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Food Security in Sub-Saharan Africa: A Case Study

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Abstract

The purpose of this study is to explore the social and economic factors that led to the recent surge in food prices in Sub-Saharan Africa. The analysis suggests that the surge in food prices results from an increasing demand for food such as dairy products in developing regions. Another contributing factor is the demand for fuel-crops, such as wheat, maize, sugarcane and oilseeds for the production of bio-fuels, bio-electricity, and bio-heat. The analysis finds that these factors have contributed to the global food security with major social and economic implications for Sub-Saharan Africa where poor households survive on less than a dollar a day. In sum, the study contends that social and economic safety nets should be provided to poor households to combat the adverse effects of high food prices, and suggests that sustainable traditional approaches to agricultural development must be adopted in order to better address food security in Sub-Saharan Africa.

Keywords: Food security, economic safety nets, agricultural development, green house effects, developing economies

Introduction

The World Food Summit in 1996 defined food security as a condition that exist “when all people at all times have access to sufficient, safe, and nutritious food to maintain a healthy and active life (World Health, 2009). The problem of food security in developing countries is severe. Particularly in Africa, where 210 million people are undernourished, this translates into one quarter of the population. In Sub-Saharan Africa (SSA), 30 percent of children under age five are under weight (Wiggins, 2008). Factors that have contributed to this problem include general demographic trends in third world nations that are caused by more mouths to feed, public policies that are not consistent with development realities, and crude farming methods (Oritsejafor, 2004).

Moreover, the recent global demand for food and the increased demand for bio-fuels have brought about the need to further examine food security and its implications for

developing countries and SSA in particular (Wiggins, 2008). Bio-fuels are important because they decrease the dependency on petroleum oil, and it is claimed to be environmentally safe by some environmentalists. Nevertheless, the quest for bio-fuels, especially in developed economies, appears to be contributing to food insecurity in developing economies.

This analysis suggests that alternative sources of energy such as bio-fuels are needed to decrease the dependency on petroleum oil. Along the same line, developing countries, particularly those in Sub-Saharan Africa, are most likely to be affected by the use of fuel crops such as wheat, maize, and sugarcane to support the bio-fuels industries. Therefore, these countries should consider implementing socio-economic programs such as school feeding, comprehensive education, and provide food subsidies to poor households in order to better address food security challenges in a region that is vulnerable to poverty. The next section provides a theoretical perspective on agricultural development in Sub-Saharan Africa.

Theoretical Perspective

There are four dominant orientations often used by development agencies, policy makers and some social scientists for addressing food security in Africa: dualism, agro-technological, socio-anthropological, and the development orientation. The analysis includes the approaches employed by each model and their implications for addressing food security in Sub-Saharan Africa. It also discusses how the use of fuel crops for bio-fuels has contributed to food security in this region.

The theoretical works on economic development by the Keynesian school of thought provides some of the dominant orientations in the effort to explain the problem of economic decline in developing countries. However, this school of thought appears to have had an enormous influence on contemporary neoclassical theoretical models used for explaining agricultural development in developing regions. Examples of such models are the Bohemian notions of static dualism and the Higginian dynamic dualism.

The first neo-classical orientation, dualism, uses the growth model as the point of departure for its own model of economic development. Hayami and Ruttan (1971, 19) in their essay on agricultural development, define dualism as: "The attempt to understand the relationship or the lack of a relationship between a lagging traditional sector and a growing modern sector within non-western societies affected by the economic and military institutions of western colonialism."

Within this orientation, dualism can be seen as either static or dynamic, that is, from a sociological and technological perspective. However, static dualism is concerned with the description of the two sectors of the economy, showing the static nature of the traditional sector

African Social Science Review

while concurrently recommending that such sectors are best left alone (Hayami & Ruttan, 1971,19). Boeke (1953) in his study of Dutch colonialism in Indonesia provides this thesis on dualism: the traditional sector, he claimed, could never be transformed by outside resources and materials. Thus, any attempt to transform this sector would only result in the continuance of its inherent problems. The general outcome of this recommendation by Boeke has further encouraged the emergence of the enclave model of growth within which has emerged the perspective that a high productivity sector producing for export must co-exist with a low productivity sector producing for domestic consumption (Boeke, 1953).

