

## **Agriculture and Industrialisation in Contemporary Nigeria: Interrogating the Nexus For enhancing Sustainable Development Goals**

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### **Abstract**

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This paper highlights the phenomena of agriculture and industrialisation in contemporary Nigeria. Using extant and oral historical sources, it affirms the indispensable nexus between thriving agricultural production and industrialisation as a strategy for realizing the Sustainable Development Goals (SDGs) in Nigeria. The study also discusses the plethora of challenges perpetrating the complementary role of agriculture to industrialisation for the purposes of enhancing the development of the Nigerian State through the SDGs. These challenges are identified as the environmental constraints, socio-economic constraints, and the increasing prevalence of insecurity in some agricultural and industrial producing communities and in other areas of the country. This scenario makes it difficult for farmers in such areas to persist in their farm activities, thereby gradually decreasing agricultural yield and increasing hunger and poverty, among others which the SDGs have set out to tackle to an end or at least bring them to their barest minimum before or in 2030. The study contends that even with the said challenges, it is essentially through agriculture and industrialisation that Nigeria can achieve the kind of sustainable development it envisages through the United Nations (UN) SDGs. This paper concludes that the resultant massive disruption of agricultural activities poses a grave danger to Nigeria's quest for the complementary role of agriculture to industrialisation for enhancing sustainable development. Thus, the paper proposes thoughtful policy prescriptions to tame the deterioration state of agriculture and industrialisation for the realisation of the SDGs in contemporary Nigeria. In this connection, the study advocates a more proactive involvement of University scholars, stakeholders, and policy makers in the study of these and related phenomena in order to facilitate the fashioning of appropriate policies that will maximally tap the potentials of agriculture and industrialisation in the current drive towards the realisation of the SDGs.

**Keywords:** *Agriculture, Industrialisation, Nigeria, Nexus, and Sustainable Development Goals (SDGs).*

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## **Background to the Study**

Issues of development have recently attracted the attention of the United Nations and its agencies. This, no doubt has resulted from the serious danger posed by poverty to humanity generally and the more vulnerable sections of the world particularly. The poverty situation of the world, as presented by the World Bank ([www.worldbank.org](http://www.worldbank.org)), looks really gloomy. For instance, 736 million people live in extreme poverty, surviving on less than \$1.90 dollars a day. More than half of the world's extreme poor live in sub-Saharan Africa. Nigeria is among the five countries with the highest number of extremely poor, the others being India, Democratic Republic of Congo, Ethiopia and Bangladesh. More than 87 million, out of 190 million estimated population of Nigeria are living in extreme poverty; and the number of extreme poor in the vulnerable areas is increasing (Varvar, 2019).

However, it is believed that the above societal maladies could be tackled by the Sustainable Development Goals (SDGs) through agriculture and industrialisation. In fact, there seems to be growing awareness that conscience that there is a strong nexus between “agriculture and industrialization” and “industrialization and agriculture”. Put differently, agriculture has been considered an appendage of industrialisation for achieving sustainable development globally. Countries like Britain, Japan and China, among others depended on agriculture to ensure industrialisation and subsequently, sustainable development. However, this is more prevalent in developing economies due to their dependency on primary commodities for foreign exchange earnings. Consequently, the effects are transmitted to all facets of life, especially on the industrial sector. Similarly, Sing (2019) notes that:

*Agricultural sector plays a strategic role in the purpose of economic development of a country generally. Increase in agricultural production and the rise in per capita income of the rural community, together with the industrialisation and urbanisation, lead to an increased demand in industrial production.*

The preceding information shows the complementary role of the phenomena under consideration. Without the two, it would be difficult to achieve the SDGs in Nigeria and elsewhere in the world. In this connection, this paper, therefore, examines agriculture and industrialisation as veritable tools or strategy for achieving the SDGs in contemporary Nigeria. To logically address the aforementioned thrust, the paper is divided into sections. The first section scopes the discourse. The second section conceptualises the keywords. The third section puts into context the historical currents that motivated the establishment of the SDGs. The fourth section outlines the complementary role of agriculture to industrialization. The fifth part analyses the factors limiting the complementary role of agriculture to industrialisation to achieving the SDGs in contemporary Nigeria. The sixth part contains the concluding thoughts.

