

ACCOUNTING FOR NATURAL RESOURCES: THE NIGERIAN EXPERIENCE

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ABSTRACT

With increased population growth and development in Nigeria, it has become essential to carry out an efficient collation of measureable and quantifiable data on the known natural resources and reserves in the country in order to provide a suitable framework for national planning purposes and global assessments. This paper takes a critical look at Nigeria's natural resource and how it is being accounted for. Natural resources are analyzed in terms of their mineral or vegetable source and also, of their renewable and non-renewable nature. Nigeria is richly endowed with natural resources and of paramount is oil and gas. This oil and gas control Nigeria's economy as it accounts for over 80% of its revenue. The over-reliance on oil and gas has led to low GDP and economic retardation. As a result, emphasis is now being placed on properly accounting for these natural resources so as to make the economy sustainable. The development achieved in Nigeria so far cannot be described as sustainable because the various developmental processes have over exploited the natural resources and, as a result, affected the environment dangerously. There's now been conscious efforts by individuals and firms alike in exploiting other natural resources, such as Agriculture. The method used in accomplishing this objective is by identifying the present position, limitations and the challenges encountered in trying to account for the problem under study. Governments are now implementing various policies, plans and programmes in order to restructure the agricultural sector in an effort to boost its role in the transformation of the Nigerian economy. Based on this findings, this paper recommends that Nigerian government should look beyond crude oil and natural gas, they should also consider means of utilizing the huge natural resources in the country to stimulate growth and development of the country. This study essentially implies that sensible actions and steps should be taken in quantifying these actions so as to achieve the goal of sustainability development on natural resources placed for human depletions.

Keywords: Accounting, Natural Resources, Environmental Effects, Nigerian Experience, Nigeria.

1. INTRODUCTION

Nigeria is among nations in Africa with diverse range of natural resources. Natural resources are raw materials that are extracted from the soil or ground. They are found naturally rooted in the earth and can only be altered by man for his advantage and use (Commonwealth Government Discussion Paper, 2000). Natural resources of a country usually comprise the minerals, nature of the soil, good river, land area, quality of the soil, richness and quality of the forest, good bracing climate and hydrocarbons etc. (Brown, Stephen, 2017). Nigeria is richly endowed with ample natural and mineral resources which amounts to over 30 resources ranging from natural gas, arable land, industrial materials, copper, diamonds, coal, barites, tin-ore, iron ore, marbles, limestone, niobium, lead, barites, bitumen, zinc, columbite, tar sand, and kaolin. Most of these natural resources are yet to be exploited. The extent of exploitation of these mineral deposits is very little in comparison to the degree of deposit found in the country. Natural resources largely tapped at present are crude oil, natural gas, limestone, iron ore, tin ore, and coal and lignite.

According to Ewubare and Stephen (2017) “Nigeria was among the largest producers of columbite, 6th largest producer of Tin, 8th largest producer of crude oil and gas. About 31.3 percent of the total land area in the country is arable, of this, 3.0 percent of the total land is for permanent crop cultivation, 23.0 percent for meadows and pastures, 15.0 percent is the forest woodland region while 28.0 percent is for other uses with negligible percent for irrigation. Nigeria is also blessed with abundant maritime resources, water constitutes about 1.4 percent of the country’s total area which provides an abundance of fish of large variety capable of producing about 600,000 metric tons of fish annually and producing less than 12 percent of their estimated fishery potential. The country’s oil and gas accounts for about 21.9 percent of GDP, 56.4 percent of foreign exchange receipts and 88.6 percent of government revenues in 2015. Prior to the discovery of oil in the 1960s and the oil boom era, Nigeria depended largely on primary commodities and artisanal mining for export and revenue. During this period, agriculture and artisanal mining accounts for 60 percent of GDP and approximately 60.0 percent of the labour force. The oil boom of the early 1970s resulted to a neglect of agriculture and other sources of revenue generation”. The oil and gas sector accounts for about 10 per cent of gross domestic product, and petroleum exports revenue represents almost 83 percent of total revenue (OPEC). One of the objectives of the new National Policy on solid minerals is to ensure the orderly development of the mineral resources of the country. Nigeria is unaffectedly affluent in both categories of natural resources but have still not been able to sustain the much desired economic growth. This research therefore examines accounting for natural resources in the Nigerian environment.

