

FOOD SECURITY IN NIGERIA, CONTEMPORARY WAYS TOWARD NATIONAL DEVELOPMENT

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ABSTRACT

Food security is a precondition for sustained human development especially in a development nation like Nigeria. For this food security to be assured, agricultural productivity needs to be improved through employment of effective and efficient agrarian policies across the country. Also, at the national level, agricultural liberalization could be associated with greater increase in its production so as to reduce volatility in agricultural product prices which will hence assure food security. In Nigeria, it is on record that agriculture contributes above 42% of the country's gross domestic products (GDP), hence with sustenance of this figure it will result to food security. Meanwhile, achieving sustainable food security Nigeria must include reduction in the level of poverty because income must be improved to enable people meet the basic necessities of life, including food. Other immediate solvable solutions that must be taken toward achievement of food security which is contemporary ways toward national development include but not limited to good agricultural policy change, improved agricultural biodiversity and even nice environmental management.

Keywords: food security, national development, poverty reduction, Nigeria

1.0 BACKGROUND INFORMATION ON FOOD SECURITY

According to FAO (1996), food security exists in a place when all the inhabitants have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life at all times. Also, they have identified several indicators for food security across countries/regions. Some of these include food availability, per capita food production, and supply, percentage of under-five who are underweight, percentage of under-five who are stunted, domestic food price volatility, political stability, and absence of violence as well as domestic food price index. Available statistics show that based on these indicators, Nigerian is having food insecurity problem.

For too long now, the faces of different individuals in Nigeria and sub-Saharan Africa (SSA) countries has been one of dehumanizing hunger. If Nigeria as a country and other African countries are to realize their potential, they will need to overcome the undernourishment that afflicts more than a quarter of their people. Food security is a precondition for sustained human development in all aspects and that is why the first goal of Millennium Development Goal (MDG) centred to eradicate extreme poverty and hunger. However, since Nigeria could not even meet the MDG target of reducing hunger by half, it is clear that if nothing is done, meeting the current

Sustainable Development Goals (SDG) goal will be an impossibility. There is, therefore, a clear need for series of efforts at the various level of the food production chain in order to make this impossibility possible. These would require precise knowledge of where the economy is, where we are going and the gap therein. To this effect, this paper analyses the food security position and government performance approaches Nigeria to appreciate their status and find out their strength, weakness, the opportunities, and the threats therein.

For growth to be effective, agricultural productivity and nutrition policies need to improve. Because food security for human development requires that individuals be the subjects and agents of their own well-being, these policies must be leveraged through actions that build resilience and empower people, especially women, children and youths. Nigeria as a nation and some African countries still trails the world in human development, but the quickening pace of change and the new economic vitality on the continent offer grounds for renewed, if guarded, optimism. Food security for human development can accelerate and help sustain the promise of these new trends and prevent reversals if the challenges of food insecurity are solved.

People are considered well-fed and well-nourished when they can obtain safe food of sufficient quantity, variety and quality to sustain their lives. They need

food that provides energy for growth, physical activity and basic human functions, from breathing and thinking to circulation and digestion. When starvation terminates these vital functions, people die. But when poor nutrition insidiously compromises these functions every day, it is the future that is silently forfeited. In children, their development arrested, and denied in the realization of their full potential when there is problem of food security. Malnourished adults fail to develop the full range of their capabilities and are unable to function at their best. And the human capital of nations erodes inexorably.

Therefore, food security is a flexible concept as reflected in the many attempts at definition in research and policy usage. Even a decade ago, there were about 200 definitions in published writings as reported by Maxwell and Smith 1992. Whenever the concept is introduced in the title of a study or its objectives, it is necessary to look closely to establish the explicit or implied definition Maxwell, 1996

The continuing evolution of food security as an operational concept in public policy has reflected the wider recognition of the complexities of the technical and policy issues involved. The most recent careful redefinition of food security is that negotiated in the process of international consultation leading to the World Food Summit (WFS) in November 1996. The contrasting definitions of food security adopted in 1974 and 1996, along with those in official FAO and World Bank documents of the mid-1980s are set out below with each substantive change in definition underlined. A comparison of these definitions highlights the considerable reconstruction of official thinking on food security that has occurred over 25 years. These statements also provide signposts to the policy analyses, which have re-shaped our understanding of food security as a problem of international and national responsibility.

Food security as a concept originated only in the mid-1970s, in the discussions of international food problems at a time of global food crisis. The initial focus of attention was primarily on food supply problems - of assuring the availability and to some degree the price stability of basic foodstuffs at the international and national level. That supply-side, international and institutional set of concerns reflected the changing organization of the global food economy that had precipitated the crisis. A process of international negotiation followed, leading to the World Food Conference of 1974, and a new set of institutional arrangements covering information, resources for promoting food security and forums for dialogue on policy issues according to ODI 1997.

The issues of famine, hunger and food crisis were also being extensively examined, following the

events of the mid 1970s. The outcome was a redefinition of food security, which recognized that the behaviour of potentially vulnerable and affected people was a critical aspect.

A third, perhaps crucially important, factor in modifying views of food security was the evidence that the technical successes of the green revolution did not automatically and rapidly lead to dramatic reductions in poverty and levels of malnutrition. These problems were recognized as the result of lack of effective demand.

Meanwhile, the initial focus, reflecting the global concerns of 1974, was on the volume and stability of food supplies. Food security was defined in the 1974 World Food Summit as: "availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices" UN, 1975.

But in 1983, FAO expanded its concept to include securing access by vulnerable people to available supplies, implying that attention should be balanced between the demand and supply side of the food security equation: "ensuring that all people at all times have both physical and economic access to the basic food that they need" FAO, 1983.

In 1986, the highly influential World Bank report "poverty and hunger" as reported by WB, 1986 focused on the temporal dynamics of food insecurity. It introduced the widely accepted distinction between chronic food insecurity, associated with problems of continuing or structural poverty and low incomes, and transitory food insecurity, which involved periods of intensified pressure caused by natural disasters, economic collapse or conflict. This concept of food security is further elaborated in terms of: "access of all people at all times to enough food for an active, healthy life".

By the mid-1990s food security was recognized as a significant concern, spanning a spectrum from the individual to the global level. However, access now involved sufficient food, indicating continuing concern with protein-energy malnutrition. But the definition was broadened to incorporate food safety and also nutritional balance, reflecting concerns about food composition and minor nutrient requirements for an active and healthy life. Food preferences, socially or culturally determined, now became a consideration. The potentially high degree of context specificity implies that the concept had both lost its simplicity and was not itself a goal, but an intermediating set of actions that contribute to an active and healthy life.

