Current implications of oil boom on food production in Nigeria

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ABSTRACT

The impact of oil industry on agricultural development in Nigeria is addressed in this research work. The backward/forward relationships measure the level of impact that the oil industry has brought to the economic development of the Nigerian Economy. We therefore present the review of related literature in the perception and area of oil in the Nigerian economy, accessing the impact of oil industry in Nigerian economy, and the way forward in the 21st century. First, a general look into how crude oil is formed is presented. Second, we outlined the history of crude oil in Nigeria, from discovery, exploration to current development of the oil sector. Third, we looked at the impacts of oil boom in Nigeria on her economy and environment alongside the efforts made so far by the Nigerian government in regulating the oil sector and possibly diversifying Nigerian economy. Lastly, we presented an outlook into possible strategies to address various problems outlined in this review concerning oil development impacts with emphasis on Nigerian agricultural sector.
Keywords: Agriculture, crude oil, environmental effects, food security, Nigeria, oil exploration, oil industry.

INTRODUCTION

The position of oil industry in the building of prosperity of the Nigeria agricultural sector is too obvious to require elaboration in this research. Crude oil is technically seen as a mixture of hydrocarbons (hydrogen and carbon) that exist in liquid form in natural reservoir (Odukoya Lambert and Sakrabani, 2019). It also contains some varying amount of oxygen, nitrogen and sulphur compounds but they have small quantity of hydrocarbon element (Qin et al, 2019). This is in line with the classical definition of crude oil, which from a purely geological point of view, oil mineral is a structurally homogeneous solid of definite chemical composition formed by the inorganic process of nature with mercury as the only all warble exception (Singh et al, 2020) (Kutcherov and Krayushkin, 2010). This definition strictly includes ice, but however excludes coda and petroleum. However, from a different perspective altogether a strictly geological definition of mineral is quite amusing and relatively meaningless outside the technical academic world. It is from this non-technical perspective that some economists argued that a mineral is an ore body from which an element or a compound can be economically or profitably extracted (Wang et al, 2018). Mineral includes non-living, naturally

to men whether they are inorganic or organic (Ogbesejana, Bello and Ali, 2020). Also, in an ordinary sense that economic literature dealing with mineral exploration is neither extensive nor distinguished.

Despite enormous economic advances where the techniques of mineral survey are concerned and at the present time these include a wide range of aerial, geophysical and geochemical methods exploration refers to an inquisitive process or exercises involving through examination with the aim of finding out something especially where there are indications of its presence. According to mineral exploration steak, a mineral deposit of what is wanted determines whether it is worthwhile to exploit with a close level of confidence and corresponding accepted level of risk. Ordinary oil which is a mineral, is a natural substance got from the earth *via* the process of mining technically. It can be defined as a naturally occurring inorganic substance having a particular chemical composition and a regular atomic structure (Ameloko, Uhegbu and Bolujo, 2019).

Nigerian economy has depended on crude oil export over the years. Nigeria recoups huge amounts from oil exports and is regarded as one of the major countries that produce crude oil worldwide. However, despite the boom in oil production in Nigeria, an all-round development in various sectors of the country's economy is yet to be achieved. The agricultural sector for instance has been struggling because it was neglected immediately after the first discovery of oil in Nigeria, and this has attendant negatives (Scheme 1). Nigeria used to export enormous agricultural produce to various countries before the oil boom. Unfortunately, many farmers in Nigeria today struggle to even produce enough for the consumption of their families. Subsistence farming has taking over the agricultural sector. Consequently, food production has greatly declined. Today, Nigeria imports almost every commodity from Asia, Europe and the Americas. This review therefore investigates the impacts of oil boom on food production in Nigeria. This encompasses the efforts of the Nigerian government to diversify the economy to boost food production to ensure food security for her ever-increasing population. It is expected that this review will shine deeper light on the need to extensively boost the agricultural sector of Nigeria, amidst dwindling crude oil prices, and quest to guarantee food security in Nigeria.

FORMATION OF CRUDE OIL

Petroleum or crude oil is formed from organic matter in both plant and animals the non-biological components are also accepted as a possibility (Abdulredha, Aslina and Luqman, 2020). After the plants and animals have died, their remains settle to the bottom. Because it is mixed with sand and mud and formed layers of biological debris. As time passed, the older layers were buried deeper and deeper by an increasing over burden of salt and sediments and the resultant pressure upon them increased significantly (Wijaya and Sheng, 2022).