Winger (1976) on the other hand, elaborates on “enclave dualism.” He views dualism on the basis of the technological differences between the modern and the traditional sectors. The modern sector is concentrating on the primary production of commodities in mining and plantation through its importation of technology from outside while the traditional sector is characterized by wide substitution possibilities between capital and labor and the use of labor intensive production methods.

Lewis (1954) study on developing countries has likewise made an equal contribution to the understanding of the neo-classical orientation of dualism. Lewis’ analysis is mainly concerned with exploring the relationship between the modern and the traditional sectors. His analysis views the developing countries as characterized by an unlimited labor supply in the rural sector, but if this supply is carefully utilized, it can lead to needed economic development in both the traditional and modern sectors. This model has failed to produce the desired results in most developing countries because policy makers and development agencies have not been able to strengthen the relationship between the traditional and modern sectors of their economies.

The second orientation that has been utilized in explaining the reason for rural agricultural decline in Africa is the agro-technological orientation. This orientation seems to have the greatest impact on the development strategies that are designed to help ameliorate productivity problems in the agricultural sector. The most important model within this orientation is the diffusionist model. This model is premised on the belief that new farming methods that have been discovered in developed nations would inevitably lead to high agricultural productivity when transferred to developing countries (Schultz, 1964).

The third neo-classical orientation frequently used in explaining the problem of agricultural productivity in developing economies is the socio-anthropological approach. This approach is concerned with the question of why traditional farmers in developing economies seem to have a negative perception of programs directed at transforming their development. Thus, proponents of this approach suggest that developing agencies cannot become successful in transforming traditional societies until they take into account the values and social orientations of these societies because they are conditioned by long periods of traditionalism. Thus, change in these societies will occur slowly or, in some cases, never occur (Foster, 1967).

However, scholars such as Mouzeli (1980), Brett (1973), and Amin (1976) reject the growth criteria of the neoclassical orientations, where quantitative increases in such indexes as Gross Domestic Product (GDP) and per capita income are yardsticks for measuring development. Instead, they argue that development should be examined through a country's actual economic, political, cultural structure, and their historical development within the context of the world economy. In this regard, Amin (1976, 201-202) contends that underdeveloped countries have certain characteristics that oblige us not to confuse them with the now advanced countries. These characteristics are as follows:

1. The extreme unevenness that is typical of the distribution of productivities in the periphery and in the system of prices transmitted to it from the center;
2. The disarticulation due to the adjustment of the orientation of production in the periphery to the needs of the center, which prevents the transmission of the benefits of economic progress from the poles of development to the economy as a whole; and
3. Economic domination by the center, which is expressed in the forms of international specialization and in the dependence of the structures whereby growth in the periphery is financed (Amin, 1976, 201-202).

However, given the challenges of sustainable agriculture development in Sub-Saharan Africa, the primary use of modern agricultural practices such as biotechnology has not been sustainable. Instead, alternative agricultural development approaches, such as the use of traditional farming methods with modern agricultural practices, must be examined (Oritsejafor, 2004). In this regard, Gana (2003) focused on the use of natural plant materials as agro-chemicals among small-scale farmers in three villages in Niger State in Northern Nigeria. The study revealed that these farmers were able to reduce and control the population of cowpea pests in the field and parasitic nematodes found in the soil with the use of botanic chemicals as alternative to the use of toxic-synthetic agro-chemicals.

In another study, Ajibade and Shokemi (2003, 37-44) found that indigenous knowledge (Ik) was used effectively by 95 percent of 200 farmers to identify five weather systems such as rainfall, harmattan, thunderstorm, windstorm, and sunshine. The study suggests that if IK is integrated with a western-based weather forecast system, it could prove to be an essential element of the development process for farm communities in Nigeria.

Similarly, in other developing countries such as Bangladesh, farmers use the store of knowledge they have built overtime to enhance food production. Thus, IK has become an integral part of agricultural development in Bangladesh. For example, in the absence of sufficient natural forests in Bangladesh, more than 50 percent of timber, 85 percent of fuel-wood and 90 percent of bamboo used are derived from trees and shrubs grown by people on

African Social Science Review

their homesteads (Qudus, 2000). In this case, IK is integrated with modern technology to address farm forestry challenges that were caused by over-exploitation of homesteads for food crops and medicinal resources.