The 1994 UNDP Human Development Report promoted the construct of human security, including a number of component aspects, of which food security was only one, UNDP 1994. This concept is closely related to the human rights perspective on development that has, in turn, influenced discussions about food security. The wider investigation into the role of public action into combating hunger and deprivation, found no separate place for food security as an organizing framework for action. Instead, it focused on a wider construct of social security which has many distinct components including, of course, health and nutrition in the views of Drèze and Sen 1989.

As the debate for definition of the subject matter continues, the 1996 World Food Summit adopted a still more complex definition which stated that: **“Food security, at the individual, household, national, regional and global levels [is achieved] when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life”**, FAO, 1996.

This definition is again refined in The State of Food Insecurity 2001: “Food security [is] a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” FAO, 2002.

This new emphasis on consumption, the demand side and the issues of access by vulnerable people to food, is most closely identified with the seminal study by Sen 1981. Eschewing the use of the concept of food security, Sen, 1981 focuses on the entitlements of individuals and households.

The international community has accepted these increasingly broad statements of common goals and implied responsibilities. But its practical response has been to focus on narrower, simpler objectives around which to organize international and national public action. The declared primary objective in international development policy discourse is increasingly the reduction and elimination of poverty. The 1996 WFS exemplified this direction of policy by making the primary objective of international action on food security halving of the number of hungry or undernourished people by the year 2015.

Essentially, food security can be described as a phenomenon relating to individuals. It is the nutritional status of the individual household member that is the ultimate focus, and the risk of that adequate status not being achieved or becoming

undermined. The latter risk describes the vulnerability of individuals in this context. As the definitions reviewed above imply, vulnerability may occur both as a chronic and transitory phenomenon. **Therefore, it can be said that - Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life.** However, household food security is the application of this concept to the family level, with individuals within households as the focus of concern. Meanwhile, food insecurity exists when people do not have adequate physical, social or economic access to food as defined above.

2. 0 HISTORY OF AGRICULTURAL PERFORMANCE IN NIGERIA.

Food crop production in Nigeria dates back to the dark ages when life was characterised by subsistence farming and hunting for survival. Then, farmers were mainly producing for their household consumption using the manual farming techniques. The colonial period, however, improved the agricultural system in the country by introducing mechanisation of food production, hybrid seedlings, the use of fertilisers, and research to improve food production. The Department of Botanical Research was the pioneer research institute, established in 1893 with its headquarters at Olokomeji (former Western Nigeria), followed by the creation of the Moor Plantation in Ibadan in 1905. The Moor Plantation later became the headquarters of the Department of Agriculture of Southern Nigeria in 1910, while the Department of Agriculture was established in the North in 1912. By 1921, a unified Department of Agriculture was formed in Nigeria, after the amalgamation of the North and the South (Kanu, 2013). The colonial era was characterised by the creation of irrigation schemes, agricultural skill centres, plantations, as well as an association of farmers that saw the production of cash crops that were geared for exports.

After colonisation, farming was more organised and specialised across regions as the North was known for the production of groundnuts and cotton, the West produced cocoa, the Mid-West produced rubber, palm oil, palm kernel, and timber, and the East produced palm oil and timber.

Nigeria was, therefore, a major exporter of these products that earned her foreign currency that was used in building schools, hospitals and managing the economy at large. In fact, in the 1970s Nigeria recorded over 50 percent of the country's total export earnings from the agricultural sector, which also accounted for about 50 percent of the GDP and

employed about 72 percent of the labour force (CBN, 2000).

Then what many people refer to as the 'resource curse' or 'cursed blessing' hit Nigeria in the 1970s when the instability in the Persian Gulf metamorphosed into an increase in Nigeria's export quota of crude oil. The increased quota coupled with the four-fold rise in the per barrel price of crude oil increased the export earnings of the country significantly (Fasanya, Onakoya & Adabanija, 2013). The significant increase in export earning was the beginning of a boom period for Nigeria as the oil sector contributed about 80 percent of the government revenue and accounted for over 90 percent of the country's annual export earnings for about three decades (CBN, 2000).

This discovery attracted investors to the oil sector, relegating the once buoyant agricultural sector. In fact, the proportion of crop production to GDP dropped from about 52 percent in 1961 to about 15.1 percent in 1974 and 11.96 percent in 1979 before it slowly recovered to 17 percent in 2000 and then 20.7 percent in 2015. The current statistics suggest that to record 52 percent proportion of crop production to GDP today will be 'a long shot', especially as long as the crude oil keeps generating income for the economy. The 2015-2017 economic crises that hit the Nigerian economy again highlighted the need to diversify the economy especially by diversifying foreign earnings as was done in the post-colonial era.

3.0 FOOD SECURITY AND NATIONAL DEVELOPMENT IN NIGERIA

Food is a basic necessity of life; this is due to the fact that it is a basic means of sustenance, also an adequate food intake, in terms of quality and quantity, is a key to a healthy and productive life. In Nigeria, food is important also because it accounts for a substantial portion of the typical Nigerian household budget. It has been predicted that there would be a catastrophic widespread food famine, the type the world has never witnessed before the year 2020. It is of common knowledge that the quality of the food a people eat is a reflection of their lives. In African setting, one of the achievements of a man is his ability to provide quality food for his family.

By extension, any country that is self — sufficient in food production, and does not depend on other countries for the provision of food for her citizenry has reasons to be proud among comity of Nations. Considering the abundant agro-opportunities around our country, Nigeria, there is no justifiable reason for her to be part of the over 1 billion people currently experiencing hunger across the world, despite the government's resolve to make the country one of the top 20 economies by the year 2020. Food security is an essential tool for national development.

Meanwhile, it is of interest to notice that with little co-coordinated efforts to utilize the abundant human and natural resources, Nigeria can be reposition on the map of the world as a leading food producer. Most of what Nigeria needs to attain this enviable height is within her reach.

Compared with any country of the world, Nigeria has one of the best climate and land resources for produce would be enough for consumption, exportation and industrialization, Eboh, et al (2009). There is a wide range of crops in which it enjoys comparative advantage. Achieving food security in Nigeria is pivotal to national development. This is because it serves as boost to other sectors of the economy. It is a common saying that a hungry man, is an angry man, therefore a nation with a fragile food security will have a fragile internal security that could produce nothing better than a population of people with bottled anger, awaiting exposition.

It is a common knowledge that good food enhances immunity and good health, a well fed child can develop intellectually to justify investments in his education. Besides, the nutritional values and industrial potentials, food is an International Identity, as world-class exported food tends to become cultural ambassador for a country and its people. According to Nwakapa 2014, "food security exists when all people at all times have physical and economic access to sufficient, safe and nutritious food to meet their dietary and food preferences for an active and healthy life style". This is a fact that tends to have ended the intelligence of leaders of this nation, Nigeria.

