

The Role of Natural Resources in Economic Development in Nigeria

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Abstract: Natural resources in Nigeria are extremely rich with valuable natural resources such as oil, gold, copper, and zinc. Natural resources also play a very important role in economic development. This article analyzes the role of natural resources in economic growth and development in Nigeria.

Keywords—natural resources, Nigeria, economic, growth

1. INTRODUCTION

The geology of Nigeria has a complex structure consisting of many layers such as strata, foundation complex, young granite strata, and basin sediments. The foundation complexes were formed from the pre-Cambrian period, mixed rocks and old granite types. Young granite strata consisted of igneous rocks from the Jurassic period that formed in north-central Nigeria. Sedimentary basins form in the Niger Delta region, the Anambra River basins, Lower, Middle, and Upper Benue Trough, Chad Basin, Sokoto Basin, Niger Basin, and Dahomey Basin. Thanks to the complex geological structure that creates extremely valuable natural resources such as oil, gas, and abundant mineral deposits in all geological strata of Nigeria. Oil now plays an essential role in Nigeria's economy. In addition to oil and gas, there are economically significant solid minerals deposits, including gold, iron ore, cassiterite, columbite, wolframite, pyrochlore, monazite, marble, coal, limestone, and clay, barytes, lead-zinc, etc., are found scattered throughout 36 states of Nigeria. However, besides the positive roles that natural resources bring, it also causes many negative impacts affecting the economic development of Nigeria.

2. THE NATURAL RESOURCE IN NIGERIA

2.1 Petroleum resources in Nigeria

Nigeria is the 8th largest oil producer and the 6th largest oil exporter in the world. Nigeria also has the second-largest oil reserves in Africa after Libya. The continent's main oil producer is currently learning the oil production process from countries like Angola, Libya, and Gabon. Nigeria's oil reserves are approximately 37.2 billion barrels and are among the top 10 countries in the world in terms of oil reserves on a global basis. Furthermore, Nigeria's oil industry is supported by two essential advantages. First, Nigeria's oil is high-quality and often sells for more than Brent, the North Sea benchmark crude [1]. The price of Nigerian light oil is popular with the US and European refiners as it can be quickly processed into fuel products, which also means disruptions to Nigeria's crude supply could negatively impact the international market. A second advantage for the Nigerian oil industry concerns the

geographical location of the country. Nigeria is also located in an important position in oil supply in North America, a significant source of global demand. A third advantage that can be emphasized is that the cost of oil production is usually meager in Nigeria. According to the International Energy Agency, producing a barrel of oil in Nigeria is about 15 USD/barrel, while in Angola, it costs 40 USD/barrel to produce a barrel of oil [2].

Currently, oil exploration and production take place mainly in the Niger Delta region. However, exploration campaigns have been conducted in different segments of the sedimentary basins of Nigeria. About 606 oil fields are currently being exploited in the Niger Delta region, of which 355 are onshore, and 251 are offshore. However, about 23 fields have been closed due to depleted oil. Outside the Niger Delta region, about 28 oil fields have been exploited in Anambra, Edo, and Benue (Figure 1)[3].



Figure 1: Distribution map of Nigerian oil fields

Large oil wells have a production rate of about 1 million barrels per day out of the country's total production of about 2.1 million barrels per day. A large oil well is an oil well with a total production of about 500 million barrels. In Nigeria,

there are large oil fields such as Oso, Ubit, Assan, Meren, Abo, Onga, Agbami.. with a production capacity of about 200,000 barrels of oil and 150 million m3 of standard gas. Most of the oil fields in Nigeria produce between 20,000 and 40,000 barrels of oil per day. The average oil field in Nigeria produces about 1000 bpd. Most of Nigeria's oil reserves are found along the Niger River Delta and offshore oil fields of the Bay of Benin, the Gulf of Guinea, and Bonny. Exploration activities are mainly concentrated in offshore areas deep in the Chad Basin, located in the country's northeast. About 80% of oil production and extraction comes from Akwa-Ibom, Bayelsa, the Niger River basin, and about 20% comes from the Cross, Imo, Abia, Anambra, Ondo river basins.

Nigeria's Oil Ministry believes that inland oil reserves are gradually decreasing because they have been exploited for a long time, and the current exploitation is mainly offshore oil fields. However, about 60% of oil production is still in the Niger Delta region. Nigeria's current oil production capacity is about 3.23 million barrels per day, but in reality, the country only produces about 2.5 million barrels per day. Moreover, the government's target is always higher than the proven oil reserves. The government has had ambitions to increase crude oil production to 4 million barrels per day and plans to produce 40 billion barrels by 2025. However, the number of rigs has decreased in the past two years from 43 operating rigs in 2013 to 33 rigs in 2014. Proven oil stocks fell from 37.2 billion barrels in 2011 to 35 billion barrels at the end of 2012 and rose again in 2013, but below fundamental aspirations. Oil production levels also remain below the government target [4].