## **Conceptual Pathway**

The key terminologies in this paper are agriculture, industrialisation and the Sustainable Development Goals (SDGs). Agriculture on the one hand, is a late English name adoption of Latin *agricultua*, from *ager*, 'field' and *cultura* 'cultivation' or 'growing'. Agriculture usually refers to the activities of man though, it is also observed in certain species of ant, termites and

*ambrosia* beetle (Ulrich, 2002, Ityonzughul, 2019). To practice agriculture means to use the natural resources to 'produce commodities which maintain life including food, fibre, forest products, horticultural crops and their related services' (Chantrell, 2002). Related to the above definition, agriculture is conceived as the production of food, fibre, feed and other goods by the systematic growing and harvesting of plants and animals (Akinboyo, 2008). It is the science of making use of land to raise plants and animals. It is the simplification of nature's food webs and rechanneling of energy for human and plant (Akinboyo, 2008, Ityonzughul, 2019). Agriculture embraces all the processes that are pulled together using the factors of production such as land, labour and capital in order to produce the food requirement of man. According to Ojo (2009), in its widest sense, the agricultural sector consists of agricultural crops, livestock, and fishery and forestry sub-sectors. Agriculture, here, involves the production of crops on land, the keeping of livestock of various kinds, fishery production and the establishment and maintenance of forests. It, therefore, does not go beyond the production and maintenance of the above products. According to Halcrow (1980):

*Originally, it applied to the growing of crops and the raising of livestock. As economies developed it has taken on a broader meaning. The word still applies to growing crops and raising livestock and the organization and management of farming and ranching. But now it also extends to firms and industries that manufacture farm machinery, produce fertilizer, market farm chemicals-all services and supplies used in modern farming...it includes a public supported sector or government service and regulations, scientific research and education, experiment stations and educational services and market news and economic analysis.*

Agriculture as defined above has evolved from its traditional stage of cultivation of crops and raising and marketing of livestock, fishery to their marketing. Many of the crops are referred to as raw materials because of the processes they undergo in industries to end up as manufactured goods. Agricultural development is another term or concept that needs to be clarified. According to Nchuchuwe and Adejuwon (2012), agricultural development implies a sustained increase in the level of production and productivity over a reasonable length of time and the subsequent improved well-being of farmers as reflected in their higher per capita income and standard of living. The above conceptualisation leads us to the meaning of agricultural development. Laiglesia (2018:6-7) defines agricultural development, "as the process that creates the conditions for the fulfilment of agricultural potential. These conditions include the accumulation of knowledge and availability of technology as well as the allocation of inputs and outputs". These definitions, in as much as they have the well-being of the farmer, and an expectation that agriculture should not be static move from the primitive mode of production to mechanised technology so that both the standard of living of the farmer and total production of food should have a boost, to ensure food security is only a mirage in Nigeria. Agricultural development has not been given the prime of place for it to enjoy any form of sustainability, neither has the conditions for the fulfillment of agricultural potentials received the necessary attention by its stakeholders.

Industrialisation on the other hand, is believed to be the *sine-qua-non* for raising a country's standard of living. In historical terms industrialisation involves the expansion of the

secondary sector in an economy, hitherto dominated by the activities of the primary sector. To be more specific, industrialisation is defined as:

*The process of social and economic change that transforms a human group from a pre-industrial (or traditional) society into an industrial one. It is part of a wider modernization process, where social change and economic development are closely related with technological innovations, particularly with the development of large-scale energy.... It is the extensive organization of an economy for the purpose of manufacturing (Yio, 214:42).*

In 1063 The United Nations Committee for Industrial Development also defined industrialisation with a lot of premium also placed on manufacturing as a critical variable of the process. According to the committee:

*Industrialisation is the process of economic development in which the growing part of the natural resources is mobilized to develop a technically up-to-date, diversified economic structure characterized by a dynamic manufacturing sector having and producing means of production and consumer goods and capable of assuring a high rate of growth for the economy as a whole and of achieving economic and social progress. (Tyangunencko, 1966:7)*

From the foregoing, industrialisation is the process of growth of large scale machine production. It is also defined as the process of setting up such organisations, especially the introduction of manufacturing industries in countries, state or regions where people are engaged mainly in agricultural activities (Clark, 1988). Once industrialisation is achieved, it is expected that the per-capita income would rise and productivity levels would also increase with a corresponding increase in employment and drastic reduction in poverty as well as inequality. The process also includes movement from rural to urban areas and a shift from home to factory production (Yio, 2014). Increased mechanisation in agriculture generally leads to increased agricultural productivity and enough food for large urban population. Agricultural productivity growth is therefore necessary for modern industrial growth (Yio, 2014). Arising from the foregoing, some of the following features define an industrialization space:

- i. The transformation of natural resources into finished products.
- ii. The mechanisation of the production process.
- iii. The diversification of the economy characterised by a dynamic manufacturing sector.
- iv. It is also characterised by high technological innovations.
- v. Expected increase in per capita income and rise in productivity levels.
- vi. Rural-urban movement and shift from home to factory production.
- vii. Increase in food production and enough food for the large urban population.
- viii. Increase in employment opportunities and drastic reduction in poverty (Ukase, 2016: 557-558).

