International Journal of Operational Research in Management, Social Sciences & Education
ISSN Hard Print: 2536-6521 | ISSN Online: 2536-653X
Vol. 3, No. 1 May, 2017

Sustainability of Agriculture to Boost Food Security in Nigeria

Ishaku Usman Gadzama
Department of Sociology,
Faculty of Social Sciences,Ahmadu Bello University, Zaria, Kaduna State

Abstract

The United Nations' projected Nigerian population as over 187 million in 2016. Consequently, the need to sustain food security is a necessity for the country. However, the highest incidence of undernourishment is found in sub-Saharan Africa (Nigeria inclusive), where one in every three persons suffers from chronic hunger. It is also noted that in the twenty-first century, due to decrease in fertility rates, the number of people who have attained 60 years and above will triple in three out of four developing countries. The total number of older people in developing countries is expected to increase from 8% in 2000 to 20% in 2050. This will put serious strains on human security as people's ability to move out of poverty and cope with crisis is undermined. This further juxtaposes that there is low level of productivity in Nigeria which perpetuates food importation to feed the population. The paper conceptualizes food security, and looks at agriculture and sustainable food security, examines food security in the Nigerian context, determines the sustainability of agriculture to boost food security in Nigeria and x-trays the United Nations human security model. It also examines the food systems paradigm for sustainable food in Nigeria and some lessons to be learnt. Malthusian theory of population growth was adopted. The paper advocates that the policy makers should increase the level of agricultural productivity by improving expenditure to boost the growth of Nigerian economy. The paper argues that policies aimed at adequate financing of agricultural sector for sustainable food security is a way forward.

Keywords: *Food security, Human security, Nigerian economy, Population, Sustainability of agriculture*

Corresponding Author: Ishaku Usman Gadzama

http://internationalpolicybrief.org/journals/international-scientific-research-consortium-journals/intl-jrnl-of-operational-research-in-mgmt-soc-sci-edu-vol3-no1-may-2017

Background to the Study

Sustainable agriculture is considered as a necessity for Nigeria to guarantee her food security. Agriculture, is, and will still remain an important and vital sector of the economy. The agricultural sector now and in the future will be relied on to supply more food to the growing and more prosperous population as a foreign exchange earner. Nigeria as Africa's most populous country and the largest economy, yet majority of the population are malnourished. According to Reardon *et al.*, 2009 cited in Requier - Desjardins, 2013:114), agriculture is now highly integrated with the agri-food sector constituting a "global value chain". Agriculture value chains encompass the flow of products, knowledge and information between small-holder farmers and consumers. In 2014, as part of a statistical review of national accounts, the country adjusted its estimate of 2013 Gross Domestic Product (GDP) of 91%, from $273 billion to $521 billion. This was the first major revision of Nigeria's GDP estimate in almost two decades, changing the base year from 1990 to 2010. The most notable improvements include incorporating small-business activity and fast-growing industries (such as mobile telecoms, real estate, and the film-industry). 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).

Several other countries in sub-Saharan Africa such as: the Democratic Republic of Congo (62%), Tanzania (31%), Kenya (25%), the region's fourth largest economy, Zambia (20%), Uganda (15%), and Namibia (14%) also improved the quality of their GDP estimates. Two countries revised their GDP estimates down: Rwanda (3%) and Equatorial Guinea (9%) (World Development Report [WDR], 2015).

Agabi (2013) noted that out of 850 million people suffering from hunger worldwide, 98% are located in emerging markets. That is, the Asia-Pacific region had the greatest number of (528 million) while sub-Saharan Africa had (237million). In 2010, the National Bureau of Statistics estimated that 112 million people lived below the poverty line and a significant proportion of poor Nigerians do not have sufficient food or calorie intake for their survival. Consequently, the World Development Report (2015) indicated that the world economy was expected to grow at 2.6% in 2014 but was projected to 3% in 2015. Developing economies for instance, accounted to 32.9% in 2014, from 32.1% in 2013 while, it was estimated that the developing economies stood at 4.4% in 2014 and was projected to also grow at 4.8% in 2015. East Asia has reduced the prevalence of undernourishment by more than 3% and South Asia by 1.7% annually, but the failure to reduce the absolute number of people that are undernourished remains a cause for concern. In the 1970s, for example, it was said that 37million people were removed from the ranks of the undernourished and 100 million in the 1980s, but in the 1990s, the number reduced to only 3 million people. What accounts for these millions of food insecure individuals is that food security depends on adequate and stable food availability, access to adequate/appropriate food and good health to ensure that individual consumers enjoy the full-nutritional benefits of available and accessible food (World Development Report, 2008). However, the devaluation of the Naira by over 80%, increase in fuel prices, accelerated increase in prices of farm inputs in markets, have combined to raise production costs for farmers in Nigeria.