In addition to oil, Nigeria's gas reserves are said to be the largest in Africa. However, due to limited infrastructure, Nigeria has not fully exploited the advantages of the largest gas field on the continent. This massive amount of gas was found when Nigeria searched oil fields. Nigeria's gas reserves are estimated at 180 billion cubic meters gas. With the 8th most enormous proven gas volume globally and accounting for about 2.8% of total global gas reserves. Gas experts say Nigeria's gas quality could be as high as 600tcf. Nigeria's gas reserves have been proven to be exploitable in about 100 years [5].

Table 1: Proven gas reserves in African countries

Countries	Reserve (trillion cubic meters of gas)
Nigeria	180,458
Algeria	159
Ai C�p	77,2
Lybia	52,795
Angola	10,945
Cameroon	4,77
Mozambique	
Congo(Brazzaville)	

Sudan and South Sudan	4,5
Tunisia	3.200
Namibia	3,0
Rwanda	2,3
Equatorial Guinea	2,2
Ivory Coast	2,0
Gabon	1,3
Mauritania	1,0
Ethiopia	1,0
Ghana	1,0
Uganda	1,0
Tanzania	1,0
	0,8
	0,8
	0,5
	0,23

Source: US Energy Information Administration (International Energy Statistics), Oil and Gas Journal

2.2 Minerals

In addition to oil, Nigeria's natural resources are also wealthy, with various solid minerals from precious metals, precious stones, and industrial minerals. According to a report by the Nigerian mining industry, the country currently has about 40 types of precious stones and solid metals waiting to be mined. Foreign exchange earnings from the mining industry can replace foreign exchange earnings from petroleum. For many countries worldwide, the mining industry can be as profitable as the oil and gas industry. However, Nigeria has only exploited about 30% of its solid mineral reserves and earns about \$89 billion annually. Thus, about 70% of mineral reserves are still in the ground, especially in the northern region of Nigeria [6].

The types of solid minerals that can be mined in large quantities in the country include:

Iron Ore: Nigeria currently has the 12th largest iron ore deposits globally, with more than three billion tons of iron ore producing iron and steel found in provinces such as Kogi, Enugu, Niger, Zamfara, and Kaduna.

Coal: Apart from the scattered coal mines in the Sokoto Basin and the Niger River basin, most of Nigeria's coal mines are found in the region, such as Benue Trough, Enugu, Okaba, Ogboyaga, Orukpa, Lafia-Obi, Gombe, and Chikila. Lafia-Obi Coal Mine is the oldest coal mine in Nigeria to date. Coal reserves in the Lafi-Obi mine are estimated at 22.4 million tons and have not yet been fully exploited. Much of Nigeria's coal is consumed locally. Only about 110,000 tons per year are exported, mainly to Ghana. Lafia-Obi coal mine is used and

produced primarily in the Ajaokuta steel factory with 50,000 tons per year. Coal mines are expected to provide the necessary energy for several cement plants and power plants planned in these areas. Moreover, in the current energy situation globally, especially in Nigeria, coal mines, although of low quality, still play an essential role in the country's economic development.

Gold: Gold reserves can be found in alluvial deposits and shale areas in Maru, Anka, Malele, Tsohon Birnin, Gwari-kwaga, Gurmana, Bin Yauri, Okolom-Dogondaji, and regions of Iperindo province - in northwestern and southwestern Nigeria.

Bitumen: Nigeria has relatively high Bitumen reserves, around 42 billion tons, twice the proven reserves of crude oil. With such a large output, it can meet the construction of roads in Nigeria or be exported to earn foreign currency.

Lead/Zinc: An estimated 10 million tonnes of lead/zinc are distributed across eight states of Nigeria.

Limestone: Limestone occurs in most of the 36 states of Nigeria and has more enormous reserves in some states such as Sokoto, Gombe, Benue, Kogi, Edo, Oyo, Ogun. Limestone reserves of about 2.3 trillion tons and about 568 million tons have been proven. In 2014, Nigeria's cement production capacity was about 26-28 million tons/year [6]

3. THE ROLE OF NATURAL RESOURCES

Natural resources are one of the input factors of the production process. Without resources and land, there would be no production and no human existence on a global scale. However, for economic growth and development, natural resources are only a necessary but not sufficient condition. If the technology is fixed, then the flow of natural resources will be the absolute limit on material produced in the industry using ore minerals as input materials such as aluminum, steel. Natural resources have only become an economic power when people know how to exploit and use them effectively.

