their manufacturing costs and decreasing their competitive advantage. Numerous industrial production facilities around the nation have been forced to close due to the high cost of electricity, which has resulted in a mass layoff of employees [1, 5, 7].



Fig.2. Nigeria experiences of having a nationwide power outage with negative impact on small scale businesses.

Because of this urgency, the government was compelled to investigate and accept the use of nuclear energy in the nation, which would enable it to close the gap and so meet the anticipated demand for electricity [5, 6, 7]. An examination of the scientific literature on the topic of energy development in Nigeria, which can readily support the country's industrialization and agricultural growth, revealed that the current energy crisis in the nation [6] calls for careful consideration when formulating a construction plan for power plants in Nigeria and their varieties, including wind, hydropower, gas-fired thermal, and nuclear power plants. This is because the country's current electricity shortage is severely impeding the growth of urban, rural, and suburban settlements (refer to Fig. 2) as well as new industrial facilities, considering their unique characteristics and social significance [5, 6, 7].

Nigeria is working to develop nuclear energy because it offers a special chance to help any nation's socioeconomic growth. Unlike other fuels, nuclear energy has several benefits beyond only producing power [8, 9]. The efficiency of nuclear power plants (NPPs) is high. With respect to worldwide best practices, their portion of the world's electricity output is around 22%. Fossil fuels - coal, oil, and gas - are thought to be energy sources that can significantly contribute to pollution of the environment and contribution to the greenhouse effect which can

be replaced by nuclear energy [8, 9]. It is a competitive, safe, dependable, and clean energy source. The only practical route into the future is a clever mix of nuclear power for base-load power generation, renewable energy sources for low-intensity on-site uses, and energy conservation [1, 8, 9]. This is obtainable in majority of the developed and developing nations worldwide, such as USA, France, China, India, Japan, South Korea, and Russia, among others.

An Overview of Nigeria's Economy

In the 1950s and 1960s, Nigeria's economy was on par with those of Brazil, Indonesia, Malaysia, and Pakistan, but it now falls significantly behind them all in terms of overall economic development. Nigeria's development has lagged behind that of other oil-producing nations, particularly considering that the majority of these nations are currently transitioning to modern industrialization [1, 10]. Oil and gas production largely dominates Nigeria's economy. Even if the industry brings in large sums of money for the nation, the price of oil has a significant impact on government revenue. Furthermore, the industry does not see many new positions created. Dependency on oil has a significant distorting influence on other industries, undermining their ability to produce items for export, particularly processed agricultural products. This dependency pathology is serious and unsettling. It has led to significant long-term budgetary contraction as well as other economic issues like inflation, unemployment, and payments imbalances that cause shortages of foreign currency. Nigerians' lives, means of subsistence and social cohesiveness are all under risk from the nation's on-going reliance on oil earnings. Nigeria's reliance on oil nearly brought her economy to its knees at the federal level, causing a negative GDP growth of 1.8% in 2020. According to National Bureau of Statistics NBS, "the services sector, which recorded a growth of 4.35 percent and contributed 57.29 percent to the aggregate GDP, was the main driver of the GDP performance in the first quarter (Q1) of 2023." The five cross-sector activities that made the most contributions to the economy are displayed in Figure 3.

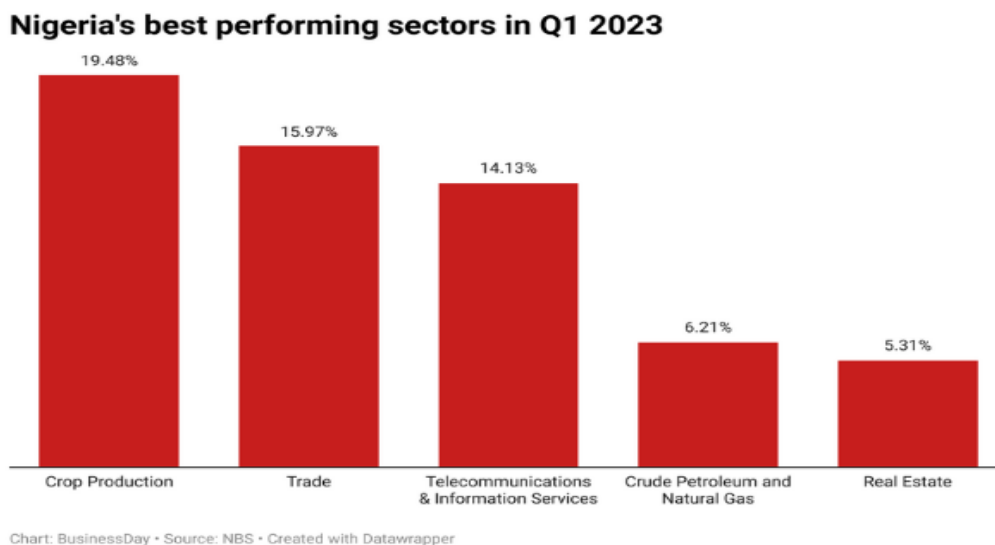


Fig.3 Top 5 activities that contributed to Nigeria's economy in Q1 2023

The most striking aspect of Nigeria's economy is that the country's abundant natural and human resources especially its wealth in crude oil were not able to be used to fund long-term

infrastructure improvements and the establishment of a strong foundation for self-sustaining economic development because of the corruption and poor management of the country's post-colonial governments. Nigeria is therefore poorer now than it was when it attained independence in 1960, despite having abundant natural resources. Despite being among the least developed and impoverished nations in the world, it has the potential to grow into a significant economic force if its leaders choose to learn from previous resource mismanagement errors and make use of the abundant natural and human resources in the nation for worthwhile, long-term initiatives that advance economic development [10].

Productivity was at best low due to the fact that established state industries and companies were frequently corrupt, inefficient, and had insufficient power supplies. Specifically, poor administration and corruption were prevalent throughout the nation and among succeeding administrations. The government's decision to prioritise the industrial sector over other sectors was the largest issue, though, as officials set out to industrialise the country quickly and extensively at the expense of light and agricultural industries due to a lack of the resources and expertise needed for such rapid industrialization [1, 10]. Thus, the industrial sector has suffered significant harm from unskilled labour and a lack of funding. Furthermore, Nigeria's disregard for the agriculture industry has made the already dire food crisis worse. During its colonial era and for ten years following its independence, Nigeria produced enough food to meet its own requirements. But due to food shortages, it had to import food from other nations. Examples of these imports were rice from the US and other nations, which was thought to be less nutrient-dense than Nigerian brown rice, and palm oil from Malaysia, of which Nigeria was the world's largest producer and exporter [1]. Due to poor maize production, Nigeria which was formerly the continent of Africa's top producer of poultry meat lost its position as a significant exporter of cocoa, peanuts, and rubber.

Due to harsh living conditions and poverty, a number of factors made the agricultural sector's issues worse by causing workers to migrate from rural to urban regions, which has decreased the number of traditional agricultural workers. The issue was made worse by a number of natural factors, including poor soil, erosion, drought, and a lack of sufficient power [10]. Using antiquated technology because mechanised farming is too expensive, agriculture's poor standing in youth education, poor marketing, and poor transportation infrastructure, power outages that prevent refrigeration, low prices, and erratic pricing policies are some more obstacles to agricultural products. Many agricultural and food enterprises are also restricted in their availability by import restrictions, in addition to these hurdles. As the administrators borrowed money from abroad and subsidised the import of food and grains as well as petrol, Nigeria's debts also increased. In an attempt to boost the economy, borrowing from outside has caused more issues than it has solved. Not all of the loaned funds arrived in Nigeria. The portion that entered the nation was frequently allocated to shelved or unfinished public sector projects. Nigeria became an international pariah for years due to the military regime's egregious corruption and violations of citizens' fundamental rights, which deterred foreign investment in the country's economy [1, 9]. Due to a lack of raw materials, numerous companies and manufacturing facilities had to close.

