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Economic Analysis of Agriculture, Forestry and Fisheries to the Economic Development of Nigeria

Rotowa O.J[1*], Adekunle E.A[2], Adeagbo A.A[3], Nwanze O.L[1] and Fasiku O.O[3]

[1]*Department of Forestry and Wildlife Management, Nasarawa State University, Nigeria.*
[2]*Department of Agricultural Economic, University of Abuja, Nigeria.*
[3]*Department of forest products and production, University of Ibadan, Ibadan, Nigeria*
[4]*Department of Aquaculture and Fisheries Management, Nasarawa State University, Nigeria*

***Correspondence Author:** Rotowa O.,Department of Forestry and Wildlife Management, Nasarawa State University, Nigeria.e-mail:odunrotowa@yahoo.com babaaru92@gmail.com*

ABSTRACT

Natural resources play an important role in the economic growth process of most economies in the World. This paper examined the contribution of Agriculture, Forestry and Fisheries to the economic growth in Nigeria. Gross domestic product (GDP) represents the sum of value added by all its producers. These sectors have over the years contributed immensely to the socio-economic development of Nigeria and other countries in West Africa Sub-region and not only serve as source of raw materials to the industries, they also provide employment opportunities to thousands of people. Agriculture, value added (% of GDP) in Nigeria was 21.21 as of 2016. Its highest value over the past 35 years was 48.57 in 2002, while its lowest value was 20.24 in 2014. In the last three decades, forestry and fisheries has added continuously to Nigeria GDP in an increasing manner. Nigeria had 88.91b₦ in 1989 and has continually increase to 167.26b₦ in 2015 and 171.64 b₦ in 2016'Fisheries in the year 1989 added94.81 b₦ and 358.7 b₦ in 2015. Although, it expected that countries rich in natural resources should perform better than those poor in natural resources but the case in Nigeria is different as natural resources has no and still not been getting a sustainable management its deserves. It is on this note that this article conclude that *policies aimed at effectively and appropriately financing Agricultural, Forestry and Fishery sectors of the economy should be adequately formulated and implemented by government in order to increase the output of these sectors and promote sustainable exportation of Agricultural, Forestry and Fishery Products.*

Keywords: *Economic development, Agriculture, Forestry, Fisheries and Economic growth.*

INTRODUCTION

Forests in West Africa form a veritable base from which substantial proportion of the populace derives their source of livelihood. The forests have over the years contributed immensely to the socio-economic development in all the countries in West Africa Sub-region. Between 1950 and 1970 the newly independent nations in West Africa relied on the national forest resources to build capital base for economic development. Logging activities were very high in the tropical forest vegetation in Ivory Coast, Ghana, Togo, Republic of Benin, Sierra Leone, Liberia, Nigeria and Cameroon. Many forest-based industries were also established in these countries. Thus the forestry sector ranks among the highest revenue and employment generating sectors in West Africa (Fuwape, 2003). The forests do not only serve as source of raw materials to the industries, they also provide employment opportunities to thousands of people. Apart from timber resources, the forest is also very rich in variety of non-timber products that provide food, medicine, energy, shelter and recreational facilities for people in both rural and urban centers in West Africa. The forests and trees also provide a way to express human, cultural and spiritual values. The forests play important roles in the amelioration of weather pattern and climate, provision of clean air, protection of biological diversity, protection of soil and food crops and carbon sequestration. The forest play important role in the environment to maintain biodiversity and conserve soil and water. (Fuwape, 2003) .The relationship between agriculture and development, especially in Sub-Saharan Africa, cannot be overemphasized. As a roadmap to attaining development, the Millennium development Goals (MDGs) was adopted in year 2000 and in Africa, 70% of the

development target group live in rural areas and are dependent on agriculture for a living (Tolulope and Chinonso,2013). Invariably, reducing poverty, improving nutrition and general well-being of the population would imply improving the livelihood of this majority and this hinges critically on the performance of the agriculture sector. For example, using World Development Indicator (WDI) data from Nigeria for selected periods, we find a strong positive correlation between food production and primary school enrolment ratio and gender equality while there is a strong negative correlation between food production and child mortality rates. This gives some evidence on the importance of agriculture in economic development (Adekunle*etal.*,2009).