Industrialisation is also defined as a process by which an economy moves from a primary agrarian production to one characterized by mass produced, technologically advanced goods and services. Industrialisation is characterized by shift from urban labour and increased

standard of living (Varvar, 2019:2). In the context of this study industrialisation is conceived as the increase in agricultural production as a result of mechanisation to feed both the industrial, agricultural and other sectors of the economy in order to reduce poverty and enhance a good standard of living.

Also considered in this section is Sustainable Development Goals (SDGs). The SDGs refer to a set of goals embraced by United Nations member states, Nigeria included, at the September 2015 UN Sustainable Development Summit. These goals spell out what countries that signed onto the Agenda 2030 intend to achieve by the year 2030. Each goal has specific targets and indicators that make it easy to measure and monitor progress towards their achievement. For example, with respect to universal primary education, the target is to ensure that, by 2030, children everywhere, boys and girls alike, will be able to complete full course of primary schooling. Indicators used for monitoring progress for these goals are the enrolment ratio in primary education; the proportion of pupils starting grade 1 who reach the last grade of primary school and literacy rate of between 15 and 24 year-olds, women and men (Dipholo & Tshishonga, 2017:89-90).

The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by all United Nations Member States in 2015 as a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030. The 17 SDGs are integrated, that is, they recognise that action in one area will affect outcomes in others and that development must balance social, economic and environmental sustainability. Through the pledge to leave no one behind, countries have committed to fast-track progress for those furthest behind first. That is why the SDGs are designed to bring the world to several life-changing 'zeros', including zero poverty, hunger, AIDS and discrimination against women and girls. Everyone is needed to reach these ambitious targets. The creativity, know-how, technology and financial resources from all of society is necessary to achieve the SDGs in every context.

### **Background and Aim of the Sustainable Development Goals (SDGs)**

The Sustainable Development Goals (SDGs) were born at the United Nations Conference on Sustainable Development in Rio de Janeiro in 2012. The objective was to produce a set of universal goals that meet the urgent environmental, political and economic challenges facing our world. The SDGs replace the Millennium Development Goals (MDGs), which started a global effort in 2000 to tackle the indignity of poverty (SDGs Brochure). The MDGs established measurable, universally-agreed objectives for tackling extreme poverty and hunger, preventing deadly diseases, and expanding primary education to all children, among other development priorities. For 15 years, the MDGs drove progress in several important areas: reducing income poverty, providing much needed access to water and sanitation, driving down child mortality and drastically improving maternal health. They also kick-started a global movement for free primary education, inspiring countries to invest in their future generations. Most significantly, the MDGs made huge strides in combating HIV/AIDS and other treatable diseases such as malaria and tuberculosis (<http://www.undp.org/content/undp/en/home/librarypage/mdg/the-millennium-development-goals-report-2015.html>).

1. More than 1 billion people have been lifted out of extreme poverty (since 1990)
2. Child mortality dropped by more than half (since 1990)
3. The number of out of school children has dropped by more than half (since 1990)
4. HIV/AIDS infections fell by almost 40 percent (since 2000) (SDGs Brochure)

The legacy and achievements of the MDGs provided us with valuable lessons and experience to begin work on the new goals. But for millions of people around the world the job remains unfinished. We need to go the last mile on ending hunger, achieving full gender equality, improving health services and getting every child into school beyond the primary level. The SDGs are also an urgent call to shift the world onto a more sustainable path. The SDGs are a bold commitment to finish what we started and tackle some of the more pressing challenges facing the world today. All 17 Goals interconnect, meaning success in one affects success for others. Dealing with the threat of climate change for instance impacts how we manage our fragile natural resources, achieving gender equality or better health helps eradicate poverty and fostering peace and inclusive societies will reduce inequalities and help economies prosper. In short, this is the greatest chance we have to improve life for future generations (SDGs Brochure).