The purpose of this study is to explore the social and economic factors that contributed to the current surge in food and oil prices and the implications for food security in Sub-Saharan Africa. In this regard, Hellegers, Stedto, and McCormick (2008), Schmitz, and Kavallari, (2009) and Stoeglehner and Nardodoslawsky, (2009) extensively discussed the challenge of the use of fuel crops to address the increasing demand for bio-fuels and the need to strengthen food security in developing regions. In the case of Sub-Saharan Africa, the current food crises is not sudden, it has been evolving for at least three decades. Since the 1980s, most countries in the region appear to have neglected agriculture as evidenced by low crops yield (Ngongi, 2008). Factors that have contributed to the neglect of the agricultural sector are numerous and are not limited to ill-conceived public policies that have attempted to shift emphasis to other economic sectors such as the production of crude oil as in the case of Nigeria. In other instances, sub-Saharan African countries are challenged by poor agricultural infrastructures and natural disasters such as drought. The next section of this analysis examines the evolving surge in food and oil prices for poor households in Sub-Saharan Africa.

The Surge in Food and Fuel Prices

Over the past 100 years, the world has witnessed three major surges in food prices. The first occurred after World War II, the second took place in the 1970s, and third, which began in 2007, is still current (Von Braun, 2008). However, there are several factors that have led to the recent increase in food prices: (1) full liberalization of the agricultural markets, (2) rising income in some developing countries in Asia, and (3) the demand for bio-fuels.

The prices of agricultural commodities such as food crops have reached astronomical levels in recent years, while world agricultural markets are developing rapidly (Schmitz & Kavallari, 2009). The recent rise in food prices became noticeable in 2007 when wheat prices rose by 77 percent and rice by 16 percent. These increases in food prices were the sharpest ever (Economist, 2008, 32). Experts claimed that this trend will remain as such in the long run (Schmitz & Kavallaris, 2009). Figure 1 shows that the price of staple foods such as rice, maize, and wheat started to accelerate as of January 2008 (Economist, 2008, 32).

Figure 1: Grain Prices 2007-2008

Source: *The Economist*, "The New Face of Hunger" April 19th, 2008, 32.

The harsh impact of the current increases in the price of food is likely to be felt by those Sub-Saharan African counties that are already facing declining food supplies. Schmitz and Kavallari (2009, 4020) note that the economic impact of the surge in food prices is already noticeable in many developing and transition countries, where, in 2007, the food prices rose from 20 to 25 percent and household food expenditure is about 75 percent of their budget for food. Accordingly, the World Bank (2008, 3) reported that increasingly, the soaring food prices will result in more people in poor countries being pushed to poverty, and the most serious long term impacts may come from their effect on those that are already poor. The converging estimates on the global increase in the number of poor as a result of the food crisis average between 3 to 5 percentage points in the global poverty rates; an equivalent of 100 million people (World Bank, 2008, 3).

As indicated in the preceding passage, approximately 210 million people in Africa are estimated to be undernourished, which translates into one quarter of the population (Wiggins, 2008, 10-11). With the recent rise in food prices developing economies such as those in Africa will be profoundly affected (Wiggins, 2008). Sub-Saharan African countries appear vulnerable to high food prices because the region is a net importer of cereals, especially rice and wheat,

valued at \$3.5 billion in 2006 (World Bank, 2008, 7). The predominance of rice and wheat as a local staple suggests that the continuous rise in the global prices of these cereals would have an adverse impact on the poor in this region (World Bank, 2008). Already, the current food crisis has sparked civil unrest in approximately 30 developing economies of Africa, Asia and Latin America. Some of these countries are Cameroon, Ivory Coast, Burkina Faso, Ethiopia, Senegal, Madagascar, Mozambique, Egypt, Haiti, Bangladesh, Indonesia, and Malaysia. Protests in these countries have resulted in the loss of lives (Stringer, 2008), and, in some cases, changes in governments. For example, in Haiti, the Prime Minister resigned because of intense political pressure as a result of food demand and the related soaring cost of food (Economist, 2008). The next section of this analysis draws out salient factors that have contributed to the increasing food demand and its effects in developing economies such as those in Sub-Saharan Africa.

Food versus Oil: Competing Interests?

One of the factors that have contributed to the recent rise in food prices is the full liberalization of the agricultural markets, which has consequently led to an increase in the prices of agricultural raw materials by 5.5 percentage and for food prices by about 1.3 percentage (Schmitz & Kavallari, 2009, 4020). The decline of the stocks of essential agricultural commodities in recent years has also contributed to the increase in global food prices. Consequently, this has led to a supply deficit in agricultural commodities (Schmitz & Kavallari, 2009).

