



**FEDERAL UNIVERSITY OF TECHNOLOGY  
MINNA**

**IRRIGATION DEVELOPMENT AND  
FOOD SECURITY IN NIGERIA**

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**INAUGURAL LECTURE SERIES 15**

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## 1. Introduction

It is a well-known fact that Nigeria is largely a food-insecure nation. Overwhelmingly large proportions of both the rural and urban populations have no access to adequate food of the right quantity and quality. Domestic food demand has continued to outstrip supply, resulting in high food prices which are further driven through the roof by the high agricultural production costs. Even the resort to massive food importation witnessed over the years has not succeeded in reducing prices to levels that would permit access to adequate food by a major proportion of the poverty-stricken population. The food security situation in the country has been further exacerbated by the soaring world food prices. The effect of the global food crisis and the high prices of food, particularly grains, which it engendered, has been felt most severely in sub-Saharan African countries most of which rely heavily on imported food and food aid. Nigeria was not insulated from this shock which began about 2008. The salutary lesson of the global food crisis should be that as much as possible, any serious country has to look inwards by producing most of the food she consumes. Reliance on food imports is usually costly (and a heavy drain on scarce foreign exchange), unreliable and impinges on the dignity and self-respect of a nation.

It is paradoxical that Nigeria should be grappling with the problem of food security. The country has an estimated land area of 94 million hectares, most of which is suitable for agricultural production. In fact, the country still has abundant land which has not been cultivated. Land is perhaps, the most critical input in agricultural production and the country has this in abundance. Furthermore, not less than 60% of Nigeria's labour force is engaged in agricultural production. Why then, should the country be unable to feed herself even when so much resources are committed to the agricultural sector?

The woes of Nigeria's food security situation could also not be attributed to a lack of well-intentioned policies and programmes aimed at transforming the agricultural sector. In fact, successive governments in Nigeria have over the years, rolled out a plethora of programmes which were intended to raise agricultural production in order to ensure food security, reduce poverty and supply raw materials to the agro-allied industry. Some of these are the National Accelerated Food Production Programme (introduced in 1972), Operation Feed the Nation (1976), River Basin Development Authorities (1976), Agricultural Credit Guarantee Scheme (1977), Green Revolution Programme (1979), World Bank-assisted Agricultural Development Projects (1986), the Directorate of Foods, Roads and Rural Infrastructure (1986), Better Life Programme (1989), National Agricultural Land Development Authority (1991), National Fadma Development Programme (1993), Family Support Programme (1995), Family Economic Advancement Programme (1997), and National Poverty Eradication Programme (2001).

In spite of these efforts, the agricultural sector has not adequately responded to the food and raw materials requirements of the country. The problem is that the sector is dominated by smallholders, most of whom still use traditional inputs and tools and are characterised by low productivity.

## 2. Nigeria's Agricultural Sector

Nigeria's agriculture is largely rainfed. However, considerable investment has also been made in irrigation infrastructure which is yet to make the desired impact on food security in the country. Both rainfed and irrigated agriculture are dominated by small-scale farmers most of whom cultivate less than five hectares. These farmers use traditional tools and inputs in the production process. The production is characterised by low productivity. The low productivity on individual farms has resulted in low aggregate food production for the country as a whole. The causes of low agricultural productivity are numerous but have been too adequately documented elsewhere (see for instance Baba, 2009) to warrant a full listing here. Suffice it to highlight some of the more important ones as follows:

One of the major causes of low productivity is inappropriate agricultural technologies. In spite of several decades of agricultural research and extension, agricultural scientists have not been able to substantially change the production systems of many Nigerian farmers. There appears to be a wide gap between research and the farmers. Majority of the farmers continue to use traditional, but time-tested technologies in spite of far "superior" modern ones developed by research. This has resulted in wide disparities between potential and actual crop and livestock yields. It will be difficult to achieve food security in Nigeria without modernisation of the production systems.

Another important cause of low productivity is inadequate supply and high cost of production inputs. Two of the modern inputs that triggered the Green Revolution in Asia are high-yield seeds and fertilizer. But the level of use of these inputs in Nigeria in particular, and Africa generally, is still very low because they are out of the reach of the resource poor farmers. It is reported for instance, that fertilizer use in sub-Saharan Africa is at an average of 8kg/ha, representing only 9% of world average. This is in spite of the promising resolutions reached by African leaders at the "All African Fertilizer Summit" held at Abuja in 2006 (Iwunna, 2009).

Low agricultural productivity is also caused by the small, uneconomic production units of the farmers. Most Nigerian farmers operate on very small and often fragmented land holdings. Some rigidities, including unsuitable land tenure arrangements, low levels of capital, and high costs of labour and material inputs, seem to have limited the sizes of farms farmers could effectively maintain, thereby denying them the benefits of scale economies.

Poor development of vital infrastructural facilities is yet another factor limiting agricultural productivity. For instance, rural roads and other avenue for transportation (which could ease market access for both input purchase and output disposal) are not adequately developed. This, in addition to poor storage facilities, poor market information, long marketing channels and high number of middlemen, has resulted in inefficient marketing system which, in turn, does not give farmers the needed incentive (in terms of remunerative prices) to increase production. For instance, prices of agricultural products which are sometimes so high at the retail level as to prohibit consumption do not

adequately reflect at the farmers' level to stimulate production.