It is on record that Nigeria is predominantly an agrarian society, as a reasonable percentage of the population engages in agricultural production though at subsistence level. Agriculture holdings are generally small and scattered. It provides about 41 percent of Nigeria's total Gross Domestic Product (GDP) in 1999 this percentage represented a normal decrease of 24.7 percent from 65.7 percent GDP in 1957. The decrease is still ongoing because, as economic development occurs, the relative size of agricultural sector usually decreases.

In the views of Nzeh and Eboh 2010 the fertility of the Nigeria soil and the wide range of varieties in climate allow it to produce a variety of food and crops especially in the South-East of the country. The staple major food crops include yam, cassava, corn, plantain, rice, sorghum and a variety of fruits and vegetables. The leading cash crops are cocoa, citrus, cotton, groundnuts, palm oil, palm kernel, beans seed and rubber; they form part of Nigeria's major exports commodities in the 1960s and early 70s. Chief among the export destinations for Nigeria's agricultural products were Britain, USA, Canada,

France and Germany. Other aspects of the nations agricultural sector involves cattle herding, fishing, poultry and lumbering which contributed more than two percent to the GDP in the 1980s.

According to the United Nations food and Agricultural Organization (UN-FAO) 1987 estimate, there were 12.2 million cattle, 13.2 million sheep, 26 million goats, 1.3 million pigs, 700,000 donkeys, 250,000 horses, and 18,000 camels, mostly in Northern Nigeria and owned mostly by rural dwellers. Fishing output range from 600,000 to 700,000 tons annually in the 70s but statistical data indicated that all these aspects of our agricultural sector have dropped to its lowest ebb due to numerous factors which must be overhauled if the nation must be on course for vision 2020 and marry it with the current change agenda in the present context of the government of the day.

In both developed and developing countries of the world, no country can truly be a truly great nation if it is not capable of feeding its citizens. Recent estimate put the number of hungry people in Nigeria at over 50 million, just less than 30 percent of the country's total population of about 160 million out of which about 52 percent live under the poverty line using national population census of the year 2006.

Research across so many literatures indicated that Nigeria was self sufficient in food production and was indeed a net exporter of food to other regions of the world. However, things changed dramatically for the worse following the global economic crisis that hit developing countries beginning from the late 70s, coupled with the discovery of crude oil and subsequent rising revenue from the nations petroleum sector. These provided a platform for the neglect of the agricultural sector and turned Nigeria into a net importer of food Eboh, et al 2009.

In Nigeria, as far back as the year 2009, the Federal Ministry of Agriculture and Rural Development estimated that Nigeria was spending over 3 billion dollars annually on food importation. This has since doubled as many of the food consumed in the nation are imported from other countries of the world. Numerous factors are responsible for this ugly trend in the nation's agricultural sector, these must be revisited and appropriate solution proffered if Nigeria truly takes food security seriously. This is because developments go hand in hand with the issue of food security in every nation of the world.

In Nigeria, agriculture contributes above 42 percent of the country's GDP, and even in the year 2013 according to CBN 2014 agriculture contributed 14,709.10 Gross Domestic Product at Current Basic Prices (N' Billion) compared to that of 13,413.84 and 11,593.43 in 2012 and 2011 respectively.

Meanwhile, agriculture provided employment means of livelihood for more than 80 percent of the productively engaged population, yet it receives less than 10 percent of the annual budgetary allocations. Under funding in this regard is central to the crisis in food production and food security in Nigeria which explains the high incidence of poverty and underdevelopment. Akin to this problem is the seemingly irresolvable incoherence in governments' policy formulation and implementation strategies.

The fact remains that the Nigeria agriculture is still too feeble to compete with the forces of nature and the dynamics of the International market. The farmers are incompetent to contend with the challenges of the climate change. With too little or too much rains, the Nigerian farmers are still the losers because an average farmer has no stabilizing factors to cope with the challenges. The farmers, still depends largely on traditional implement. The Nigerian farm is still a model of incompatible marriage between new ideas such as improved crop varieties and crude age-long working tools of bare — foot old farmer. More so, with so many Agricultural and research institutes, Nigeria hardly needs more paper work. Nigeria needs to move from crude to mechanized farming. The machines can produce better than the crude method of farming by the fast ageing population of the poverty — ridden rural dwellers, struggling to feed million of Nigerian people.

Basic infrastructural facilities like good roads to access the rural areas where the bulk of the agricultural crops are cultivated are inadequate; lack of farm labour due to rural — urban drift, trade restrictions, illiteracy on the part of farmers, little or non-government assistance in providing some basic facilities like fertilizers, dams for Irrigation, storage facilities and credit facilities coupled with acts of nature such as drought and flooding are some of the factors militating against food security in Nigeria. Other critical factor identified is the appalling level of financing in agriculture in Nigeria in comparison with their African Nations. According to Adesina 2014, "Nigeria spends only 3% or less of her entire budget on agriculture." In Adesina views 2014 other countries, much smaller than Nigeria do far more than this; as typical examples are - Rwanda, Tanzania, Kenya, Malawi and Mozambique which spend between 10-15% and more in agriculture.

4.0 STRATEGIES TOWARD ENSURING FOOD SECURITY IN NIGERIA

Food insecurity is a major problem worldwide and it is especially widespread in sub-Saharan Africa of which Nigeria is a major part. Food insecurity and hunger are two sides of the same coin and one cannot analyze one without analyzing the other. The problem of food insecurity is especially critical as

World Bank data reveals that about 90 percent of Nigeria's agricultural output comes from inefficient small farms. Also, most farmers do not even grow enough food to feed their own families. UNICEF statistics says that about 65 percent of our population is 'food insecure'.

Clearly, we are just a little away from a food crisis as the nation is already in economic recession which was theoretically announced to have stopped. The problem of food insecurity is not just limited to Africa alone, rather it is a worldwide phenomenon. Just as there have been cases of food crises in such African countries as Cote d'Ivoire, Cameroun, and Egypt, cases have also been recorded in such non-African countries as Indonesia, Peru and most recently, Haiti. This shows that food insecurity and the resultant food crisis is not peculiar to Africa alone but is most prevalent in most less developed countries (LDCs) all around the world thereby making it a development problem. It is also a global issue and hence it should be treated as one. Going by the above information, there is therefore the need for strategies toward ensuring food security especially in Nigeria which has the largest population in black race. Some of these strategies include but not limited to these:

4.0.1 Food as a human right: A food-secure world would be one in which food as a human right would be the norm of social behaviour, an expectation upheld and enforced by all and for all. The rudiments for the international recognition of a human right to food currently exists in the form of the Universal Declaration of Human Rights, the International Covenant on Economic, Social and Cultural Rights, and in conflict situations, the 1977 protocols to the Geneva Conventions of 1949. Yet in 1984, the foremost legal expert on rights to food could write: Few human rights have been endorsed with such frequency, unanimity, or urgency as the right to food, yet probably no other human right has been as comprehensively and systematically violated on such a wide scale in recent decades (Alston, 1984).