The surge in food prices in 2007 through 2008 is also attributed to the rising demand for dairy, meat and feed in China, India and other parts of Asia. The impetus for this trend, according to the Director General of the International Food Policy Research Institute (IFPRI), stems from rising incomes in these developing regions (Von Braun, 2008). For instance, ECA international salary trends surveys for 2007-2008 show that salaries rose in China from the 7.3 percent, and average for Asia to 8 percent and above the global average of 5.9 percent (ECA International Statistics, 2009, 1).

Another factor that has led to the rise in global food prices is the high demand for fuel-crops such as wheat, maize, sugarcane and oilseeds for the production of bio-fuels, bio-electricity, and bio-heat in oil importing developed economies such as the United States (Schmitz & Kavallari, 2009). The ethanol industry statistics forecast from 2008 through 2012 shows that world ethanol production will exceed 20 billion gallons by 2012 (Ethanol Industry Statistics, 2009, 1). The projections for world ethanol production in the next four years underscore the increasing importance of bio-fuels as an alternative to fossil fuels.

The demand for alternative energy stems from the need to reduce green house gas emissions and the dependency on petroleum based oil with its attendant unpredictable market-driven price (Balat & Balat, 2009). To promote the production of alternative energy, such as ethanol for transportation, the United States national policies, such as the Energy Policy Act of 2005, targeted 28.4 billion liters consumption of bio-ethanol by 2012. The Act provided and extended the bio-diesel fuel excise tax credit through 2008 and provided a \$0.03 per liter income tax credit to small bio-diesel producers in the United States. Despite these measures and incentives to support bio-fuels, the price of fossil-fuels continued to surge over \$0.79 per liter in the spring of 2007 and remained constant during the summer, except for a slight retreat, but returned to the same price at the beginning of 2008 (Balat & Balat, 2009, 2274).

Nonetheless, the rising demand for fuel-crops such as wheat, sugar cane, and maize is bound to have a mixed and profound effect on most Sub-Saharan African countries. On the one hand, the use of bio-fuels as alternative sources of energy in Sub-Saharan Africa is likely to reduce the dependency on petroleum oil. This could be the case because 39 countries in Africa are net importers of petroleum oil and about 39 percent of the total energy consumed in Sub-Saharan Africa is imported against the world average of 19 percent (Mulugetta, 2009, 1593).

On the other hand, the reliance on bio-fuels in Sub-Saharan Africa would most likely reduce greenhouse effects and the emissions of carbon monoxide and carbon dioxide. This is especially significant for Sub-Saharan Africa economically and environmentally because it could reduce the cost of road transportation. Road transportation is the primary method of moving goods and services in the region. This commercial area accounts for about 85 percent of the total fossil fuel used in the transportation sector. Diesel fuel accounts for over 55 percent of the fuel consumption in this sector (Mulugetta, 2009, 1592).

The demand for bio-fuels in developed and developing economies also presents major challenges for food security. This demand potentially will lead to increase pressure to clear land for farming in order to increase the production of fuel crops such as sugarcane for ethanol and palm oil plantations for bio-diesel. However, the clearing of mass areas of land for farming presents major threats to animal and plant diversity (Mulugetta, 2009).

With the price of crude oil expected to continue to rise, investments in fuel crops production and the attendant competition for land is likely to lead to increased pressure on farm based economies to produce alternative food crops (Mulugetta, 2009). This was the case in Latin America and the Horn of Africa when farmers switched from growing traditional food crops and coffee to coca and quinoa production as a response to diminishing returns in the food commodities sector. The demand for fuel crops has emerged at a time when the world food stocks are at their lowest level in about 40 years. With 76 million more people to feed each year, this presents enormous social and economic challenges for Sub-Saharan Africa, especially with the extensive number of “food deficits in the region” (Mulugetta, 2009, 1593).

African Social Science Review

The next section of this paper examines the social and economic implications of the rise in food and fuel prices in 2007 and 2008, followed by policy recommendations and conclusions.

Social and Economic Effects of the Food Tsunami

Though there has been some moderation in the rising food and oil prices, millions of people in Sub-Saharan Africa continue to face enormous social and economic challenges. They are confronted with high domestic food and oil prices and declining nutrition and investment in their children's schooling (World Bank, 2008).