Gross domestic product (GDP) represents the sum of value added by all its producers. Value added is the value of the gross output of producers less the value of intermediate goods and services consumed in production, before accounting for consumption of fixed capital in production. The United Nations System of National Accounts calls for value added to be valued at either basic prices (excluding net taxes on products) or producer prices (including net taxes on products paid by producers but excluding sales or value added taxes). Both valuations exclude transport charges that are invoiced separately by producers. Total GDP is measured at purchaser prices. Value added by industry is normally measured at basic prices. (Ogunbadejo and Oladipo, 2017). However, sustained economic development cannot be achieved without economic growth. As expressed by the World Bank (2006), high poverty level will lead to low growth and low growth will lead to high poverty level. Thus, economic growth is necessary for sustained economic development (Akanbi and Du Toit, 2011; World Bank, 2006). There is no doubt that economic growth is necessary for sustained development, coupled with data limitation, informs our focus on investigating the contributions of agriculture and forestry to economic growth, as measured by Gross Domestic Product (GDP), in Nigeria. This paper therefore investigates the contribution of agriculture and Forestry to aggregate economic growth in Nigeria.

AGRICULTURE, FORESTRY, FISHERIES AND ECONOMIC GROWTH

Natural resources play an important role in the economic growth process of most economies in the World (Cronin and Pandya, 2009). Most importantly, no developing economy in the World has the prospect to sustain growth in the absence of natural resources, since they serve as sources of foreign earnings especially oil, timber and other Agricultural products including grains and tubers. It is therefore expected that countries rich in natural resources should perform better than those poor in natural resources. This is because, it is believed that economies which are rich in natural resources can accumulate economic infrastructure and human capital easily (Idumah and Awe 2017). However, empirical studies on the natural resource endowment economic growth relationship reveal that while many countries rich in natural resources have performed poorly while countries poor in natural resources have performed better(Njimanted and Aquilas,2015).Among the countries which have fallen victim of are source-curse are Nigeria, Angola, Congo, Bolivia, Sierra Leone and Venezuela (Arezki and Ploeg,2010). From 1965 to 1998, the rate of growth of Gross National Product (GNP) per capita in Iran and Venezuela was on average -1% per year, -2% in Libya, -3% in Iraq and Kuwait. For Qatar, between1970 and 1995, it was -6% (World Bank, 2000 in Gleason (2001). Gross National Product per capita fell by an average of 1.3% during 1965-1998 for all OPEC, relative to the 2.2% average per capita growth in all the lower- and middle-income countries. The only countries which are rich in natural resources with long-term investment above 25% of Gross Domestic Product (GDP) on average from 1970-1998, which is equal that of successful industrial countries that are poor in natural resources were Botswana, Indonesia, Malaysia, and Thailand(Gylfason, 2001). On average, GDP per capita growth rates for Nigeria, Venezuela and Indonesia from 1998 to 2002 were -0.59%, -3.64%, and -1.38%respectively (Iimi and Ojima, 2005).

These sectors correspond to ISIC divisions 1-5 and include forestry, wildlife, and fishing, as well as cultivation of crops and livestock production. Value added is the net output of a sectors after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. Agriculture, value added (% of GDP) in Nigeria was 21.21 as of 2016. Its highest value over the past 37 years was 48.57 in 2002, while its lowest value was 20.24 in 2014. The contribution of forestry sector to the

national economy is usually reflected in terms of GDP share, balance of payment impact or export revenue, industrial output, employment or income generation. The contribution of forestry to national economy in macro-economic terms is usually undervalued in West Africa due to their peculiar accounting system.