3.1 The role of natural resources in GDP growth in Nigeria

Nigeria's mining industry is very developed, in which oil plays a dominant role. With nearly 37.2 billion barrels of reserves and 2.13% of global production, Nigeria has proven reserves among the ten largest oil reserves globally (3.1% of international reserves) and is one of the top 10 oil-producing countries. Since the discovery and production of oil in 1958, the oil industry has played an important and dominant role in the Nigerian economy. Oil production and extraction have grown steadily from 1958 to the present, and oil production had increased from 16.8 million barrels in 1961 to 1807 million barrels in 2014 [7].

Accordingly, the contribution of oil to GDP has also increased rapidly over the years. In 1961, the contribution of oil to GDP was only about 0.9%; in 1990, this proportion increased to 37.46%. The highest peak was in 2000, oil contributed to GDP nearly 50% and decreased slightly in the

following years. Until 2014 oil's contribution to GDP was still 31.1% [8].

However, the contribution of oil to GDP in Nigeria is still low compared to some countries in the region. In Angola, Africa's second-largest oil producer, the ratio is 45%. In Kuwait and Libya, oil production contributes about 60% of GDP. In Saudi Arabia, OPEC's largest oil producer, GDP is about 48%, Qatar is 55%, the UAE is about 40%, and Venezuela is 25%. In Nigeria, the share of oil is mainly measured in terms of revenue. That income level would not be included in GDP if there was no manufacturing activity in the economy. However, because the legal sanctions in Nigeria have not been fully implemented, there is still a considerable loss of oil revenue and, therefore, a decrease in GDP contribution [9].

In contrast to the oil industry, Nigeria's mining industry is very underdeveloped and contributes less than 2% to the country's gross domestic product (GDP). In 2014, the contribution of the solid minerals industry to the Nigerian economy was one percent (1 percent). The mining industry is responsible for providing local raw materials for other industries and contributing to infrastructure construction for many areas in the country, especially in rural areas [10].

The decline of the solid mining industry began when Nigeria discovered oil fields, and Nigeria has become an oil-dependent economy and is vulnerable to volatile oil prices. The government's failure to properly regulate the mining industry leads to illegal mining activities that degrade the environment and spread disease and mineral smuggling, leading to loss of government revenue. In response to the global recession and underdevelopment of the solid mineral mining industry, Nigeria introduced essential policies, including establishing the "Ministry of Solid Minerals Development" in 1995.

In addition, despite the enormous profits from oil, Nigeria still struggles to solve many social problems such as high unemployment, declining industry, rapidly increasing poverty rate, infrastructure underdevelopment.

3.2 The role of resources in the structure of import and export

Oil and gas contribute to GDP growth and are the primary source of foreign exchange and government revenue. Oil exports account for 94% of Nigeria's total exports. Nigeria's oil exports have also increased rapidly since the discovery of the oil fields. In 1961, oil export turnover accounted for only about 7%. By 2014, Nigeria's oil export turnover accounted for 94.2% of total export turnover. The highest peak was in 2010, and oil export turnover reached the highest level of 98.72%.

Table 2: Contribution of oil to the trade balance in Nigeria.

Year	Productivity	Oil export	Oil exp/total exp (%)
1961	16,8	23,1	6,65

1965	150,3	136,2	25,37
1970	395,7	509,6	57,54
1975	660	4563	92,64
1980	760	13632	96,09
1985	507,5	11223,7	95,76
1990	660,6	106623,7	97,03
1995	712,3	927565,3	97,57
2000	797,9	1920900,4	98,72
2005	919,3	7140578,9	98,53
2010	759,2	8543261,2	96,73
2014	1807,1	7692500	94,2

Source: OPEC annual report 2014

In 2014, Nigeria's trade surplus shrank despite soaring oil prices. Oil and natural gas still dominate - about 90% of total exports of goods and services. Besides oil and gas exports, other non-petroleum products are barely significant enough to cover the current account deficit caused by falling oil prices.

In contrast to the surpluses from Nigeria's oil exports, mineral exports in Nigeria accounted for an average of 0.02% of total exports in 2013. Zinc and lead ore accounted for 48% of total exports.

