

**THE STATE OF THE AGRICULTURAL DEVELOPMENT AND
FOOD SECURITY IN THE EAST AFRICAN COMMUNITY**

BY

MS VERONICAH KIBATI,

RESEARCH ANALYST

TABLE OF CONTENTS

ACRONYMS AND ABBREVIATIONS.....	4
ABSTRACT.....	5
1.0 INTRODUCTION.....	6
1.1 Theoretical Framework.....	9
1.2 Methodology	11
2.0 NATURE AND IMPORTANCE OF AGRICULTURE IN AFRICA.....	12
3.0 THE REGIONS' INITIATIVES TO ENHANCE AGRICULTURE	14
3.1 Regional Food Balance Sheet	14
3.2 Comprehensive Africa Agriculture Development Programme (CAADP).....	15
3.3 Alliance for a Green Revolution in Africa (AGRA).....	18
4.0 THE STATE OF FOOD SECURITY IN EAST AFRICA.....	20
4.1 Rwanda	22
4.2 Kenya	24
4.3 Uganda	27
4.4 Tanzania.....	29
4.5 Burundi	31
4.0 CONSTRAINTS IN ACHIEVING FOOD SECURITY IN EASTERN AFRICA	33
5.1 An Underdeveloped Agricultural Sector.....	33
5.2 Climatic extremes	34
5.3 Conflict	35
5.4 Population growth.....	36
5.5 Gender inequity in Agriculture	37
5.6 Low Government commitment to Agriculture.....	38
5.0 TOWARDS A FOOD SECURE EAST AFRICA	39

6.0 CONCLUSION 43

ACRONYMS AND ABBREVIATIONS

AIDS	- Acquired Immunodeficiency Syndrome
AU	-African Union
AWM	-Agricultural Water Management
AGRA	-Alliance for a Green Revolution in Africa
CAADP	-Comprehensive Africa Agriculture Development Programme
EAC	-East African Community
EAGC	-East African Grain Council
FAO	-Food and Agriculture Organization
GDP	-Gross Domestic Product
GNI	-Gross National Income
HIV	- Human Immunodeficiency Virus
ICPD	-International Conference on Population and Development
IDPs	-Internally displaced persons
MDGs	-Millennium Development Goals
NEPAD	- New Partnership for African Development
PPP	-Public-Private Partnership
REC	-Regional Economic Community
SAP`	- Structural Adjustment Programme
SIPRI	-Stockholm International Peace Research Institute
SSA	-Sub-Saharan Africa

ABSTRACT

Increasing agricultural productivity is critical to accelerating economic growth and improving the wellbeing of both rural and urban people in East Africa. Indeed, many strategies have been pursued in an attempt to increase agricultural productivity and enhance food security in East Africa. However, despite these numerous strategies, East Africa is repeatedly caught up in the vicious cycle of food insecurity which perpetuates poverty. This paper seeks to analyse the state of food security in East Africa, identify the constraints and suggest possible remedies for enhancing food security in East Africa. It seeks to examine how the region went from being a net food exporter to a net food importer and from food abundance to mass starvation. Data from the paper is drawn from literature review and analysis of various policy documents and food security and nutrition reports from the various institutions that attempt to address food insecurity in East Africa. The findings of this study indicate that despite the importance of agriculture to East Africa's economy, the region has low agricultural yields and is still largely prone to food insecurity. This is largely as a result of the traditional and small scale nature of Agriculture in Eastern Africa characterized by reliance on rain fed agriculture; low diversification; low usage of modern technology; poor water management systems; land fragmentation; and high post-harvest losses among others. This coupled with an underdeveloped Agricultural sector, climate change effects, high population growth and low government commitment to agriculture further aggravates the problem. The study finds that addressing these constraints will be the panacea to the problem. Remedies such as increased investment in agriculture, improved seed and farm management techniques, integrated water management techniques, engendering agriculture, addressing climate change and population growth among others are proposed. The paper concludes that if Eastern African leaders truly commit to implementing the already known remedies, then food insecurity will be unheard of in East Africa.

1.0 INTRODUCTION

Despite the advances in science and technology achieved over the last century, close to one billion people in different parts of the world are still not assured of their most basic need - food. Famine, malnutrition or in the short-term, hunger, remain some of the most intriguing challenges facing mankind in the 21st century. Food insecurity is a global problem, but particularly affects much of the third world. The countries that fall within the East African Community (EAC) trade block - Kenya, Uganda, Rwanda, Burundi and Tanzania- are in a region prone to debilitating and widespread effects of hunger and famine. The region is particularly characterised by entrenched poverty, recurrent droughts, crop failures and environmental degradation. These conditions are partly caused by declining land productivity, soil degradation, desertification, loss of biodiversity, livestock and crop diseases, declining fisheries, poor development and trade policies, among other problems. As a result, it has become difficult to produce sufficient food, trapping people in a vicious cycle of food insecurity. Paradoxically, many of the local communities living in this unique and vast natural resource rich region, are among the poorest and most food insecure in the world.

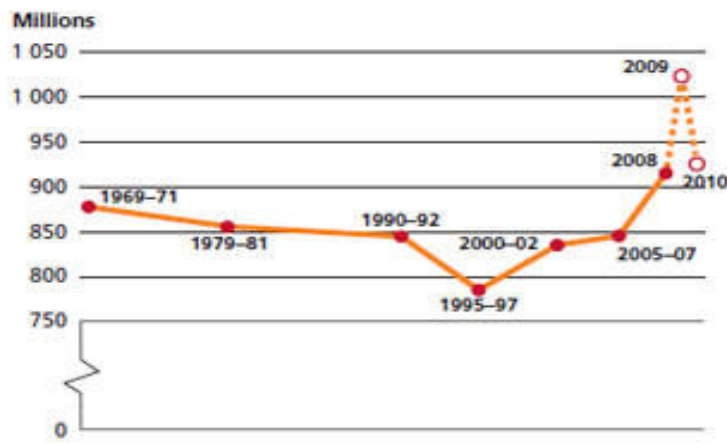
The world food summit in 1996 defined food security as existing when “all people at all times have access to sufficient, safe and nutritious food to maintain a healthy and active life.” The concept of food security is defined as including both physical and economic access to food that meets people's dietary needs as well as their food preferences. Food security therefore implies the provision of safe, nutritious, quantitatively and qualitatively adequate food as well as access to it by all people. Food security has three dimensions:-

- i) Availability of sufficient quantities of food of appropriate quality supplied through domestic production in imports;
- ii) Access by households and individuals to appropriate foods for a nutritious diet ; and
- iii) Optimal uptake of nourishment, clean water and adequate sanitation together with healthcare.

At the world Food Summit, world leaders committed themselves, in the Rome Declaration and Plan of Action, to reducing by half the numbers of hungry and undernourished people in the world by 2015. However, 2015 is fast approaching with the numbers of the hungry steadily

increasing. Out of the 7 billion people in the world, an estimated 925 million of them are hungry, representing about 13.1 percent or almost 1 in 7 people.

Figure 1: Number of hungry people, 1969-2010



Source: FAO 2010

Despite stakeholder consultations, plans of actions, commitments and declarations, food insecurity in the region remains at unacceptably high levels. Over the years, it has become clear that Africa is neither short of diagnosis nor prescriptions but implementation of already well-known remedies and sustained application of adequate and focused effort and resources to the food security challenges.

This paper seeks to:-

- i) Analyse the state of food security in East Africa
- ii) Identify the constraints/challenges that affect food security
- iii) Propose remedies for enhancing food security in East Africa

Universally, the global divide between rich and poor countries is more apparent in the contrasting profile of agriculture and hence food production. In the developed world, farmers manage sophisticated capital-intensive businesses. They deliver cheap food and a variety free of shortages. In the poorest developing countries, EAC member states included, most farming resembles the primitive rural economy of 19th century Europe. Millions of small land holders labour on small plots, attempting to feed over one hundred and forty million people. The farmers and pastoralists in these areas struggle against the erratic weather elements and creates

one of the ironies of the modern world - that three-quarters of global food insecurity is located amongst farmers and their workers. Most of the remaining quarter is found amongst the urban poor.

World hunger is also a consequence of the unequal political and Agro-economic relations of globalization and therefore requires a systematic change in international food security policy. The skewed policy is manifested in world food prices that are determined by traders active on international commodity markets. They are influenced by a range of factors including global prices of oil. The inputs and operations of modern farming are highly dependent on oil products. The outcome of this pricing process impinges on many developing countries who are net importers of food. Almost all those classified as Least Developed Countries (LDCs) fall into this category. Food prices are critical to social stability in poor countries because the world's poorest two billion people spend 50%-70% of their incomes on food. They have no mechanism to cope with rising prices other than to reduce the size or nutritional quality of their consumption and thus the cycle of food insecurity continues.