This pressure with the heat of earth and chemical bacteria action is thought to have converted the biological debris into petroleum. The resultant crude oil or petroleum is generally found in porous rocks in the sedimentary layer of the earth crust. Just what is it that makes oil and gas so valuable to mankind? Why was Drakes discovery so existing and commercial? Drakes employer was an American called Bissel had read a scientific paper which claimed that if crude oil was drilled on an industrial scale a vast near range of chemical and fuel oil would immediately become available to mankind and entirely

revolutionize the industrial (Elumalai et al, 2021).

This was before the appearance of the motor vehicles, so the fact that petroleum spirit would also be derived from this distillation process was not appreciated. Such a process would produce large quantities of lamp and cooking fuel oil-kerosene or paraffin as it is known in Britain, this was the beginning of the linkage effect of the oil industry.

HISTORY OF CRUDE OIL IN NIGERIA

Genesis of oil activities

The history of crude oil development or oil prospecting in Nigeria began as far back as (1908), when a German company, the Nigeria Vitumen Corporation started its exploration in Nigeria, they discovered some oil at Araromi area of Ondo State (Steyn, 2009). Their pioneering efforts however ended with the outbreak of the First World War in 1914 (Uche, 2008).

The petroleum industry, which is relatively said to be young in Nigeria, compared to other countries, like the United State. Petroleum prospecting in Nigeria was formally, concentrated in the Southern part of the country; this yielded a positive result in 1957, when it was in the region of the Niger-Delta and after many years of research. A commercial quantity of crude oil was recorded at Oloibiri and Bonny in River State in the mid-1950s (Uche, 2008). Shell BP then known as Shell D'Archy pioneered the search for oil in Nigeria in the early 1973. From its base at Owerri in Imo State, the company was investing completely unknown territory, because no oil had been discovered in any part of West Africa and there was no indication of subsequent role as a major oil producing area. The search area initially covered the whole country, but this was later narrowed down to 40,000 square miles (103,000 square kilometers) around Niger-Delta basis (Okorobia and Olali 2018) (Onojake, Osuji and Abrakasa, 2015). These early efforts involved a massive process of elimination a period of many disappointments which required great perseverance and expenditure. Exploration resumed in 1940, ten years later a new company known as Shell-BP petroleum development company of Nigeria Limited, jointly financed by the Royal Dutch/Shell Group of companies and the British Petroleum Group on an equal basis replaced the shell D'Army company (Okorobia and Olali 2018) (Abrakasa, Ukaegbu and Onojake, 2016).

Shell-BP drilled the first exploration well in 1951 at Iho, 10 miles (16 kilometers) North East of Owerri, the depth was 11,228 feet (3,422 meters) but no oil was found. Then some years later another area known as Akata 1 was drilled in (1953); here some oil was found but not in commercial quantity.

The result of the oil drilling was terminated during this period, the partner nearly gave up the search as fruitless and too expensive with little prospect of any commercial result. But in January 1956 oil was said to be found by Shell and BP in a commercial quantity at state and towards the end of the year another discovery was made at Afam also in Rivers State. Intensified search for more oil field in 1958-59 led to the discover of Ebubu and Bonny oil fields in the Rivers State and of Ughelli field in the former Bendel State, later the first hydrocarbon was found in the West of River Niger, thus Nigeria became firmly established as a major world producer of crude oil and oil increasingly occupied an important ground in the economy of the country (Sonibare, 2008). Apart from the initial two areas where oil was produced there are other

areas in the country where oil is produced, these areas are Cross River and Imo States, Nigeria.

Development in the petroleum industry

By mid-1961, production has exceeded 50,000 barrels per pay. At that point the Royal Dutch Shell group BP, and the Shell-BP Petroleum Development Company of Nigeria Limited began discussing with the Nigerian government on the establishment of a refinery to fulfill an undertaking that when crude oil production would have reached 50,000 barrel prepay the partners would build a refinery in Nigeria (Genova and Falola, 2003).