But the civilian government hasn't been able to revive the economy either. The use of industrial capacity seems to have decreased. The National Electricity Authority and other infrastructure

facilities are still in poor condition, which exacerbates the situation. The government's economic recovery programme was based on the expectation of a significant infusion of foreign investment, which did not materialise. This is partially caused by the high expense of conducting business in Nigeria and the opaqueness of the nation's economic decision-making process [1]. Aside from these facts, the nation's unemployment rate hasn't moved in months despite the reinstatement of the civilian administration. In fact, it is gotten worse among recent graduates. The economic environment was exacerbated by political unpredictability stemming from ethnic and religious disputes between Christians and Muslims [7] and on-going internal strife mostly between the president and parliamentarians. Foreign investment and tourism were further deterred by the prevalence of armed robberies and other crimes. To support its recovery and expansion, the nation's economy requires the combined efforts of all levels of government in addition to more tangible solutions to its problems. The state does not currently have enough money to address the needs of every economic sector at once. The mainstay of the economy, crude oil [9], has recently seen a substantial increase in price and is still a very important item. It still has the potential to give Nigeria a strong basis for more sustained growth, economic diversification, and prosperity into the twenty-first century and beyond if handled well.

Nigeria's primary source of income is oil, which is its only source of dependence. The nation started to face severe challenges as the price of crude oil dropped. One of Nigeria's biggest economic issues is this. Diversifying the nation's economy is one way to potentially address this issue. Nigeria must find a substitute for oil by exploiting its other natural resources and go back to the days of lush agriculture, but this will only be possible with the support of a sufficient energy mix programme [9]. The government should give the long-standing energy situation in Nigeria more attention, considering nuclear energy as a base load electricity supply option. It should also encourage and permit various states and business owners on their quest to construct their own local power generation systems.

Diverse Economic Sectors

Agricultural Sector:

According to data from the World Statistics, Nigeria's population as of December 2023 was estimated at around 226.2 million. Nigeria's gross domestic product (GDP) was \$1.117 trillion at the end of 2023. The GDP of Nigeria represents 0.38 percent of the world economy. There are two sectors of Nigeria's economy: the non-oil sector and the oil sector. In Nigeria, the non-oil sector includes the agricultural industry as well as the following: professional scientific and technical services, education, entertainment and recreation, banking and insurance, information and communication, lodging and food services, and the arts. Four sub-activities make up Nigerian agriculture: fishing, forestry, animal production, and crop production [10]. Agriculture still makes a substantial contribution to the Nigerian economy, despite the country's heavy reliance on oil. According to estimates from the National Bureau of Statistics, the agricultural industry accounts for 70% of employment in Nigeria and contributes 25% of the country's GDP (or 4.575 trillion naira). Over the previous five years, Nigeria's economy has grown mostly due to expansion in services, telecommunications, and agriculture. Nigerian agriculture primarily produces and processes the following goods: fish, wood, pigs, cattle, sheep, goats, yams, cocoa, peanuts, cotton, palm oil, corn, rice, sorghum, millet, cassava (cassava, tapioca), yams, rubber and fish [11]. While some of these goods are

exported, the majority are used in Nigeria. Nigeria exports 95% of its commercial goods as oil and oil products, with only 5% coming from the country's agricultural sector. The Federal Ministry of Agriculture and Rural Development (FMARD) is the government organisation in charge of Nigerian agriculture, development, and transformation.

Nigeria's agricultural sector expanded by 1.5% in real terms during the second quarter of 2023 when compared to the same time the previous year. As of now in 2021, the sector has increased by 1.77%, from 1.88% in the first half of 2020. The National Bureau of Statistics (NBS) revealed this in their Q2 2021 GDP report (See Fig. 4). In real terms as showed in Figure 4, Nigeria's GDP increased by 5.01% (annualised) during the second quarter of 2021. Crop production increased by 1.38% in the second quarter of 2021 compared to 2.31% in the first quarter of 2020, according to NBS. Forestry in the agricultural sector grew by 1.06% in the second quarter of 2021 from 1.28% in the first quarter of 2020 and 1.08% in the second quarter of 2020. Accordingly, the sector's real GDP contribution in the second quarter of 2021 was 23.78%, which was less than the higher but still significant contribution of 24.65% in the same quarter of 2020 (See Figure 4). According to the NBS, Nigeria's agriculture industry increased by 1.34% (year over year) in real terms in the third quarter of 2022. This was an increase of 0.12% points from the same period in 2021 and 0.14% points over the previous quarter, which had a growth rate of 1.20%. On a quarter-over-quarter basis, it increased by 40.02%. In real terms, the sector's contribution to the GDP in Q3 2022 was 29.67%, which was greater than the second quarter of 2022 (23.24%) and lower than the third quarter of 2021 (29.54%). With a gain of more than 3.5 percent in the fourth quarter of 2021, agriculture's contribution to Nigeria's GDP saw the biggest increase during the chosen period. A large portion of the nation's GDP comes from agriculture [12]. After oil, it is a crucial industry for Nigeria's economy. However, a large portion of Nigerians make their living from agriculture, whereas the income created by oil only benefits a small portion of the population. The contribution of the agricultural sector is clearly shown in Figure 4.

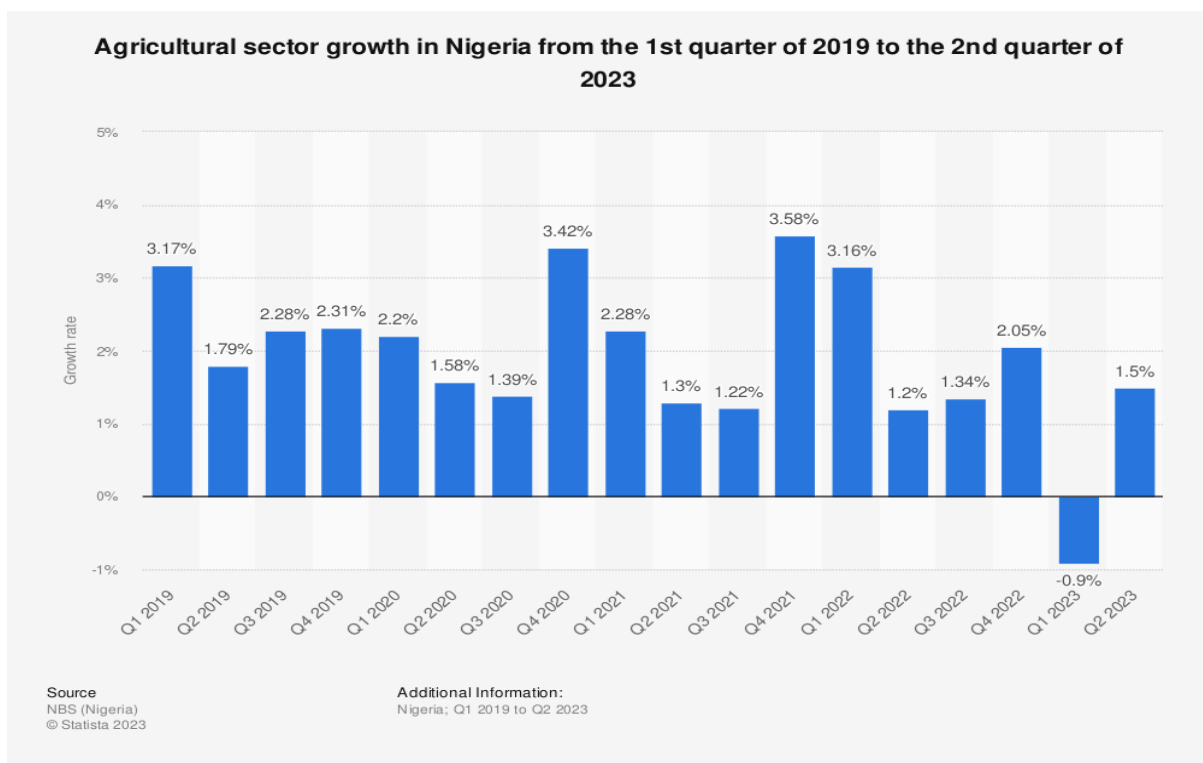


Fig.4. Agricultural sector growth in Nigeria from the 1st quarter of 2019 to the 2nd quarter of 2023