4. DISCUSSION AND CONCLUSION

Nigeria has substantial reserves of both oil and gas, even when compared on a global basis. However, Nigeria's economy has become increasingly diversified in recent years. With solid growth in the non-oil sector, oil and gas still account for about 95 percent of export revenue, about 15 percent of the total % of GDP, and more than 80% of financial income. This leaves the economy vulnerable to fluctuations in world crude oil prices. As a result, developments in the international energy market and Nigeria's domestic natural oil supply situation will continue to have a significant impact when assessing Nigeria's macroeconomic risks in the short and medium-term.

Nigeria is the largest oil producer in the African region and one of the ten largest crude oil and gas producers in the world. Nigeria's economy is heavily dependent on the oil and gas sector as it accounts for 95% of export revenue and 76% of government revenue. Still, most Nigerians live below the poverty line despite the country's abundance of potential to build a prosperous economy. The productive capacity of the non-oil manufacturing sector is dwindling, and the government's efforts to improve its contribution have not yielded good results.

Nigeria has been involved in oil and gas production for more than 50 years, and current oil reserves are estimated at 35 billion barrels, while natural gas reserves are 187 trillion cubic meters. However, all of the above figures have not contributed much to the sustainable economic development of Nigeria. Instead, from being ranked among the 50 richest countries in the world in the 1970s, Nigeria has become one of the poorest countries in the world today.

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Levels of corruption and mismanagement in Nigeria remain high, despite the Economic and Financial Crimes Commission (EFCC), Transparency International, the World Bank, and many other organizations. Another organization to reduce corruption and mismanagement in Nigeria. Nigeria has been placed at the bottom of the list among other oil-rich countries using the International Transparency Index against corruption (Perception Index) and the World Bank's research index.

The poverty rate increased from 36% in 1970 to about 70% in 2010. Nigeria is the 28th poorest country in the world despite its extremely rich resources. Many studies show that mineral resources are associated with high levels of corruption and mismanagement. Nigeria is one of the countries in the world with a relatively high gap between rich and poor with a Gini index of 50.6, much higher than countries like India (37.8), Jamaica (37.9), and Rwanda (28.9).

Nigeria is also facing the "Dutch disease" challenges arising as production and exports shift from non-resource sectors to resource exports with products such as oil and gas. Profit from oil leads to currency appreciation and makes domestically produced goods expensive and imported goods cheap, thus discouraging domestic production. As Nigeria has transformed from an agricultural and technology-driven economy to a crude oil exporter, economic diversity has plummeted. The decline in production technology and the agricultural sector has slowed economic growth and led to a decrease in the labor force and increased unemployment[9].

National oil revenue in Nigeria is highly volatile as it depends on world oil prices. This has also been described as a cyclical "boom and bust." Fluctuations in oil market prices or stock sources affect government revenues that indirectly affect the entire economy from the national budget.

Up or down adjustments in regular government fiscal spending are costly because they tend to encourage private investment and, at the same time, impede the supply of public goods. Furthermore, the government tends to borrow vast sums of money to support the budget deficit because it believes that an increase in oil prices will make it easier for the government to repay the debt. A prime example was in the early 1980s when Nigeria's public debt increased due to colossal borrowing - largely to offset the collapse in oil prices - and borrowing unrelated to development in the country.

The mismanagement of resource-rich countries is also reflected in their very little investment in education. Some scientists have asserted that the main political consequence of relying on outsourcing is a weak institutionalization of the country. Unexpected information from outside sources of revenue makes it easier for the government to spend state spending, making it difficult for the government to build strong institutions. This weakens the government's tax system as the government has to hire searchers because it is not a source of revenue. Thus creating a weak link between citizens and government and making it possible for leaders to spend irresponsibly. An excellent example of such spending is the Ajaokuta steel plant in Nigeria, built in the 1970s but has been unable to produce any tons of steel[11].

Furthermore, various studies have shown that investment in education in resource-rich countries is fragile. As countries begin to rely on natural resource wealth, they seem to forget about the need for a diverse and highly skilled workforce that can support other manufacturing industries in the process. or when resources are completely exhausted. As a result, the share of GDP spent on education decreases, which will have lasting effects on the economy as the government decides to diversify in the future.

Thus, it can be seen that Nigeria has extremely rich natural resources such as oil, gas, and solid minerals with huge reserves. But Nigeria's economy is based mainly on oil production and export. In addition, other industries are very underdeveloped, such as the mining of solid minerals. Because it relies heavily on available resources, Nigeria has a poorly

developed economy with a high poverty rate, severe inequality, and a high risk of 'Dutch disease.'

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