As stated earlier, a number of factors sparked the sharp rise in food and oil prices between 2007 and 2008. Oil markets experienced increasing prices as a result of demand drivers and slow supply responses. Also, the decline in interest rates and the depreciation of the U.S. dollar contributed to the peak in crude prices to \$147 per barrel in July 2008, but it later declined by 30 percent in September 2008 (World Bank, 2008, 2).

The surge in food prices was driven by the combination of the rising fuel costs, the demand for fuel-crops for bio-fuel production, and trade restrictions that had led to upward price pressures (World Bank, 2008). The World Bank projected that the price of grains and other major food crops would double their 2004 levels through 2015. This trend is being experienced in developing economies where the rising global price of major food crops has affected domestic prices (World Bank, 2008). For example, median inflation in non Organization for Economic Cooperation Development (OECD) countries peaked from 5 percent in 2006 to 8.1 percent in 2008 and inflation increased by more than 5 percentage points in 21 countries (World Bank, 2008, 2). In the case of Sub-Saharan Africa, price inflation was higher than the 2005 through 2007 average at about 14 percent (World Bank, 2008, 13).

The rise in food prices has also led to an increase in the number of poor people. The overall estimate on the global increase in the number of poor people, as a result of the food crisis averages between 3-5 percentage points in global poverty rates, which is equivalent to around 100 million people (World Bank, 2008, 3). This number is profound in developing regions such as Sub-Saharan Africa, where millions live on less than a dollar a day and the rate of unemployment and income inequality is among the highest in the world (Guseh and Oritsejafor, 2009). Recent estimates have also shown that poverty is deepening among those that are already poor. For instance, developing countries have witnessed 88 percent of the increase in urban poverty depth as a result of rising food prices (World Bank, 2008, 3).

In addition, the surging food prices have also led to some households eating less in developing economies. Thus, poor households have begun to switch from nutritious sources of

food, such as fish, meat, and eggs, to less nutritious cereals. It is in this regard that Sheeran (2008, 12) suggests that:

People living on less than a US \$2 a day have cut out health and education and sold or eaten their livestock. Those living less than US \$1 a day have cut protein and vegetables from their diet.

The implications of such a nutritional switch are micro-nutrient deficiencies in iron, iodine, and vitamins. Consequently, this will lead to weight loss and acute malnutrition among poor households (World Bank, 2008).

In a region where food security is a challenge, the World Bank reported in a recent study that malnutrition is profound in Sub-Saharan Africa. Thirty-four Sub-Saharan African countries in the sample collected by the World Bank were experiencing high malnutrition rates (World Bank, 2008). According to the study, 24 percent of Sub-Saharan Africa Children have stunted growth, which is nearly five times that of China (World Bank, 2008, 4).

The high food and fuel prices have created pressures on poor households to withdraw their children from schools. The direct and indirect educational costs on families, such as school fees, transportation, and uniforms, have become unaffordable for most households. Evidence from developing countries such as Brazil, Peru, and Bangladesh underscores the relationship between loss of income and schooling and the current surge in food prices (World Bank, 2008). For instance, a longitudinal study in Brazil shows that sudden loss of primary household income could lead to 50 percent higher probability of a female youth leaving school to seek employment while evidence from Peru suggests that economic factors affect the quality of education a child receives as a result of reduced private spending on education (World Bank, 2008, 5).

The next section examines policy options and provides an assessment on best practices in developing countries that could be implemented in Sub-Saharan Africa to address the social and economic effects of the surge in food prices.

Policy Options and Assessment

Given the social and economic implications of the current food crisis policy makers and development agencies would need to provide safety nets for poor households in developing regions. The ability to address the adverse effects of high food prices would require policy options and an assessment of best practices in Sub-Saharan Africa and other developing regions. Thus, the following recommendations are proffered:

African Social Science Review

1. *Food and transport vouchers*: Programs that have used food vouchers have been known to be successful in some developing countries, though there is less experience with transport vouchers. The challenge of distributing near cash instruments such as vouchers is that benefits are amenable to diversion when compared to cash transfers. For example, Indonesia has been successful in the implementation of a time-limited cash transfer program to about one-third of its population in order to absorb the shocks of food and oil prices (World Bank, 2008);
2. *School feeding*: School feeding programs are increasingly popular in developing countries; particularly in sub-Saharan Africa. Countries such as Ghana, Benin, Burundi, Liberia, Lesotho, Sierra Leone, Senegal, Mauritania, and Mozambique have all implemented school feeding programs. However, the benefits of school feeding could be enhanced through increasing funding (World Bank, 2008);
3. *Comprehensive education*: To alleviate the present social and economic impact of high food prices on poor households, social protection should be implemented to reduce the pressures of children being pulled out of school. For example, in Ghana, primary school enrollments have peaked by 14 percent after user- fees were abolished in 2005 (World Bank, 2008, 8);
4. *Nutrition and health options*: Eating less and switching from expensive sources of protein such as fish, meat, and eggs to cheaper cereal will invariably have long term health consequence for poor households. Younger children and pregnant women are more susceptible to weight loss and malnutrition (World Bank, 2008). Therefore, national governments and multilateral institutions must collaboratively intervene to address food and health-care shortages during crisis periods to the poor households (World Bank, 2008);
5. *Food taxes and subsidies*: Several countries have implemented programs to reduce food taxes and increase subsidies. For example, in North Africa, Egypt has increased the ration of food subsidies and in Latin America, Brazil has increased the benefits of the Bolsa Familia conditional cash transfer (World Bank, 2008);
6. *Alternative sources of energy*: Given the pressure to seek alternative sources of energy partly because of the costs and partly because of the declining production of fossil-fuels, scientists have begun to seek alternative sources of energy such as solar energy and bio-fuels. However, this analysis suggests that in light of some of the environmental advantages of bio-fuels, its advantages may not augur well for poor farmers and food security. For instance, the use of palm oil, an edible for bio-fuels, has been promoted by some scientists in Malaysia. However, the concern is that the conversion of food crops such as palm nut for bio-diesel would consequently lead to undernourishment among millions in developing countries that depend on palm oil for

their daily nutrition (Keelam, Tan and Lee, 2009). Moreover, the use of bio-fuels such as bio-diesel, as an alternative source of transportation energy is fraught with production costs because the price and availability of the main by-product, glycerin, presents economic and environmental issues (Bezergianni and Kalogianni, 2009). It is against this backdrop that alternative sources of energy, such as used cooking oil, should be explored as a feedstock for biodiesel production.

In addition to the recommendations provided to address the adverse social and economic effects of high food prices in Sub-Saharan Africa. This study offers an alternative approach for addressing food security. Thus, the next section examines how “Traditional Management Regimes” and the empowerment of farmers could enhance food security in Sub-Saharan Africa.

Traditional Management Regimes and Food Security

Traditional Management Regimes refers to the processes and products of agricultural diversification. It includes the ways in which farmers use the natural diversity of the environment for production, the management of water and land (Gyasi et al., 2004).

Given the challenge of food security in Sub-Saharan Africa, it is instructive that policymakers and development agencies should continue to embrace and encourage agro-diversity and traditional farming practices. The use of indigenous methods for managing the land, water, and biota for crop and livestock production is not only a practical approach for addressing food security; it is also less capital intensive and sustainable. Table 1 provides examples of traditional food management regimes in southern Ghana and their advantages.

Traditional food management regimes have also been successfully adopted in other developing regions such as Southwest Asia. For example, Bangladesh has developed an array of sophisticated farm practices to sustain their agricultural needs. For instance, Neem leaves are dried to protect stored grains from insect infestation (Qudus, 2000).

In light of the challenges that the recent rise in food prices presents to developing economies, farmers in these countries must be empowered socially and economically. This is particularly the case in Sub-Saharan Africa where about 70 percent of the population live in rural areas and depend mainly on agriculture (United Nations Economic and Social Council, 2007, 1). African countries also represent about 50 percent of the top 20 countries in terms of total agriculture exported merchandise in the world (UN Economic and Social Council, 2007, 1), and women are responsible for about 80 percent of the total food production (CPAR, Annual Report, 2009, 1).

TABLE 1: Management Regimes and Traditional Agricultural Practices in Southern Ghana

Practices/Regimes	Major advantages
Minimal tillage and controlled use of fire for vegetation clearance, mixed cropping, crop rotation and mixed farming	Minimal disturbance of soil and biota. Maximize soil nutrient usage.
Traditional agro-forestry: cultivating crops among trees left in situ	Conserves trees; regenerates soil fertility through biomass litter. Some trees add to productive capacity of soil by nitrogen fixation.
Bush fallow/ land rotation	A means of regenerating soil fertility and conserving plants in the wild.
Usage of household refuse and manure in home gardens and compound farms.	Sustains soil productivity.