In Nigeria, between one-fifth and one-half of the population is employed in agriculture. The majority of them are modestly sized subsistence farmers who only generate a tiny surplus to sell and supplement their income by cultivating one or more cash crops and selling handcrafted goods from nearby craftsmen (See Fig. 2). Due to incomplete soil mechanisation, the hoe and machete remain the most used agricultural tools. The amount of agricultural land cultivated per household is limited by a number of variables, including limited access to land in certain locations and a shortage of agricultural land in others. The low productivity and overall stagnation in agriculture can be attributed to various factors such as inadequate power supply for mechanised farming, environmental deterioration, inadequate storage facilities, inadequate transportation infrastructure, and insufficient investment capital [10, 11, 12]. Despite government efforts to improve the situation in Nigeria, food insecurity is still growing due to the country's rapid population growth, urbanisation and insecurity arising from banditry and insurgency. Most people consider rice to be a significant household crop. While cotton and peanuts are farmed in the north, the principal industrial crops in the south are trees, particularly oil palm, cocoa, and rubber plants. Both industrial and staple food crop production is dominated by small (peasant) farmers.

In the early 21st century, goat, pig, and sheep husbandry was in its infancy. Even if some of the cattle under the care of these nomads are owned by settled farmers and city dwellers, the pastoral Fulani people remain the primary producers of meat. But like most of Africa, Nigerians do not consume nearly as much meat as people in the West do. Less than 10 percent of Nigeria's entire geographical area is covered by its permanent forest reserves. Outside of these areas, continuous bush burning to make way for farming or hunting has lost a large portion of the

forest cover. More heavily inhabited regions, including the Niger Delta and drier savannahs, are the most affected by deforestation because of overgrazing, wildfires, and a high demand for firewood and woodworks, which inhibits normal fallow plant recovery. In many watersheds, forest plantings have been set up to prevent soil erosion and safeguard river catchments. Since the Sahel has experienced recurrent droughts since the early 1970s, which have claimed thousands of cattle lives, fishing has become increasingly significant as a food source. Fish needs are more than half met by domestic capture. The primary fisheries are Lake Chad and the coastal waters to the south, but a significant amount of fish is captured annually in the seasonal river basins in the northern states [11, 12].

Long a vital component of the Nigerian economy, agriculture has grown strongly during the most recent recession and preserved macroeconomic stability despite fluctuations in the world oil market. Nigeria's economy is based primarily on the production of oil and gas, which has led to a decline in the sector's workforce, exports, and GDP contribution in recent decades [10, 11, 12]. Nevertheless, the country still has a large amount of arable land and a diverse manufacturing base that includes many valuable commodities crops, providing significant opportunities for development and investment. Acknowledging the sector's robust expansion and export prospects, the Nigerian government is putting more emphasis on agricultural development as a means of bolstering macroeconomic and non-oil growth. Modern medium-term national development plans have placed a strong emphasis on growing exports and production in close collaboration with investors from the private sector. The industry's high potential is demonstrated by recent progress in establishing a network of planned Basic Crop Processing Zones (BCPZs), including announcements of major private sector investment in facilities in these zones. Growth is still limited by limited access to credit and inputs, illegal food imports, lack of infrastructure, including power supply. Small farmers and regional agro-industries should be supported by government loans and foreign exchange control programmes, which should also guarantee an enabling climate and the necessary infrastructure, laying the groundwork for long-term, sustainable growth.

The private sector's role in agricultural development and the significance of achieving food self-sufficiency are also emphasised in Nigeria's national economic development agenda. In order to improve economic diversity, the Economic Recovery and Growth Plan (ERGP), which ran from 2017 to 2021, and the National Development Plan 2021 to 2025 supported industry, energy, agriculture, and micro, small, and medium-sized businesses, among other important sectors. ERGP projects that agriculture will increase at a 6.9% annual rate over the course of the entire term, driven by the expansion of agricultural output as well as the rise of fisheries, livestock, and forestry. This indicates that agriculture will continue to be a significant driver of GDP growth in the years to come. In order to attain food self-sufficiency targets for tomato paste in 2017, rice in 2018, and wheat in 2020, the plan called for boosting investment. Among other things, it called for the nation to become a net exporter of rice, cashews, peanuts, cassava, and vegetable oil. Although there are still many obstacles for Nigerian agricultural players to overcome in order to increase production such as a severe shortage of energy, a decrease in low-cost imports, and rising exports, the agricultural sector still has a lot of room to grow. Enough arable land that remains uncultivated, a diverse base of food production, and a sizable and expanding domestic population should guarantee that the nation achieves substantial progress towards its medium-term growth objectives. It also has to expand energy

diversification by including nuclear power as the base load for a dependable energy supply to promote agricultural productivity. Chronic smuggling and food imports have conspired to impair short-term prospects and should be discouraged and offenders prosecuted.

The Petroleum industry

Nigerian oil was first discovered in 1956, and production began in the late 1950s. Oil exploration became available to international businesses in the ensuing ten years, and by then, the oil industry had grown steadily to become a major worldwide force, with a few notable outliers owing to economic conditions. The Nigerian National Petroleum Company (NNPC) was established in 1977. The state-owned company's objectives are to oversee and take part in the nation's oil industry. Nigeria is currently the continent's largest oil producer. Nigeria is currently ranked as the eleventh largest oil producer globally, with 18 operational pipelines and an average daily production of approximately 1.8 million barrels in 2020 and has decreased subsequently due to oil theft and vandalism, having 1,350,573 barrels per day (bpd) in October 2023. Various estimates indicate proven oil reserves to be between 25 and 36 billion barrels. Low sulphur content light grades account for 65% of the oil produced. Primary export types: Forcados and Bonny Light. Joint ventures between the National Oil Company of Nigeria and multinational corporations—Shell, ExxonMobil, Chevron, etc., manage the production of oil [1, 7].

Nigeria ranks among the world's top producers of oil. In the start of 2020, Nigeria produced more than two million barrels of oil per day. Subsequently, production fell and peaked in January 2021 at 1.14 million barrels per day, the lowest level in the previous year [1, 13]. In general, the first three months of 2021 saw the lowest daily oil production in Nigeria [13]. The sector that produced mineral fuels, oils, and distillation products accounted for more than 80% of Nigeria's export value in 2019, or around 47 billion US dollars. However, oil output and export declined as a result of the COVID-19 pandemic's decreased demand. Data for 2020 does, in fact, indicate a significant decline in the value of oil exports. The oil industry in Nigeria typically contributed roughly 9% of the nation's GDP prior to the coronavirus (COVID-19) outbreak. The oil sector's share of the overall real GDP between October and December 2020 was 5.9%, which represents a drop of about three percentage points from the same period the previous year (See Figure 5). The oil industry's share of the nation's GDP was 5.34 percent in the second quarter of 2023 [13]. Nigeria's GDP Growth in the Oil Sector fell to -13.43 percent in the second quarter of 2023 from a reading of -4.21 percent in the first quarter. GDP Growth Oil Sector: From 2011 to 2023, Nigeria's GDP Growth Oil Sector averaged -5.08 percent. Its highest point was 24.21 percent in the first quarter of 2011 and its lowest point was -26.04 percent in the same quarter of 2022.