Since then there has been a slow but marked improvement on the leading edge in the creation of such a social norm - the provision of humanitarian assistance. A human right to food by civilians in zones of armed conflict is gradually emerging as enforceable even within the borders of a civil conflict or against the wishes of host governments. Simply stated, there is growing agreement that no nation or governmental authority has the right to starve its own people. The transition to the case where all nations and peoples live up to their responsibilities to ensure that everyone is adequately fed will be long and difficult but has advanced considerably since 1984. Nevertheless, though war and conflict may themselves still persist, we are optimistic that by the

middle of the next century the use of food as a weapon will be eliminated.

4.0.2 Sustainable food availability: It is widely believed that there is actually plenty of food in the world and that hunger results mainly from its misdistribution. This is certainly true for a world universally content with a nutritionally adequate, but rather basic vegetarian diet. Distributed according to nutritional need, the vegetarian food supply plus the production from naturally grazed animals could support as much as 120 per cent of the world's current population. But for a world whose diet contains a modest amount of animal products derived from cereal grains, then there is only enough food produced at present to meet fully the nutritional needs of about three-quarters of the world's population. And to feed people with a healthy but animal-rich industrialized national diet, there would be only enough food for a little more than half of the world's population.

These figures do not necessarily imply that people cause hunger by eating cereal-based animal products or that there is or will be a global food shortage. Economists rightly point out that if poor countries and peoples had greater purchasing power then more food would be produced: the world has much unused capacity for producing food. And without such purchasing power, cereal products not used in animal feed would still not be available to poor people unless given away as food aid. Studies of the expenditures of poor people also show that with increased income, most poor people want to spend some of that income for a diverse diet that includes animal products except where restricted by religious preference.

All of the foregoing suggests that in a world of somewhat more than doubled population, food availability will have to increase three- to fourfold simply to meet the food requirements and modest expectations of improved diets of a food-secure world. Between 1934 and 1989, food production measured in terms of food calories grew by an average of 2.1 per cent per annum with per capita growth of about 0.6 per cent. For a fourfold increase in food production between 1990 and 2060 growth will have to be at a rate of 2 per cent per year, or about the historic average.

Can this historic rate of increasing food production be sustained to provide enough food for improved diets for a world with a doubled population? A key component of the scientific and policy arsenal for improving food supply is agricultural biotechnology. This array of molecular, cellular, and whole-plant biology techniques is applied to tailoring plants used in agriculture to resist pests, tolerate heat and drought, and respond more efficiently to nutrients

and moisture. However, the first biotechnology products in the marketplace will probably benefit farmers in rich nations. Agricultural biotechnology is unlikely to contribute to the alleviation of hunger in developing nations during the coming decade. Continued progress into the next century will depend greatly on improved capabilities on the part of developing country scientists and farmers (Messer and Heywood, 1990).

Even if food production could be trebled or quadrupled, could it be sustained under the additional burdens of heightened soil and water loss, pesticide and fertilizer use, and changing climates that will accompany such increase? Our research suggests some important questions for an uncertain future, a number of which are considered in the papers to come. First, we must ask whether more food can be made available from existing agricultural production. The present global food system is not very efficient in transforming raw agricultural products into usable food (Chen, 1990; Bender, in press). Second, we need to examine alternatives for increasing food production in the light of their potential impacts on the global environment. For example, it may be necessary to weigh the benefits of bringing more cropland, irrigation, and rangeland into production and of using more fertilizers against their contributions to methane and nitrous oxide emissions and loss of biomass. Similarly, measures to prevent or delay global environmental change that affect energy use, water management, and forest practices could have important near-term effects on agricultural sustainability (Chen, 1990; Rosenberg and Scott, in press). Notably, the success of these measures in actually reducing or spreading out environmental changes is by no means guarantee.

4.0.3 Adequate household income: Household income affects food security directly, providing the major source of entitlements for the food required by the household, income that is currently inadequate in households with a total population of more than 700 million. Indirectly, household incomes in the aggregate affect the size of the available food supply by virtue of its effects on encouraging greater production. This suggests that in a world of somewhat more than doubled population, household income will have to increase four to six fold (depending on the pattern of income distribution) in order to meet the food requirements and modest expectations of improved diets of the poorest households. But increasing income is not enough. Although it is true that for the poorest households up to 85 per cent of income is spent on nutrition, it appears that in general a 10 per cent increase in income increases dietary calories only by 4-6 per cent (Marek, 1992). This occurs because some of the additional income is spent on non-food needs and some on greater and more costly food varieties. Thus

for a food-secure world, even raising most households above the poverty level would still require a pervasive safety net.

4.0.4 Famine prevention: Many of the tools needed to prevent famine are already in place. Efforts to cope with drought, flood, war and famine in the 1980s have led to major improvement in the global system for providing emergency food aid. A major international early warning system coordinated by the United Nations Food and Agriculture Organization was established in 1975, and several regional systems are in operation as well. Recent efforts to improve understanding of the underlying vulnerability of particular groups to famine and to coordinate development, response, and relief efforts based on this understanding hold promise of more timely and effective interventions before famine conditions spread.

4.0.5 Adaptations to surprise: To achieve a food-secure world, societies will have to be successfully adapted to a series of unexpected surprises. These will have made the task easier and harder, and certainly different than it might have been. The surprises themselves are by definition unpredictable, but the mechanisms are easily imaginable. For example, one can readily conceive of a new disease outbreak that would seriously disrupt plant or animal production at the same time that new breakthroughs in biotechnology begin to provide substantial improvements in yields and nutrition. New and unexpected sources of conflict may well interfere with the flow of food, people, and caring, while social and religious movements enhance the development of global responsibility. Optimistic outlooks in some regions will undoubtedly give way to pessimism but perhaps a few of today's 'basket cases' will confound the conventional wisdom.

To achieve food security in the world will require a capacity to deal with surprise - to take advantage of surprising opportunities and to maintain social and technical flexibility to cope with surprising adversity. Such a capacity could entail the maintenance of large food stocks and other emergency response resources to cope with fluctuations in food production due to a changing climate. It will certainly require support for the research and development infrastructure to provide continuing improvements in food production in the face of a variable environment and ongoing population change. And though the details are hard to foresee, it will need to include a safety net to ensure that the most vulnerable people and regions are not caught unprepared.