1.1 Statement of the problem

The natural resources sector is dynamic, globally focused and multifaceted. It is always under evaluation as environmental concerns and fluctuating product prices attract the attention of regulators, politicians and the general public and as a result, the natural resources sector is encountering more pressure than ever. The sector is confronted with a distinctive set of challenges, difficulties, and uncertainties. Nigeria's GDP mostly comes from crude oil which means that Nigeria's economy is dependent on natural resources. Following the crash in global commodity prices, Nigeria witnessed a consequential drop in the export value of oils and mineral fuels, its principal revenue generators. Nigeria is largely endowed with one or more forms of natural resources. These resources have in one way or the other played a significant role in terms of boosting economic activities in the economy. Oil as a major source of revenue in Nigeria poses all kinds of economic and political challenges that will be difficult, but not impossible, to overcome. Attempts to expand the economy have been weakened by corruption, high rate of poverty, insufficient infrastructure, and insurgents.

The discovery of petroleum and mineral resources in Nigeria has in one way or the other played a critical role in influencing the political economy of the country. Nigeria has been one of the leading countries in terms of crude oil production in West Africa for the past decades. However, an interesting question one would like to ask is whether the presence or discovery of these natural resources in the country has significantly impacted on the country. A good number of researchers have observed a link between natural resource discovery and the outbreak of civil conflicts over the past two decades. It is also believed that proceeds generated from the exploitation of natural resources are not only used for sustaining militaries but also for personal enrichment and erecting political empires. The question as to whether the presence and discovery of natural resources in Nigeria has transformed into improving the wellbeing of citizens of the country or not has triggered series of arguments amongst professionals especially to the accountants and economists over the last two decades.

Some authors are of the belief the impression that natural resources are a good measure of a country's wealth is a misconception. Rather, it's more probable to result in what economists call the resource curse, one of the most malignant and menacing ailments a country can suffer. As noted by Jeffry (2010), the viewpoint that natural resource riches are a curse rather than a blessing may seem paradoxical and has led to an extensive literature. Proponents of the resource curse literature have asserted that the possession of oil, natural gas, or other valuable mineral deposits does not necessarily confer economic growth. A typical example is that many African countries such as Congo, Angola, Sudan, and Sierra Leone are rich in oil, diamonds, or other mineral deposits, and yet their citizens continue to experience low quality of life and low per capita income. A good number of authors believed that the discovery of mineral deposits and the ensuing revenue generated thereof helped nations to address key socioeconomic issues such as

education, health, poverty, lack of infrastructure, and unemployment. Conversely, recently, proponents of the resource curse literature have connected the endowment of natural resources to a series of harmful effect like corruption, economic decline, and autocratic rule (Jalloh, 2013).

Using resource revenues to develop the local economy depends significantly on substantial increases in private sector investment, from large scale infrastructure to small holder farms. However, boosting sustained growth beyond resource extraction has been an issue for many resource-rich countries. Aslaksen (2007), found that minerals enhance corruption only in the sample of non-democratic countries whereas oil boosts corruption in the illustrations of both democratic and non-democratic countries. The society and government should be taught how best to harness the opportunities created by extractive resources for development. Policies and guidelines should be designed and implemented to avoid the mismanagement of diminishing natural riches and ensure their ongoing benefits.

The question that one needs to ask at this juncture is that what measures are being taken to account for these natural resource use?

1.2 Objectives of the study

This study aims at investigating the relationship between accounting for natural resources in Nigeria and the overall impact on the economy using data from Nigeria. Specifically, the study seeks to determine:

- I. The measures taken in accounting for natural resources to ensure sustainability
- II. The impact of corruption and government effectiveness on the growth of Nigeria.