Bonat, 2015. Ironically, the Agricultural Promotion Policy [APP] (2016 - 2020) reveals that the federal government has allocated only 2% of the 2016 capital budget to agriculture. This is the lowest allocation to agricultural sector by the Nigerian government since 1990s. Therefore, the aim of this paper is to discuss sustainability of agriculture in order to boost food security in

Nigeria. The paper achieves this by looking at the agricultural sector as a necessity for the sustenance of food security in the country, presents vividly the concept of food security in the Nigerian context and the sustainability of agriculture to boost food security in Nigeria. It examines the United Nations human security model and highlights some lessons that Nigerian should borrow to sustain its food security. The paper uses the Malthusian principle of population to situate food security in the context of Nigeria. As a conceptual paper, the writer descriptively discussed the subject matter of this paper by collecting relevant secondary data from different literature on food security and food sustainability within and outside Nigeria.

Conceptualizing Food Security

The concept of food security is multifaceted. Several definitions of food security have been put forward by different scholars, but the most commonly used definition of food security is defined as 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 (Food and Agricultural Organization [FAO], 1996). In effect, food security depends on agricultural production, food imports and food aid, employment opportunities, income generations and allocation of resources.

It is against this backdrop that Ojo & Adebayo (2012) see food as life and also an instrument of national power. Food security happens when all people at all times have access to enough food that is affordable, safe and healthy and is culturally acceptable, meets specific dietary needs, obtained in a dignified manner and produced in ways that are environmentally sound and socially just. Food security is not just a poverty issue; it is a much larger issue that involves the whole food system that affects people in the society (FAO, 2001). According to World Bank (2007), the global food security crisis endangers the lives of millions of people, particularly the world's poorest who live in countries already suffering from acute and chronic malnutrition.

Food security means equitable access to markets, distribution of resources. This can take place within households, among individuals, across communities and viable options and opportunities to take action and make decisions. In many countries, changes have been taking place in dietary habits, with increasing consumption of meat, dairy products, and processed foods, and decreasing consumption of cereals and other basic foods. Methods of food production, processing, and marketing are also changing rapidly and international trade in raw commodities and processed foods has grown substantially. The increases in world population and urbanization are critical issues in terms of food availability, access to food and nutritional well-being. This suggests that more people will require more food, more goods, more services, and more employment opportunities.

According to Hossain, Naher & Shubaddin (2005), the concept of food security can be viewed both from the national and individual levels. At the national level, food security means the availability of food to meet domestic demand until stocks can be replaced from harvests or imports. At the individual level, it means that all members of the society have access to the food they need, either from their own production, from markets and/or from the government. While food security is traditionally viewed as having two dimensions - spatial and temporal, in fact, it has three, with gender being the third and most overlooked. Identifying individuals' differential access to resources and benefits is fundamental and ensuring equitable access and distribution enhances food security. For instance, women in developing countries play

significant roles in maintaining food production, economic access to available food, and nutritional security but faced with enormous social, cultural and economic constraints in society.

Molnar (1999) cited in Isa (2014) has identified a number of cultural and social factors that determine food security. Culture, for example, is connected to food security through the individual's access to formal education and other forms of human capital. It means that social organization of people affects food security because education and other human capital along with other institutional provisions like technical support for industries and transportation becomes ineffective for increase in productivity and distribution.

Similarly, the Agriculture Promotion Policy (APP) of Nigeria is predicated upon the following guiding principles: food security, import substitution, job creation and economic diversification. A number of these are originally inspired by the Agricultural Transformation Agenda (ATA) reflecting the strong desire for policy stability. For sustainability of agriculture in Nigeria, agriculture is seen as a business (agric-business) because it focuses on the policy instruments on a government-enabled, private sector-led engagement as the main growth driver of the sector. This essential principle was established in the ATA and it is still a cardinal design principle of Nigeria's agriculture policies. Food is regarded as a human right. In furtherance of this policy, agricultural development focuses on the social responsibility of governments with respect to food security, social security and equity; and compelling the government to recognize, protect and fulfill the irreducible minimum degree of freedom of the people from hunger and malnutrition (Agriculture Promotion Policy, 2016 - 2020).