4.0 CHALLENGES OF FOOD SECURITY IN NIGERIA

Attaining food security in its entirety poses a huge challenge in a country like Nigeria, as a result of a

wide spectrum of problems. More than 90 per cent of agricultural production in Nigeria is rain-fed with about 79 million hectares of arable land, of which 32 million hectares are cultivated (Nwajiuba, 2012, cited in FAO, 2012). Both crop and livestock production remains below potentials. Despite a seven percent growth rate in agricultural production (2000 to 2008), the growing population is dependent on imported staple food (e.g. rice, beans) exemplified by increase in food import bill. First and foremost, the primary cause of food insecurity in developing countries is the inability of people to gain access to food due to widespread poverty and unemployment, which also inhibits purchasing power and prevents assured access to food supplies. Secondly, global food prices have risen dramatically in the last few years and are forecast to rise further or become more volatile (IAASTD, 2009, Nelson et al, 2011, cited in, FAO, 2011).

Food price volatility has exerted considerable pressure on global food security, and many Nigerians depend on market for their food supply and vulnerable to high food prices. Related to high food prices is a high cost of input which limit yield and production levels that many time lead to sub-optimal input utilization. For instance, fertilizer consumption in Nigeria is one of the lowest in sub-Sahara Africa at 71g per hectare (Abu, 2012, cited in, FAO, 2012). Thirdly, the inherent characteristics of climate that manifest themselves as changes of climate over a period time affect food security significantly in unpredictable ways as a result of their detrimental effect on pests, crops diseases, crop production, animal husbandry, and humans.

Changing climatic conditions affect both the physical and the economic availability of certain preferred food items. Their impacts on income-earning opportunities can affect: the ability to buy food, the availability of certain food products, and price. Changes in the demand for seasonal agricultural labour, consequent upon changes in production practices, will in turn affect income generating capacity. Fourth, farmers in Nigeria also have limited access to credit, and less than 10 per cent of irrigable land is being irrigated. Fifth, the global economy is knowledge-driven and food system efficiency is dependent heavily and directly on agricultural technological innovations and innovations in relevant sectors. Nigeria's adult literacy level is 54.5 per cent (NBS, 2009).

However, the rural poor who are the active stakeholders in food availability account for 33.4% and are mainly involved in subsistence farming. The violence has also affected the state's trade in Kola. The upsurge in violence has made it difficult for farmers in Kano to market their produce due to persistent insecurity in the capital city. Consequently,

lots of kola nut remain unsold. Although many farmers in the state were expectant of a bumper harvest from time to time, many of them dread the situation whereby they would not be able to find any market for their crops. "If the current situation persists, it will severely hamper crop sales for many farmers," across the country.

The crisis in the North has forced some of the crop farmers and pastoralists to abandon their lands and relocate to the neighbouring countries of Niger, Chad and Cameroun. As reported by the National Emergency Management Agency (NEMA) in the recent time, about 65% of northern farmers had migrated to the South because of the insecurity they faced. The agency warned that the country faced a famine by the soonest because most of the small-scale farmers and mechanized farmers in the Nigeria's northeast are threatened by terrorist attacks. "The attacks on these farmers who produce beans, onions, pepper, maize, rice, livestock and catfish in the Lake Chad area for the southern states, have forced them to migrate since the Boko Haram insurgency broke out in Borno State in the year 2009..

A countrywide food crisis, therefore, looms, considering NEMA's disclosure. Since most of the foodstuffs consumed and traded in Nigeria are grown in the north, the agency warned about an impending famine. Incessant bombings and other violent attacks on local markets perpetrated by both the Boko Haram sect and Nigerian armed forces pose grievous risks to northern farmers, livestock breeders and dealers in farm produce, forcing them to migrate to new locations far from their farmlands, while placing additional burden on the transportation of food and farm produce to other states. Consequently, prices of foodstuffs have skyrocketed, particularly in the southern part of the country.

Finally, the apparent inconsistency in government's targeted policy intervention and implementation strategies further compounds the problem of food security. For instance, weaknesses and threats to agricultural development in Nigeria include but not limited to these: (a) Poor access to credit, technical inputs, machines and farm implements (i.e. fertilizers, seeds, pesticides, tractor, plow, harvesters etc) by farmers (b) Degradation of agricultural natural resources especially soil and water bodies. (c) Poor infrastructure (i.e. rural roads, water supply, storage facilities and market infrastructure) (d) Bad and inconsistent government policy (e) Poor budget allocation to agricultural sector (f) Poor and inadequate irrigation facilities (g) Uncontrolled grazing and livestock migration in some areas and (h) Poaching and settlement within protected areas and bush fires.

For the genuine transformation of Nigeria agricultural sector in order to make it relatively more attractive to people (especially the youth and unemployed), it is recommended that all tiers of government (Federal, State and Local), as well as public and private organizations should sincerely adopt policies and strategies that will address and reduce the above weaknesses and threats to agriculture.

6.0 THE NIGERIAN GOVERNMENT RESPONSES TO FOOD SECURITY CHALLENGES

Majority of the rural populace depends on agriculture-related activities for their livelihood, the appraisal on the past shows that successive administrations in Nigeria had initiated programmes towards ensuring food is availability and accessible for the teeming population. The sustenance of idea is to fulfil their mandates has remained a dream. It includes Farm Settlement Scheme, National Accelerated Food Production Programme (NAFPP); Operation Feed the Nation; River Basin and Rural Development Authority; Green Revolution and World Bank funded Agricultural Development Project (ADP) and Directorate for Food, Road and Rural Infrastructure (DFRRI).

Despite these efforts in the past including those of the present not listed here, agriculture has been constrained by numerous challenges like rural urban migration, wavering policy formulations, implementation, insufficient infrastructural support poor input distribution system, focus on oil economy; pricing system; over dependence on rain-fed farming; poor capacity utilization, low investor's confidence; environmental degradation' poor access to funds; poor socio-economic status of farmers, insufficient technological transfer system, corruption and poor commitment to implementation of agricultural policies.

Therefore, for Nigeria to transform as one of the 20 leading economies in the world by 2020, an agricultural revolution should be the catalyst to its industrialization. Besides, the targets of the SDGs of reducing hunger and poverty and sustainable development can only be attained through increased attention to agriculture, food security and sustainable water resource development.

Meanwhile, in the midst government despair it is refreshing to see corporate Nigeria rise to its noble obligations. This has complemented the efforts of the federal and state governments who have shown that swift response and leadership in the face of crisis is not the sole preserve of the private sector. Therefore, corporate giants such as Guinness, Nigerian Breweries, Mouka Limited, Nestle, MTN, Nigerian Bottling Company, to mention but these, have risen

to the task by making donations to alleviate the sufferings of the affected persons. Corporate Nigeria gave in terms of donations of basic supplies ranging from food to mattresses, and so on. The renewed vigour to be our 'brother's keeper' also went beyond expectation with the fundraising dinner organized by the Presidential Task Force on Flood Relief..