In Eastern Africa the 2011 failure of two consecutive rain seasons heralded the worst famine in sixty years with inter-communal conflicts over water and pasture access escalating. Thus food security has a direct bearing on national security and stability. These factors alone are however not solely responsible for the famine; instead they have intensified an already dire hunger crisis that has persisted in Sub-Saharan Africa for decades, thanks to lending policies pushed by the World Bank and International Monetary Fund (IMF) that transformed a self-sufficient, food-producing Africa into a continent dependent on imports and food aid, leaving the continent vulnerable to food emergencies and famine.

Since 1981, when lending policies were first implemented, Oxfam found that the amount of sub-Saharan Africans surviving on less than one dollar a day doubled to 313 million by 2001, which is 46 percent of the population. Since the mid-1980s, the number of food emergencies per year on the continent has tripled. World Bank Structural Adjustment Programs (SAPs) of the '80s and '90s led to huge disinvestments in the agricultural sector. What is being witnessed now in poor agricultural systems partly relates to those kind of policies.

The lingering question is: how did an entire continent go from being a net food exporter to a net food importer, from food abundance to mass starvation, in such a short period of time?

1.1 Theoretical Framework

A substantial and growing body of literature links agricultural growth and poverty reduction positively. Agricultural growth has traditionally been regarded as important for poverty reduction because rural poverty represents the major share of total poverty in most developing countries and agriculture is a major source of income for poor rural households. To the extent that poverty affects social welfare, reduction of poverty among urban and rural non-farming households can be considered as an externality which is only partly compensated through market mechanisms influencing real income at the household level. As a result, poverty reduction may be regarded as a service that is under-supplied with respect to its optimal level as seen from a social point of view. This paper uses the poverty module to analyze the role of agriculture in reducing poverty and food insecurity and to identify the key channels through which these goals can be achieved.

Farm households face government-induced and institutional failures. Farmers also face external constraints such as agro-ecological conditions, international market prices and standards, distribution of productive assets (i.e. land and human capital), as well as the level of development of urban areas which may influence wages and land rents. The combination of policy and institutional environments and external constraints determines farmer production choices, including crop composition and the level and mix of productive inputs. In turn, the interaction of production choices, the supply of production factors and the demand for farm products affect real wages, land rents, crop and food prices.

Awareness about the effectiveness of agricultural growth in reducing poverty has focused attention on the importance of a new agenda for a pro-poor agricultural growth strategy. The new agenda is inspired by two basic considerations.

Firstly, national governments and the international community should improve the quality of government intervention in agricultural and rural markets. Secondly, emphasis needs to be made on a bottom-up approach, reflecting local preferences, resource constraints and a growing push for decentralizing agricultural policy making. The call for a more decentralized and bottom-up approach to agricultural policy design responds to the growing appreciation of the heterogeneity of the farm sector in the developing world and the challenge that such heterogeneity poses in terms of the poverty impact of policy reforms. The coexistence of small and large farms and of

commercial and subsistence oriented producers in many developing countries requires policy making to become more focused on the differential impact that policy reforms may have across producers and their implications in terms of poverty and food security.

Food security is a broad concept, whose meaning and scope has evolved over the years. The traditional concepts of food security included simple measures such as national food production, food grain storage, national food self-sufficiency and food aid. These were mainly macro indicators reflecting food supply, and which were used as a basis for developing conventional early warning systems against famine. In designing these systems, it was believed that such indicators could predict acute food insecurity and cause the relevant authorities to respond adequately through centralised distribution of national food reserves or food aid (Davies et al, 1991). However, famine has continued even in the face of conventional early warning systems. It has also not been possible to develop interventions that may reliably prevent or reduce the extent of food insecurity situations in future.

This has prompted the need to redefine food security, to come up with concepts that aim for longer-term, sustainable improvement in access to food. The new definition of food security should take cognisance of a number of facts. Firstly, there is ample evidence that food supply and availability alone are not sufficient to relieve food insecurity. Borton and Shoham (1991) explained that food insecurity could occur in a situation where food was available but not accessible to sections of the community because their entitlements to food had been eroded. This argument counters the general assumption that deficits in food supply are the only important cause of food insecurity. Secondly, the levels of food production by households are not always positively related with differences in household food consumption. This negates the assumption that food production is a sufficient indicator for food consumption, or that increased food supply will automatically result in improved nutrition. Thirdly, the generalization that malnutrition is a conclusive indication of food insecurity is not necessarily correct. Malnutrition can as well result from other causes that are independent of food insecurity, for instance, poor health or poor maternal and childcare. Thus, household food security is a necessary but not a sufficient explanation for adequate nutrition. Similarly, deterioration in child growth cannot be interpreted on its own as identifying a decline in food intake or a conclusive indicator of food insecurity.

In analyzing food security therefore, food quantities accessed must be sufficient to meet national, regional or household needs and should fulfill nutritional needs of adequate energy, protein and micronutrients. Access to food should also be equitable for all individuals. In its least serious degree, food insecurity indicates only the risk of hunger, not necessarily its presence. By contrast, chronic food insecurity denotes a constant condition of hunger. Famine, which is the most extreme state of food insecurity exists where a series of hunger indicators, including mortality, cross critical thresholds set by the United Nations (UN). Although very rare elsewhere, famine has been declared in the EAC states several times over the decades, the latest being some regions of Kenya and Somalia in a series of UN announcements in 2011.

Communities in EAC states will have food security if there is sufficient food available; they have the necessary purchasing power or means of exchange to acquire it; and their social relationships (local and international) allow them access to it within the household. Four main channels link the performance of agriculture to poverty and food insecurity: Real farm income; the demand for unskilled labour; food prices; and indirect consumption and production linkages which connect agricultural activity to the nonfarm economy.

The study is significant in that food security, particularly in the East African region persists despite various government, non-government and community initiatives. “The fundamental right of everyone to be free from hunger” is established in Article 11 of the International Covenant on Economic, Social and Cultural Rights (ICESCR), the branch of international law inspired by the Universal Declaration of Human Rights. A rights-based approach to food security imposes obligations on national governments to establish non-discriminatory and non-political laws to ensure that their populations have access to adequate food. East African governments should strive to enhance agricultural growth which will address poverty and food insecurity.

1.2 METHODOLOGY

The main data collection for this study was literature review. Document analysis of various policy documents on agriculture, food security and nutrition and reports on experiences of other countries in Africa that have made progress in ensuring food security for their people, was done.

2.0 NATURE AND IMPORTANCE OF AGRICULTURE IN AFRICA

Agriculture and food security are inextricably linked. Agriculture is the only source of food both for direct consumption and as a raw material for refined foods. Agricultural production therefore determines food availability. During the colonial period, the policies favoured cash crops at the expense of subsistence crops. Soon after attaining independence, African countries thus gave primary focus to agriculture in their development strategies. The focus of agricultural modernization was on increasing productivity and enhancing food security. This was considered a prerequisite to Africa's economic take-off as increased productivity would lead to better incomes for peasant farmers and expand the markets. However, in the 1980's, changes took place caused by ideological shifts, the debt crisis, SAPs and liberalization policies. The new policies aimed to have private stakeholders assume responsibility for the revival of agricultural production. This however was not successful and instead there was an increase in food deficits.

In the Eastern African region, Agriculture is the engine of economic growth and cornerstone of poverty reduction. The sector is dominated by small holder mixed farming of livestock, food crops, cash crops and fishing among others. Approximately 70% to 80% especially in the rural areas rely on agriculture as their primary source of livelihood. Small-scale farmers are responsible for more than 90% of Africa's agricultural production. It accounts for 24 to 48% Gross Domestic Product (GDP) in the East African Community (EAC) and almost 60% of its total export earnings. Agriculture has a high multiplier effect on the economy as it contributes indirectly to other sectors such as manufacturing.

Agriculture in Eastern Africa however remains largely traditional and small scale. The nature of East Africa's agriculture has been characterized by reliance on rain fed agriculture; low diversification; low usage of modern technology and agro inputs; underutilized land; land fragmentation; and high post-harvest losses among others. This leads to low yields trapping the farmers in a cycle of poverty and food insecurity.

The Eastern Africa region is endowed with ample land resources which are under-utilized. One of the main characteristics of land use in the region is the high concentration of people and livestock in highlands due to the cooler climates and deep soils. There are also vast stretches of land with good but under-utilized soils due to shortage of water. The World Development Report

(2008) on Agriculture and Development estimated that the rate of use of improved varieties in SSA was about 24%, use of chemical fertilizer stood at only 13%, and use of appropriate water control systems for agriculture covered only 4% of the cultivated land.

The Africa Fertilizer Summit in Abuja, 2006 resolved that the AU member states will accelerate timely access of farmers to fertilizers so as to increase the level of use of fertilizer from the average 8 kilograms per hectare to at least 50 kilograms per hectare by 2015. Some of the proposals include reducing the cost of fertilizer procurement, developing and scaling up input dealers' and community-based networks, granting targeted subsidies to poor farmers, accelerating investment in infrastructure, fiscal incentives, strengthening farmers' organizations, establishing regional fertilizer procurement and distribution facilities through public-private partnerships (PPPs) and promoting national/regional fertilizer production and fertilizer trade. However, fertilizer usage in the region remains quite low and in marked contrast to that of developing regions.