The SDGs coincided with another historic agreement reached in 2015 at the COP21 Paris Climate Conference. Together with the Sendai Framework for Disaster Risk Reduction, signed in Japan in March 2015, these agreements provide a set of common standards and achievable targets to reduce carbon emissions, manage the risks of climate change and natural disasters, and to build back better after a crisis. The SDGs are unique in that they cover issues that affect us all. They reaffirm our international commitment to end poverty, permanently, everywhere. They are ambitious in making sure no one is left behind. More importantly, they involve us all to build a more sustainable, safer, and more prosperous planet for all humanity.

Since the adoption of the Sustainable Development Goals (SDGs), Nigeria has continued to demonstrate its commitment to the SDGs promise through leadership and ownership of the implementation process. The UNDP, is building on their support through the provision of technical support to the Office of the Senior Special Advisor to the President on SDGs (OSSAP) and line ministries in an effort to ensure that planning and budgeting for development activities in the country are done within the framework of the SDGs. Using lessons learnt from the MDGs era, UNDP is working closely with the Government of Nigeria and other partners in ensuring that the SDGs are efficiently and effectively implemented and that resources are allocated to sectors of the economy that will yield highest dividend for the poor and vulnerable millions across the country (<https://www.ng.undp.org/content/nigeria/en/home/sustainable-development-goals.html>).

The UNDP has have supported the Government of Nigeria in conducting the SDGs Data Mapping Exercise and conducting Baseline Surveys whose results have been useful in developing baseline indicators for SDGs implementation, monitoring and reporting in the country. The baseline survey continues to be updated bi-annually to reflect current situation and changing trends in the country. In addition to conducting various advocacy and awareness

activities with several government ministries, departments and agencies, they have supported initiatives aimed at promoting strategic engagements around the SDGs. For example, with our support, the government developed the Private Sector Engagement Strategy which provides for and recommended the establishment of the first-ever Private Sector Advisory Group on SDGs. They have also supported the establishment of SDGs Development Partners Forum which they also anchor (<https://www.ng.undp.org/content/nigeria/en/home/sustainable-development-goals.html>).

The UNDP provides both technical and financial support toward ongoing efforts aimed at integrating the SDGs into national and State-level policies, plans and budgets. In support of Government's efforts aimed at sharing its experiences so far, the UNDP is providing technical support towards the development of Voluntary National Reviews (VNR). The VNRs facilitate the sharing of experiences, including successes, challenges and lessons learned, with a view to accelerating the implementation of the 2030 Agenda. The NRVs will serve as a basis for anticipated regular reviews by the high-level political forum (HLPF) meetings held every year. The VNRs also seek to strengthen policies and institutions of governments and to mobilise partnerships. As the UN's agency mandated to eradicate poverty, UNDP has pledged to continue supporting the Governments and people of Nigeria in tackling the new agenda and taking it forward over the next couple of years. They will continue to provide support to the country as both partners continue on this long path towards the SDGs promise- a promise of a just, equitable and sustainable planet – a common heritage; a promise of peace and prosperity for all (<https://www.ng.undp.org/content/nigeria/en/home/sustainable-development-goals.html>). These SDGs are presented in the succeeding table hereunder.

**Table 1:** Sustainable Development Goals: Agenda 2030

GOAL 1: No Poverty	GOAL 10: Reduced Inequality
GOAL 2: Zero Hunger	GOAL 11: Sustainable Cities and Communities
GOAL 3: Good Health and Well-being	GOAL12: Responsible Consumption and Production
GOAL 4: Quality Education	GOAL 13: Climate Action
GOAL 5: Gender Equality	GOAL 14: Life Below Water
GOAL 6: Clean Water and Sanitation	GOAL 15: Life on Land
GOAL 7: Affordable and Clean Energy	GOAL 16: Peace and Justice Strong Institutions
<b>GOAL 8:</b> Decent Work and Economic Growth	GOAL 17: Partnerships to Achieve the Goal
<b>GOAL9:</b> Industry, Innovation and Infrastructure	
UN: Transforming Our World: The 2030 Agenda for Sustainable Development <a href="https://www.un.org/sustainabledevelopment">A/RES/70/1;sustainabledevelopment.un.org</a>	

1. For the industrialisation process to fully mature in Nigeria, it necessarily needs the full complements of agriculture, just as agriculture also needs the complements of industry to fully flourish.
2. The experience of the first industrial nation, Britain, and others that followed, clearly attests to the indispensable role of agriculture in industrialisation.