2. REVIEW OF RELATED LITERATURE

2.1 Natural Resource deposit in Nigeria

Willers (2004) has described natural resources as “a gift of nature and an endowment of comfort that makes the existence of mankind complete”. He asserted that the major features of natural resources are that they are products of nature with economic value in contrast to agricultural products such as livestock, groundnuts, beans, grains, cotton, hide and skin, horns, and gum which are the “direct result of husbandry and the cultivation of the soil”. Therefore, within the context of this work, the term ‘natural resources’ is used to describe minerals, mineral oils and natural gas (Okafor, 2012).

According to Jones and Geoffrey (1981), in Nigeria, the search for oil started far back in 1903 when two companies, Nigeria Properties (Limited) and the Nigeria and West African Development Syndicate (Limited) commenced exploration for bitumen, coal and oil. Nigeria is

currently the largest oil producer in Africa and among the top ten globally. Its effective pumping capacity is about 900 million barrels a year. Its recoverable reserves are estimated at 34 billion barrels. In recent years, the oil sector has accounted for over 40% of GDP, 95% of export receipts, and over 80 percent of government revenue. The sector is dominated by joint venture operations between the Nigerian government and six major international oil companies—Shell, Mobil (11 Plc), Agip, Chevron, Elf, and Texaco. Nigeria's reserves of natural gas were estimated at around 159 trillion cubic feet of proven reserves, being among the ten largest in the world. However, gas production is currently less significant economically (Jalloh, 2013).

According to the Federal Ministry of Mines and Steel Development, there are 34 types of solid minerals in Nigeria occurring in more than 450 locations all over the 36 states of the federation and the Federal Capital Territory. Some of the known mineral resources found in different regions of the federation include gold, marble, granite, coal, lead, zinc, clay, silver, bitumen, phosphate, talc, limestone, iron ore, gypsum, diatomite, bentonite, manganese, and magnesite. The proved reserves of these solid minerals attest to the enormous mineral endowment of the country. Nigeria is a natural resource dependent nation with earnings from these mineral deposits constituting the strength of the economy. Since the 1970's, Nigeria's economy has been driven by revenue derived from oil and natural gas. The near total dependence on oil revenues of the economy is easily perceptible from the fact that the annual federal budget is traditionally based on the daily production level and benchmark oil price in the international market. This explains why any drop in the price of oil in the international market is bound to have adverse impact on the economy of Nigeria (Oladoye, 2009).

According to Herath (2005), "all of Nigeria's oil and gas are currently produced from land and swamps in the Niger delta and from deep-water reserves some 120 kilometres off its coast. There are currently 606 oil fields in the region out of 355 are on-shore while the remaining 251 are offshore. The operations of Shell Petroleum Development Company Limited (SPDC) in the region alone are spread over circa 20,000 square kilometres comprising a 'network of more than 6,000 kilometres of flow lines and pipelines, about 60 producing oil fields, approximately 700 producing wells, 46 flow stations, seven gas plants, and two major oil export terminals at Bonny and Forcados.' The Niger delta region is thus the sole host to all of Nigeria's oil exploration and production activities and the hub of the nation's oil and gas industry". With the current production level of 2.48 million bpd (representing 2.9% of the world total daily production), Nigeria is the 11th largest world producer of crude oil and Africa's largest. Nigeria's proved oil reserves at the end of 2016 stood at 37.1 billion barrels representing 2.2% of world's total reserves and the 11th largest in the world. The country's proved natural gas reserves as at the end of 2013 were no less impressive. They stood at 5.3 trillion cubic metres representing 2.9% of world's total reserves and the 9th largest in the world. This represents an improvement on the

estimated reserves for the past three decades which stood at 2.83 trillion cubic metres in 1989, 3.51 trillion cubic metres in 1999 and 5.25 trillion cubic metres in 2009 respectively (Herath, 2005).