The supply of water in the region is skewed both temporally and spatially. Even in the semi-arid areas more than 60% of rain water often goes unutilized. Irrigation development has focused on civil engineering structures for water diversion rather than the management practices needed to optimize water use efficiency at field level. Most of the river flow in the region has not been mobilized such that the installed capacity for storage of water is on average 500 m³ per capita compared to the USA or Australia with more than 5,000 m³ per capita. Furthermore, out of the world's 45,000 large dams, only 1,000 (2%) are in SSA and nearly all (600) in one country, South Africa. The EAC region has an economic water scarcity because of inadequate investments in water control structures and systems for effective management of water resources.

The role of water control infrastructure can be seen from the scale of investment by the developed nations. For instance, in Japan, heavy investment in water control infrastructure has reduced annual economic losses due to floods from 20% of Gross National Income (GNI) to less than 0.5%. In the developed and developing countries, investments in agricultural water infrastructure have led to tremendous positive impacts in the creation of wealth and improvement of food security.

The soils continue to degrade leading to a reduction in the productivity of the farms. Some of the causes of soil fertility depletion in Africa include the limited adoption of fertilizer replenishment strategies and soil and water conservation measures; expansion of agricultural production into

fragile areas; overgrazing; rapid population growth; limited access to agriculture-related technical assistance; and lack of knowledge about productive agriculture.

Despite the importance of Agriculture, numerous challenges limit productivity and affect the livelihoods of many households increasing food insecurity. Specific interventions need to be undertaken to enhance agricultural growth.

3.0 THE REGIONS' INITIATIVES TO ENHANCE AGRICULTURE

3.1 Regional Food Balance Sheet

The EAC Food Security Action Plan (2011-2015) was adopted by the 9th Extra-Ordinary Summit of Heads of State held in Arusha, Tanzania on 19th April, 2011. The Plan proposed preparation of a Regional Food Balance Sheet (RFBS) as a key policy tool for management of food availability in the EAC region. Enhancing a comprehensive food inventory that reflects the regional food situation is imperative in this era of globalization and regional integration. Having a regional or common food balance sheet is in line with the framework of EAC's economic development agenda as articulated in the EAC Development Strategic Plan 2006-2010. The benefits of developing a common food balance sheet in East Africa are numerous and include the need to fast-track and harmonize regional policies for the interests of all the member states.

Food balance sheets present a comprehensive picture of the pattern of a country's food supply during a specified reference period. A food balance sheet shows for each food item i.e. each primary commodity and a number of processed commodities potentially available for human consumption - the sources of supply and its utilization.

The quest for a regional food balance sheet was premised on the fact that each EAC Partner State runs its own food balance sheet for monitoring food availability. The Free Trade Area (FTA) in the EAC, which has been concretized through elimination of import duty on intra-regional trade, sets a trading platform for food to move freely from surplus countries to deficit countries. This implies that Food deficit EAC countries can rely on food availability in surplus EAC countries. The reality of this expectation is underscored by increase in food trade since 2005 when EAC Customs Union was launched.

Pooling of regional food stock data in form of a regional food balance sheet helps governments and traders to have knowledge of the available food stock in the region for purposes of food security planning and intra-regional sourcing of commodities. This would in turn motivate investments in the production and other levels of the regional value chain benefiting farmers and consumers.

The EAC supported national survey on food balance sheets. The survey culminated into national consultative meetings and a regional stakeholder's workshop that developed a draft Regional Food Balance Sheet which was adopted at the EAC Regional meeting in 2011. The Regional Meeting was given a head start by National Consultative meetings held between May and July 2011 in all the five EAC countries, where the concept of the Regional Food Balance Sheet was endorsed and National Food Balance Sheet Committees proposed. The Committees would be responsible for ensuring timely preparation and submission of the National Food Balance Sheet to the EAC.

Through a food balance sheet it is possible to get the picture of products where the region's total production surpasses consumption, with the surplus getting cleared through trading (exports). On the other hand, it is also possible to see the products where regional consumption surpasses production leading to a deficit situation. The deficit gap gets cleared through trade (imports). These two scenarios already show the importance of the regional food balance sheet as a tool to inform on the food deficit/surplus situation and the role that trade plays in bridging the surplus/deficit gaps.

Food Balance Sheets are therefore important in carrying out an appraisal to establish the food situation through estimations and projections. At policy level, it is a barometer for measuring national food supplies, famine and malnutrition for interventional measures.

3.2 Comprehensive Africa Agriculture Development Programme (CAADP)

The CAADP of the AU is the African based and African led initiative established in 2003 by the New Partnership for African Development (NEPAD) working to boost agricultural development and improve food security in Africa. In establishing CAADP, NEPAD set the goal to eliminate hunger and reduce poverty through agriculture. To achieve this goal, CAADP addresses policy

and capacity issues across the entire agricultural sector and the African continent. To realise their vision, the leaders agreed to increase public investment in agriculture in compliance with the Maputo declaration by a minimum of 10% of their national budgets and to raise agricultural productivity by at least 6%. Within this framework an AU vision on agriculture has emerged on what should be achieved by 2015.

The CAADP is the most comprehensive agricultural reform effort ever undertaken in the continent. It addresses policy and capacity issues across the agricultural sector and is a mechanism for reducing hunger and poverty. The CAADP's work falls under four pillars- land and water management, market access, food supply and hunger and the Agricultural research pillar. CAADPs core functions are: -

- i) Strengthening country-led policy processes for better investment programmes;
- ii) Mobilising partnerships for investment at the national, regional and international levels, and from both private and public sources;
- iii) Evaluating commitments and strengthening systems and mechanisms for accountability;
- iv) Advocating the restoration of African agriculture as a major development driver; and
- v) Harnessing African strategic thinking, positions and scenarios for the future.

Its core principles are:

- i) African ownership;
- ii) To build partnerships and alliances between government, the private sector, development partners and farmers to better address the needs of a cross-cutting sector like agriculture;
- iii) To promote dialogue, peer-review and mutual accountability to develop a sense of collective responsibility; and
- iv) To exploit regional complementarities and cooperation for common and mutual needs and regional comparative advantages.

Despite the commitments made by the African Governments at Maputo however, only eight countries have currently achieved the Maputo declaration (NEPAD 2011).

Table 1: Agricultural expenditures as a share of total spending compared to CAADP 10% target

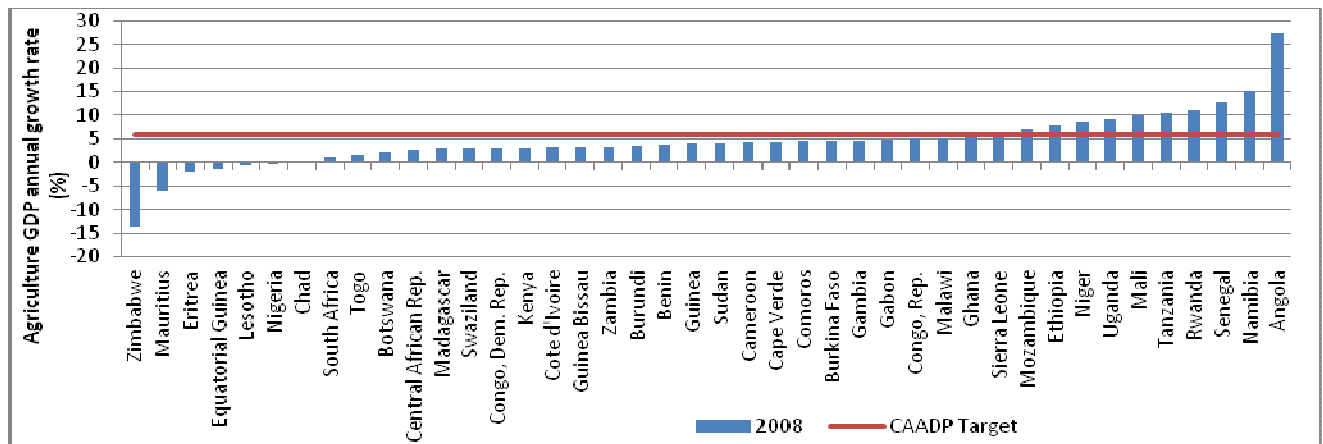
At least 10 percent	Less than 10 percent	Less than 5 percent
Burkina Faso	Chad ²	Angola ²
Ethiopia¹	Gambia ²	Benin
Ghana³	Mauritania ³	Botswana ²
Guinea	Namibia ²	Burundi ²
Malawi²	Sao Tome and Principe ²	Cameroon ³
Mali	Sudan ²	Central African Republic ²
Niger	Togo	Comoros ⁴
Senegal²	Tunisia ³	Congo, Dem. Republic ²
	Zimbabwe ²	Congo, Republic ³
		Cote d'Ivoire ²
		Djibouti ²
		Egypt ³
		Guinea Bissau ²
		Kenya ¹
		Lesotho ²
		Liberia ¹
		Madagascar ²
		Mauritius
		Mozambique ²
		Nigeria
		Rwanda ³
		Seychelles
		Sierra Leone ³
		Swaziland ²
		Tanzania
		Uganda

Sources: Based on ReSAKSS data collected from various national government sources and IMF 2009.

