Energy Transition and Its Potential Imapct on the Nigerian Economy

BY OMONIYI EMMANUEL OLUWAFEMI

Abstract

The impact of the global energy shift from fossil system of energy to renewable energy on emerging economies like Nigeria deserves attention. The Gross Domestic Products would be adversely affected by this shift. Nevertheless, if policies that drive investment in renewable energy, agriculture, and solid minerals are established, such impacts would be mitigated.

Introduction

The global clamoring for sustainable and clean energy sources to replace the current fossil-based fuels with their attendant issues of climate change and energy security have continued to drive changes in the global energy policy. In light of the foregoing, renewable energies are currently receiving global attention and have begun to form part of the essential components of responsive nation's energy strategy for economic development sustainability. Consequently, oil and gas producing companies and oil producing nations around the world face a unique and intense period of change as they navigate through the energy transition. More worrisome are the general concerns of the impact of the global energy shift from fossil-based systems of energy production and consumption on global economies, particularly those of emerging economies like Nigeria, in West Africa.

The government, in their response to a global transition from fossil-based fuels, has come up with a policy known as National Renewable Energy and Energy Efficiency Policy (2015) for consideration. The Policy is aimed at removing the barriers that put renewable energy and energy efficiency at economic, regulatory, or institutional disadvantages relative to other forms of energy in Nigeria as well as to provide a conducive political environment that will attract investment in the renewable energy and energy efficiency arena. However, the effect of the Policy is yet to be felt in preparing the nation for the potential adverse effects of the Global energy transition on an emerging economy like Nigeria that depends largely on revenues from crude oil.

Economic Relevance of Hydrocarbon Resource in Nigeria

Nigeria as a nation is blessed with abundant natural resources. It is the 6th largest exporter and7th largest producer of crude oil in the world with a proven oil reserve estimated at 35 billion barrels and gas reserve of over 159 trillion cubic feet. According to the Organization of Petroleum Exporting Countries (OPEC) (2020), Nigeria's economy as evidenced by the available statistics of the contributions of revenues from crude oil to the total federation revenue is undoubtedly hanging on the happenings in the global oil market. For example, Nigeria's total revenue from crude oil rose by 29% to NGN7.3 trillion in 2017 from NGN5.68 trillion in 2016 reflecting impact of increase in production volume and increase in crude oil price per barrel. In 2017, the revenue from oil represented 69% of the total federation revenue which gained an increase of 22% to hit NGN10.6 trillion from NGN8.26 trillion achieved in 2016. In 2017, the average spot price of Nigeria reference crude oil, the Bonny Light (37^{o}API) rose from $52.92 per barrel in the third quarter of 2017 to $62.48 per barrel in the fourth quarter of 2017. This represents an increase of 18.1% which was attributed to the production-cut agreement, demand growth from China, and increased refining activity in the United States.

Omoniyi Oluwafemi is the Chief Operating Officer of Mak Mera Nigeria Limited. Dr. Oluwafemi can be reached at femiomoniyi@makmera.com

Furthermore, according to the economic report released by the Central Bank of Nigeria (CBN) 2019, the total oil revenue rose to NGN9.4 trillion in 2018, representing an increase of 29%. However, in 2019, the economic report further indicated a decline in the oil revenue from NGN9.4 trillion in 2018 to NGN64.9 billion in 2019. The reduction in oil revenue threw the economy of Nigeria into a near recession even before the COVID-19 Pandemic which eventually crippled the economy. How long should Nigeria's economy be shaped by factors beyond her control?

Possible Impacts of Energy Transition on the Nigerian Economy

The current global energy transition program would undoubtedly affect the Nigeria's Gross Domestic Product (GDP) because the health of the economy depends largely on the revenues from the oil sector. The Nigeria GDP growth rate as shown in Figure 1 shows a modest recovery in 2017 with 0.5% after the oil shock in 2016 threw the GDP into -1.60%. The economic growth rate experienced a steady increase into 2018 and 2019 with 1.5% and 2.2% respectively before COVID-19 Pandemic plunged the economy into -1.79%.