Thus, was born the present refinery at Alesa Eleme which was originally financed and owed an equal basis by Shell and Bp. Through some subsequent negotiation the Nigeria government acquired majority ownership of 60% in the refinery and Shell-BP held the remaining share at 20% each. In 1962 Shell-BP held the remaining share at 20% each. In 1962 Shell-BP in accordance with its concession terms relinquishing at least 50% of its average which coupled with the discovery of commercial quantity of oil in Nigeria (Watts and Zalik, 2020) (Iwegbue et al, 2021). This resulted to other multinational companies, at this time Government also opened up the off-shore for oil prospecting.

THE OIL BOOM AND PROBLEMS

The emergence of oil boom has brought more harm than good enumerating the negative effect of the oil industry (Elum, Mopipi and Henri-Ukoha, 2016) (Osuji and Adesiyan, 2005) (Chikere, Chikere and Okpokwasili, 2012). Problems such as the turning the Nigeria economy into a mono-cultural economic system is observed that other sectors of the economy which provided the economy with finance were neglected as a result of the introduction of oil industry which led to oil boom; resulting in wrong placement of priority (Majd, 1989).

We produce what we do not consume and consume what we do not produce such that the growth of importation relative to exportation and balance of payments, problems, which it created, would have been more tolerable, if the reverse was the case (Adesoye, 2017). There are unpleasant effects and the actual harm caused to marine life and other agricultural products (Cordes et al, 2016) (Langangen et al, 2017) (Akakuru et al, 2019) (Akakuru et al, 2021).

There are reports that oil caused damages to plant life; plants respond noticeably to minor visible determiners in their environment quality in that they reflect with lower threshold respond to changes in their environment (Ugochukwu and Ertel, 2008) (Novakovskiy, Kanev and Markarova, 2021) (Benka-Coker and Ekundayo, 1995).

This has been the forerunner of much pollution problems in air and water (Ilyas et al, 2021). It is also worthy of note that the pollution problem from crude oil adversely affects aquatic species that are well-known sources of raw materials for some pharmaceutical products (Akakuru et al, 2020) (Akakuru et al, 2019) (Akakuru et al, 2020) (Akakuru et al, 2020).

These facts about pollution on plants go to confirm the effect of oil pollution on plants in the Enoch areas of Rivers State where the Agip Oil Company operates its oil industry activities plants found around that area grow tall but bear no fruits, a good example is the palm tree (Osuji and Opiah, 2007).

Due to the extent of damages caused by oil pollution, a pollution tax i.e., pollution tax on sulphur dioxide emission has put forward among the oil traders (Okedere et al, 2021). Nigeria also could emulate this system, of putting pollution tax, so that oil companies would be more conscious in their operations especially when pollution is sighted (Lawal, Adekola and Akinlua, 2021).

The possibility of oil spillage effect to the ecosystem is also imminent. Damages are caused to the air, water and soil in various drivers' way; as a result the society suffers a socioeconomic effect (Adeola et al, 2021).

If there is legislation checking the activities of the oil companies, the excess and the negligence of the oil companies will be brought to an end, but regretted that, there are no such existing laws.

It will be recalled that, only recently that President Olusegun Obasanjo (former President of Nigeria) spoke about such regulations. But before that law becomes workable, oil companies should comply with the laws of the land, including environmental pollution controls. The petroleum decree of 1968 (Degree No. 51) in many places refers to "good oil" field practice" and obviously leaves the rest to the discretion (not compulsion) on the part of the oil companies (Abusharaf, 1999).

The oil companies, should in fact, not to be asked to make reports of oil pollution to the government as the President stated. Because if they are asked to report about the cases of oil spillage, there is no doubt that they (oil companies) will be hiding most cases of oil spillage (Idemudia, 2009).

Rather, government functionaries should be made to report cases of oil spillage and also on time, in a way to check oil companies should be made to report the conditions of their pipelines, it is on the report of the pipelines conditions that oil spillage could be known (Lawal, Adekola and Akinlua, 2021).

There are also community development efforts. For instance, under the second plan period, 3250 km of roads were constructed and a large percentage of allocation was also given to the agricultural sector to help improve the sector. At the end of the plan period a further 4000 km of roads and over 30 bridges were under construction. In the federal Nigerian publication/gazette it was noted that under the 3rd National plan period, the federal government committed itself to the responsibility for 27000 km of trunk A and B roads and was actually to be involved in a programme at over 31000 km of road (Odeleye, 2000).

As a result of these road networks, access to rural areas and to urban markets have been greatly facilitated and an such has greatly facilitated the development of agriculture and the transformation of the rural areas of education, water resources development, telecommunications, development of ports, harbours, and so forth, the revenue from oil has greatly enhanced level of economic activity.