Notes: 1. Estimate for 2009; 2. 2007; 3. 2006

Since 2003 the number of countries that have achieved the CAADP growth target of 6% has nearly doubled. Ten countries met or exceeded the target- Angola, Ethiopia, Mali, Mozambique, Namibia, Niger, Rwanda, Senegal, Tanzania, and Uganda. Nineteen other countries attained moderate agricultural GDP growth rates of between 3 and 6 percent. In the same year, eight countries experienced negative growth in their agriculture sectors. Progress towards an agricultural sector growth rate of 6% therefore needs to be stepped up.

Figure 2: Agricultural GDP growth rates across sub-Saharan African countries compared to CAADP target 6% target, 2008



Source: ReSAKKS calculations based on World Bank 2009

Though Regional Economic Communities (RECs) have been tasked with promoting CAADP at the national level in their member states, it is important to evaluate whether CAADP countries have adopted policies that explicitly recognise the importance of regional co-operation in agriculture. There is, as yet, no clear sign of a strong CAADP impact on regional co-operation, despite some important sub-sector advances in, for example, fertiliser trade regulation in West Africa and research coordination in most regions. CAADP has been successful in certain countries such as Rwanda and Ghana and can drive agricultural production in Africa.

3.3 Alliance for a Green Revolution in Africa (AGRA)

AGRA is an African-led partnership that helps small-scale farmers and their families to get themselves out of poverty and hunger. The alliance's programs aims to develop practical

solutions to significantly boost farm productivity and incomes for the poor while safeguarding the environment. AGRA advocates for policies that support its work across all key aspects of the African agricultural value chain from seeds, soil health, and water, to markets and agricultural education. AGRA is guided by three Goals to be achieved by 2020 which are:-

- i) Reduce food insecurity by 50 percent in at least 20 countries.
- ii) Double the incomes of 20 million smallholder families.
- iii) Put at least 15 countries on track for attaining and sustaining a uniquely African Green Revolution: one which supports smallholder farmers, protects the environment, and helps farmers adapt to climate change.

AGRA's programs include the seeds program which supports the breeding of improved seed and works to ensure that this good seed gets to farmers, the soil health program improves farm productivity through increasing farmers' access to locally appropriate soil nutrients and promoting integrated soil and water management. Both are key to environmental sustainability and helping farmers adapt to and mitigate climate change, market access program which pursues multiple routes to expanding market access for smallholders, the policy and partnerships program and the initiative on innovative finance works with Africa's financial institutions and other partners to increase access to low-interest loans for smallholder farmers and agricultural businesses.

AGRA works for comprehensive changes across the agricultural system to benefit smallholder farmers, the majority of whom are women. Integrated programs in seeds, soils, market access, policy and partnerships, and innovative finance are aimed to transform subsistence farming into sustainable, viable commercial activity.

AGRA's programs also work to strengthen agricultural education and extension, train youth, develop rural infrastructure, improve efficient water management and enable smallholder farmers to adapt to and mitigate climate change. All of our programs pay special attention to the women farmers who produce the majority of Africa's food. AGRA programs seek to empower women with full and equal access to finance, land security, extension services and new agricultural tools and technologies.

An important AGRA initiative is the development of new crop varieties that can withstand pests and disease; cope with drought, marginal soils and other environmental stresses; and dramatically increase farmers' yields. AGRA's goal is to develop 1000 new varieties as rapidly as possible, using conventional breeding and participatory methods in which plant breeders work closely with farmers to develop varieties with the traits farmers need.

Agriculture is the backbone of African economies and therefore achieving the MDGs on chronic hunger and poverty requires that attention be placed on revitalizing smallholder agriculture in Africa. Without rapid increases in agricultural productivity, poverty and food insecurity will worsen. The African Green Revolution aims to create a wave of prosperity and food security across the continent by lifting millions out of poverty.

4.0 THE STATE OF FOOD SECURITY IN EAST AFRICA

The East African region is frequently affected by food shortages and pockets of hunger although the region as a whole has a huge potential and capacity to produce enough food for regional consumption and a large surplus for export. It is estimated that out of the 925 million hungry people (2010), 239 million are from Sub-Saharan Africa (SSA) presenting a grim situation in comparison with only 19 million from the developed countries.

In 2011, East Africa experienced a severe drought which was recorded in some areas as the driest or second driest year on record since 1951. The drought affected countries such as Somalia, Ethiopia, Kenya, South Sudan and some parts of Uganda and the devastating impact was compounded by rising food prices, creating a food security and acute livelihood crisis for almost 12 million people in Africa.

The Food and Agriculture Organisation (FAO) statistics indicate that currently, nearly 20 million people in the Eastern Africa region are food insecure and are depending on food relief. Widespread poor and erratic weather patterns resulting in massive food shortages and rising food prices are largely to blame for food insecurity in the region. However, the food security situation in the region varies from country to country.

Food availability

Food availability to the people can be through own production, purchases, food aid or gifts. The analysis of average food availability in Kenya, Tanzania and Rwanda reveals that the average daily caloric intake availability is below the recommended level of 2100 Kcal. In Burundi, the mean availability is below 1800 Kcal, which is considered the minimum intake level.

Food accessibility

As a result of poor transport network, high fuel prices and market infrastructure, food either does not reach those who need it the most (from surplus regions) or reaches them at excessively high prices. In many African countries, conflicts have constrained the flow of food leading to insufficiency even for those who could afford to purchase. In East Africa, a high percentage of the food consumed in the rural areas is derived from own production. In the urban areas however, a high percentage of food consumed is purchased. This emphasizes the strategic role played by the rural households in food security of the East African countries. Agricultural policies formulated therefore should focus on how to increase productivity and market efficiency in the rural setups.

Utilization/Nutrition

Despite economic growth and food availability, some countries still display increasing malnutrition, as measured by the prevalence of stunted growth among children. In East Africa although cereals, pulses, roots and tubers play a central role in food supply, production has generally lagged behind. This is partly because priority was put on development of the cereals and pulses leaving behind the root and tuber crops which can survive harsh weather conditions. Those countries that have been able to increase their cereal production and export agricultural products have generally been those in which food security improved. To satisfy demand for food, Sub-Saharan African countries have had to rely increasingly on imports. About 30% of cereal consumption is currently imported compared to 5% in the late sixties (FAO, 2008).

World prices of wheat, rice and maize have increased since late 2007 compared to the year before. With the increase in oil freight rates this has sharply driven up the cost of imports for food importing countries. Despite soaring international prices of the cereals imports between

2006 and early 2008, the rate of importation by many countries has been faster compared to the past years. Total import bill for African countries in 2007 was 10,297 million USD compared to an estimated bill of 17,892 million USD for the year 2008 (FAO, 2008).

Over the recent years, the intra-EAC trade has continued on an upward trend, rising from about US\$2 billion in 2004 to around US\$3.5 billion in 2009. The establishment of the Customs Union brought about the introduction of the Common External Tariff (CET) and internal tariffs for extra-regional imports and intra-regional trade. Under the protocol, EAC member states apply zero duty for raw materials and inputs, 10% for processed or manufactured inputs, and 25% for finished products. For intra-regional trade, the import duty (internal tariff rate) ranges between 0% and 25%, with a gradual phase-out by 2011. A selected list of sensitive items, comprising 58 tariff “lines,” has rates above 25% for certain goods, including milk and milk products, corn, popcorn, rice, wheat, and wheat flour.

In each of the Eastern Africa countries, agriculture is a core industry, employing 75–90% of their respective populations and providing for 24–46% of GDP. Opportunities for trade in agriculture fall far short of their potential, however, due to inadequate infrastructure, shortage of cold-storage facilities, and other factors that make it difficult to trade in fresh fruit, meat, horticulture, and other local products.

The state of food security in the East Africa region however varies from country to country.

4.1 Rwanda

Rwanda which lies on 26,338km² has an estimated population of 10.9 million (World Bank, 2011). The economic base is mainly small-scale and subsistence agriculture with about 90% of the population is involved in farming. The agricultural sector contributes approximately 46% of the GDP. Food crops of Rwanda include plantains, sweet potatoes, cassava, potatoes, sorghum, beans and maize. The main export crops are tea and coffee.

Agriculture is the most important sector in Rwanda’s economy, contributing for about 46% to the GDP and employing more than 90% of the active population. Rwanda’s main food crops by ranking order of production are banana (62.5%), sweet potatoes (17.9%), cassava (4.5%), Irish potatoes (4.3%), pulse (beans and pea, 3.9%), sorghum (2.9%), maize (1.4%), and the rest are

paddy, wheat, soybean and groundnuts. Coffee and tea are the major export crops, accounting for more than 60% of the value of all Rwanda's exports (USAID, 2006).