Figure 2 shows the contribution of hydrocarbon resource to the Nigeria Gross Domestic Product (GDP). It is clear from the available data that Nigeria economy largely depends on the production and consumption of crude oil. From 2016 to 2019, just like the previous years, the dominance of oil in the Nigeria economy

Figure 1: Nigeria GDP Growth rate between 2016 and 2020
Source: World Bank calculations based on NBS

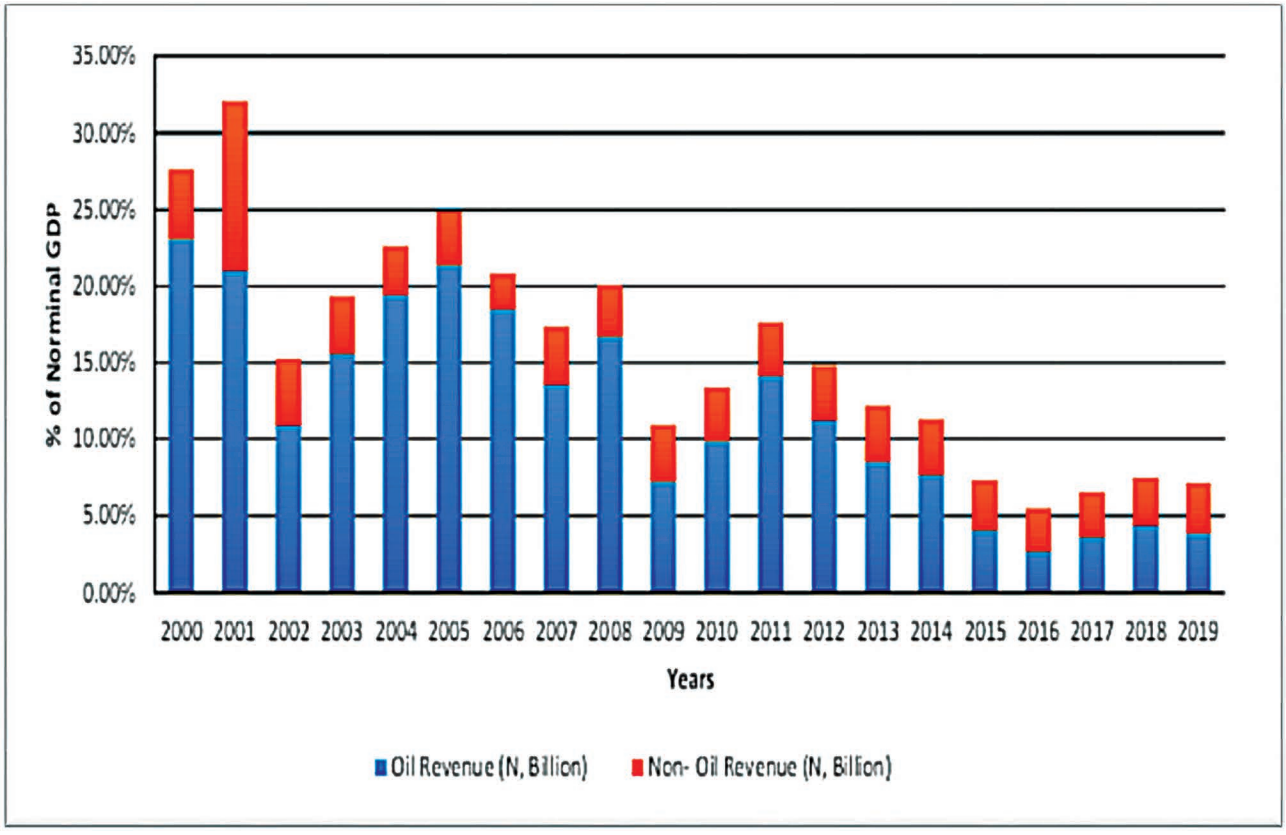

Figure 2: Oil and Non-oil contribution to the GDP in Nigeria between 2000 and 2019
Source: Data from Central Bank of Nigeria (CBN) Statistical Bulletin 2019

is clear. Thus, it is expected that the global shift from fossil fuel particularly crude oil will have adverse effects on the Nigeria economy if no seriousness is shown by the government towards diversification of the economy away from oil to potential revenue earning sectors such as solid minerals, agriculture, and manufacturing.