Agriculture and Sustainable Food Security in Nigeria

From time immemorial, Nigeria depended so much on agricultural productivity for its revenue until the exploration of oil in 1970s. The oil boom led to the negligence of the non-oil sectors most especially the agricultural sector which used to be the major source of revenue for the country. The attention given to agriculture reduced drastically, farmers needs were not attended to and the worst of all was that research and development in agricultural sector slowed down. The aftermath stagnated food production. However, policy change that championed increased incentive for local farmers for improved local food productions were also neglected. Urban and community farming and even home gardening were no longer encouraged as land agents made it too difficult for people to obtain land for building as well as for agricultural productivity (Metu, Okeyika & Maduka, 2016).

The type of farming system prevalent in Nigeria is the traditional subsistent farming. This system is characterized by the use of simple farm tools, small farm holdings, restricted access to credit facilities and low agricultural inputs. Others include: inadequate storage facilities, insecure markets for post-harvest products and exploitation of farmers by the middlemen. In terms of technology, Nigeria is still lagging behind when compared to other countries particularly in Europe and Asia. Due to poverty and illiteracy, farmers do not have access to modern communication system with which they can access information regarding new technologies. Also there are few extension agents to transfer new technology to the farmers. Consequently, funding for agricultural research is still low in Nigeria, while frequent importation of food crops into the country grossly affects productivity of local farmers because the small-farmers cannot compete with the imported crops (Metu, Okeyika & Maduka, 2016).

The demand for food is not commensurate with the supply of food because the rate of growth of population is higher than the growth in agricultural productivity. In addition, the large population continues to push some youths to urban areas in search of white collar jobs which do not exist. This youth rural-urban drift makes it difficult for the country to be food secured. Flood, drought, desertification are environmental issues affecting availability of food in Nigeria. Climate change too is not left out because it affects food supply through loss of farmland, fluctuating food prices, increases in food borne illnesses and other food utilization issues (Green Climate Fund, 2016 cited in Metu, Okeyika & Maduka, 2016). Environmental degradation through deforestation and flooding has wide negative implication for food production. For instance, in 2012, Nigeria witnessed an unprecedented rainfall as a result of extreme weather. The rainfall resulted in severe flooding causing loss of agricultural crops, live stocks and human lives. According to Metu, Kalu & Ezenekwe (2015), the estimated loss of the country's GDP worth about N2.6 trillion.

Over the years, Nigeria has emerged as one of the fastest growing economies in sub-Saharan Africa, with an annual growth rate of 6% witnessed between 2001 and 2008. Until the global economic downturn which began to affect the economy tremendously and yet the country had achieved unprecedented macroeconomic stability (United Nations Development Programme [UNDP], Nigerian Human Development Report, 2008 - 2009). In fact, one of the contemporary's major challenges is how to feed the world population, particularly in developing countries like Nigeria. Agriculture, for example, contributes about 42% of the Nigeria's GDP and engages over 65% of the country's workforce, however, the country's food security must be sustainable. The reason is that the Nigerian agricultural sector is constrained by enormous challenges and also characterized by low output, inefficient, antiquated production tools and infrastructure (UNDP Nigerian Human Development Report, 2008 - 2009).

In addition, about 66% of the Nigeria's total land mass of 92.377 million hectares is suitable for agricultural production but half of that unfortunately is not cultivated. The technological inadequacies in standardization and quality control have stunted natural farm produce, rendering it unable to compete at the local and international markets (Information Section, 2009). Similarly, a study conducted by the National Insurance Commission (NAICOM) for instance, reveals that about 75 million Nigerians need micro-insurance and interestingly most of these people are farmers (Agabi, 2013). Hence, micro-insurance must be a necessity for farmers in Nigeria for the sustenance of food security.

Nigeria, as a country, is at the brink of collapse if her food security is not guaranteed for the citizens. According to Ahmed (2011:29), "many of the Nigerian farmers toil all the days of their lives to earn a living and feed the nation but their standard of living is still very poor". In spite of the efforts made by the farmers to attain effective food security, Kantiok (2013) observes that it is unthinkable for Nigeria to be classified as one of the poorest countries in the world with about 70% of its population living below the poverty line and on less than two dollars a day. Similarly, Dorayi (2013) notes that Nigeria has a population of about 180 million in 2013 projected at 3.16% annual increase based on 2006 census figure of 140 million. However, in 1963, Nigeria's population stood at 56 million while it is estimated to rise to 280 million (i.e. double of 2006) population census figure in 2015. However, the Food and Agricultural Organization (FAO) according to Adeolu & Taiwo (2004) has consistently listed Nigeria among the countries that are technically unable to meet their food needs from rain fed

agriculture due to low level inputs. In fact, the devastating effects of desertification and drought on the dry sub-humid and semi-arid agro-ecological zones of Nigeria have made the government to embark on massive investment in small-holder irrigation.