Fisheries and Aquaculture is a sector that is very important to humanity, it provides food and nutrition security, economic and social development, marine and coastal tourism, shipping, mining, energy and ecosystem services such as carbon sequestration, water filtration, atmospheric and temperature regulation, it also provides protection from erosion and extreme weather events. According to FAO (2009), Fish farming is a common practice in Europe, Canada, East Asia, China, Africa and developing Countries like Nigeria. As reported by Keith (2010), over 500million people in the developing countries depend directly or indirectly on Fisheries and aquaculture for their livelihood. In Nigeria, Fish farming is one of the fastest growing ventures in Nigeria as it plays a vital role in the nation's economy in terms of employment generation, poverty alleviation, foreign exchange earnings and provision of raw materials for the animal feeds and provision of raw materials for the animal feeds industry.

Contribution of Agriculture to Nigeria Economy

A different literature has established a relationship between agriculture sector and economic growth (Gallup et al., 1997; Thirtle, Lin &Piesse, 2003; Awokuse, 2008; Irz et al., 2001). Tolulope and Chinonso (2013) contributed to the literature using Solow"s growth accounting framework and estimate their model with time series data on the Nigerian economy from 1960 to 2011. In their model, aggregate output growth is conceptualized as the sum of growth contributions from each sector of the economy. They further modify the model to provide evidence on the importance of the agriculture subsectors in the growth of the sector. Similar Collins and Bosworth (1996) and Iyoha & Oriakhi (2002) reported that growth in the agriculture sector is taken to be the weighted sum of the growth inthe sub-sectors of the agriculture sector – namely, crop production, livestock production,fisheries and forestry. It is expected that disaggregating the agriculture sector will provideclearer evidence on how agriculture contributes to economic growth by highlighting the sources of growth in the agriculture sector. This will give evidence on the contribution of agriculture to economic growth and development on Nigeria.

Contribution of Forestry Sector to Nigeria Economy

The contribution of forestry sector to the national economy is usually reflected in terms of GDP share, balance of payment impact or export revenue, industrial output, employment or income generation. The contribution of forestry to national economy in macro-economic terms is usually undervalued in West Africa due to their peculiar accounting system. The contribution of the forestry sector to national economies is one dimension of sustainable forest management, the sector include all economic activities that mostly depend on the production of goods and services from forests. This includes commercial activities that depend on the production of wood fibre (i.e., production of industrial round wood, wood fuel and charcoal; sawn wood and wood-based panels; pulp and paper; and wooden furniture). It also includes activities such as the commercial production and processing of non-wood forest products (NWFPs) and the subsistence use of forest products.

Forest-Based Employment and Value-Added

In most countries, statistics on employment and value-added are two important components of a broad range of macroeconomic statistics that are collected to monitor trends in the economy. Some countries use their own macroeconomic classification systems but many use the International Standard Industrial Classification of all Economic Activities (ISIC).

This classification system is maintained by the United Nations (UN) and is periodically revised by the UN with the agreement of member nations. The versions of the ISIC used for most of the period 1990 to 2011 (ISIC Revisions 3 and 4) include three sub-sectors (called Divisions in the ISIC) that clearly fall within the definition of the forestry sector given above. They are: ISIC Rev.4 Division 02 (forestry and logging); ISIC Rev.4 Division 16 (manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials) and ISIC Rev.4 Division 17 (manufacture of paper and paper products). In addition to these three Divisions, forest dependent activities also appear as part of other sub-sectors (i.e., Classes) in the ISIC.

Furthermore, part of activities such as manufacture of agricultural and forestry machinery, printing, transport, wholesale and retail trade, private household and recreational activities are also forest related. All these activities generate employment and value-added, however, it is not possible to distinguish between forest dependent activities and other activities within these sub-sectors.

Forestry activities and the operations of the forest industries offer a lot of job opportunities. Sources of forest-based employment are many and diverse but only a few of them are recorded. The different stages of log harvesting, transportation and sawing are labour intensive and many people in the rural area are employed. The present level of technological development in West Africa necessitates that most tree felling and processing operations are done manually. For example in Nigeria where the sawlog production rate is 6,240,000 m^3 per annum, it has been estimated that about 40,600 people are employed in tree felling and transportation, while 160,800 labourers are employed per annum in primary log processing.

Sawmills are the most widespread forest-based industries and one of the largest employer of rural labour. The integrated wood industries that offer employment to rural people include the Plywood and Veneer Mills, particularly mills and furniture factories.