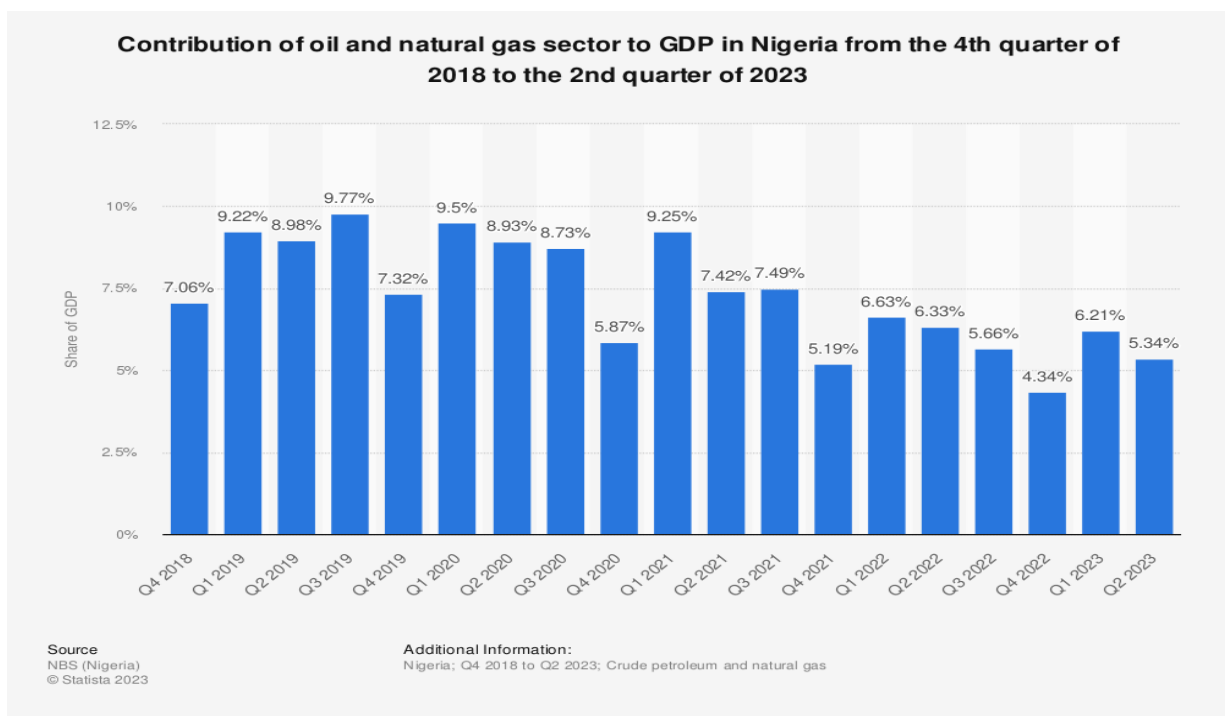


Fig. 5. Contribution of oil sector to GDP in Nigeria 2018-2023

According to the National Bureau of Statistics (NBS)'s most recent figures, the sector's GDP increased by 9.2 percent over the previous quarter, thanks to a surge in oil output in January, February, and March. The data indicated a 21.83 percent year-over-year growth from -26.04 percent in the equivalent quarter of 2022. Nonetheless, the oil sector's actual growth continues to sway in the negative direction. In Q1 2023, the oil sector's actual growth was -4.21 percent (year over year), which represents a 21.83 percent improvement over the rate observed in the equivalent quarter of 2022 (-26.04 percent). In comparison to Q4 2022, when growth was -13.38 percent, there was an improvement of 9.18 percent points. Accordingly, the oil sector experienced a growth rate of 20.68 percent in Q1 2023 on a quarter-over-quarter basis [13]. According to the NBS; Nigeria produced 1.51 million barrels of crude oil per day (mbpd) on average in the first quarter of 2023. This is 0.01 mbpd more than the daily average output of 1.49 mbpd that was recorded in the same quarter of 2022, and 0.17 mbpd more than the production volume of 1.34 mbpd that was recorded in the fourth quarter of 2022. In Q1 2023, the oil industry experienced a growth rate of 20.68 percent on a quarter-over-quarter basis.

With the oil business providing more than 90% of all foreign exchange profits, it is safe to say that for the time being at least, Nigeria's economy is centred on it. Nigeria's crude oil is entirely sourced from a multitude of tiny sources found in the Niger Delta's marshes. Regrettably, protests in the Niger Delta's streams over the supposed neglect of the regions have been supplanted by the invention of oil theft. Long before the federal government (Umaru Musa Yaradua's Administration) implemented the amnesty programme, oil theft was a frequent act of militancy. Furthermore, there are growingly alarming reports of illicit local refineries and oil bunkering in the Niger Delta [14, 16]. Nigeria and the Nigerian people have yet to reap the full benefits of the money generated by their hydrocarbon resources, even though their country is the biggest producer of oil in Africa and among the biggest globally. Despite the fact that the

nation's economy depends on the export and government income from crude oil, a significant amount of money is lost due to the risk of crude oil theft, which reduces the nation's savings [14, 15, 16, 17].

There is the fact that practically every economic sector is indirectly impacted by this enormous loss of revenue. For instance, it's estimated that Nigeria loses over N1 trillion per year as a result of crude oil theft. It is a well-established fact that pipeline vandalism, illegal oil bunkering, and oil theft not only occur in Nigeria, but also significantly contribute to the finance of other criminal operations in the Niger Delta [15, 16, 17]. In addition to costing the country enormous sums of money, this act has prevented the nation from using that money for infrastructure projects like roads, housing, healthcare, and education. This illegal act has raised the level of insecurity in the country as a whole and in the area [17]. This is because small arms and light weapons proliferation has led to various forms of kidnapping, political banditry, gun looting, Boko Haram, and other forms of violence. As a result, there are health issues, air pollution, and water contamination in the Niger Delta region, where oil extraction is currently underway [16, 17]. It has been established that the benzene levels in the area's water are 900 times greater than those permitted by the World Health Organisation for drinking water [14, 15, 16]. The region's rivers, which are largely used for fishing, have been polluted as a result of oil spills, which are mostly the result of oil thieves' actions. This has caused a rise in unemployment and poverty among those whose natural means of subsistence has been eliminated [17]. Similarly, agriculture is unfeasible in the area due to dead soil that extends five metres below the surface.

Instead of the needless politicking that permeates every aspect of political life with broken promises, the nation urgently needs the government at all levels to start high-impact projects capable of improving the lives and livelihoods of people in both urban and rural areas that bear the brunt and consequences of these illegal activities [14, 15, 16]. Additionally, through the "protect your environment" campaign, the government must educate the public about the risks that artisanal processing and oil theft pose to the environment and the economy [14, 16, 17]. The energy and refining sectors must receive substantial investments from the government in order to supply enough fuel and electricity to meet the demand for fuel that has been illegally processed for use in power plants. To persuade the private sector to invest the tens of billions of dollars required, legislative reform in Nigeria is therefore necessary to establish favourable investment conditions and commercial rewards. For the offenders, strict prosecution with unique judicial trial procedures with timeline is highly required.