The rapid growing demand for food coupled with seasonal variations, unpredictability and unreliability have been characterized as patterns of rainfall in the dry sub-humid and semi-arid agro-ecological zones of Nigeria. These have necessitated the supplementation of rain-fed agriculture with irrigation. The goal of increasing food production and reducing food import has elicited many programmes and policies at the various levels of government. The first was the establishment of River Basin Development Authorities (RBDAs) in the early 1970s while by the late 1980s, the development of small-scale irrigation systems in Fadama land areas commenced. In 1993, the Federal Government of Nigeria in collaboration with the World Bank and State Governments commenced a new programme referred to as "National Fadama Development Project". Many reasons have been advanced for the necessity of supplementing rain fed agriculture with irrigation in Nigeria and hence the current investment in the widely acclaimed small-scale or small-holder irrigation practices (Fadama) by the Nigerian government is an effort in this direction (Kudi, Usman, Akpoko & Banta, 2008).

Food Security: the Nigerian Case

There have been a lot of concerns over the looming danger of food crisis in many countries of the world, including Nige2ria. The Food and Agricultural Organization, among others have been persistent expressing these concerns for the global food crisis over the past decades. The main goal of food security therefore, is for individuals to be able to obtain adequate food needed at all times, and to be able to utilize the food to meet the body's needs. Food security is one of the major concerns of the Federal Government of Nigeria. Food demand grows at the same pace as the population increases but because of the modification of the diet in cities (increasing consumption of rice and wheat among the cereals); part of the demand would have to be met through food imports. Taking a per capita allowance of about 2,200 calories per person a day to meet basic nutritional needs, and after making some allowances for wastage and conversion of grain into protein. Also, it has been observed that about 1 tonne of grain is equivalent per year to meet the basic needs of a typical family of five in Nigeria (International Food Policy Research Institute [IFPRI], 2005).

The most important components of the food basket of a nation are cereals and tubers, which include rice, maize, guinea corn, millet, sorghum, yam and cassava. Millet, sorghum and maize for instance are produced under rain-fed condition; consequently their production is subject to large annual variations (IFPRI, 2005). More than 70% of the rice cultivated in Nigeria is grown from irrigated farmlands. Nonetheless, its production is also subject to variations since the functioning of the Fadama scheme depends on the level of flood as well as the level of precipitation in the area. For instance, projections by the World Bank suggest that the demand for all types of cereals have increased globally by 2.5% between 1990 and 2000. These figures are rather conservative for Nigeria and it was estimated that the demand for cereals (especially rice) rose to about 3.5 % between 1990 and 2000 before it dropped to about 2.5% between 2000 and 2025 (IFPRI, 2005).

Consequently, the human food requirement consists of four principal sources such as water, agricultural crops, livestock and fisheries. Essentially, the demand for food depends on the population and the dietary habits/per capita daily calorie intake of the people under

consideration. On the other hand, the food requirement of a nation depends on additional factors like food import and export balance. There are basically three ways to produce this food requirement and these are rain-fed agriculture, irrigated agriculture and food import. In all cases, water is the most important determinant to increase food production and rural development in Nigeria.

In recent times, the global focus has been on food security and poverty alleviation. This is in response to the increasing threats of food evident in the fact that over 70% of the populations live below 1 US dollar per day. To achieve the millennium development goal of halving the proportion of hungry people by 2015, it was projected that about 22 million people must achieve food security every year (IFPRI, 2005). The achievement of this target is important in reducing hunger and poverty (FAO, 2005). The lingering poverty incidence among other things has led to low agricultural production and low productivity among the farmers. This, however, has ultimately limited their traditional role in economic development.

According to World Bank (2001) and FAO (2013), the core determinants of food security are availability, accessibility, utilization and stability. This means that a nation whose food production level is unable to satisfy these criteria is said to be food insecure.

Food Availability: The availability of food in a nation is necessary but not adequate to ensure that people have satisfactory access to food. For instance, an increase in Nigerian population without commensurate supply of food could lead to unavailability of food for individuals.

Food Accessibility: Having access to food depends on two major conditions namely; economic access and physical access. Economic access depends on an individual's income, the price of food and the purchasing power of that individual. Physical access refers to the availability and quality of infrastructure needed for the production and distribution of food. This suggests that lack of economic access to food is not unconnected to an increase in the rate of poverty.