7.0 NIGERIA AND SUSTAINABLE FOOD SECURITY

Sustainable food security is an access by all people at all times to enough food for an active healthy life at present plus the ability to provide enough for future generation. Issues on food security was brought to lime light in 1974 during the world food conference when it downed on the governments that nations all over the world needs to strategize on how best to improve agricultural production so as to match the per capita needs of the population. Ban Ki Moon, the UN Secretary-General at a World food summit in Rome in 2009, warned that six million children die of hunger every year; 17,000 die of starvation every day and by 2050 the world will need to feed two million more mouths. This has rekindled the idea of achieving sustainable food security in all countries of the world including Nigerian.

Nigeria is blessed with abundant natural and human resources, but despite its significant natural resources, majority of the citizens are living below the poverty line. For instance according to WDI, (2015), an estimated 60% of Nigerians live on less than US\$1.25 per day. Nigeria was also ranked 91st out of a total of 104 countries on the 2015 Global Hunger Index and 153rd out of a total of 187 countries on the 2012 UNDP Human Development Index. Malnutrition and hunger which is linked to poverty have been ravaging most developing countries and affecting their productive capacity. Classifying Nigeria as one of the poorest countries testifies to our failure to achieve our development policy as well as national food security. It once more awakened the government to the realities on ground, that is, the need to achieve the first sustainable development goal of no hunger before the year 2030.

World Bank (2012) estimates the population of Nigerian to above 160 million people, the largest in Africa almost accounting for 47% of West Africa's total population. As the population increases, the country's demand for food increases, while the ability to produce food diminishes because pressures from the growing population in form of desertification, climate change and erosion are also impacting on the already diminishing resources and further threatening food production.

Food security involves access and availability of food stuff, stability of supplies and the quality of the diet (Honfoga & Vanden Boon, 2003). According to

FAO, International Fund for Agricultural Development (IFAD) and World Food Programme (WFP) (2013), Nigeria have an energy intake of 1730Kcal and an average protein supply of 64g capita per day far below the 2500 – 3400Kcal minimum recommended daily intake per day. This shows that Nigeria is facing the challenge of unbalanced diet leading to various deficiency symptoms. Also among the 109 countries assessed by Global Food Security Index (GFSI) (2015), Nigeria is 91st with 37.1 score based on indices of affordability, availability, quality and safety.

One of the goals of Nigerian's agricultural development policy is to ensure that there is enough food reserve at household, state and federal government levels to forestall any threat to the level of food security. Since domestic agricultural production has failed to meet up with the increasing demand for food, the government had to spend on importation to feed her teeming population. For instance, food import increased from 19.9% in 2000 to 30.6% and 22.7% in 2011 and 2012 respectively while food export is barely 5.3% of merchandise (World Development Indicator, 2016).

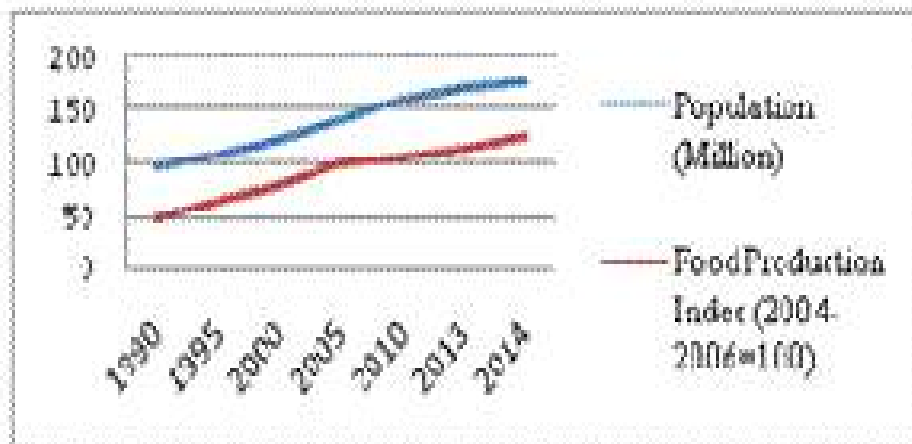
The second sustainable development goal of zero hunger incorporates the need to achieve food security and improved nutrition, promote sustainable agriculture, ending rural hunger, empowering small scale farmers especially women, ensuring healthy lifestyle by 2030. The Nigerian government is working assiduously to achieve these goals.

8.0 FOOD PRODUCTION, FOOD SUPPLY AND NUTRIENT STATUS IN NIGERIA

An incisive discussion on the demand for food, supply of food as well as the nutrient status will give a better understanding of food security situation in Nigeria. A food secured situation is said to exist when the demand side is balanced with the supply side, anything contrary suggests food insecurity (Egbuna, 2001).

Nigeria produced all its food needs and surpluses for its agro-industries in the 1970s and showed remarkable trend that Nigeria was, and could remain self-sufficient in terms of the food requirements for its citizens and for exportation. In recent years, there is low agricultural productivity in Nigeria, the expected yields from crops, soils, rivers, lakes, livestock and forests are far below potentials. Even with low productivity in agriculture, a significant proportion of the output is lost or wasted during storage and transportation. There is lack of efficient and effective storage facilities to preserve the produced foods; also the roads are so bad that most of these foods are lost before they get to the consumers.

From Figure 1, food production index and population growth in the period under review shows an increasing trend, but the rise in population is faster than the rise in food production. Food production, a proxy for food supply of food increased from 48.23 in 1990 to 114.93 in 2013; while the population, a proxy for food demand increased from 98.08 million in 1991 to 177.82 million in 2014. Nigeria food equation is not balanced because the demand for food is rising faster than the supply of food. This shows that Nigeria is not food secured in terms of availability.



Source: Adapted from - World Development Indicator (2016)
Fig. 1. Demand for and Supply of Food in Nigeria (1990 -2014)

The inability of food supply to match up with demand is attributed to low productivity in agriculture leading to a shortfall in domestically

produced food in Nigeria. To supplement the shortfall in domestic food production, Nigeria

depends so much on food importation as shown below.

Table 1 presents the increase in food import. Percentage of food import increased from 1.6% in 1991 to 30.6% in 2011 and decreased to 17.8% in 2013 while food export also witnessed an

improvement between 2012 and 2013. This may be attributed to different agricultural policies/schemes established by the government. But the gap between food import and food export is a clear indication that domestic agricultural production is not sufficient for the domestic food needs as well as raw materials for our industries.