In the secondary wood processing industries, the furniture, boat building and pole treatment factories also offer employment to rural dwellers. Forest services such as recreation, hunting and tourism also offer new sources of forestry employment. The statistics of the number of jobs provided by the forestry sector is usually compromised due to the patrimonial nature of some forestry activities and the fact that crafts play a major role in the secondary forest industry. Estimation is also made complicated by the number of self-employed people who are involved in collection, processing and marketing of non-timber forest products.

Trade. The forest products statistics compiled and disseminated by FAO include the following: round wood; wood chips, residues and charcoal; solid wood products (sawn wood and wood-based panels); and pulp and paper. Statistics are available for the value of international trade (imports and exports) in these products for every country and territory in the World over the period from 1961 to 2011. statistics from FAOSTAT and COMTRADE were collated to produce datasets of forest products from four sub-sectors: Forestry (round wood and non-wood forest products (NWFPs)(AFRISTAT. 2013); Wood industry (sawn wood, wood-based panels, wood chips and residues, charcoal and further processed wood products excluding furniture); COMIFAC. 2012, Pulp and paper industry (pulp, recovered paper, paper, and further processed paper products excluding printed articles[3] ECOWAS. 2013 EIU. 2013);and Wooden furniture industry (EIU. 2013). It should be noted that the industries that produce these products do not exactly match the definitions used in the ISIC. Firstly, charcoal production (outside of the forest) is one of a number of activities under Class 2011 in ISIC. The overwhelming majority of global charcoal production occurs in developing countries, where it is nearly all produced in the forest, but large scale production for export is probably produced in factories.

Non-Timber Forest Products (NTFPs)

The non-timber forest products (NTFPs) of the State are all biological materials other than timber, industrial round wood and pulpwood that are extracted from the forest. NTFPs are derived from large variety of plants and animals and may be consumed or processed into different set of products. The quantity and types of NTFPs that are available in different parts of the sub-region depend on the vegetation type of such location. Different types of non-timber forest products are available in the mangrove, rainforest and derived savanna.

The important functions of NTFPs ranged from economic to social, cultural and religious. Fuwape (2013) reported that NTFPs provide food, medicine, handicraft, tannin, dyes and cosmetics. The use of NTFPs for traditional medicine was ranked as the most important in Ondo State, Nigeria followed by its use for food, craft and cosmetics (Fuwape, 2003). The popular acceptance of NTFPs for medicinal purpose was attributed to the socio-economic status of the people and their confidence in the efficacy of herbal medicine.

The sale of NTFPs in local market provides income for people in the rural area. Some people also engage in the collection and sales of leaves, fruits, seeds and roots of forest trees as source of livelihood. Handicraft enterprise is one of the most predominant cottage industries in the rural areas. It provides employment opportunity and

income to the people. A lot of NTFPs are very valuable as craft materials. Plant fibres from *Raphia spp.* and palm trees are used in making brooms, ropes, fishing nets, baskets and mats. Rattan and climbing palms are also used for building and construction of furniture items. Rattan furniture items are now commonly used in homes and recreation centres. These furniture items have been found to be good, attractive, comfortable, presentable and economical. Tannin and dyes are also obtained from the bark and roots of some trees. Substantial quantities of tannin have been extracted from Mangrove trees (*Rhizophoraspp*), *Khaya spp.* and *Entandrophragma spp.*

The forest in West Nigeria contains different types of non-timber products in large quantities. These products have both economic and social importance in the life of the people. Some of these products can supply raw materials to sustain different cottage industries in the rural areas.