Food Utilization: Food utilization is measured by two indicators which reflect the impact of inadequate food intake and utilization in a country. The first outcome is measured by under-five years of age nutrition level while the second measures the quality of food, health and hygiene. FAO (2013) further noted that measuring the nutritional status of under-five years of age is an effective approximation for the entire population. The indicators for the measurement of under-five are wasting (too thin for height); underweight (too thin for age) and stunting (too short for age). Most times, progress in terms of having access to food is not always accompanied by progress in the utilization of the food. A more direct indicator of food utilization is underweight because it shows improvement more promptly than stunting and wasting whose improvement can take a longer time to notice.

With regard to food utilization, Nigeria has not performed very well. National Demographic and Health Survey [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 (43%) and urban (26%) areas respectively. These also show the 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 rate of 74.2% and food poverty rate of 55.4%, while Anambra State has 56.8% and 34.2% respectively (National Bureau of Statistics, 2010 cited in Metu, Okeyika & Maduka, 2016).

Food Stability: Stability has to do with exposure to short-term risks. It has a way of endangering long-term progress. Key indicators for exposure to risk include climate shocks such as droughts, erosion and volatility in the prices of inputs for food production. The world price shocks leads to domestic price instability which is a threat to domestic food producers as they stand the chance of losing invested capital. Thus, most Nigerians are mainly small-holder farmers who farm for subsistence. Interestingly, agriculture value chain emphasizes the flow of products, knowledge and information between the small-holder farmers and consumers i.e. agriculture is integrated with agric-food. Their status makes it difficult for them to cope with changes in the prices of inputs. It also reduces their ability to adopt new technologies thereby resulting in low production. For instance, change in the pattern of weather as a result of climate change has played a significant role in reducing food supply. Consequently, flood in the southern parts of the country and drought in the northern parts leads to substantial losses in production and income. The interplay of all these variables determines whether an individual, household, state or nation is food secured or not. This is because sustainable food security at the household level does not guarantee sustainable food security at the state or national level.

Sustainability of Agriculture to Boost Food Security in Nigeria

In the mid-1970s, there was a rapid increase in prices of commodities which caused a global food crisis; therefore food security emerged as a concept of topical discussion. At that time, attention was focused first on food's availability but later moved to food access, food use and most recently to human right to adequate food. It is argued that the commonly accepted definition of food security is thus when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. The chronically food insecure never have enough to eat while the seasonally food insecure fall below adequate consumption levels while the transitory food insecure fall below the food consumption threshold as a result of an economic or a natural disaster like drought, sometimes with long-lasting consequences. It is noted that the world has more than enough food to feed everyone, yet 850 million are food insecure (WDR, 2008).

Consequently, in rural communities, training opportunities to improve skills, productivity and livelihoods in agriculture are very few or they focus on programmes that do not prepare children and youth for productive work in agriculture (Yakubu, Gadzama & Mudiare, 2016). Thus, the agricultural sector is important to food security. The channels are complex and multiple. For instance, rising productivity increases rural income and lower food prices, making food more accessible to the poor. Other investments such as improved irrigation and drought-tolerant crops reduce price and income variability by mitigating the impact of a drought. Productivity gain is a key to food security in countries with foreign exchange shortage or limited infrastructure to import food. The same scenario applies to households in Nigeria with poor access to food markets. Nutritionally, improved crops give access to better diets, particularly through bio-fortification that also improves crop nutrient content. The contributions that agriculture makes to food security need to be complemented by medium term programmes to raise incomes of the poor as well as insurance and safety nets, including food aid that will protect the chronic and transitory poor (WDR, 2008).

According to the United Nations Hunger Task Force, about half of those suffering from hunger are smallholders; a fifth are landless; and a tenth are agro-pastoralists, fisher-folk and forest users; the remaining fifth live in urban areas. Today, agriculture's ability to generate income for the poor, particularly women, is more important for food security than its ability to increase local food supplies. Women, more than men, spend their income on food. In Guatemala, for example, the amount spent on food in households whose profits from non-traditional agricultural exports were controlled by women and double that of households whose men controlled the profits. India has also moved from food deficits to food surpluses, reducing poverty significantly and reaching a per capita income higher than that in most parts of sub-Saharan Africa. Yet it remains home to 210 million undernourished people and 39% of the world's underweight children (WDR, 2008). Chitambar (1973:15) succinctly captures this scenario with reference to Indian society when he says:

> *Twenty-four years after India has gained national independence, it encountered tremendous task of development of a widely diverse country in which acute shortage of food was a chief problem. It had to cope with this problem in the face of a rapidly increasing population and a rate of agricultural production which was among the lowest in the world.*