Source: Gyasi, A. Edwin, Gordana, Kranjac-Berisavljevic, Essie T. Blay, and William Oduro (2004) *Managing Agro diversity the Traditional Way: Lessons from West Africa in Sustainable Use of Biodiversity and Related Natural Resources*, New York, NY: United Nations University Press, p.58.

Despite the pivotal role of women in food production they continue to face several social and economic constraints. Thus, in order to empower farming communities in Sub-Saharan Africa and address food security, one has to examine the implications of such intervention for women farmers. The following are examples of some of the social and economic constraints that rural women farmers face in Sub-Saharan Africa:

1. Less access to land than men. The land tenure systems in most Sub-Saharan African countries seem to be porous and are typically gender bias. Even in cases that women farmers own land, the land is often located in marginal areas (CPAR Annual Report, 2009);
2. Women farmers have less access to credit which often limits their ability to purchase seeds and fertilizers and other farm inputs (CPAR, Annual Report, 2009);
3. The role of rural women farmers as mothers and in some cases bread winner's is vital to household food security. However, they are further challenged by the lack of access

- to adequate healthcare facilities (Prakash, 2003, 11); and
4. Women farmers are also challenged by lack of educational facilities. Most rural educational infrastructures are weak and in most cases do not address the social economic realities of rural communities.

To address these challenges, countries such as Malawi, Uganda, Tanzania and Ethiopia have established partnerships with local and international non-governmental organizations (NGOs) such as the Canadian Physician for Aid and Relief (CPAR) to develop intervention programs focusing on food security for rural women farmers in Sub-Saharan Africa (CPAR, Annual Report, 2009). One of such programs is the *Farmers First Program*. The program identified the following interventions for addressing food security for women:

1. Entrepreneurship training for women and training women in the use of fuel efficiency stove for cooking in order to limit the time they spend in collecting woods for cooking;
2. Health education sessions on family planning and HIV prevention;
3. In Tanzania CPAR has developed a training program in soil conservation and provides labor saving devices such as ploughs and wheel barrels for local farmers; and
4. Training programs have been developed in Malawi, Tanzania, Uganda and Ethiopia for equipping women farmers on food processing, budgeting, management of household consumption and production for better nutritional outcomes.

Training are provided to improve crop storage facilities and other farm based asset needs such as support to construct vitamin rich food gardens and to keep specific livestock types (CPAR, 2009).

Concluding Remarks

The surge in food and oil prices between 2007 and 2008 was sparked by several factors. For example, the oil market experienced increased prices as a result of demand drivers and slow supply responses. Also, the decline in interest rates and the depreciation in the value of the U.S. dollar also contributed to the peak in crude prices at \$147 per barrel in July 2008, although they declined by 30 percent in September 2008. The surge in food prices was also driven by the combination of rising fuel costs, the demand for fuel crops for bio-fuel production, and trade restrictions that led to upward price pressures. It is projected by the World Bank that the price of grains and other major food crops will double their 2004 levels through 2015 (World Bank, 2008, 2).

African Social Science Review

This global trend is profound in developing economies, where the rising global prices of major food crops have affected domestic prices. For instance, median inflation in non Organization for Economic Cooperation Development (OECD) countries peaked from 5 percent in 2006 to 8.1 percent in 2008 and inflation increased by more than 5 percentage points in 21 countries. In the case of Sub-Saharan Africa, price inflation was higher than the 2005-2007 average, and, in some cases, above 14 percent.

Overall, the rise in food prices has led to an increase in the poverty rate in developing economies. This rate is profound in Sub-Saharan Africa, where millions already live on less than a dollar a day and the rate of unemployment and income inequality are among the highest in the world (World Bank, 2008). In view of this, policymakers and development agencies should continue to partner with farming communities to provide social and economic safety nets such as nutrition programs, credit facilities, and universal free education for farming communities in order to address the adverse effects of high food prices, and to attain food security. For example, in Nigeria, the Enugu State Government in collaboration with local governments reactivated and launched agro-input service centers and nurseries for palm, cashew and cassava for local farmers (Enugu State Government, 2009). The state government in this case used local funds to provide agricultural assistance for local farmers with limited resources.

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Food Security in Sub-Saharan Africa: A Case Study

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