However, it will not be of place to mention that, this absolute size of the national income, has resulted into the wrong choice of priorities, example is the mad rush to complete the new federal capital earlier than was originally scheduled. One can also qualify this mad rush by saying that, Nigerian's took to running first, then fall down to creep, rather than creeping first and then running (Figure 1).

Figure 1. Impacts of oil sector development of the agricultural sector of Nigeria.

NIGERIAN GOVERNMENT CONTRIBUTIONS

Government control of oil industry

Even before the first large of oil was shipped from Nigeria in 1958, there had been in existence government companies. There were ordinances 17 of 1914, 1 of 1925, which were consolidation and re-enacted into the mineral oil ordinance caption 120 of the law of the federation of Nigeria and Lagos dated December 31st 1958. The most up to date version of the law regulating the Nigeria oil industry is contained in the petroleum Decree 1969 No. 51 published as a supplement to official federal government gazette No. 62, volume 56-part A, dated 27th November 1969.

The decree in part states in section one as follows; the entire ownership and control of all petroleum in, under or upon any lands to which this section applies to all handling (including land covered by water) which:
(a) Is in Nigeria or
(b) Is under the territorial waters of Nigeria, and
(c) From the continental shelf.

In simple language, the law stipulates that the federal government has to be approached to obtain approval by the issuing of relevant licenses before carrying out any key operation in the oil industry.

Below shows a list of the licenses issued by Nigerian government to a typical oil company in Nigeria:
(1) Oil Exploration License,
(2) Oil Prospecting License,
(3) Oil Mining Lease,
(4) Pipeline, and
(5) Fisculization.

The various license and lease cover the various stages of government contract over the activities of oil industry.

The Impact of oil revenue on the scope and character of government intervention in agriculture

The increase in oil revenue resulting from increased petroleum oil production has led to increased government direct expenditure in agricultural production and the dominant role of the federal government in financing agricultural development (Ngada and Bowers, 2018). The federal government believes that oil is a wasting asset. It is necessary to use the windfall from oil production to make investments that will increase the productive and absorptive capacity of agricultural sector.

In discussing the impact of oil revenue on the scope and character of federal government intervention in agricultural development, we have to consider the role of the federal government in financing agricultural development. The estimated capital investment in agricultural for the 1980-95 plan period was 1.6 billion, the figure for the estimated capital investment during the period was large proportion of federal expenditure in food crops (12.6%) tree crops (11.7%) from imports (30.3%) infrastructure (43.8%) and rural institutions (1.6%) (Ikpesu and Okpe, 2019) (Ojo and Ayanwale, 2019).

CONCLUSION

We have been able to highlight the lubricate relationship between the two sectors. It has been evidently argued that the oil industries have ruined the economic political and socio-cultural development of the agricultural sector; as a result of incessant decline on the agricultural export and production and their lackadaisical attitude to those effects on the agricultural sector in fact, their presence have more of a cause than a blessing, if their attitude is anything to go by.

What they are out for is to exploit and impoverish the agricultural sector hereby developing their various home economics. This makes them a veritable instrument of the capitalist and imperialist tendencies of the advanced nations of the world. As a result of oil pollution, the agricultural sector face problems ranging from, lack of good drinking water, low output-production, shortage of land for agricultural use etc.

The following outlooks can be considered:
(a) To reduce to the barest minimum, the hazard effects of oil activities as it concerns to agricultural sector.
(b) The number of oil companies in the country should be regulated by the government, and the character and disposition of these companies equally redefined.
(c) Oil companies should also endeavour to re-invert part of their surplus to agricultural sector, especially in areas that will revamp the ailing economy of the agricultural sector.
(d) They should equally sponsor youth training schemes in their respective areas of operation as a way of producing youths with requisites skills in various fields.
(e) The oil exploration activities should be subject to Environmental Impact Assessment (EIAS) and Environment of Evaluation Reports (EERS) to prevent or to initiate its adverse effects to the agricultural sector.
(f) That remarkable linkage should be encouraged by the oil companies here in Nigeria, with the agricultural sector.

DATA AVAILABILITY

We do not analyse or generate any datasets, because our work proceeds within a theoretical and mathematical approach.

CONFLICT OF INTEREST

The authors have no conflict of interest(s) to declare.

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