There is also the problem of low investment in agriculture. Investment in agriculture at the level of government and individual farmers is very low. Investment at the individual farmer level is also low mainly because most of the farmers are poor, but also because they have limited access to credit. The resulting under-capitalisation has negative implications, not just for farm sizes, but also for the purchase and use of improved inputs and, *ipso facto*, agricultural yields.

Finally, there is the problem of an almost complete reliance on rainfall by the farmers because of limited development of irrigation facilities. It is a fact that a great proportion of Nigeria's land mass falls within the semi-arid zone receiving limited rainfall spread over a period of five months or less. This implies that without irrigation, farm resources are idle or remain underutilised for at least seven months in a year and no agricultural output could be obtained. Reliance on rainfall alone is becoming even more precarious in view of climate change. As pointed out by Janneh (2008), climate change is resulting in falling precipitation and increased climate variability resulting in low yields. Irrigation is becoming increasingly imperative for efforts aimed at attaining food security. The purpose of this Lecture therefore, is to demonstrate the potential role that effective irrigation development could play in the attainment of food security in Nigeria.

### **3. Human and Food Security**

#### **3.1 Human Security**

The common notion of human security is freedom from violence that may hurt, injure or harm human beings as individuals. But it has been argued that the concept must be viewed in a broader sense to include not only freedom from physical violence or its threat, but also from hunger, disease, poverty, illiteracy, environmental pollution or degradation, powerlessness and oppressive structures. For example, the draft African Non-Aggression and Common Defence Pact states: "human security means the security of the individual with respect to the satisfaction of the basic needs of life; it also encompasses the creation of the social, political, economic, military, environmental and cultural conditions necessary for the survival, livelihood, and dignity of the individual, including the protection of fundamental freedoms, the respect for human rights, good governance, access to education, healthcare, and ensuring that each individual has opportunities and choices to fulfill his/her own potential" (Cilliers, 2004). According to Poku *et al.* (2007), the new notion of human security has to do with the challenge of meeting the basic needs and aspirations of millions of people in Africa, Asia and beyond. In other words, contemporary view of security is tied to the complex and multiple challenges of development.

#### **3.2 The Concept of Food Security**

Food security is said to exist when "all people at all times have access to safe nutritious food to maintain a healthy and active life" (FAO, 1996). Food security is not just a production matter. The World Bank (2001) as cited in Obamiro *et al.* (2003) identified

three pillars underpinning food security; these are food availability, food accessibility, and food utilization. Food availability for the farm household means ensuring sufficient food is available for them, through own production, throughout the year. Food accessibility means that it should be affordable. Food utilization means ensuring a good nutritional outcome (Obamiro *et al.*, 2003). For there to be food security therefore, food must be available, affordable and of the right nutritional quality (Baba, 2009). And to achieve this, you either produce what you need or you have adequate income to purchase food of the right quantity and quality. Unfortunately, Nigeria and most other countries in Africa are not food secure. The United Nations has designated 82 countries as low-income food deficit countries; 42 of those are in Africa ((Fleshman, 2008). Further, of the 36 countries identified by the United Nations Food and Agriculture Organization (FAO) to be in the grip of a food security crisis, 21 are in Africa. It is worrisome that even the food producers suffer from food insecurity because of low yields and incomes.

### **3.3 Agriculture and Food Security**

Given the broad view of human security, it is not difficult to establish that there can be no human security without food security. Food security has direct bearing on many other dimensions of human security. For instance, people who are food insecure are not likely to be healthy and are unlikely to be in a position to seriously think about conquering other necessities of life that would have given them a comprehensive human security. In fact, where the population of hungry people is large, there is potential for instability and conflict, implying that food insecurity is a precursor to other forms of human insecurity. Furthermore, hungry or undernourished people cannot contribute meaningfully to the development process because of their reduced capacity for productive work. In fact, it is estimated that malnutrition could cause a 6% reduction in GDP of developing countries (Sheeran, 2009).

The development of the country's agriculture is perhaps the most feasible way of ensuring food and human security. A developed agricultural sector would raise productivity and increase aggregate food production which would be expected to increase food availability and accessibility. In addition, given that a large proportion (60-70%) of Nigeria's labour force is employed in the agricultural sector, increased agricultural production is likely to raise the income of the populace, thereby reducing poverty. Poverty is a well-known threat to food security. When people have money in their pockets and food is available, the problem of food insecurity is attenuated. Furthermore, health is related to nutrition. A developed agricultural sector that provides adequate nutrition for the people is also improving their health. Poor health is a human security threat which could to some extent, be avoided by adequate and appropriate food intake. In fact, in the Nigerian and African context where agriculture still depends largely on manual labour, health and agriculture are mutually reinforcing (Baba, 2009). A healthy person is able to produce more food which also enhances his/her health by making available more food.