Table1. *Data on Real Gross Domestic Product (RGDP),(N'Billion).*

YEAR	RGDP	Crop Production	Livestock	Forestry	Fisheries
1981	15,258.00	1,854.76	341.41	77.9	90.3
1982	14,985.08	1,897.08	361.12	73.91	93.86
1983	13,849.73	1,842.70	393.13	75.28	97.96
1984	13,779.26	1,759.12	399.69	76.69	68.01
1985	14,953.91	2,180.91	428.1	78.08	43.97
1986	15,237.99	2,427.10	421.63	86.59	51.51
1987	15,263.93	2,330.00	433.43	87.59	40.65
1988	16,215.37	2,581.60	444.27	88.91	59.79
1989	17,294.68	2,710.67	453.16	67.31	94.81
1990	19,305.63	2,828.59	462.22	72.61	101.29
1991	19,199.06	2,955.88	454.82	74.79	105.35
1992	19,620.19	3,044.55	458.92	76.51	94.81
1993	19,927.99	3,132.84	461.67	78.04	71.11
1994	19,979.12	3,226.83	466.29	80.07	66.49
1995	20,353.20	3,336.54	485.87	81.83	73.14
1996	21,177.92	3,463.00	499.96	82.24	88.35
1997	21,789.10	3,611.91	512.46	82.98	98.33
1998	22,332.87	3,752.77	526.3	83.98	112.2
1999	22,449.41	3,949.42	541.03	85.07	128.12
2000	23,688.28	4,067.90	553.48	86.35	133.25
2001	25,267.54	4,222.48	570.08	88.07	143.91
2002	28,957.71	6,977.88	597.5	88.69	153.02
2003	31,709.45	7,493.02	622.56	90.02	159.23
2004	35,020.55	7,956.66	663.03	95.87	173.02
2005	37,474.95	8,524.15	707.87	101.55	183.43
2006	39,995.50	9,162.65	756.73	107.66	195.43
2007	42,922.41	9,826.77	809.16	114.25	208.29
2008	46,012.52	10,437.99	864.19	121.22	221.97
2009	49,856.10	11,046.16	920.2	128.31	235.66
2010	54,612.26	11,683.90	979.56	135.72	249.71
2011	57,511.04	12,017.19	999.4	142.46	270.32
2012	59,929.89	12,919.54	972.76	146.09	291.31
2013	63,218.72	13,247.80	1,030.94	154.31	317.47
2014	67,152.79	13,793.45	1,086.85	161.34	338.75
2015	69,023.93	14,274.94	1,151.32	167.26	358.7
2016	67,931.24	14,894.45	1,185.12	171.64	356.13

Source: *CBN statistical bulletin (Various Issues)*

Contribution of Fisheries to Nigeria's GDP

Fish production provides employment opportunities across various sectors. Harvesting, processing, packaging and distribution activities constitute the supply chain for delivery of the commodity. The production of equipment and technology for vessels, handling, processing and shipping constitute support services. It generates employment for about 10-12% of the world's population, according to an estimate by World Bank (2010) small scale fisheries employed about 79million people in the developing

nations while large scale fishing employed like 5 million people and these estimate includes those involved in fishing and post-harvest activities. In 1999, a total of 6.3 million metric tons of fish was caught in Africa majority of which were marine fish. Countries with the highest catch include Morocco, Egypt, South Africa, Ghana and Nigeria with Morocco being the leader in fish processing, it produces more canned fish, fish oil and fish meal than any other African country (World Bank, 2013).

Fish remains an important source of protein in Nigeria and the demand exceeds the supply. As reported by FDF (2005) there is a high demand for fish (1.5 metric tons) and an annual per capital consumption of about 7.5-8.5kg in Nigeria. In 2007, Nigeria produced 600,000 metric tons of fish while consumer demand stood at 266 million metric tons and the demand-supply gap was supplemented through the importation of 740,000 metric tons (Market resources commodity fact sheet, Nigeria harvest vol. 4, 2007). As report by Ovie and Raji (2006), Nigeria imports about 700,000 metric tons of fish annually at a cost of some US$400 Million to cushion the supply-demand gap.

The artisanal fishermen on the coastal waters supply about 260,000 MT, while those on inland waters contribute about 200,000 MT. The remainder of the 511,000 MT annual production comes from industrial fisheries. Thus, fisheries are crucial to the Nigerian economy, contributing 5.4% of the Gross Domestic Product (FDF, 2005). The contribution of the fishing sub sector to gross domestic product in Nigeria (GDP) at 2000 rose from 133.45 billion naira to 356.13 billion naira in 2016 (Table 1).