Agriculture in Rwanda is mainly for subsistence and generally agricultural production sags steadily. According to the Rwanda Agricultural Survey 2006, a retrospective study on 20 years shows that the total production of most of the food crops declined or rarely increased very slightly, while the total human population of the country almost doubled. For instance, banana which is the major crop in Rwanda, incurred a decline in total production of 54.4% from 1986 to 2006, owing chiefly to diseases.

Despite a decade of rapid and sustained economic growth along the path of recovery from the devastating 1994 genocide, the population of Rwanda remains highly vulnerable to food insecurity and malnutrition. The trend of hunger in Rwanda mirrors that for income poverty. There was good progress between 2006 and 2011 but incidence remains uncomfortably high. The proportion of people living below the hunger threshold (insufficient income to purchase a minimum food requirement) fell from 37% to 24% over that period. The MDG target for 2015 is 17%. This may prove challenging in light of the high level of price inflation in staple foods experienced in Rwanda through 2011 and 2012. The 2009 Comprehensive Food Security and Vulnerability Analysis & Nutrition Survey concluded that 16% of children aged under five were underweight, close to the 14.5% MDG target for this hunger indicator.

Food insecurity is present among all livelihood groups but some groups were more prone to food insecurity: agriculturalists with no alternative source of income and agro-labourers whose work opportunities were related to farm employment. The marginal livelihoods profile also had a high proportion of food insecure. The food insecure among these three livelihood profiles represented over 83 percent of the total food insecure population.

At national level the state of food security is more encouraging. Unlike many of its neighbours, Rwanda has been able to improve agricultural yields to the extent that national food production consistently exceeds consumption. Rwanda's Government 2020 vision of national development defines agriculture as its springboard. The vision stresses the vibrant need to develop new disease resistant varieties, since diseases scourges account for the major causes of Rwanda's

poor agricultural performance. Agricultural research is expected to play a key role in reversing the steadily declining crop production, by developing and disseminating resistant varieties through biotechnology.

4.2 Kenya

Agriculture is the mainstay of Kenya's economy, contributing over one third of the GDP. Cash crops in Kenya include tea, coffee, horticultural products, pyrethrum, pineapples, sisal, tobacco and cotton. Food crops for domestic consumption include maize, beans, cane sugar, wheat, rice, bananas, cassava, potatoes, sorghum, millet and Livestock farming. Kenya exports tea, coffee, horticultural products, hides and skins, pyrethrum and pineapples among others.

Kenya for a long period has pursued the goal of attaining self-sufficiency in food commodities that include maize, wheat, rice, beans, milk and meat. Self sufficiency in maize was achieved during the 1970s when production was high and the surplus was exported. Unfortunately, attainment of self sufficiency does not automatically imply that household food security is achieved. Empirical evidence shows that solving the food security issue from production (supply side) point of view, while overlooking the purchasing power (demand side) of the people, does not solve the food security problem, with regard to accessibility of sufficient food by vulnerable groups (KIPPRA, 2007).

The government has indicated that some 10 million people are highly food insecure (GOK, 2009). This is mainly attributed to the seasonality of rains in the recent past. The food situation in Kenya also varies with geographical location with the most insecure areas being Eastern, Coast and North Eastern provinces. The food security situation has deteriorated reaching critical levels in the pastoral areas of Moyale, Kajiado, parts of Marsabit and Mandera districts. The overall country food insecurity has been exacerbated by shortages in rains, livestock diseases, rise in prices, crop failure in some parts of the country, and conflict in pastoral areas. A combination of all these factors precipitates acute food insecurity while accentuating chronic food insecurity across the most vulnerable urban, arid, and semi-arid areas of the country.

Food insecurity in Kenya has also occurred in the context of on-going civil and political unrest, including violence associated with the December 2007 general elections that displaced nearly

664, 000 persons in Nairobi, Rift Valley, Western and Nyanza provinces (GoK, Ministry of Special Programmes, 2009). On August 20, 2009, the Kenya Food Security Group (KFSG) increased the projected number of people in need of emergency food assistance between September 2009 and February 2010 to 3.8 million individuals representing a 32 % increase since February 2009. In response to on-going humanitarian needs, on October 1, 2009, the US government renewed the disaster declaration for food insecurity in Kenya for 2010.

In terms of food security and nutrition, Kenya's main staple food is maize. Despite the high demand for maize, production does not match the growing population hence the relationship has continued to portray an unequivocal situation. Recent studies indicate that national maize production levels have been declining since 2006 (EAGC, 2009). The national average maize production in Kenya stands at 2.8 million tons with the highest ever realized being 3.2 million tons in 2006. Despite Kenya having the ability to produce enough food crops for consumption and export, it imports food crops including maize which is a key crop in Kenya. The national supply for staple foods in 2008 for food crops was as follows; maize 2.4 million tons (26 million bags) against a national requirement of 3.1 million tons (34 m bags), wheat 360,000 tons against a national requirement of 900,000 tons, rice 120,000 tons against a national requirement of 280,000 tons (MOA Reports, Economic Review of Agriculture, 2008). The country therefore has to rely on imports to bridge the gap in these staple foods and especially wheat and rice and periodically for maize when production falls below demand.

Maize ranks highest on "percentage of diet." Data show that maize is grown by 98 percent of the rural farm households and makes up a large share of households' crop income. Thus, even small gains in maize productivity will have major and broad-based benefits throughout rural Kenya which will, in turn, generate important "multiplier effects." Maize is also a priority, not because it generates the most revenue but because farmers will not diversify without assurance of sufficient maize. Because of Kenya's relatively weak yields per hectare and low revenues generated, diversification will be critical to transforming the agricultural sector. In addition, diversification out of maize farming holds the potential to increase women's and youth's benefits from other high-value agricultural products.

Livestock products in Kenya include milk, beef, mutton, goat meat, pork, poultry and eggs. On average, 4.0 billion litres of milk is produced annually while local milk demand is 2.8 billion litres. The meat sub sector is dominated by red meat (beef, mutton and goat). Red meat accounts for about 70% of the meat consumed locally while white meat (pork and poultry) makes up the remaining 30%. The production of red meat is 430,000 tons against national requirement of 330,000 tons while white meat is 40,000 tons against requirement of 39,600 tons (MOLD, Reports).

In 2009/2010 about 9.9 million people in Kenya were estimated to be food insecure, with production of maize and other major crops, such as maize and beans being reported to have dropped by as much as 40% of the expected production. In Kenya, 30% of the food consumed by rural households is purchased, while 70% is derived from own production. On the other hand, 98% of food consumed in urban areas is purchased while 2% is own production. The Kenya Food Security Steering Group (KFSSG) estimates that food insecurity is deepening for an estimated 5.2 million people that reside in the urban areas. This is because, while households' incomes have remained stagnant, food and fuel prices have significantly increased. The general rise in prices was partly triggered by the rapid depreciation of the Kenya shilling against other foreign currencies. As a result, urban households' purchasing power markedly declined leading to about 40-45 percent contraction in food purchase. Deepening food insecurity is therefore adversely affecting households in the low income category that have to forego other important non-food expenditures, such as, health care and education. Meanwhile, middle households in these areas are spending a large proportion of their income on food rather than sustainable livelihood activities and are at risk of falling into the poor category.

In recent years, the government has put in place key policy documents (strategies) that provide the needed thrust in the Agriculture and Rural Development (ARD) sector. These key documents include the Strategy for Revitalizing Agriculture (SRA) 2004 - 2014 and the Ministry's Strategic Plan (SP) 2006-2010 and now the vision 2030 strategy as successor to the Economic Recovery Strategy for Wealth and Employment creation. The Vision 2030 particularly recognizes that Agriculture will continue to play a crucial role towards the achievement of a sustained GDP growth rate of 10% annually. Under the Vision 2030, the Government has identified several flagship projects for implementation during the next 5 years. These are :-

- i) Agricultural policy reforms
- ii) Three-tiered fertilizer cost reduction
- iii) Branding Kenya farm produce
- iv) Establishment of livestock disease free zones and processing facilities
- v) Creation of publicly accessible land registries
- vi) Development of agricultural land use master plan
- vii) Development of irrigation schemes.

4.3 Uganda

The Uganda food situation has remained relatively constant with minimal changes over the last decade. On average though, crop harvest and household stocks have maintained normal availability with access to food in most parts of the country. Food security in Uganda is uncertain for various reasons. Spatiality and the political architecture of the country dictate the status of food security in terms of geographical regions. For instance, majority of Northerners (Gulu, Lira, Kitgum and Pader) are among the districts that continue to depend on humanitarian supplies for a major portion of their food and non-food needs. The World Food Programme (WFP) estimates that 1.3 million people still live in displaced persons camps. Populations under displacement lack the basic requirements needed for enhancement of livelihood on a daily basis. Time and physical resources needed for production become limited hence low aggregate crop yields. Inaccessibility to productive land reduces the ability of the population to compliment food aid from own production, and when the people's purchasing power declines sharply, this may cascade into food poverty if the state delays in taking the necessary measures.