The areas of the Nigeria GPD that would be affected can be analyzed based on the definition of the Gross Domestic Product. For example if the GDP is defined as an allocation of Income to Consumption and Investment:

GDP = Consumption + Investment + Export – Import

Energy transition requires huge investment in renewable, decarbonization, electric vehicle batteries, and energy efficiency. Thus, increased investment in the new global energy order is expected to engender a vibrant renewable energy industry but such would cause a decline in the current oil exploration and production activities in Nigeria. Therefore, if the total new investment in the renewable energy technologies, decarbonization technologies, and energy efficiency technologies is greater than the total divestment in the oil industry due to low oil exploration and production activities, it is expected that Nigeria economy will receive a boost and the GDP will increase. This is even more true in the case of Nigeria's current economy that is far from equilibrium of full employment of available resources, and excess savings over investment due to lack of investment ideas. Thus, additional investment would cause a shift in the economy towards greater utilization of resources and the GDP would increase. However, if the total new investment in the new global energy order is lower than the total divestment in the oil industry, the economy would suffer a decline in growth rate due to reduced investment, low income, and loss of employment by the employees in the oil industry, oil service firms, and other sectors that are linked with the oil industry. Currently, the Nigeria oil industry according to International Labor Organization (ILO) employs 65,000 direct staff and 250,000 indirect staff. A decline in oil exploration and production activities would push huge numbers of the employees, both direct and indirect, into the labor market. If this happens in Nigeria, the economy will experience low spending, reduced taxes and high borrowing. This added to the current huge rate of unemployment and low revenue, generally, will cause the GDP to suffer a decline.

Moreover, the agriculture sector would share in the loss of revenue due to global shift from fossil fuels. Currently, Nigeria, as part of its efforts in integrating agriculture with the petroleum downstream is enforcing 10% ethanol blend with the auto fuel. This implies huge investment in crops such as cassava, corn and sugarcane. In Nigeria, the total estimated daily demand of petroleum motor spirit (PMS) is 38,200,000 liters and this would require 3,820,000 liters of ethanol. Thus, currently, there is a huge demand on ethanol input materials such as sugarcane, cassava and corn. However, the global energy shift from fossil based fuel to renewables would lead to a decrease in the demand for such agricultural products which are raw materials for ethanol production and consequently, there will be a reduced productivity from the agricultural sector and the GDP will decline.

The Manufacturing sectors in Nigeria could also suffer a set back because its rapid and sustainable development requires the functioning of petrochemical industries because they play key roles as industrial multipliers by catalyzing virtually all arms of the economy. Furthermore, production activities within and around the three major petrochemical industries in Nigeria; the Kaduna Refinery and Petrochemicals Company (KRPC), the Warri Refinery and Petrochemicals Company (WRPC) and Indorama Eleme Petrochemicals Company would slow down and this would cause a low productivity and consequently a slide in the GDP.

Nevertheless, if the country can show the deserved seriousness required for the implementation of the National Renewable Energy and Energy Efficiency Policy (NREEEP) to drive the required investments from both domestic and foreign investors, the adverse impact of the energy transition could be mitigated with sufficient investment in Renewable Energy as well as in Agriculture and Solid Minerals Sectors. For example, Nigeria's climate favors abundance renewable energy resources such as solar and wind energy.