Human Security Model of the United Nations

In 1999, for instance, the United Nations Trust Fund for Human Security was established by the Japanese government in collaboration with the United Nations Organization. The goal was to provide funding to projects that seek to enhance human security around the world. Since there was no conceptual framework and guidelines available for the Trust Fund to follow in the beginning, they adopted a more operational approach and most of the funding was directed towards development projects (Human Security Unit, 2006). The Trust Fund later adopted the definition of human security presented by the Commission on Human Security in their report that it seeks:

> *To protect the vital core of all human lives in ways that enhances human freedoms and human fulfillment. Human security means protecting fundamental freedoms-freedoms that are the essence of life. It means protecting people from critical (severe) and pervasive (widespread) threats and situations. It means using processes that build on people's strengths and aspirations. It also means creating political, social, environmental, economic, military and cultural systems that together give people the building blocks of survival, livelihood and dignity (Human Security Unit, 2006:1).*

Their understanding of human security had some contributions to the one presented by United Nations Development Programme (UNDP) in 1994; one was to supplement freedom from want and fear with freedom to take action on one's own behalf. The concrete human security framework proposed by the commission included two dimensions; *protection* which refers to national and international norms, processes and institutions that shield people from critical and pervasive threats and *empowerment* that emphasizes people as actors in defining and implementing their vital freedoms and the goal is to enable people to enhance their resilience to difficult conditions (Human Security Unit, 2006:1).

In 2003, half of the world population lacked access to sufficient sanitation and one in every fifth person does not have access to safe water. In effect, it was estimated that 1.7 million people die every year from diseases connected to unsafe water and sanitation. Failure to meet the

needs for fresh water imposes great risks on societies, especially in developing countries. There are immense human costs as well as economic, social and political risks if people do not have access to adequate safe water and food security. Therefore, electricity and water scarcity are among the most sensitive public service issues for which members of the public hold governments accountable. The commission has argued that in few decades, the world population requires about 20% more fresh water. Any analysis of human security must therefore address this essential matter (Commission on Human Security, 2003).

It was further noted that, in many developing countries, a large chunk of the population has access to natural resources such as forests for fuel, land for farming and water for fishing. When these resources are threatened because of environmental change, degradation or disasters, the people's security is also threatened. For instance, the Sudanese participants in a Commission on Human Security stressed that "one of the root causes of human insecurity is ecological or resource degradation and that without ecological stability people cannot have food security" (Commission on Human Security, 2003). While the Canadian Department of Foreign Affairs and International Trade sees *human security* as a freedom from fear and *human development* is considered as a freedom from want. It is argued that human security plays a central role in Japanese foreign policy. The participants define human security broader than the one adopted by Canada which thus holds that:

> *Human security comprehensively covers all the menaces that threaten human survival, daily life and dignity - for example environmental degradation, violations of human rights, transnational organized crime, illicit drugs, refugees, poverty, anti-personnel landmines and other infectious diseases such as AIDS and strengthens efforts to confront these threats (Commission on Human Security, 2003:16).*

Food security which suggests that people at all times have sufficient economic and physical access to basic food, suggests that people have an "entitlement" to eat food in order to grow or take advantage of a public food distribution system. Food use translates food security into nutritional security. Malnutrition has significant economic consequences, leading to estimated individual productivity losses equivalent to 10% of lifetime earnings and gross domestic product (GDP) losses of about 2% - 3% in the worst affected countries (Nigeria inclusive). Perhaps, malnutrition is not merely a consequence of limited access to calories. Food must not only be available and accessible, but also be of the right quality (balanced diet) and diversity (in terms of energy and micro-nutrients), be safely prepared and consumed by a healthy body, as disease hinders the body's ability to turn food consumption into adequate nutrition. For instance, lack of dietary diversity and poor diet quality could lead to micro-nutrient malnutrition or hidden hunger, even when energy intakes are sufficient to use by individuals. Hidden hunger can cause illness, blindness and premature death as well as impair the cognitive development of survivors. In spite of all these, the agricultural sector has failed to keep pace with the country's rapid population growth. Interestingly, Nigeria was once an exporter of food, the country relies to a large extent on importation of food to sustain its growing population. Although there was an increased in the production of horticulture products and livestock by extension has been agriculture's main avenue to improve the diet quality of Nigerians.

Lessons for Nigerian Food Security

Nigeria can borrow from the agricultural food systems paradigm to sustain its agricultural sector. Combs *et al*. (1996) pointed out that this system is aimed at not only for productivity and sustainability but also for better nutrition for mankind. Obviously, the country needs new paradigms for agriculture, which encompassing nutrition, health, and development which must meet the challenges threatening sustainable development efforts. For instance, enduring food-based solutions to malnutrition generate good health and improved productivity while ultimately contributing to lower population growth rates.