3. In Nigeria, this imperative is even more emphasised as over 70% of Nigeria's population is involved in agriculture, monopolising the prospects for the supply of the capital necessary for industrialisation.
4. Due to the dominance of peasant production in Nigerian agriculture (Varvar, 2008), a determined focus on the improvement of rural agriculture will translate into rural development with tremendous impact on the industrialisation process.
5. Agriculture has the potential for providing food and raw materials needed by the industrial sector. Without food and raw materials, industrialisations cannot progress.
6. The larger population of Nigerians engaged in agriculture is a ready market for industrial goods.
7. Production linkages develop from the interdependence between agriculture and industry through the use of inputs. While industry provides tools, vehicles, fertilizers, and, among others agriculture provides raw materials.

### **Complementary Role of Agriculture to Industrialisation in Contemporary Nigeria**

Before attempting any analysis in this section, it will be worthwhile to consider first the views of Varvar (2019) which provide a graphic analysis of the nexus between industrialisation and agriculture for the enhancement and realisation of the Sustainable Development Goals (SDGs). He summarised his argument that:

*Agriculture supplies raw materials to the industries and industrialization plays a vital role in the development of a country's economy. Industrialization has the capacity for guaranteeing wealth and providing mass employment. It is essentially through agriculture and industrialisation that Nigeria can achieve that kind of sustained development as envisaged by the United Nations Sustainable Development Goals.*

Obviously, these two sectors are not to be viewed as competitive but are complementary to each other. In practice, the futures of agriculture and industry are closely linked with each other in the sense that expansion in agriculture depends on the supply of industrial inputs and the expansion in industry is tied up with the development of the agricultural activity. Nehru (1963) observed that:

*Agriculture is more important than industry as industry depends on agriculture. Industry which is, no doubt, important, will not progress unless agriculture is sound, stable, and progressive. Because of this interdependence these sectors are complementary, and not competitive. In the development of an underdeveloped economy, there is as such no conflict between agricultural and industrial development.*

The interdependence between agriculture and industry becomes strengthened through various linkages generated in these two sectors. The three most important linkages are: production linkages, demand linkages, and saving-investment linkages. Production linkages arise from the interdependence between agriculture and industry through the use of productive inputs. Agriculture draws some raw materials, like chemical fertilisers, pesticides, electric power, agricultural machinery and implements, etc., from the industry. Agriculture is



also dependent on industry for the supply of materials for building up social and economic overheads in the agricultural sector. Further, many raw materials and inputs used in industrial production, for example, cotton, jute, sugarcane, tobacco, etcetera., are supplied by the agricultural sector (Kum, 2019).

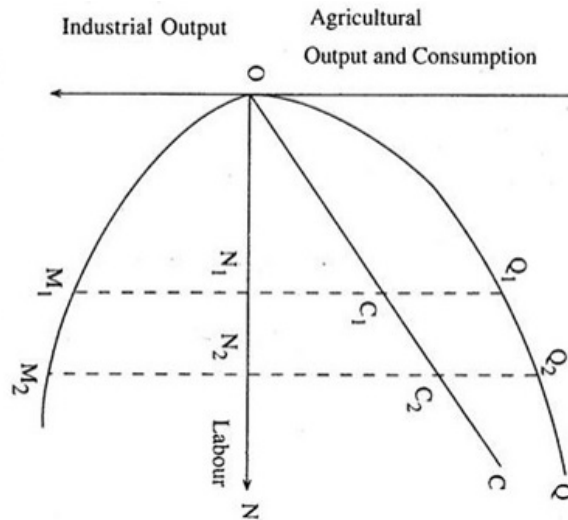
Demand linkages between the two sectors suggest that demand for one sector's product pulls demand for another sector in an upward direction. Urbanisation and industrialisation are synonymous. Under the impact of Green Revolution, agriculturists now experience rising rural incomes which has brought a change in the pattern of tastes and preferences of rural people. Increased rural income has resulted in an entry of industrial consumer goods, like TVs, refrigerators, modems, cars, footwears, refined sugar, edible oils, motorbikes, etcetera.

In the urban areas, we see some sort of demand saturation of some of these products of consumer goods industries. The impact of rising urban incomes and industrialisation has a favourable impact on the demand for food, vegetables, fruits and various raw materials produced in the agricultural sector. It has been an article of faith in India that the demand stimulus for industrial expansion would likely come mainly from agriculture with low social and economic costs. Finally, there is a savings-investment linkage between these two sectors. A self-reliant agriculture capable of exporting surplus food-grains helps in saving scarce foreign exchange resources of the country. Now, these resources can be better utilised for importing capital goods and crucial raw materials needed for industrialisation effort.