Because many of Nigeria's oil fields lack the infrastructure to produce and market associated natural gas, it is often flared. Gas flaring is discouraged by the international community as it contributes to climate change. As flaring in the west has been minimized in Nigeria, it has grown proportionally with oil production. According to the National Oceanic and Atmospheric Administration (NOAA), Nigeria flared 536 Bcf natural gas in 2010 or about a third of gross natural gas produced in 2010 according to NNPC. In 2011, the NNPC claimed that flaring cost Nigeria US \$2.5 billion per year in lost revenue. Gas flaring in Nigeria releases large amounts methane, which has very high global warming potential. The methane is accompanied by carbon dioxide, of which Nigeria is estimated to have emitted more than 34.38 million tons in 2002, accounting for about 50% of all industrial emissions in the country and 30% of the total CO₂ emissions (Kareem and Kadiri, 2017).

Table 2.1: The Organization of Petroleum Exporting Countries (OPEC) has given the data for 2017 as follows:

Population (million inhabitants)	197.700
Land area (1,000 sq km)	924
Population density (inhabitants per sq km)	214
GDP per capita (\$)	1,881
GDP at market prices (million \$)	371,886
Value of exports (million \$)	46,680
Value of petroleum exports (million \$)	38,607
Current account balance (million \$)	7,924
Proven crude oil reserves (million barrels)	37,453
Proven natural gas reserves (billion cu. m.)	5,627
Crude oil production (1,000 b/d)	1,535.6
Marketed production of natural gas (million cu. m.)	45,434.1
Refinery capacity (1,000 b/cd)	446.0

Output of petroleum products (1,000 b/d)	82
Oil demand (1,000 b/d)	425.9
Crude oil exports (1,000 b/d)	1,811.1
Exports of petroleum products (1,000 b/d)	19.3
Natural gas exports (million cu. m.)	32,511.2

2.2 The Nigerian Experience

Bulte et al. (2005) asserts that nations regarded as natural resource abundant are very likely to exhibit lower growth rates than those without. Resource rich countries are also noted for being regarded as income inequality owing to the high level of corruption in the public sector of most resource rich countries. Gelb (1988) notes that countries that are rich in natural resources are more inclined to exhibit unequal income distribution than those without. Palley (2003) further opines that such countries are described by features such as exhibiting greater tendencies for corruption, having a greater share of their population living in poverty, and having more dictatorial regimes that spend more on the military (Jalloh, 2013).

It is believed that the government of most countries that are resource rich are less accountable to their citizens. It has been widely noted that governments of most resource rich countries are highly prone to hold on to power through vote-buying, voter intimidation and other forms of electoral fraud. Collier and Hoeffler (2005) show that in situations of poor governance, officeholders are far more likely to win elections than in situations of good governance. In most cases, governments that win elections through vote-buying are likely to be unaccountable to their citizens. This lack of accountability by such governments has the tendency of triggering rebellions/civil conflicts that may have adverse consequences to the economy. A government that lacks accountability to its citizens will be perceived by its citizens as highly corrupt (Jalloh, 2013).

It is observed that the problem of environment in Nigeria are essentially on agricultural production, human population, land use and soil conservation, water resources management, toxic and hazardous substances, air pollution, noise pollution, working environment and settlements (Nigerian Federal Office of Statistics). Current efforts are also targeted towards the measurement of deforestation, soil degradation, loss of biological diversity and wildlife and coastal degradation (Okafor, 2012). The country faces several challenges to achieve development that is environmentally and economically sustainable. The ecosystem of the country has been disturbed as a result of rapid population growth with great pressure on the natural resources

(Federal Office of Statistics, 1999). Attempts are now being made in designing a statistical system that will describe the inter-connection between the natural environment and the economy (Okafor, 2012).

2.3 Accounting for Natural Resources

In trying to account for natural resources, our aim is to make them sustainable, i.e. the theme is focused on how the numerous natural resources in Nigeria are being managed to assure their sustainability. Sustainability simply means being able to meet the needs of the present without compromising the ability of future generations to meet their own needs". This can only be achieved through proper planning and implementation. Part of the problem we are having now is that of poor management.