The interplay among several factors in food security within this section of the Ugandan population compromises the people's recommended daily allowance (RDA) and WFP has been instrumental in filling the gap by about 74% of the 2,100 Kcal per person per day. During May-July 2009, Uganda experienced a major food crisis-with famine and acute food shortage on a scale much wider than what was observed during the food price hikes of 2006/07 and the financial crisis of 2008. It was reported that at least 17 districts-mainly in the sub-regions of North East and West Nile, faced famine while a further 31 districts faced acute food shortages.

Despite a variety of staples, food production and consumption is dominated by a few staple foods notably matooke, sweet potatoes, cassava, maize and beans. These crops account for 44 percent of the cultivated area in Uganda. At the same time, their importance in the diets of Ugandans is also large as the 5 staples account for 41 percent of the food budgets of Ugandan households. On the other hand, maize and matooke are also important sources of household incomes—the two products account for 36 percent of the total household earnings from crop sales.

In general terms, Uganda is regarded as self-sufficient in food production. In fact, achieving food self-sufficiency in food production has long been one of the major objectives of the agricultural sector. Yet agricultural and population statistics available indicate that per capita food production in 1997 was 44 percent less than what it was in 1970. As an indicator of food availability, Uganda had more food available per person in 1970 than in 1997. That means the country's food crop production has not been keeping pace with increases in population. In 1970 when Uganda's population was about 9.78 million, total food crop output was 14.1 million metric tons, while in 1997 with a population of about 20.4 million people, total food output was 16.5 million metric tons. In the 27-year period, population grew by about 109 percent, while total food production grew by about 17 percent only. From these statistics, it is clear that Uganda's self-sufficiency in food production is threatened..

Based on the 2005/06 Uganda National Household Survey data, the study provides insights into access to food at household level. More importantly, the study shows that average caloric intake stood at 1,970 calories per person per day, which is below the minimum caloric requirement of 2,200 calories. In year 2006, a population of 17.5 million Ugandans, comprising of 3.1 million households were unable to meet the minimum caloric requirement. The famine that hit some districts during 2009 demonstrates that adverse effects on the agricultural sector directly increase vulnerability to food insecurity.

If agricultural productivity is increased, Uganda has great potential to produce sufficient food not only to meet domestic demand, but also have surplus to export to regional and international food markets.

4.4 Tanzania

The importance of agriculture in the economy of Tanzania cannot be over emphasized. In the short to medium term, the sector will remain the mainstay of the economy. The Agriculture sector is comprised of crops, livestock, fisheries and forestry sub sectors. It contributes significantly in terms of aggregate growth, exports, employment and linkages with other sectors. Agriculture in Tanzania employs the majority of the poor, and has strong consumption linkages with other sectors. In 2007, the sector contributed approximately 26 percent of the Gross Domestic Product (GDP) at market current prices. In addition, the sector generates significant share of the foreign exchange (it was around 51 percent of in 2005), and contributes 75 percent of total employment. Smallholder farming dominates agricultural production, and a large proportion is for subsistence. It is therefore the only reliable source of food supplies. Thus, agriculture sector has enormous importance to the overall economic growth, which reached 7.1 percent in 2007. In fact, the performance of the overall Tanzanian economy has been driven by the performance of the agriculture sector, due to its large share in the economy.

In Tanzania, food security can be analyzed in three aspects; food availability, accessibility and utilization. The major source of food supply in Tanzania is local production. On average, Tanzania produces about 95% of its food requirements. In some years, the country's food self sufficiency measured by the Self Sufficiency Ratio (SSR) was over 100. However, there are pockets of food shortage in some regions and districts even when this ratio is over 100. This is mainly due to regional input allocation and output distribution. Most food imports in the country usually comprise substantial amounts of wheat in both surplus and food shortage years. For example, over the period 1999 to 2003, the country imported an average of 300,000 tons of wheat to supplement domestic production of 71,000 tons per year. Food imports however increased during the drought periods. In 2003/2004 when there was food shortage due to drought, total food imports amounted to 698,668 tons comprising 103,762 tons of maize, 157,597 tons of rice, and 437,309 tons of wheat grain. Out of the total imports, commercial imports amounted to 607,600 tons comprising 42,694 tons of maize, 135,597 tons of rice, and 429,309 tons of wheat. Food aid amounted to 59,068 tons comprising 29,068 tons of maize, 22,000 tons of rice and 8,000 tons of wheat.

The major factors affecting food availability are low production due to low productivity of land, labour and other production inputs, high incidences of crop and livestock pests and diseases, inadequate processing, storage and marketing infrastructure. This is mainly caused by inadequate financial resources to obtain productivity-enhancing inputs, limited availability of support services and appropriate technologies. Other factors affecting food availability include high pre- and post-harvest losses due to pests, diseases and climatic variations. In 2005, post harvest losses were estimated to account for over 30% of all crop losses in the country. It is estimated that post-harvest losses range from 30%-40% for cereal grains and legumes, up to 45% for roots and tubers and 40%-80% for fresh vegetables and fruits.

In terms of accessibility to food, Tanzania's infrastructure remains a daunting factor. The spatial distribution of surplus food production areas is such that food production is mainly concentrated in the southern highland regions and peripheral areas of the country, while the traditional food-deficit areas are located mostly in the central corridor and parts of the northern regions. Given the fact the country is vast and there are long distances between food producing and deficit areas with inadequate transportation networks, there are high costs of transportation involved leading to high distribution costs which are often reflected in high prices. Decisions on food utilization are dependent on availability of timely and reliable data on the food balance sheet.

In 2009, about 280,000 people (5 percent of the total population) were food insecure; with most parts of the country being classified as overall food secure (FEWSNET 2009). Regions facing food shortages include Arusha, Dodoma, Kagera, Kigoma, Kilimanjaro, Lindi, Mara, parts of Mbeya, Morogoro, Mtwara, Shinyanga, and Tanga (Arusha Times, 2009). However, failure of rainfall and continuous increases in maize, rice, and bean prices to 40-60 percent above their five year averages has resulted in food shortages (FEWSNET 2009). The country is also a hunger hotspot with a global hunger index of 24.17 or Alarming in 2008 (a compilation of population undernourishment, child malnutrition, and child mortality).

Poverty is one of the major causes of food insecurity in Tanzania. The prevalence of income poverty is still high in Tanzania. For Tanzania, food situation during the 2009/2010 has not been satisfactory due to poor food production performance during the 2007/2008 and 2008/2009

period. Other factors contributing to seasonal food insecurity include, overselling due to competing needs for cash including health, education and clothing. In addition inadequate postharvest management knowledge contributes to food insecurity. This scenario perpetuates the cycle of food insecurity, as it causes people to change their eating patterns and habits. This is detrimental to their health, nutritional well-being and productivity. Continuous or chronic food insecurity is common to the urban poor households, the rural landless and the resource poor smallholder farmers and pastoralists.

4.5 Burundi

Burundi has a total area of 27,830 sq km. The country's climate is equatorial with two wet seasons: February through May and September through November; and two dry seasons: June through August and December through January. Of Burundi's total land area, 35 percent is utilized for cultivated crops, while another 13 percent supports permanent crops such as trees bearing fruits and nuts. One of several urgent agricultural issues facing Burundi is soil erosion. This is a result of overgrazing and the expansion of agriculture into marginal lands. The country's population is approximately 9.5 million, with 93 percent of its workforce dedicated to agriculture. However, due to outdated agricultural practices and poor use of resources, 68 percent of Burundi's population lives in poverty. Burundi's economy is highly dependent on the export of coffee and tea, which account for 90 percent of the country's foreign exchange earnings. Other agricultural products in Burundi include cotton, maize, sorghum, sweet potatoes, bananas, livestock, milk, hides and cassava.

Fifteen years of civil war since 1993, combined with extreme poverty, a fragile political process and recurrent climatic shocks have severely undermined Burundi's economic and nutrition indicators. Food security for the majority of Burundians has not improved in recent years, despite a gradual return to peace. Average annual food deficits in Burundi range from 350,000 to more than 500,000 metric tons in cereal equivalent against an annual average requirement of 1,746,000 tons, while food production has stagnated at pre-1993 levels.