As agricultural production and productivity rises above the subsistence requirement, the volume of marketable surplus increases which provides sinews of industrialisation, particularly in the rural sector. Again, the rising volume of savings and capital formation consequent upon rising farm incomes give strong stimulus to demand for manufactured goods. Investment in one sector pulls investment of other sectors up thereby accelerating the overall growth rate of the economy. Similarly, the rise in non-farm incomes leads to an increase in the demand for various agricultural products. In the process, the agricultural sector becomes diversified and modernised (Kum, 2019). Most importantly, the relative terms of trade between the two sectors affect the flow of resources from one to another sector. Terms of trade will improve for the agricultural sector if over a period of time the prices of agricultural commodities move at a higher rate than the prices of manufactured articles. Thus, the terms of trade favouring agriculture result in an increased real income and hence, increased private saving and investment. The relative terms of trade also influence government saving and investment in these two sectors (Kum, 2019).

It is thus evident that there is an interrelationship between the two sectors and each sector influences the development of the other. How agriculture contributes towards higher development can be explained diagrammatically below:

**Fig. 1: Interdependent Development**



Here we consider two sectors—agriculture and industry. Agricultural production and consumption are measured on the vertical axis above the origin while industrial output is measured on the vertical axis below the origin. Horizontal axis—ON axis—measures the volume of agricultural labour. Agricultural output is indicated by the OQ curve. Its shape is governed by the law of variable proportions. The OC curve measures the volume of consumption of agricultural output. The difference between OQ and OC thus measures the volume of surplus generated in the agricultural sector. At ON<sub>1</sub> level of employment made in the agricultural sector, C<sub>1</sub>Q<sub>1</sub> becomes the surplus agricultural output. Investment of this surplus generates N<sub>1</sub>M<sub>1</sub> output in the industrial sector. As employment in agriculture increases to ON<sub>2</sub>, industrial output rises to N<sub>2</sub>M<sub>2</sub> consequent upon a C<sub>2</sub>Q<sub>2</sub> surplus produced in agriculture. If technological change is made in the primary sectors there will be more surplus and, hence, more output in the industrial sector.

In the end, we must say a few words about the problem of inter-sectoral resource allocation. To begin with, it is almost impossible to make an optimum balance between these two sectors. In many of the developing countries, agriculture no longer enjoys a pride of place, for some obvious reasons. The Neo-liberal era has seen the over-emphasis on the urban, industrial sector. That is why agricultural land is now being forcibly taken away for industrial development, infrastructural developments, and so on. Against this backdrop, farmers of these economies have been shifting their attention from the agricultural sector towards non-agricultural activities. How far these two sectors will complement each other, and to what degree, is an important issue. Indeed, the failure on the agriculture front is often attributed to faulty agricultural policy in many developing countries, including India (Kum, 2019).

### **Factors Limiting the Complementary Role of Agriculture to Industrialisation for Enhancing SDGs in Contemporary Nigeria**

Generally, the factors limiting the complementary role of agriculture to industrialisation and consequently the SDGs in contemporary Nigeria are identified as the environmental constraints, socio-economic constraints and insecurity, among others. Environmentally, numerous natural hazards like flood and drought have become prominent in Nigeria. They occur by chance and when they occur, they destroy a lot of farm crops leading to low yield. The drought of 1987, the floods (of especially the ones of 2010 and 2012) caused much damage on the crops (Unde, 2016). In 2018, the minister of Agriculture and Rural Development, Chief Audu Ogbe mentioned that about 30% – 40% of the foods produced in Nigeria are ultimately wasted. This means that the problems stem beyond the farming process as issues such as wastage can still hinder successful Agriculture. In the United States of America, only about 2% (2.1 million) of the country's population are farmers. Yet American farms contribute about 136 billion dollars to the nation's GDP (Ogbe, 2018). Agriculture in Nigeria has the potential to generate more if we can tackle the problems head-on instead of looking for short fixes. These problems are identified as can be seen in a succeeding discourse.

**Lack of Modernisation/Mechanisation:** At this day and age, farmers in Nigeria still rely on crude tools for farming and storage and this can inadvertently affect productivity. For instance, lack of proper irrigation tools makes it difficult to farm during the dry season and lack of mechanical tools such as tractors to substitute manual labour hinders productivity due to fatigue.