There is need for sustainable management of natural resources. The reasons for sustainable management of natural resources are not farfetched. The resources of the earth are limited in supply and most of them especially the non-renewable ones have fixed quantity deposited. Human population is dynamic increasing at a very rapid rate. Sustainable management enables for controlled utilization of the fixed quantities of resources to meet the need of the present generation while allowing the generations yet unborn the access to the same resources (Duru and Chibo, 2012). Natural resources and their governance, both individually and as interacting systems, are complex in nature and there is a need for fresh ways of framing problems related to sustainable consumption of these natural resources. Natural resource utilization is regulated through the use of taxes and permits. The government and individual states determine how resources must be used and they monitor the availability and status of the resources.

According to the world conservative union (n. d) consumption of natural capital- the depletion of natural capital - forests, in particular - is accounted for as income. Whereas in accordance with conventional business accounting principles, the gradual depletion of physical capital- machines and other equipment – are treated as depletion rather than income. However, most experts on environmental accounting agree that the depletion of natural capital should be accounted for in the same way as other productive assets (Beredugo and Mefor, 2012).

As a general rule, natural resources are initially entered in the accounting records at their direct cost plus logically related items like legal fees, surveying costs, and exploration and development costs. Once the cost basis is properly established, it must be allocated over the periods benefited through a process known as depletion. Traditional measures of economic activity such as Gross Domestic Product (GDP) and Net Domestic Product (NDP), generated via the existing System of National Accounts (SNA), are recognized as being inadequate in terms of accurately measuring the contribution of, and impact on, the environment. Specifically, costs of environmental degradation and natural resource depletion, and non-market amenity values are

not included. Furthermore, defensive expenditures designed to offset pollution are counted as additions to GDP/NDP. Thus, the present measures of economic performance that are given primary importance in public policy formation and debate can provide misleading information on which to base decision-making. Variables that contribute to economic well-being are excluded from national income calculations. National income in its current guise, and in the current SNA, provides a poor reflection of both current and future standards of living. Hence environmental adjustments to the SNA and, more broadly, the introduction of Natural Resource Accounting (NRA) are advocated on the basis of removing the current biases (Harris and Fraser, 2012).

Natural resources accounting corrects the national income accounts by giving the balance sheet of natural resources which records the quality and value. Natural resource accounting (NRA), is, simply put, a methodology that extends accepted notions of income and depreciation to the stock of natural resources, treating such resources as depreciable assets. The aim of national income accounting is to provide an information framework suitable for analyzing the performance of the economic system. The current system of national accounts reflects the economic concerns that were dominant when the system was developed (Repetto, Faeth, Westra, 1999). Man-made assets such as buildings and equipment, are valued as productive capital. As they wear out, a depreciation charge is taken against the value of production that these assets generate. This practice recognizes that a consumption level maintained by drawing down the stock of capital exceeds the sustainable level of income. But customary accounting methods do not value natural resource assets in this manner: their loss entails no debit charge against current income that would account for the decrease in potential future production. A country could exhaust its mineral resources, cut down its forests, erode its soils, pollute its aquifers, and hunt its wildlife and fisheries to extinction, but measured income would not be affected as these assets disappeared (Repetto, Faeth, Westra, 1999).

Trouble arises when the indices by which we try to measure improvements in living standards ignore the loss of natural resources and the services that they provide. Policy makers, who inevitably rely on these flawed measures of economic development, can get very misleading signals, leading to temporary improvements in consumption that are "purchased" by permanent losses in wealth and productive capacity (Repetto, Faeth, Westra, 1999). Business firms should go further to incorporate activities that will impact on the company and on its endeavor to protect its amenities and the environment. In other words, there should be a comprehensive reporting of all aspects of the business which will improve resource allocation (Herath, 2005).

The basic concept that underlies natural resource accounting, as with financial accounting, is the notion of a balance. The stock at the beginning of a time period, plus the input flows, minus the output flows, must equal the stock at the end of the time period.