Food production in 2009 shows a 2% increase at 934,269 Tons as compared to 919,501 Tons in 2008. This consisted of 77,524 Tons of cereals (+ 4%), 33,533 Tons of pulses (- 2%), 360,125 Tons of roots and tubers (+1 %) and 463,087 Tons of Bananas (+1%). The production of major

crops has declined drastically over the last 15 years. Cereals have the biggest drop with (- 41%), pulses (- 37%). Dry beans are the major source of proteins for the majority of Burundian smallholder farmers. This has happened despite a sizeable increase in crop land of 39% from 792,510 hectares (1982) to 1,295,000 hectares (2007). This decline is attributable to many reasons among which include lack of appropriate improved seeds and or planting materials, high cost of farming inputs, human pressure on the land, drastic reduction in animal manure that are commonly used by these smallholders farming families that are unable to afford chemical fertilizers, repeated drought, flooding and huge mass wasting that have repeatedly been felt in Northern Burundi and part of the wet central plateau, diseases outbreak on both crops and livestock and lack of credits facilities for farmers and the prevalent civil strife in Burundi.

Food access is alarmingly low with only 18 % of the population being food secure and the remainder 82% having a caloric coverage from 1400 to 1900 calories per day. Chronic malnutrition rate was of 46 % in 2007. It is estimated that 75 %, 40 % and 22 % respectively of energy, proteins and lipids needs are assured. A poor household spend up to 67% of their meager earnings to feed themselves with the remaining percentage being shared among other expenses such as housing, health care and clothing among others.

In Burundi, the proposed consumption for a daily intake of 2,100 calories consist of 47 Kg of cereals, 52 Kg of pulses (i.e. dry beans, Green peas, etc), 230 Kg of root and tubers and 264 Kg of bananas and plantains. With 1,108,000 Tons of equivalent cereals produced, the estimated shortfall for 2009 stands at 556,000 equivalent tons of cereals and the import volumes of 100,000 cereals equivalent leaves a serious gap of 456,000. The average per capita production now stands at 1,472 kilocalories per day.

Burundi is one of the countries identified by both FAO and WFP as being among the most affected by soaring food prices. After so many years of conflict, the capacity of the government to respond to this new challenge is limited. Burundi, like much of Central Africa, is also prone to natural disasters. Floods, hailstorms, drought and torrential rain are recurrent in Burundi. In recent years, the country has registered an unusually high number of natural disasters which have contributed to the displacement of communities, the destruction of homes, the disruption of livelihoods and the further deterioration of food and nutrition security. In 2011, WFP assisted

more than 72,000 vulnerable households affected by drought, torrential rain and hailstorms. There is therefore need for specific interventions to address these challenges.

4.6 The Regional Opportunity

East Africa has an annual surplus of over 3 million metric tons (MT) of maize with almost 70% of the grain grown by smallholder producers. Yet trade of surplus staple foods in East Africa is disorganized, fragmented and largely informal. Structured Trade Systems (STS) – formal contracts, price discovery mechanisms such as commodity exchanges, financial products like warehouse receipt systems (WRS), certified warehouse operators and collateral managers, insurance and other quality control mechanisms to mitigate risks , and contract farming - are building blocks that can help the region to move from fragmented to formal trade. With access to formal markets and trading systems, the region’s smallholder producers can increase their incomes, better participate in cross-border trade, and ultimately improve regional food security.

4.0 CONSTRAINTS IN ACHIEVING FOOD SECURITY IN EASTERN AFRICA

5.1 An Underdeveloped Agricultural Sector

The major challenge to food security in East Africa is its underdeveloped agricultural sector that is characterized by over-reliance on primary agriculture, low fertility soils, minimal use of external farm inputs, environmental degradation, significant food crop loss both pre- and post-harvest, minimal value addition, minimal product differentiation and inadequate food storage and preservation. Over 90% of the food in Sub-Saharan Africa is grown under rain fed agriculture hence food production is vulnerable to adverse weather conditions. The tropical climate makes foods produced in Africa prone to pests and diseases leading to loss of food before harvesting.

There is low farm input investment including fertilizers, seeds and technology adoption in Africa. Fertilizer productivity (expressed in terms of maize yield response) in Africa is estimated at some 36% lower than in Asia and 92% lower than in developed countries. Access to fertilizer use is constrained by the high fertilizer prices which limit small scale rural farmers to purchase fertilizer and other inputs, poor infrastructure, limited development of output, input and credit markets. A significant amount of the food is lost through pre- and post-harvest losses which are further increased by poor handling and storage.

Agricultural development is low in the region also because of underutilization of land. Land and water are the primary natural resources necessary for agriculture, food production and rural development in most countries. It's notable that for Africa, the percentage of arable land that is irrigated is about 7% (barely 3.7 percent in SSA) East, South-east Asia and South Asia being 10%, 29 % and 41% respectively. Furthermore, in Africa, about 16% of all soils are classified as having low nutrient reserves while in Asia the equivalent figure is only 4%.

In spite of the fragility of Africa's soils, climatic variability, and the uneven distribution and availability of both surface and subsurface water resources, there is substantial untapped potential for the development of the region's water and land resources for increasing agricultural production. FAO estimates that the current area under managed water and land development totals some 12.6 million hectares, equivalent to only 8% of the total arable land. Substantial public and private investments in developing and improving the management of these land and water resources will be essential to enable African countries reach the levels of agricultural production required to meet the targets for poverty alleviation, food production and economic recovery by 2015.

5.2 Climatic extremes

Agriculture is extremely vulnerable to climate change as higher temperatures and more erratic rainfall patterns reduce yield, encourage weed and pest proliferation and increase the likelihood of short run crop failures and long run production declines. Large parts of Eastern Africa are arid and semi-arid with very little rainfall which is subject to a high degree of unreliability. Drought and other climatic extremes such as floods are major factors contributing to food insecurity in Eastern Africa. In the Horn of Africa, there is no year or season in which the whole region receives normal rainfall and is free from climatic anomalies such as floods or drought. In the Eastern African sub-region, droughts following floods have been a major cause of famines affecting millions of people in the last 50 years. A major drought affecting several parts of the Eastern Africa is recorded at least every 10 years.

Climate change reduces crop yields and agriculture productivity due to an increase in the temperature, increases incidences of pest attacks since an increase in temperature is likely to be

conducive for a proliferation of pests that are detrimental to crop production, limits the availability of water, exacerbates drought periods, reduces soil fertility through reduction of soil moisture and will affect livestock productivity directly by influencing the balance between heat dissipation and heat production and indirectly through its effect on the availability of feed and fodder among others.

Drought is the most catastrophic natural event that causes widespread periodic famine in the region though it is not the only natural hazard facing Eastern and Horn of Africa. Periodically, floods afflict localized parts of even the driest areas. For instance, during 1997/98 severe floods were observed over many parts of the region, and were followed by a drought in late 1998. The drought that afflicted the region in 2011 was so severe leading to the declaration of famine by the UN (for the first time in nearly 30 years) in Bakool and Shebelle which are located in the Southern part of Somalia where over 2.8 million people were at risk of starvation.

The overall impacts of climate change are negative, threatening global food security particularly in the African region. At regional and national levels, the consequences of climatic variability are also a major cause of large economic losses such as destruction of infrastructure for example, destruction of nearly 10,000 km of rural roads in Uganda during the El Nino rains of 1997. At community and individual level these disasters lead to death, loss of livelihoods, destruction of assets and thus increased vulnerability.

5.3 Conflict

The Horn of Africa has been plagued by conflict since time immemorial. The region has suffered from civil conflicts over the last 30 years in Democratic Republic of Congo (DRC), Ethiopia, Sudan, Somalia and Uganda and these have spilled over into Djibouti. Conflict in Africa often occurs over political leadership, resource scarcity, poverty, socio-economic inequalities, religious extremism and ethnic divisions among others. The struggle for the control of the factors of food production, primarily land and water are also major causes of conflict in the Eastern Africa region. Having more people to feed, more pressure on land and water, more variable climates and greater price volatility tends to increase stress and also raises the risk of civil unrest or worse conflict.

Conflicts in the region have devastating effects especially where they have continued for a long period of time such as in Somalia. Conflicts undoubtedly exacerbate the famine and food insecurity triggered by drought. It also removes able-bodied men from agricultural production and, incidentally places an extra work burden on women. During the genocide in Rwanda in 2004, an estimated 1 million people were killed leaving most families without breadwinners, livelihoods and homes.

Conflict destroys land, water, biological and social resources for food production. Millions of people are displaced or have their livelihoods destroyed by conflict every year in the African region. One of the most direct effects of conflict on food security is the displacement of people. Of the world's estimated 12 million refugees, about 3.2 million are found in Africa. In addition, Africa has about half of the world's 25 million Internally Displaced Persons (IDPs). The burden of refugees and IDPs in Africa is so severe leading to a strain to contain the problem. For instance, the daadab refugee camp in the Northern part of Kenya which is cited as the largest refugee camp in the world is hosting over 440,000 refugees mostly fleeing from Somalia yet it has the capacity to host only about 90,000 people. Contributing to meeting the food needs of refugees places an additional burden on recipient communities where food security is already marginal leading to sometimes acute food shortages.