**Lack of Information:** Lack of information is one of the major problems that exist in Nigeria's agriculture sector. To begin with, there is more to farming than just digging the soil and planting crops. Farmers need to know how to select the right seed variety to get optimum yield, the best time for planting, best on-farm practices to reduce crop loss and how to partner with the right off-takers to get the best price for their product.

**Poor Infrastructure:** The absence of fundamental facilities and inadequate systems has been a major stumbling block in the agriculture business in Nigeria. Poor infrastructure discourages potential local and foreign investment and leads to wastage of the farm products that are cultivated under this.

**Poor Research and Record Keeping:** Farm records are kept carelessly if kept at all. Farmers do not have accurate tracking of farm activities and farm information. Information about the Nigerian farm market is not easily accessible and adequate information such as market prices is pertinent. This opens the door to adulteration of figures regarding farming in Nigeria. Agricultural development in Nigeria cannot be measured if there is disorganisation of the farm records for research purposes. This makes it hard to narrow down certain farming issues and proffer solutions (Ogbe, 2018).

**Finance;** 88% of Nigerian farmers are considered small family farmers. Some of this stems from the lack of funds to expand to large scale farming. Despite their importance for the

domestic economy and due to the sector's productivity limitations, more than 72 percent of Nigeria's smallholders live below the poverty line of USD 1.9 (691) a day. One of the major factors limiting farmers from growing and making a reasonable living is lack of funds. These funds are difficult to come by as some banks do not loan to them for various reasons. This leads to the farmers struggling to make a living, asking disinterested family members to take part in farming instead of hiring proper human labor, and affecting agricultural productivity overall. Lack of capital also prevents potential farmers from venturing into farming business (Ogbe, 2018). Corroborating on this matter, Development Finance Office (DFO) of the Central Bank of Nigeria (CBN) espouses that:

*Although millions and billions of Naira had been voted and expended for agricultural programmes, it should however, be noted that this money is grossly inadequate to cater for the total number of the applicants that are interested in the CBN agricultural development programmes. The cost of supervision of farms is high, coupled with the large number of small scale applications makes it difficult for the CBN to cater successfully for its programmes (DFO, 2016).*

In discussing the challenges of complementing agriculture to industrialisation for enhancement of SDGs in Nigeria, an informant, Adesiyani (2020) gives his views as excerpt below:

*Nigeria agriculture is not attracting much attention as it used to be. Following the discovery of oil, attention deviated from agriculture to the oil sector. Nowadays, people look at farmers as the downtrodden. Even the Government is not helping matters. The Nigerian cocoa, coffee, Shea trees, and many agro-raw materials have been totally neglected. With this neglect will be difficult for Nigeria to fare smoothly in the process of achieving SDGs as desired in 2030.*

Similarly, an interview with Olajire (2020) discloses that, though, agriculture plays a complementary role to industrialisation for the achievement of SDGs in contemporary Nigeria, there are daunting challenges thwarting this process. Olajire was more forthcoming when he disclosed that:

*The SDGs programmes are not properly felt at the grass root. The government at the grass root should be adequately empowered. The proper monitoring of the SDGs programmes should also be done as it is done in Brazil, Bangladesh, among others countries. If these challenges are surmounted, contemporary Nigeria will stand on a sound footing in tapping from the nexus which exists between agriculture and industrialisation for the realisation of the SDGs in or before 2030 as proposed by the United Nations Development Programme (Olajire, 2020).*

The consequences of the attacks of herdsmen are already being felt throughout the country. The country is now facing famine because of food shortages. Oseloka (2016) captures the horrors of these attacks:

*From Abia, Adamawa, Benue, Ogun to Taraba, the horrid story is same. Available data shows that while in a three year period 2010-2013 Fulani-Herdsmen killed some 80 people in farming communities in Nigeria, in 2014, the number of fatalities rose to*

*1,229 people. Years 2015 and 2016 have witnessed spiraling rise in the number of incidents and fatalities, the later being in the Agatu and Tombo communities in Benue State, where a total of 315 were killed. These clashes almost occur almost daily across Nigeria, and grazing conflict now ranks second to Boko Haram as a cause of massive population displacement in Nigeria.*