Nigeria - Agriculture, value added (% of GDP)

Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. Agriculture, value added (% of GDP) in Nigeria was 21.21 as of 2016. Its highest value over the past 35 years was 48.57 in 2002, while its lowest value was 20.24 in 2014. The origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3. Note: For VAB countries, gross value added at factor cost is used as the denominator. In 1981 agriculture added value in Nigeria was 28.52 and increased continuously 1988 (41.65). There has been constant decline in agricultural added value until it get 2002 when it raises to 48.57 a record that has not been broken till today (Table 2)

Table2. *Agriculture added value (1981-2018)*

Year	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Value	28.52	32.41	35.47	39.92	39.21	40.33	37.26	41.65	32.16	31.52
Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Value	31.22	27.27	33.9	38.81	32.06	31.13	34.03	39.05	35.31	26.03
Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Value	33.75	48.57	42.71	34.21	32.76	32	32.71	32.85	37.05	23.89
Year	2011	2012	2013	2014	2015	2016	2017	2018		
Value	22.29	22.05	21	20.24	20.86	21.21	22.23	19.1		

Source: *World Bank national accounts data and OECD National Accounts data files.*

The contributions of agriculture to economic growth can be examined through the roles of the sector in the economy. Johnston and Mellor (1961) summarized these roles in five inter-sectoral linkages; food, labour, market, domestic savings and foreign exchange. The most basic of these roles is, perhaps the supply of food for both domestic consumption and export. Direct contributions of food production can be through income generated from sales of farm produce and returns from economic activities related to production; or indirectly from increased capacity to partake in any form of economic activity through improved diet. Anyawu, *et al* (2010) using correlation matrix find that production of major staples in Nigeria contributed significantly to GDP growth (except wheat) between 1990 and 2001. Also, the agriculture sector contributes to economic growth through provision of better caloric intake and food availability. The attainment of global food security and reduction of hunger hinges largely on this singular role.

According to FAO (2005), agriculture can facilitate the attainment of all 8 MDGs through the direct or indirect linkages to food availability and poverty reduction. In 2008, UNDP reported that the 12.6% reduction recorded in the proportion of underweight

children between 1990 and 2008 can be attributed largely to growth in the agriculture sector in Nigeria (UNDP, 2008). Furthermore, as population increases, failure to increase food supply in proportion to increased demand has negative effects on industrial profits, investment and economic growth (Johnston & Mellor, 1961).

CONCLUSION

There is no doubt that the proxies of agriculture, forestry and fisheries productivity has over the years had positive effect on Nigeria economic growth despite the fact that these sectors has receive little attention by the government. Agriculture, value added (% of GDP) in Nigeria was 21.21 as of 2016. Its highest value over the past 35 years was 48.57 in 2002, while its lowest value was 20.24 in 2014. In the last three decades, forestry and fisheries has added continuously to Nigeria GDP in an increasing manner. Nigeria had 88.91b₦ in 1989 and has continually increase to 167.26b₦ in 2015 and 171.64 b₦ in 2016'Fisheries in the year 1989 added94.81 b₦ and 358.7 b₦ in 2015.

Although, it expected that countries rich in natural resources should perform better than those poor in natural resources but the case in Nigeria is different as natural resources has no and still not been getting a sustainable management its deserves. *In order to increase the output of these sectors and promote sustainable exportation of agricultural, forestry and fishery products,* The Government of Nigeria should put in efforts to diversifying the Nigerian economy as the Nigerian Agricultural, forestry and fisheries Sector currently suffers from Marginalization.

This would ensure that the economy is non-dependent on the recently failing oil sector, creating a better level of economic Growth and development. Also, agricultural practices including fish farming and tree planting should be encouraged round the country through the provision of Modern and affordable farm inputs and equipment to help develop a higher level of food security across the Nigerian states. Funding in forms of loans and grants should be given to Farmers and young graduates, and other farm related operators to conduct their agricultural businesses. This will cause an increase in the number of Nigerians that are interested in agriculture, fostering a larger scale of farming and thus, an increase in agricultural, forestry and fisheries outputs.

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