The Manufacturing Sector

Approximately 10% of Nigeria's annual GDP (Gross Domestic Product) is generated by the country's manufacturing sector. Large southern cities like Lagos, Port Harcourt, and Ibadan are the centres of the nation's manufacturing activities. A vast number of people work in the production of consumer goods, building materials, cement, mining, vehicles, and household goods [1, 18, 19]. The manufacturing sector in Nigeria is primarily focused on the manufacture of construction materials and cement, food and drink, tobacco, chemicals and fertilisers, wood, and textiles. Merely three subsectors - food and beverage, cement, and textile - account for 77% of industrial production, producing the highest value among all of them. Breweries and wheat mills also make significant contributions to the manufacturing industry [1, 18, 19]. When

compared to prior years, the manufacturing sector in Nigeria has been operating well lately. Government incentives are starting to stimulate more interest in the manufacturing sector. To this end, the government has been lowering the cost of locally manufactured goods for consumers, making foreign alternatives prohibitively expensive or unavailable through import bans, funding facilitation at lower costs, discriminatory foreign exchange policies, and other measures [19].

Nigeria's manufacturing GDP climbed from 1528005.55 NGN million in the second quarter of 2023 to 1636751.87 NGN million in the third (See Figure 6). As shown in Figure 6, the Nigeria's manufacturing GDP reached an all-time high of 1797291.93 NGN million in the first quarter of 2023 and a record low of 875408.17 NGN million in the first quarter of 2010; from 2010 to 2023, it averaged 1483173.26 NGN million. The food, beverage, and tobacco industries contributed around 4.5 percent of Nigeria's GDP in the second quarter of 2023, making them the manufacturing sector with the biggest contribution to the country's GDP. Other significant contributors to the manufacturing sector were the cement and textile industries, with 1.5% and 0.8%, respectively [18].

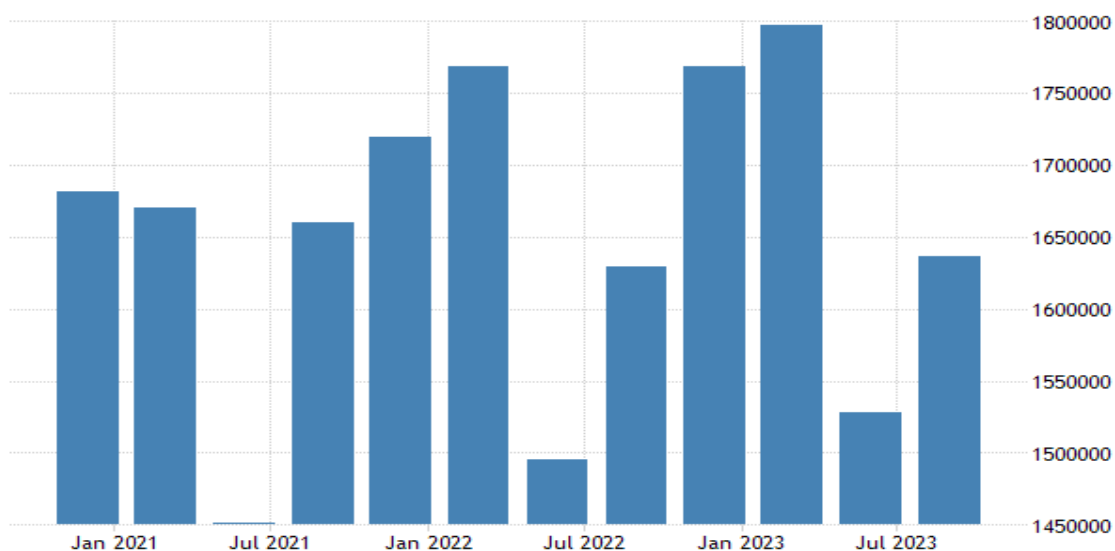


Fig. 6. Contribution of the Manufacturing sector to GDP in Nigeria Quarterly 2021-2023.

According to data from the Nigerian Bureau of Statistics (NBS), the country's GDP expanded by 2.51% in Q2 of 2023 as opposed to 2.31% in Q1 of 2023. The growth indicates economic growth for the eleventh consecutive quarter, albeit at a slower rate than the 3.54% seen in Q1 of 2022. The Bureau also revealed that, compared to N17.75 trillion in Q1'23, the real GDP for Q2'23 was N17.72 trillion, a 0.17 percent decline. The manufacturing sector's percentage contribution to the real GDP decreased from 10.13% in Q1 of 23 to 8.40%. In the meantime, the manufacturing sector's real GDP growth in the second quarter of 2023 was 2.20%, 0.81 percentage points more than the 1.61% it had in the previous quarter.

Nigerian manufacturers have many difficulties, the most significant of which is the lack of reliable power. In order to maintain operations, the majority of these companies depend on "emergency" power generators, which drives up expenses [1, 19]. The physical infrastructure

shortcomings of the nation are also a significant barrier, as are the difficulties in obtaining credit and the high cost of importing skilled labour and raw supplies. Nigeria's efforts to revive its gravely failing manufacturing sector could determine the country's future. Despite the government's lack of support and several obstacles impeding their growth, industries in places like Nnewi in the country's east have achieved remarkable achievements in the past.

Before the Innoson Group, led by industrialist Innocent Chukwuma, defied common sense and opened Nigeria's first car plant in Nnewi, many thought it was impossible to create an automobile manufacturing in Nigeria. The Cutix Group, a significant producer of electrical cables, and the Chicason Group, which has a variety of interests in both manufacturing and construction, are located right next to this business. These groups provide as examples of what might be accomplished if the Nigerian government intervened to assist in resolving a number of the issues facing the manufacturers.

The Service Sector in Nigeria

One of the main industries that greatly boost a nation's economic development and competitiveness including Nigeria and all of Africa is the services sector. Among the subsectors within the service sector are banking, insurance and finance, travel, retail, food and drink, media and entertainment, healthcare and education, and the aviation sector [1, 19, 20]. Good road networks, water and electricity supplies, and other infrastructure are also on the list. In the long run, a nation's capacity to supply these services will become an asset to draw in foreign capital in addition to improving the welfare of its people. Right now, the world's fastest-growing sector is the service industry. It contributes significantly to the share of total employment and accounts for a sizeable portion of the gross domestic product in the majority of countries [19, 20]. The service sector contributed over 60% of Nigeria's GDP as of 2015 and contributed 52.70 % to the aggregate GDP in 2023, accounting for roughly 33% of employment share on average as opposed to 7% for industry.

It is well recognised that a thriving service sector improves the success of other economic sectors like manufacturing. This is due to the fact that the sector makes most other sectors - manufacturing, the industrial sector, etc., - able to function, as these industries primarily depend on the service sector to provide essential services like banking, accounting, information technology, and so forth [1, 19, 20]. For additional outputs, manufacturing companies that rely on outside sources for transportation, funding, design, and communication can turn to the service sector. The level of per capita individual consumption and demand from the manufacturing sector are the main drivers of the growth of the service industry [19]. The growth of firms is also impacted by the service sector, which boosts value added and productivity. The service sector in Nigeria has demonstrated remarkable performance in spite of challenging economic conditions. Nigeria's rebased GDP sectorial composition changed in 2014, moving away from the oil sector and towards the service sector. With wholesale and retail trade contributing 16.27%, real estate contributing 8.37%, and information and communication providing 11.04%, the service sector accounted for 54.8% of the rebased GDP. Currently according to the NBS data, Nigeria's gross domestic product (GDP) is made up of 53% services. Trade (16%), information and communication (12%), real estate (6%), professional, scientific, and technical services (4%), financial services, and insurance (3%), are the major contributing services activities.