Table 1. Value of Import and Export of Food in Nigeria (%) (1991-2013)

Year	1991	1996	2001	2006	2011	2012	2013
Import (% of Merchandise)	1.6	17.5	21.7	18.0	30.6	22.7	17.8
Export (% of Merchandise)	1.5	1.7	0.0	0.1	1.8	5.3	5.1

Source: WDI, (2016)

Depending so much on food importation is not good for any economy, it could only lead to vulnerability and in case of down turn in the economy as we are expressing recently, the country will be left with no option than to depend on food aid and further exposing the country to a chronic food insecure situation.

Since 2000, the prevalence of undernourishment in Nigeria has been decreasing even though the country did not achieve the millennium development goal of eradicating poverty and hunger in 2015. The downward trend in the prevalence of undernourishment maybe attributed to the improvement in food production during the period.

Table 2 shows that the proportion of undernourished in total population decreased from 20.8 million in 1992 to 8.9 million in 2008 and increased again to 11.9 million in 2015. The quality of the diet of the nation shows an imbalance as a result of heavy dependence on root crops, tubers and cereals. Major contribution to availability of food does not come only from agricultural crops, fisheries and forest products also have high nutritional content. Forest

foods and aquatic animals are highly nutritious and can be used as supplement for food lacking essential vitamins and minerals. It is estimated that between 15% and 20% of animal protein consumed is derived from aquatic animals (FAO, et al., 2013).

In Nigeria, forest foods constitute an important share of our diets such as nuts, wild animals and insects, but over dependence on wood as fuel for cooking and preserving food leads to deforestation thereby worsening the food availability situation in the country.

DES derived from cereals, roots and tubers increased from 113% in 1992 to 123% in 2015 indicating an improvement in dietary supply. The minimum dietary energy requirement increased from 1710Kcal in 1992 to a paltry 1730Kcal in 2008 yet far less than 1800 Kcal (7500KJ) average minimum daily energy requirement per person as recommended by FAO, et al. (2013). The current calories value can be attributed mainly to carbohydrate consumption. Other food values such as proteins, vitamin and minerals fall far below the component directory requirements.

Table 2. Minimum Dietary Energy Requirement (DER), Share of Dietary Energy Supply (DES) and Prevalence of Undernourishment in Nigeria (1992 – 2015)

Year	Minimum DER (Kcal)	DES (%)	Prevalence of undernourishment (%)	Number of people undernourished (million)
1992	1710	113	17.9	20.8
1997	1720	118	11.2	13.2
2002	1720	121	9.0	11.2
2008	1730	126	5.7	8.9
2015	n.a	123	7.3	11.9

Source: WDI, 2016

Although the government is trying to meet the sustainable development goal of no poverty in 2030, with an increase in GDP from \$369.1 in 2010 to \$ 568.5 in 2014; 60% of the population still lives on less than \$1.25 a day (WDI, 2014). Government expenditure on health has not been encouraging, as

poor people are mostly the ones accessing government health facilities. For instance, expenditure on health as a percentage of GDP in Nigeria decreased from above 7% in 2003 to 3.88% in 2013.

In terms of food utilization, Nigeria has not performed very well. NDHS, (2013) reports that 37% of Nigerian children are stunted, 29% are underweight while 18% are wasted and out of these percentages that are stunted and underweight, more reside in the rural areas than in the urban areas, precisely 43% and 26% respectively. All these are signs of acute and chronic malnutrition caused by high poverty rate in the country. High poverty rate as well as poor sanitation leads to poor nutrition. There are also regional differences in nutrition outcomes across the country, for instance, Adamawa state has an absolute and food poverty rate of 74.2 and 55.4 respectively, while Anambra state has 56.8 and 34.2 respectively (NBS, 2010).

Different ethnic disturbances in different parts of the country have all disrupted food production and supply in the country. The prevalence of food insecurity can be said to be predominant in the rural areas than in the urban areas but with differences across states and regions.

9.0 SWOT ANALYSIS OF FOOD SECTOR PERFORMANCE IN NIGERIA

Going by the available literature on the food sector performance in Nigeria, the study further carried out a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis of the sector.

The SWOT analyses give a comprehensive résumé of the nature of food sector development and performance in Nigeria. The SWOT analysis is as depicted in Figure 2 below.

Strengths: The strengths of the Nigerian economy in producing food crops, primarily dwell on her vast expanse of land that amounts to about 91 million hectares with around 80 million suitable for agriculture and 37.3 million hectares considered to be arable land as at 2015, thereby providing enough room for the cultivation of food crops production in the country.

Figure 2: SWOT Analysis of Food Sector Performance in Nigeria

Strength	Weakness
❖ <i>Large expanse of arable land; large population, Agriculture friendly climatic zones, Diverse climate for the production of different crops, low exposure to most natural disaster, and almost zero exposure to Tsunami, and available labour.</i>	❖ <i>Small scale farming, Poor mechanisation, Obsolete equipment, Lack of value addition and poor agricultural value chain, insufficient research for improved varieties and methods, Poor marketing Strategy, Lack of storage and/or processing technology/facilities, etc.</i>
Opportunities	Threat
➤ <i>Large expanse of land to allow for mechanisation; Availability of water for irrigation; Large market owing to the huge population and free trade zones; large income from crude oil, Abundance of raw materials for farm inputs e.g. fertilizers from petro chemical industry; Support of international organizations e.g. CIDA, FAO, World Bank, AfDB</i>	○ <i>Large revenue from the oil Sector, Food Importation, Climate Change, Insecurity/conflicts, Poor road infrastructure, Insufficient access to long-term credit, the land tenure system in the country, Poor power and transportation infrastructures, Low technological knowhow, Pests and diseases, and the high rate of poverty and inequality, Unstable economic and agricultural policies, Lack of incentives</i>

Again, the massive population of Nigeria provides readily available labour for food crop production for the nation. Geographically, Nigeria's location gives her an excellent climate for the cultivation of different crops at different seasons. The wet season in Nigeria spans for over six months in most areas, which gives room for the cultivation of a variety of food crops such as maize, cassava, rice, yam, fruit crops in most areas (Nuga and Asimiea, 2015). Also, the country has low exposure to most natural disasters like earthquake and almost zero exposure others like Tsunamis (ocean waves) or avalanches (large ice block melting). Though we cannot completely rule out the possibility of these natural disasters happening in the future due to the changes in the climate, so far none has been recorded. These natural disasters are known to wreck farmlands, destroying crops and vegetation. For example, the

December 26, 2004, tsunami in Thailand, Sri Lanka, India, Maldives, and Indonesia damaged at least 116,000 acres of land; flooding the land with toxic salt thereby rendering the land sterile (Grossman, 2005).