Table 2.2: Structure of material resource accounts

I) Reserve accounts	
Beginning of period:	Resource base Reserves (Developed, Non developed) Total gross extraction during period Adjustments of resource base (New discoveries, reappraisal of old discoveries) Adjustments of reserves (New technology, cost of extraction, transport etc., price of resource)
End of period:	Resource base Reserves (Developed, Non developed)
II) Extraction, conversion & trade accounts	
	Gross extraction (by sector) - Use of resource in extraction sectors = Net extraction (by sector) Import (by sector) - Export (by sector) = Net import (by sector) Changes in stocks
For domestic use:	Net extraction + net import + /- changes in stock
III) Consumption accounts:	
	Domestic use (final use category, commodity)

Source: Alfsen, et al., 1987, p.13.

3. EMPIRICAL REVIEW

Okafor, Tochukwu G., in his study, natural resources accounting and sustainable development: the challenge to economics and accounting profession asserted that there is no doubt that the past developmental patterns have not been sustainable as a result of excessive use of natural resources. Despite the contribution of these resources to development, they were assigned a very low profile.

Ajie and Ewubare (2011) contended that negative relativity of natural resource abundance and financial development in Less Developed Country (LDC) is thus of unutilization and underutilization, that monetary development happens when there is legitimate abuse through improved technology great institutional quality and initiative.

Oaikhinan (2015) studied natural resources and economic development in Nigeria and found that the country is slow and backward because, she failed to explore other abundant natural resource, instead of depending on only crude oil revenue and extinct or abandoning other minerals.

However, other economists have refuted the negative relationship in natural resource and economic growth by offering different explanations.

4. CONCLUSION

From the ongoing, there is no doubt that natural resource use has not been used in the best manner as to make it sustainable. The previous practice of accounting for natural resources makes no provision for depletion of natural resources due to the fact that they are seen as a free gift of nature. With the emergence of the concept of sustainability reporting, natural resources have been assigned an important place. Sustainability reporting has been gradually embraced by corporations globally given the demand of stakeholders for greater transparency on both environmental and social issues. Several reporting standards exist as guidelines for Sustainability Reporting but the most widely used guidelines is the Global Reporting Initiative (GRI). Reporting with the GRI Standards enables firms, large and small, public and private, safeguard the environment and develop society, while at the same time thriving economically by enhancing governance and stakeholder relations, building trust and improving reputations (Global Reporting Initiative). In Nigeria, after due procedures, the Council-approved Global Reporting Initiative (GRI) Guidelines were submitted to the SEC for approval on 16 June 2017 and the SEC approved the Guidelines on 9 November 2018. The Guidelines will become effective on January 1, 2019 and will be mandatory for companies listed on the Premium Board of the Exchange. The NSE is constantly improving its environmental management measures and practices, teaching employees to adopt environmentally accountable behaviour and encouraging these same practices in its marketplace and supply chain (Nigerian Stock Exchange, 2019). Some of the core guidelines given by the GRI are as follows:

1. Businesses should use natural and artificial resources in an ideal and responsible way and make certain the sustainability of resources by reusing, reducing, recycling and managing waste.
2. Businesses should take measures to monitor and avoid pollution. They should evaluate the environmental damage and bear the cost of pollution diminution with due regard to public interest.
3. Businesses should constantly strive to boost their environmental performance by implementing cleaner manufacturing methods, enhancing use of energy efficient and environment responsive technologies and use of renewable energy (NSE, 2018).

This sustainability report could be a stand-alone report or it could be incorporated in the annual report. With the reporting of these guidelines, there is hope yet that natural resource will be used in the best capacity as to promote accountability and transparency in the economy. With the

mandatory reporting of these guidelines, it will go a long way in blocking financial leakages in revenue generation, curb financial misappropriation, promote transparency and accountability in the financial management of these natural resources.

5. RECOMMENDATION

- 1) The unexploited and abandoned resources should be harnessed in a manner that will not endanger the environment, as this will enhance the income generation capacity of the state.
- 2) Revenues realized from these resources should be efficiently channeled for socioeconomic development of the host communities, as this will lessen communal clashes between the host communities and prospecting firms.

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