Insecurity of food and shelter is synonymous to high birth rate in poor countries (Nigeria is not exempted). Classifying Nigeria as one of the poorest countries testifies to its failure to achieve development policy as well as national food security. There is a need for the Nigerian government to strive in order to achieve the first sustainable development goal which states that "no hunger before the year 2030". However, developing linkages among agriculture, nutrition, and health is necessary to nullify the adverse effects of past policies on food security. This is because global agriculture, nutrition, and national development have focused mainly on short-term, unsustainable solutions to starvation, malnutrition, underdevelopment as well as high human fertility rates. To actualize these, there is a need for a paradigm shift in the agricultural sector of Nigeria.

Theoretical Framework

Malthusian theory on population growth is adopted for this paper. In the 18th century, Thomas Malthus warned that population of the world would exceeds the earth's capacity to grow food. Malthus in his thesis suggested that population grows in geometrical progression while the food production grows in arithmetical progression. Despite the criticisms of this theory, it has over the years remained prominent in the discourse regarding hunger, the world's population carrying capacity and the need for increased agricultural technology to sustain food security. Malthus stressed that population increase most especially among the poor because they breed too rapidly and depriving the rest of the population of food. By implication, famine is seen as a natural defense against overpopulation. For instance, the relevance of this theory to the Nigerian situation is that the current production of food is far below the population requirement. Therefore, food production, distribution and consumption continued to be problem in sustaining food security in Nigeria.

Conclusion

Food security is sustainable as well as important to human security because a country's ability to procure and adequately distribute her food resources will help towards avoiding hunger and malnutrition amongst its populace. This is vital as food insecurity undermines a person's dignity and well-being in the contemporary Nigerian society. The paper has also established that agriculture is the primary means to generate income for the poor and secure their access to food in the country. Besides, improved crop varieties can enhance diet quality, diversity and foster the link between food and nutritional security. The paper concludes that micro-insurance for the Nigerian farmers would go a long way in sustaining the agricultural sector by strengthening food security. To this end, the improvement in agricultural productivity suggested by the theory of Malthus would make Nigerians to be in a better position to achieve self-sufficiency in food security.

Recommendations

For agriculture to be sustainable to boost food security, this paper recommends that nutrition or calorie intake should be enhanced among Nigerians to guarantee their capacity to participate in all spheres of political, economic and social life to equally move out of poverty.

Agriculture plays a key role in providing food availability globally, nationally and locally in some agriculture-based countries. It is an important source of income to purchase food with high nutritional status. The paper suggests that achieving food security requires adequate food availability, access and use by all and sundry. It is also recommends that holistic food system approaches should aim at empowering Nigerian farmers to ensure balanced and adequate nutrition and improved health for all in sustainable ways.

The paper also recommends that the Nigerian government should double her entire infrastructure for food production, water supply, housing and energy to maintain today's low standard of living in the country where both abundant mineral and natural resources are found. The paper further advocates that concerted efforts should be made by policy makers to increase the level of productivity in the agricultural sector in Nigeria by improving its expenditure so as to boost the growth of the economy. Since the agricultural sector contributes to GDP in Nigeria which is capable of changing social indictors of the economy, more attention should be given to the sector.

It is recommended that agricultural systems need to shift towards alternative methods of farming, while policy that is aimed at adequate financing the agricultural sector by government at all levels is considered crucial to boost food security in the country.

References

Adeolu, A. & Taiwo, A. (2004). The impact of national fadama facility in alleviating rural poverty and enhancing agricultural development in South-Western Nigeria. *Journal of Social Science, 9*(3), 157-161.

Agabi, C. (2013). How insurance can help solve hunger issues - Swiss report. *Daily Trust*, Tuesday, February 5, 31 (42), 19.

Agriculture Promotion Policy (2016). Building on the successes of the ATA, closing key gaps: policy and strategy document. Federal Ministry of Agriculture and Rural Development (FMARD), Abuja, Nigeria, June.

Ahmed, D. (2011). Making farming attractive in Nigeria. *New Nigerian Newspaper*, Wednesday, November 2, pp. 29.

Bonat, Z. K. A. (2016). *Agricultural development strategy and the crisis of agricultural production in Northern Nigeria*. A paper presented at the national conference on the theme: *The Economy, Society and Social Change in Nigeria, 1800 - 2016*. Organized by the Department of History, Faculty of Arts, Kaduna State University, PMB 2339, Kaduna, Nigeria, held at the Faculty of Art, Kaduna State University, Kaduna, September 4 – 7.