Weaknesses: Notwithstanding the series of the strengths in the agricultural sector in general and food crop production in particular in the country, weaknesses abound, and have mainly been publicised in the literature. Some of them include small-scale farming, poor mechanisation, obsolete equipment, lack of value addition and poor agricultural value chain, insufficient research for improved varieties and methods, poor marketing strategy, lack of storage and processing technology/facilities. Although the intensity of these weaknesses varies across regions, they cut across all the agro-ecological

zones in the country. Generally, it has been observed that most farmers in the country operate a small-scale farming mainly for subsistence and small sales in the local markets. This low scale farming, in turn, leads to low mechanisation and the use of crude implements, which are also severe weaknesses of the agriculture productivity in the country in general and food crop production in particular. Similarly, storage/processing facilities are inadequate and insufficient to meet the demand nationwide, and this leads to seasonality in the consumption of food crops in Nigeria.

Opportunities: There, however, exists several opportunities to stimulate investment in food crop production in Nigeria. These include but not limited to a vast expanse of land to allow for mechanisation, availability of water for irrigation, large market owing to the large population and free trade zones. Others are an abundance of raw materials for farm inputs like fertilisers from the petrochemical industry, substantial income from crude oil, and supports from the international organisations. As stated at the beginning, Nigeria is the largest country in Africa with a vast amount of unutilized arable land. With appropriate policy on the existing land tenure system, this can be a very great opportunity for mechanised farming as farmers can have access to massive hectares that are together. Again, the vast population in Nigeria is a ready market for any intending investor in food crop production and any amount of output. In addition to the immediate demand for the products, it will also likely ensure a stable supply of labour and a reduced labour cost. Beyond the immediate Nigerian market, the West African sub-region is a free trade zone for member states, making the market even more massive. A significant amount of income from crude oil could be utilised to support investments and research that would boost the production of food crops to feed the nation.

Also, several international organisations inject a considerable amount of funds to support food production in Africa, to eradicate hunger and poverty as upheld by the SDG. It is, therefore, going to be a boost for investors. Furthermore, Akpan, Ikon, Chukwunonye & Nneka (2016) posit that the macroeconomic environment in Nigeria favours the growth of food crop production.

Threats: Despite the myriads of strength and opportunities facing crop production in the country, there is still insufficient food supply due to several factors that threaten agricultural productivity in the country. These as listed in Figure 2 above includes substantial revenue from the oil Sector; food importation; climate change; insecurity/conflicts, poor road infrastructure; insufficient access to long-term credit, the land tenure system in the country,

poor power and transportation infrastructures, and Low technological know-how. Others are pests and diseases, high rate of poverty and inequality in the country, unstable economic and agricultural policies, and lack of incentives.

The literature has linked the decrease in agricultural productivity and contribution to GDP to the advent of crude oil as the primary source of revenue to the country. Though this can also be an opportunity as explained above, the practical thing is that the country ignored the agricultural sector and became a mono sector economy that depends heavily on oil. Moreover, the substantial revenue from oil increased the income on the country and as usual, increased their demand for imported foods, which tends to out compete even the little domestically produced ones given the consumers' preference. Another major threat to food crop production in Nigeria is the climate change and lack of policies to adapt to and or mitigate it. Nigeria is currently experiencing increased sunshine in the North causing droughts and increased rainfall in the south causing floods, which is a changing dynamics for farmers, preventing proper planning. The changing climate in the North has forced herdsmen to move their cattle down south in search of pasture, and this has caused several conflicts with farmers down south leading to the wide-scale destruction of farmlands, crops, storerooms and others.

Other looming threats are the Boko Haram attacks that have left the expanse of land desolate for fear of the brutal terrorist attack. Conflicts according to the 2018 Global Report on food crisis will remain a primary driver of food insecurity in major emerging countries particularly in Africa, Nigeria Inclusive. Another critical threat to food crop production in Nigeria is poverty and lack of access to finance. Statistics (NBS) from the Nigerian Bureau of Statistics (NBS) shows that the proportion of people living in extreme poverty increased from 51.6 percent in 2004 to 61.2 percent in 2010 while inequality was 42.97 percent in 2009. The colossal poverty and inequality rates imply that such proportion of the population cannot gainfully invest in sustainable food crop production except with financial assistance, which is constrained by high-interest rates and tall-order collateral requirements that are not within reach of the poor farmers.

10.0 SUGGESTIONS TOWARD ACHIEVING SUSTAINABLE FOOD SECURITY IN NIGERIA.

It should be noted that food production is only a means to an end. Solution to achieving sustainable food security must include reduction in the level of poverty because income must be improved to enable people meet the basic necessities of life, including food. However, reduction in poverty level takes a

long time to be achieved; therefore, immediate solvable solutions must be taken and they include the following:

A. Improved Agricultural Productivity:

Different projects/schemes have been established by different governments in the country in order to improve agricultural productivity, but they have failed because poor policy implementation. Agricultural productivity can be improved through encouragement of research. Research Institutes should be funded so as to encourage innovation and participatory research. Through research, foreign technology can be modified and applied in Nigeria. Inorganic fertilizers and chemicals can be replaced with alternatives such as cow waste and composite manure which are environmentally friendly.

Also extensions services should be encouraged and strengthened because through the extension services new technology can be transferred to the farmers. There should be storage facilities to enable farmers store their post-harvest crops. Farm products are perishables; farmers are forced to sell their products so quickly thereby making revenues that do not meet their daily need. The storage facilities can help them preserve their products before taking them to the market for sale. The storage facility will also help provide enough food reserve for the country.

B. Agricultural Biodiversity:

Improved agricultural biodiversity through improved agricultural practices will also increase food supply. Large scale farming involves planting one type of crop on a large piece of land, but with improved farming different genetically improved crop types and species may be planted on a piece of land. Mono-cropping also exposes crops to both pests and diseases and also increases the use of organic fertilizers and pesticides that erode soil biodiversity. In order to achieve sustainable food security, Nigerian farmers as well as government should embrace this modern food production technique that comes in form of agricultural biodiversity aimed at increasing livestock and crop production.

C. Environmental Management:

Efforts to increase productivity have led to pressure on natural resources as well as environmental damage. There should be effective management of the environment by reducing the rate of deforestation. Trees should be planted as often as possible especially in the desert. Providing habitat for agricultural pests and increasing resilience to shocks and long-term climate change can help in the improvement and management of natural resources. Tree planting should be encouraged because forest trees outside the forest helps in protecting soil and water resources, promotes soil fertility and provides protection from extreme weather events.

D. Policy Changes:

Sustainable food security can be achieved if the government adopts inclusive growth in its development efforts. Development should be participatory and environmentally friendly. People-centered agricultural development puts the farmers first and attacks poverty with opportunities and education. It requires involving the rural people in decision making stages of agriculture productivity. The inability of government to involve these sets of people in defining and designing projects has led to the failure of some of these projects. There should be well designed social protection systems -such as risk insurance scheme and community empowerment- to help households sustain their resilience to shocks.

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