Nigeria is the fifth-biggest country in Africa and the 63rd largest producer of services globally. Nigeria has a sizable financial services industry, and despite growing macroeconomic challenges, a number of international banks are operating there as a hub for West Africa [20]. Unfortunately, only roughly 50% of Nigerian adults have access to official financial services; this issue is made worse by the excessive processes needed to execute even the most basic transactions. The Nigerian government intends to advance pension and insurance sector reforms. Nigeria's insurance market is not very well-established, but it has expanded in the last ten years. There exists a possibility for the service sector to augment Nigeria's economic growth. Further, Nigeria's over-reliance on the oil industry can be lessened by diversifying and fully utilising the service sector's advantages, as these sectors' innovations are essential for raising productivity levels and spurring overall economic growth through innovation expenditures and activities. Growth in these industries has contributed to Nigeria's economic diversification to some extent, encouraged by supportive government policies and increased foreign direct investment (FDI) [19, 20]. We call on the Federal Government of Nigeria, in collaboration with stakeholders, to give priority to all sectors of the information and communications technology (ICT) industry, including software for equipment, broadband access for satellite communications, telecommunications technology, and start-ups for innovators. This will allow the sector to leverage its full potential and contribute even more to the country's GDP, building on the progress made in 2021.

Challenges of the Economy and Possible solutions

Nigeria's economy has seen a significant decline. The nation's purchasing and selling conditions are deplorable and uninspiring. The nation's annual income has decreased, which has a detrimental impact on the livelihood of the people. Nigeria faces several challenges that prevent it from reaching its full potential when it comes to economic growth and development. The State-society gap, corruption, inconsistent economic policies, inadequate human capital development, unemployment and crime, inadequate infrastructure, and inflation are a few of the primary economic difficulties affecting this nation [22].

Nigeria's economy and commercial activity have been impacted by debt and inflation. Over the past few years, the nation's reliance on oil has diminished. According to the Department of Petroleum Resources, the nation's crude oil reserves produce 37 billion barrels annually, but about 2% of this will be depleted in 49 years. In order to alleviate the financial strain brought on by the continuous declines in revenue, the Nigerian government has raised its borrowing from the global capital market [22, 23]. Globally rising interest rates combined with Nigeria's declining revenue have made it more difficult for the nation to service its debts, reduced its foreign exchange reserves, and made it more difficult for the government to get foreign cash for economic purposes. In an effort to stabilise the Naira, the CBN adjusted a number of foreign currency rates in 2020. Official and unofficial currency rates, however, differed after a large depreciation in 2022. The country is engulfed in inflation, which is the overall rise in prices for goods and services that eventually results in a decrease in buying power. Nigerians can overcome inflation and debt by following some strict measures such as encouraging individuals and institutions to invest their savings on high-interest platforms, like securities that are based outside of the country, maintain savings in foreign currencies such as the dollar and settle the debt burden through the IMF and other lenders in the international capital market.

Inadequate Power Supply

Inadequate capacity for producing electricity limits Nigeria's economic progress by preventing a consistent and reasonably priced supply of energy. Simultaneously, Nigeria releases large volumes of associated gas, a leftover from the production of crude oil offshore. Flaring wastes a large quantity of energy and produces a large amount of greenhouse gas emissions [1, 16]. The Nigerian government's efforts to effectively manage the oil and gas industry in order to decrease gas flaring and boost the overall generation of clean energy through increased private sector engagement is in the right direction and encouraging. Insufficient power makes citizens' access to electricity expensive and unpredictable. Primarily depending on petroleum leads to an increase in noise pollution from equipment and generators; and mining for oil can pollute the air and the sea. Further, environmental pollution is costly to control. In addition, Nigeria possesses a wealth of unexplored renewable energy resources, including geothermal, hydro, biomass, wind, and biogas [16]. The Nigerian government needs to take the following actions to enhance the nation's electricity supply: The Nigerian Electricity Regulatory Commission (NERC) should continue with the project of the designed renewable energy feed-in tariffs for wind, solar, small hydro, and biomass/biodiesel to enhance the power supply in the country and consider nuclear energy as a base load electricity supply option in the country. The government ought to modernise its transmission and distribution infrastructure, and permit private enterprises to make investments in the generation and distribution of electrical power.

State – Society Divide

One of the main obstacles to Nigeria's economic progress is the state-society divide. Given the diversity of ethnic, religious, and regional identities that shape Nigeria's political landscape, the country has a severely divided populace. Since independence in 1960, Nigeria has struggled to create and sustain national integration. For many years, many groups within Nigeria's populace had expressed sentiments of being left out or marginalized, undervalued, repressed, threatened, or even targeted for eradication at various points in time. By focusing on the needs and demands of foreign interests in order to obtain funding and investments, the government has become more and more detached from its constituents. The government is encouraged by foreign interests to contribute as little as possible to the establishment of institutions, programmes, and plans that will boost domestic taxation and other revenue streams to improve the livelihood of the people [22, 23]. As a result, the nation's ability to operate greatly depends on money from outside sources. The West (and China) contributes to the continuation of this state-society divide by offering official development assistance or foreign aid. Aid money comes with development consultants that share the same outward viewpoint. They concentrate on the aspirations and needs of the foreign countries they originated from. The government is influenced or advised by these consultants to prioritise foreign interests over the needs and aspirations of its citizens [22]. As a result, the distance between the people and their government grows. The government can take the following actions to close the state-society gap: The Nigerian government need to cut back on investments and financial assistance from abroad. Rather, the government need to concentrate on establishing regional establishments for the advancement of the nation. The Nigerian government ought to cease depending on consultants who prioritise the interests and aspirations of the foreign organisations they represent. Nigerians should be allowed to establish autonomous groups that would generate people-relevant, implementable solutions. Furthermore, close the gap between the state and

society, the government should decentralize governance. Additionally, it should motivate decentralized government leaders to encourage regular societal feedback.

Corruption

An enormous cankerworm that has gnawed a hole through the fabric of our country is corruption [1, 16]. The malaise of corruption is a threat to the survival of the Nigerian economy without doubt. The nation is currently experiencing a political, sociocultural, and economic crisis that is the result of a system that is impacted by corrupt and poor leadership. The few in positions of government leadership divert funds intended for the provision of essential infrastructure and services like decent roads, clean water, health care, education, etc., into their personal coffers, while the policies and programmes of succeeding governments have turned into a source of deprivation, frustration, poverty, and hunger for the impoverished majority [22, 23]. Even with the establishment of democracy, in which the electorate is meant to choose those elected to particular positions, what we have seen in its twenty four years democratic practice is a leadership class devoid of the courage, determination, and sense of national pride necessary to lead the people in an effective manner. But they have the capacity to divert public monies into private coffers. The core of many of Nigeria's issues is corruption as a whole. Nigeria ranked 144th out of 177 countries in the Corruption Perception Index, making it one of the most corrupt countries in the world according to Transparency International [1, 22]. The goal of the Nigerian government's 2030 Agenda for Sustainable Development is to lift more than 100 million people out of poverty. Petroleum, natural gas, tin, iron ore, coal, limestone, niobium, lead, zinc, and arable land are among Nigeria's natural resources [16]. These resources bring in a substantial amount of money for the nation. For example, mineral fuels, oils, and distillation products brought in over \$47 billion for Nigeria in 2019. It accounted for more than 80% of the nation's export earnings. Nigeria's natural riches don't foster economic growth; instead, they fuel corruption and hardship, with millions of people living in poverty while very few benefit financially from them [22, 23]. Nigeria is not the only country where corruption exists [1, 16]. Vote-buying and nepotism have placed dishonest executives and employees in public positions. As a result, professionalism standards have dropped, and in both public and private offices, citizens voluntarily begin bribes, while public officials actively seek them out. There should be repercussions for both citizens and law enforcement personnel who accept or are involved in bribery. Despite having the commissions, bureaus, and tribunals tasked with looking into and prosecuting corrupt activities, Nigeria is still fighting corruption [1, 16]. The government need to permit impartial, unbiased investigations into corruption matters to be carried out by anti-corruption commissions, bureaus, and tribunals free from political interference. Corrupt public officials and individuals should face legal consequences and forfeit any riches amassed through dubious means. Further, officers and citizens who reject and disclose bribery should to be commended and those involved in bribery be prosecuted through special courts with timeline for completion of such cases. The government should further encourage information access and openness in public procurement procedures to hold public servants more accountable.