Chitambar, J. B. (1973). *Introductory rural sociology*. New Delhi: Wiley Eastern Ltd.

Combs, G. F., Welch, R. M., Duxbury, J. M., Uphoff, N. T. & Nesheim, M. C. (1996). *Food-based approaches to preventing micronutrient malnutrition: an international research agenda*. Ithaca, NY, USA: International Institute for Food, Agriculture, and Development, Cornell University.

Commission on Human Security (2003). Human security now. United Nations.

Dorayi, A. M. (2013). *Religion, ethnicity and corruption: challenges of national security*. A paper presented at a one day seminar organized by the Centre for Peace, Conflict and Security Studies (CPCASS) in collaboration with the Students' Representative Council (SRC), held at the Assembly Hall, Ahmadu Bello University, Zaria, February 2.

FAO (1996). *Socio-political and economic environment for food security*. Food and Agriculture Organization of the United Nations. World Bank Food Summit,. 1, (1.4).

FAO (2001). *The state of food and agriculture*. Available at: http://www.fao.org/docrep/003/x9800e/x9800e00.htm. Retrieved: October, 23, 2016.

Hossain, M., Naher, F. & Shahabuddin, Q. (2005). Food security and nutrition in Bangladesh: progress and determinants. International Rice Institute Manila, Philippines. *Electronic Journal of Agriculture and Development Economics*, eJADE, 2(2), 103-135.

Human Security Unit (2006). *Overview and objectives.* United Nations.

IFPRI (2005). Researching sustainable food security for all by 2020: getting the priorities and responsibilities right. *International Food Policy Research Institute*, pp. 1-8.

Information Section (2009). *Nigeria high commission*. London: February, 24.

Isa, A. U. (2014). *Strategy for ensuring food security in Taraba State, Nigeria*. A thesis submitted to the Department of Agricultural Extension, University Nigeria, Nsukka in partial fulfillment of the requirements for the award of Masters of Science in Agricultural Extension
Administration, August.

Kantiok, J. B. (2013). *Religion, ethnicity and corruption: challenges of national security*. Director's welcome speech presented at a one day seminar organized by the Centre for Peace, Conflict and Security Studies (CPCASS) in collaboration with the Students' Representative Council (SRC), held at the Assembly Hall, Ahmadu Bello University, Zaria, February 2.

Kudi, T. M., Usman, I., Akpoko, J. G. & Banta, A. L. (2008). Analysis of the impact of National Fadama development project II (NFDP II) in alleviating poverty among farmers in Giwa Local Government Area of Kaduna State, Nigeria. *Ozean Journal of Applied Sciences 1* (1).

Metu, A. G., Kalu, U. C. & Ezenekwe, R. U. (2015). Demographic pattern and sustainable development in Nigeria. In: Mbanefo, A.C. and Nnonyelu, A.N. (Eds.) *Challenges of Sustainable Development: A Social Sciences Approach*. Awka, Anambra State: Fab Anieh Nig. Ltd, pp. 129 - 140.

Metu, A. G., Okeyika, K. O. & Maduka, O. D. (2016). *Achieving sustainable food security in Nigeria: challenges and way forward*. Third international conference on African development issues. Ogun State, Nigeria: Covenant University Press.

Ojo, E. O. & Adebayo, P. F. (2012). Food security in Nigeria: an overview. European *Journal of Sustainable Development* 1(2), 199-222.

Requier-Desjardins, D. (2013). Innovation and social inclusion: how to reduce the vulnerability of rurals? In: Coudel, E., Devoutour, H., Soulard, C.T., Faure, G. & Hubert, B. (Eds.) *Reviewing Innovation Systems in Agriculture and Food: How to go towards more Sustainability*? The Netherlands: Wageningen Academic Publishers.

UNDP Nigerian Human Development Report (2008 - 2009).

World Bank (2001). *Poverty and hunger: issues and options for food security in developing countries*. USA: Washington DC, World Bank.

World Bank (2007). *World development report: agriculture for development*. Washington DC: World Bank.

World Development Report (2008). Washington DC: The World Bank.

World Development Report (2015). Washington DC: The World Bank.

Yakubu, L. L., Gadzama, I. U. & Mudiare, P. U. (2016). *The role of youth in agriculture: implication for food security in Nigeria*. A paper presented at the international conference on the theme: *Corruption, Security and National Development.* Organized by the Faculty of Social Sciences, Ahmadu Bello University, Zaria, Kaduna State, Nigeria, September, 28 – 30.