For the consideration of solar energy, Nigeria lies within a high sunshine belt and within the country; solar radiation is fairly well distributed. According to NREEEP (2015), the annual average of total solar radiation varies from about 12.6 MJ/m^2-day in the coastal latitudes to about 25.2 MJ/m^2-day in the far North. Currently, the solar energy has a maximum capacity of about 3% but the government plans to increase the maximum capacity to 6% by 2030. For wind energy, the energy potential is also high. In Nigeria, The annual average wind speed at 10m height varies from about 2m/s in the coastal areas to about 4m/s in the far North. At 50m, the range is 2m/s to 8m/s. It is possible to convert wind energy to rotary mechanical energy and electrical energy for a variety of use ranging from water pumping, milling of grains to electricity generation.

Furthermore, there are abundant investment opportunities in the Nigeria Agro - raw materials ranging from cash crops to food crops. There are ample investment opportunities in grains and cereal production and processing that could mitigate the adverse effect of the global shift from fossil based fuels. Investment in maize farming, for example, could increase Nigeria's global market share from its present 1.01%. According to the Raw Material Research and Development Council of Nigeria, the worldwide production of maize is 785 million tons/annum, with the largest producer, the United States of America producing 42%. Africa as a whole produces 6.5% with Nigeria's total production of 8 million tons/ annum inclusive which represents just 1.01% of worldwide production. Aside from maize, there are other investment opportunities in plantation establishment and processing, Cashew production and processing as well as Cocoa production and processing among others. All these cash crops are exportable and they would generate foreign earnings.

Another non-oil investment opportunity area in Nigeria is in the Solid Mineral Sector. Nigeria is blessed with geological formations which favor the occurrence of various types of mineral resources. The country is well endowed with abundant mineral resources with potentials for being developed into mineral raw materials for both domestic industry and export. There are many minerals which are available in economic quantities and are of good quality, According to the Raw Materials Research and Development Council of Nigeria, there are about 44 different mineral resources that have been identified to occur in commercial quantities broken down into seven (7) categories which include: Precious Metal Gold, Base and Rare Metals,

Ferrous Metals, Industrial Minerals, Energy Minerals, Construction Materials and Gemstones. For example, a Ferrous Metal like Nickel is a required metal input in the production of Electric Vehicle batteries. Thus, high demand for electric vehicle batteries would also lead to high demand for a metal like Nickel. This is a good investment opportunity in the Nigeria solid mineral sector.

Investment in renewable energy technologies, carbonization technologies and energy efficiency technologies would not only help Nigeria to provide sustainable energy for her economic activities without environmental pollution, but would also reduce dependence on energy importation and thus improve her trade position with the rest of the world.

Nevertheless, to attract investment particularly foreign investment, the business environment should be conducive. Investors would invest their money in a politically stable economy. Also, the government of Nigeria should promote investment policies that would provide incentives to attract foreign direct investment (FDI) as well as domestic investment. Infrastructure should be developed to support economic growth and development. The economy would require huge investment to mitigate the adverse effects that the shift from fossil fuel would eventually have on the economy.

Conclusion

In conclusion, the current global energy transition will surely disrupt economic activities of emerging economy like Nigeria. Its impact would be felt most in the oil sector as well as agriculture and linkage industries. Generally, the economy may experience a decline in GDP. Nevertheless, if measures that could boost FDI, domestic investment, good infrastructure and conducive business environment are prioritized, the economy will become vibrant and potential loss from fossil fuel rejection would be offset by gains from increased productivity in the new energy order and other sectors of the economy.

References

Federal Ministry of Science and Technology (2017). Investment Opportunities in Nigeria's Raw Materials. Technology and Innovation Expo 2017

Federal Republic of Nigeria (2015). National Renewable Energy and Energy Efficiency Policy

OPEC (2020). Handbook of Organization of Petroleum Exporting Countries (OPEC) and Global Energy Order. Routledge International Handbooks 2020, London and New York.