Economic Policy Changes

Economic policies are tools that governments employ to control the economy of their nation [1, 23]. These consist of budgetary constraints, taxation, employment creation, and monetary policy (supply and demand). There are numerous explanations behind Nigeria's ineffective and

badly implemented policies. Power struggles and inconsistent policies are the result of unhealthy inter-ministerial rivalry in the nation. One sector is governed by multiple authorities, all of which desire increased decision-making authority [23, 24]. Politicians that don't want to assist the public will bend laws to suit their needs. Instead than focusing on the previous administration's policies and goals, every new one creates fresh ones [1, 23, 24]. Therefore, even if policies are enacted, they could not be ideal or executed today. Public servants and leaders need to adhere to the country's development plans and priorities as well as comprehend the procedures for budgeting, implementing, and monitoring them [24]. To guarantee that policies are carried over between regimes, the government should establish transitional bodies. These organisations should enforce people', administrators', and leaders' adherence to policies. Appropriate research and consultations should be carried out by the government-appointed organisations and individuals responsible for developing policy. Furthermore, in order to make sure that leaders and organisations do not create and implement policies for personal benefit, governments should investigate political and bureaucratic corruption.

Insufficient development of human resources with a Poor Education system

An effective education system can lead to the development of human capital. There is a symbolic connection between a country's development initiatives and human growth through education. The fundamental resource and the key to utilising other resources for the good of humanity are labour. Thus, a key factor in determining our country's future achievements is the quality with which we cultivate and apply human capabilities. A nation that depends on foreign aid to finance these industries is taking a big risk. The budgetary provision to the Nigerian education system is inadequate. For example, the education sector received N1.29 trillion (7.9%) of N16.39 trillion in 2022, N771.5 billion (5.68%) of N13.58 trillion in 2021, and N671.07 billion (6.7%) of N10.33 trillion in 2020 [22]. More vocational crafts training are required for young Nigerians. Nigeria ought to engage in worldwide human capital development by means of skill enhancement and technological investment to foster workforce competitiveness [22]. The rate of human capital development is comparatively high in industrialised countries since gaining more experience, knowledge, and skills is guaranteed to bring benefits. Developing nations should devote 15% to 20% of their annual budget to education, according to UNESCO recommendations [22, 23]. Nigeria needs to allocate a larger portion of its budget to education in order to improve the human capital skills that are the foundation of a knowledge-based economy. Agencies that can raise students' talents and skills at all educational levels in the nation should be established by the government. To put the theories they learn in class into reality, for instance, students require mentors and internships. Further, to help employees develop their abilities, the Ministry of Labour, the Bank of Industry, and other government organisations should support various training and retraining programs. In order to make education accessible to all Nigerians, the government needs to provide financial aid at all levels.

Rising crime and High unemployment

Many Nigerians have restless nights due to the country's crime epidemic. People feel that they can no longer safely stroll around their own neighbourhoods in numerous areas. Any state's primary duty is to provide public safety, and Nigeria has fallen short in this area. The Global Terrorism Index (GTI) assessed Nigeria as the world's third worst country with insecurity in 2020 [1, 22]. The rise of the economy in this country has been hindered by crime and terrorism.

Nigeria has seen a rise in terrorist attacks, including bombings, property destruction, kidnappings, and fatalities. Most are related to Boko Haram BH, and Islamic State – West Africa ISIS-WA. They make use of homemade explosives, small guns, and stolen military hardware. The public should be encouraged by the government to report suspicious individuals and criminal activities in their localities. The government urgently needs to close the weapons and money-transfer routes used by terrorists. To reduce violence among citizens, the government should enforce stronger laws against alcohol, drugs and illegal narcotics. When people are dissatisfied with the legal options available to them, they resort to unlawful and immoral behaviour. They commit crimes because they have no other options, and their deeds reflect poorly on the entire country [1, 16]. The government should recruit young people to work as security agents and bolster security rather than letting chronic unemployment continue. To prevent young people from committing crimes to obtain money for necessities, the government needs to provide jobs. Since 2011, United Nations Office on Drugs and Crime (UNODC) has provided assistance to the Nigerian government and key ministries in their efforts to reduce terrorism and crime in the nation.

Undoubtedly, the most harmful issue Nigeria has is unemployment [1, 22]. Millions of people, primarily young ones, lack jobs. KLYNVELD PEAT MARWICK GOERDELER (KPMG) stated that the unemployment rate in Nigeria grew to 37.7% in 2022. Numerous issues are brought about by unemployment, such as a rise in crime, increased suicide rates, and slower economic progress. The government can address the employment problem in a number of ways: Expand and support institutions that provide technical training. The majority of nations have a greater need for practical skills. Young people should be encouraged to enrol in technical courses by the government. Take action against corruption to safeguard public monies that could be invested to generate employment. Further encourage self - employment by providing capital and establishing marketplaces for goods and services, and facilitate the export of human capital to get talented and educated Nigerians work opportunities overseas.

Poor infrastructure

It is impossible to overstate the role that infrastructure plays in the economy, particularly in the industrial sector. An efficient infrastructure promotes investment, moves goods, people, and services, and facilitates information and communication - all of which are critical components of economic diversification which increase productivity. Unfortunately, Nigeria's most infrastructure facilities particularly its roads, electricity, and water systems are in a terrible state and are not well maintained. This is largely because the government does not provide enough funding to maintain these facilities, which leads to careless use, vandalism, corruption, and delays in construction [1, 7, 8]. Because increased manufacturing costs and occasionally the general inability to distribute items to points of sale deter producers of goods and services, poor infrastructure leads to low productivity. Due to their participation in the rise in crime and illicit activities, this further contributes to a decline in income generation and a low standard of living for the populace. Approximately 95% of all commodities and passengers in the nation are transported via the road system, making it the most significant component of the nation's transport network [1]. However, years of excessive traffic and insufficient maintenance have left many roads in terrible condition today. Due to the lack of an effective rail transportation system, big trucks and trailers are being used to traverse the nation's few good roads, which in

turn causes an increase in potholes, traffic accidents, and the destruction of road infrastructure like signal lights [1].

A nation's development accelerates when its transport system is dependable. Nigeria, one of the biggest oil-producing nations in Africa, yet has areas that are unreachable because of tarmac road deterioration, traffic jams, instability, and other problems. Just over 10,000 km of the 50,000 kilometres of roads are paved, and many of them are in bad condition [22, 23]. The government need to take strict measures to enhance Nigerian transport infrastructures: To increase revenue, toll roads should be constructed and encouraged by the government. To lessen traffic, the government should build more highways. The installation of CCTV cameras is essential for road safety. The federal government designates highways, and the private sector can construct or renovate roads in exchange for tax credits under the Road Infrastructure Tax Credit Scheme. Various financial models for infrastructural development by the Ministry of Finance should be encouraged (Sukuk, Islamic finance bonds, other Public-private Partnership (PPP) agreements etc.). The government founded InfraCredit, a \$2 billion infrastructure firm, in February 2022 with the goal of concentrating on crucial infrastructure initiatives [22]. The Nigerian government also declared in August 2022 that the Badagry Deep Sea Port will be put up for public-private partnership at a cost of \$2.59 billion. The state has also made investments in non-traditional modes of transportation. The three main seaports in Nigeria are Port Harcourt, Calabar, and Lagos (including Apapa and Tin Can Island). Currently, international commercial flights arrive at Lagos, Kano, Port Harcourt, Enugu, and Abuja, five of Nigeria's twenty-two airports. There are currently eight lines in Nigeria's railway network, totalling just over 2,000 kilometres. These railroads need to be greatly expanded, modernised, and restored.