A three year-period -2013-2016 investigation by the Benue State Emergency Management Agency (SEMA) shows that 755,538 persons have been displaced. Right from the beginning, the Fulani herdsmen left no one in doubt about their intention to kill, maim, and destroy. In the attacks in Tivland, no rules of engagement were applied. They killed anyone in sight: the old and young, the sick and healthy, the strong and weak. Pregnant women and their unborn babies were not spared. They had the stomachs of pregnant women opened up with knives and swords and their unborn babies slice into pieces. The alleged use of chemical weapons in the cleansing had been contemplated (Wegh, 2017:108). Taken at the level of the country, Nigeria loses about USD 14 billion per annum to the herder-farmer crisis alone (Babatunde Afolabi, 2019). With loses from other crises, the magnitude of loses can only be imagined. Situations such as these discourage farming activities in the country thereby posing threat to industrialisation and the realisation of the SDGs in contemporary Nigeria.

In this connection, one cannot hesitate to say that the farmers-herders clashes have created fear among the native farmers to the extent that they are afraid of going to the farm. Indeed, these herders have adopted a clandestine approach of fighting, especially the hit-and-run tactics; this has put a lot of farming communities under perpetual fear. Lamenting on this matter, Suega (2017) of Logo Local Government Area said she was reluctant to continue with her farm activities, saying that, "I keep a reasonable amount of money to send to my parents' home to help coordinate my farm work but I contemplated whether herders will still attack our community". All these, imply that herders constitute a scourge to agricultural and industrial activities in Benue State and elsewhere in central Nigeria and if not properly handled, it will hinder the achievement of SDGs.

### **Conclusion**

This paper espounded the nexus that exists between agriculture and industrialisation for the enhancement of the SDGs in contemporary Nigeria. In doing this, the paper highlighted a plethora of challenges limiting the complementary role of agriculture to industrialisation and thereby slowing the pace for the speedy implementation of the SDGs which it hopes to be achieved before or by 2030. Concerning the challenges affecting agriculture development in the country, the study made some fundamental recommendations as seen in the succeeding paragraphs. Since most farmers in Nigeria are rural farmers, the Government has a huge role to play in regards to favourable policies, agricultural research, grants to rural farmers, subsidised farm equipment and storage facilities. The Ministry of Agriculture should provide farmers with modern tools such as tractors, ploughs, and irrigation tools. Cooling supplies for perishable goods can also be installed in trucks to keep perishable food products fresh. Incubators should also be acquired to enhance poultry farming.

Farmers should be open to learning new techniques to improve their crop yield. They should also actively seek and share knowledge with their farming communities. Adequate training and seminars should be held for farmers and new technologies should be introduced. If possible, farmers should be monitored to ensure new knowledge gained is applied on their farms. Basic amenities such as good roads, water, and electricity should be provided to farming areas. This will increase productivity and Agricultural output. This output can, in turn, be used to invest in other farms. Proper documentation and record-keeping of farming information should be adopted. The advent of online farming and crowd funding has made it easier for farmers to obtain funds for farming. Platforms such as farm crowdly now exist where a sponsor can invest in a farm for interest after a stipulated period and the investment will serve as funding for the farmer. Both the farmers and the sponsors get their share from the profits, and everyone comes out happy.

There is need for Universities and Scholars to direct attention to the sponsorship and conduct of studies that focus on the rural areas and agricultural issues generally and the crisis situation in particular. A scholarly attention on the phenomenon will be important in the following ways: Such studies have the capacity for clearly identifying the various causes of the crises in the respective areas. This would be an important first step towards the management and eventual situation of the problem. Similarly, the negative effects of the crises on the affected areas and particularly on the country's development efforts would be clearly revealed. Such knowledge is extremely necessary in the attempt at fashioning strategies for the reduction of and possible eradication of the problem thereby enhancing the achievement of the SDGs. Scholarly attention to the problem would consequently, attract the attention of governments, stakeholders and development partners to findings and their possible implementation.

Government's presence should be felt in rural areas through her security agents for peaceful co-existence and the enhancement of the SDGs. For now, the evidence presented regarding the agricultural and industrial sector indicates the absence of governance in the rural areas where industrial raw materials are produced therefore, leaving the field for almost total domination by war lords, bandits, kidnappers, and Fulani militia. Governments at all levels (federal, state and local) should live up to their own responsibilities. The presence of governments must be felt in the affected areas in all ramifications. Governments should take seriously findings from scholarly studies on agriculture and industrialisation and study recommendations carefully with a view to implementing them for the enhancement and realisation of the SDGs.

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