Nigeria Nuclear Energy Option

Nuclear energy appears to be an option for Nigeria and other countries looking to address their energy crisis. The Federal Government has mandated NAEC, the highest arm of government tasked with developing a nuclear energy programme, to investigate the feasibility of deploying nuclear power to generate electricity in the nation. The Energy Commission of Nigeria under the federal ministry of science and innovative technology is in charge of energy policy in the country. Presently, there is a government aggressive privatisation programme of new generation and transmission projects, which have made the energy industry to see significant change [1, 7, 9]. A five-year contractual obligation to boost generation for each plant was placed on these newly privatised generation businesses. New independent power producers were expected to invest an additional 2 GWe to boost supply but still ineffective and need a base load supply to avoid the current energy crisis in the country [1, 16]. It is in line with this energy need, that the Nigerian Senate had also urged the federal government to take nuclear power into consideration as base load for the nation's energy balance.

The government intended to use solar energy more often. In May 2014, a \$5 billion public-private partnership deal with Skypower FAS Energy was signed to construct 3 GWe of utility-scale solar PV capacity. A feed-in tariff (FIT) system was being designed to encourage investment in renewable energy sources. Nigeria has requested assistance from the International Atomic Energy Agency in order to develop plans for up to 4000 MWe of nuclear capacity by 2035 in order to meet the country's rapidly rising base-load electricity demand [1, 9]. The most populous nation in Africa is Nigeria, whose power outages have forced businesses

to shift to Ghana. A technical framework for the federal government's nuclear energy initiative was agreed in 2007 and was developed in 2009 into a Strategic Plan for implementation of a national nuclear power programme. The plan entails building infrastructure and manpower, certifying the design of the power reactor, obtaining licences and regulatory clearances, building, and starting it up. 2009 saw the adoption of a strategy plan to streamline this, with the goal of achieving 2000 MWe of nuclear capacity by 2030 and an additional 4000 MWe by 2035. The IAEA INIR mission to Nigeria took place in 2015, however preparations began in 2013 [1, 7, 9] and Nigeria is currently in Phase 2 of the Milestones process. The Nigerian Nuclear Regulatory Authority (NNRA) has also been set up for regulatory control on all applications of ionising radiation, nuclear materials and radioactive sources under the Federal Ministry of Petroleum Resources. Established by law in 1976, the Nigerian Atomic Energy Commission (NEAC) coordinates the National Nuclear Energy Programme Implementation Committee (NEPIC). The Commission is under the Presidency and supervised by the office of the Secretary to the federation (OSGoF).

The NEAC's environmental and siting team selected four sites for additional assessment, which was disclosed in October 2010. These are located in the north-central region around Geregu/Ajaokuta in Kogi state; in the south-south region around Itu in Akwa Ibom state; in the southwest region around Agbaje and Okitipupa in Ondo state; and in the northeast region near Lau in Taraba state. Geregu and Itu, the first two sites, were deemed preferred after being assessed between 2014 and 2015. According to Rosatom of the Russian Federation in line with various agreements signed with the Nigerian Government, two reactors will be constructed at each location [1, 7, 9]. Rosatom affirmed that Nigeria, whose preferred option is a build-own-operate (BOO) agreement with majority Rosatom equity, would have access to Russian finance options. This was to be verified in an additional intergovernmental contract. Having completed the site selection, Nigeria is now in the process of carrying out feasibility studies on the power production technologies being considered. Also, at Ahmadu Bello University, Nigeria's first research reactor was put into service in 2004. Similar to other Chinese units that are in operation in Ghana, Iran, Syria, and China, this 30 kW Chinese tiny neutron source reactor is also made in China. With regard to medical technology, geochemistry, mineral and petrochemical analysis, and exploration, the IAEA supported the Nigerian government in its endeavour to "reinforce and widen the human resource base to sustain nuclear technology" [8, 9], and a Multi - purpose research reactor is in the process for construction in the country.

Further, Nigeria completed the draft of its Atomic Energy Bill earlier in 2022 with the Agency's help in order to make it more consistent with both international and national nuclear law. The Nigerian Nuclear Regulatory Authority (NNRA), the Federal Ministry of Justice, and NAEC all participated in a number of sessions with the IAEA. Delineating the roles of the NNRA, NAEC, and other authorities and preventing any overlaps was a major priority. This was carried out under the Agency's Technical Cooperation programme, which is part of the IAEA Legislative Assistance Programme.

Presently, about thirty nations are now thinking about, planning, or launching nuclear power projects; among them are Belarus, Bangladesh, and Turkey, which are currently constructing their first nuclear power facilities for power generation and other applications. In general, the IAEA assists these nations in acquiring the necessary expertise in nuclear forensics, energy

planning, and analysis. The need for more energy is urgent for industrial and home uses in Nigeria due to the expanding middle class, population, and urbanisation. Adequate energy supply is also essential for the socioeconomic well-being of the majority of impoverished Nigerians who want sustainable development and nuclear energy mix will be the required answer. Because nuclear energy contributes to the nation's energy balance, it would be able to lessen this energy crisis in Nigeria.

CONCLUSION

Since returning to democratic government over twenty years ago, the Nigerian economy, which had suffered from low growth rates as a result of poor plan execution and economic mismanagement, has not recovered. Since the 1990s, attempts to diversify the economy and grow industries other than oil have failed, and there has been widespread mishandling of the enormous oil profits. Despite favourable evaluations and promising future growth, there are serious concerns regarding its sustainability due to a history of poor management, fluctuations in the price and production of agricultural products and crude oil, as well as dangers related to insufficient energy, infrastructure, credit, security, and political will. Therefore, while there is no denying of the economy's potential, what matters most is the capacity to harness it for growth that is optimal, sustainable, and efficient. This study offers a number of suggestions as potential remedies to help the economy reach its full potential. These include good governance for the public and private sectors by lowering the cost of corruption so that money can be used more effectively to spur growth and development; sufficient human resource development through a strong educational system; good administrative policy continuity; improved infrastructure, particularly in the case of intermittent power supplies; and improved energy diversification by adding nuclear power as the base load for a dependable energy supply to support increased agricultural productivity and rapid industrialization.

Given the abundance of natural and human resources, there is reason to be optimistic that Nigeria's economy can still be Africa's growth tiger, despite the fact that there are numerous obstacles to the country's economic growth and that these obstacles are not insurmountable as they have been overcome in a number of other countries. Nigeria has been in an energy crisis for a long time, and the government has to focus more on finding a solution. The government should also evaluate the current regulations to make room for such measures, to encourage and permit enterprises to construct their own local power generation systems. Bank funding should be made available to young entrepreneurs and start-ups to support their plans to promote locally manufactured goods with an emphasis on quality and durability in order to discourage needless imports. The government should also construct the roads, railways, airports, and seaports to enable the safe transit of goods and reduce the dependency on automobile transportation. In general, this will encourage the nation's industrialization, leading to an increase in jobs and a decline in crime from the high rate currently observed.

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