Conflict also causes the diversion of expenditure to peace keeping and security expenditures. Resources are diverted directly or indirectly from more productive and socially beneficial uses and lower investments in other socio-economic sectors such as health, education, agriculture and environmental protection to military expenditure. According to an analysis by the Stockholm International Peace Research Institute (SIPRI), world military expenditure is estimated to have been \$1630 billion in 2010, a real-term increase of 1.3% over 2008 with Sub-Saharan Africa spending about \$19.5 billion representing a 5.2% increase. The countries of the region devote between 1 and 2% of Gross Domestic Product (GDP) to the military. These figures rise substantially whenever conflict flares up.

5.4 Population growth

Of the estimated 7 billion people in the world, there are presently 925 million undernourished people. It is reported that the world population is expected to rise to 9 billion by 2050. The

momentum for future increases in population remains strong because of the age structure and youthfulness of the population. Fertility and mortality rates are high in the African region and the low prevalence of contraception use means that there is little chance of a decline in fertility in the immediate future. Growing competition for land and water as population grows puts increasing pressure on land. Land degradation due to desertification, soil erosion and deforestation is leading to loss of productivity and increased conflict. High population growth along with rising income and purchasing power will lead to greater demand for food which in turn, increases pressure on the agricultural supply system. With rapid population growth, the per capita availability of natural resources is declining in the region and many farms are becoming too small to fully support farm families.

There has also been considerable rural-urban migration, the rate of which is projected to increase. Migration from highly populated areas, regions or countries raises the demand for land elsewhere with subsequent resettlement often increasing local social tension and conflict.

5.5 Gender inequity in Agriculture

In the region, the majority of farmers are women yet they still handle other household chores. Women are often the farmers who cultivate food crops and produce commercial crops alongside the men in their households as a source of income. They are crucial in the translation of the products of a vibrant agriculture sector into food and nutritional security for their households. When women have an income, substantial evidence indicates that the income is more likely to be spent on food and children's needs. It is therefore without a doubt that poverty and hunger cannot be conquered without meeting the specific needs of poor women.

Gender-based inequalities all along the food production chain impede the attainment of food and nutritional security. This is because women lack the assets and income necessary to exit poverty and are also subject to a confluence of gender-based vulnerabilities that keep them trapped in poverty. Women have fewer benefits and protections under customary or statutory legal systems than men, they lack decision making authority and control of financial resources and suffer under greater time burdens, social isolation and threats or acts of violence.

At the International Conference on Population and Development in (ICPD) 1994, nations agreed that progress in addressing population issues could be better achieved through empowering women and girls to participate in their societies and economies on equal footing with men and boys and to make fundamental decisions about their lives including decisions related to the timing and spacing of pregnancies.

However, changing gender norms in society is difficult and far from complete in the developed world. The challenge of gender equity in accessing agricultural opportunities is great in Africa, which is why national agricultural growth strategies have to mainstream gender issues into their resulting programs. Maximizing the impact of agricultural development on food security entails enhancing women's roles as agricultural producers as well as the primary caretakers of their families.

5.6 Low Government commitment to Agriculture

During various conferences and international fora, African Governments have made several commitments to reduce hunger and to improve the agriculture sector. At the 1996 World Food Summit, Governments made a solemn commitment to halve hunger in the world by 2015. The African Governments under the Maputo Declaration on Agriculture and Food Security in 2003 also committed to spend 10% of National budgets on agriculture development. However, there is low Government implementation of commitments made including the Millennium Development Goals (MDGs). Most of the African countries have not honoured this commitment as presented in the 2007 African Union/New Partnership for Development (AU/NEPAD) survey which found that 50% of the countries spent less than 5% of their national expenditure on agriculture development reflecting a decrease from 57% in 2003.

Further, in most African Governments, the Agricultural sector is lumped up with other sectors such as livestock and fisheries for instance as is the case in Kenya. This therefore implies that the allocated funds are shared with many sectors and therefore not sufficient and specific to agricultural production only.

Other constraints affecting food security in East Africa include:-

- i) Poor or no access to affordable agricultural credit by resource poor producers.

- ii) Low producer prices making agriculture less remunerative.
- iii) Uncertainty in income flows due to price volatility in agricultural commodities.
- iv) Inadequate and weak farmer's institutions incapable of supporting a vibrant agricultural sector.
- v) Inadequate infrastructure such as transport, communications, storage and processing facilities etc that hinders access to factor and product markets within, between Partner States and beyond.
- vi) Inadequate institutional support to livestock production systems in arid and semi arid areas.
- vii) Inadequate institutional support to the fishing industry including capture and aquaculture fisheries.
- viii) Lack of national and regional forums for FBS stakeholders.
- ix) Lack of inter-ministerial coordination of relevant government departments especially agriculture, livestock, fisheries and national statistics organs.
- x) Difficulty in accessing official data in the hands of government custodians thus disadvantaging traders and researchers. This has led to food data users having to make do with inaccurate or obsolete data whose validity and reliability are minimal.

5.0 TOWARDS A FOOD SECURE EAST AFRICA

Investment in agriculture and improving resilience among farmers remain key to providing sustained access to food for all and reducing vulnerability to price volatility and natural disasters such as drought and floods. Improved seeds and farm management techniques, as well as irrigation and fertilizer that sustainably increase productivity and reduce production risk must be delivered to farmers especially smallholders by both the private and the public sector. The regions Governments must ensure that a transparent and predictable regulatory environment is in place, one that promotes private investment and increases farm productivity. Food losses should also be reduced in the region by boosting investment in the entire value chain, especially post-harvest processing. More sustainable management of the natural resources, forests and fisheries are critical for the food security of many of the poorest members of society especially the rural areas.

Investment in agriculture remains critical to sustainable long-term food security. Such investment will improve the competitiveness of domestic production, increase farmers' profits and make food more affordable for the poor. For example, cost-effective irrigation and improved practices and seeds developed through agricultural research can reduce the production risks facing small holder farmers. The productivity of water at farm level must also be improved through integrated Agricultural Water Management (AWM) approaches and water management technologies in both rain fed and irrigated agriculture.

The World Development Report 2008 called for an accelerated expansion of the share agro-industries in agricultural GDP as a way of making agriculture an engine of economic growth and reduction of poverty. This is because agro-industries create forward and backward linkages generating demand for agricultural produce, creating employment, enhancing incomes and contributing to value addition and increased public sector revenues. Through the development of agro-industries, access to markets, finance and technical assistance can be facilitated for smallholder producers promoting their inclusion into modern and efficient value chains. Value-adding agro-processing of food commodities increases food security through reduction of post-harvest losses, creation of employment along the food chain from production to marketing; and improving access to markets.

Despite the many talks on the challenges posed by climate change, the fact remains that rivers and lakes are drying up, ice caps are melting and glaciers are shrinking. Greenhouse gas emissions from developing countries will likely surpass those from developed countries highlighting the need for developing country efforts to reduce the risk of climate change. Evidence suggests that crop failures and diminishing harvests are directly caused by climate change and erratic weather patterns. The challenges of food security cannot therefore be addressed without addressing the effects of climate change. Mitigation efforts include use of improved/appropriate technologies and inputs that are adaptive to climate change impacts which should be enhanced including fertilizers, chemicals, farm machinery, high yielding, drought tolerant and disease resistant seed varieties etc. The region should support construction of a regional fertilizer processing plant to lower costs.

Africa has for long been seen as a land-abundant continent. However, land scarcity is increasing in the region due to population increase and population concentration. The issue of population

growth should be addressed for Africa to address food insecurity. Population increase is critical when it is linked with socio-economic factors. An increase in population when there is no subsequent increase in social services leads to over burdening of service provision which limits the attainment of these services. Further, increased population leads to environmental concerns and subsequent shortage of food due to limited land for agricultural production.

Poverty and land fragmentation leads to division of land into small parcels which leads to over-exploitation of land and coupled with inadequate soil and water conservation practices, the yields are low. Land fragmentation also reduces the labor and other resources that farmers invest in their farms. Land consolidation which is planned readjustment and rearrangement of land parcels and their ownerships to form larger and more rational land holdings should be applied in the region so as to enhance rural development. The overall objective is to increase the net income from land holdings by increasing the volume of production and decreasing its costs. In order to improve agricultural productivity in the region, small holder farmers should consolidate parcels of land and focus on utilizing enhanced farming methods so as to improve productivity.

Governments should strive to improve the allocation and investments to the Agricultural sector if Agricultural development and food security is to be achieved. This will be in line with the international commitments and declarations made including the Maputo declaration on allocating at least 10% of national budgets to the Agricultural sector. Most countries in the region have not been able to achieve this target and Governments should therefore make it a priority to do so and commit to implementing both regional and global strategies that are targeted on improved Agricultural production and food security.

At the community level, food security is essentially a matter of access to food. Sustainable progress in poverty reduction therefore is critical to improve access to food. Individuals need access to sufficient, safe and nutritious food. They need adequate health services, and a healthy and secure environment, including a safe water supply. Food security is therefore closely linked to the economic and social health of a nation, society and individual. Improving rural livelihoods, market opportunities and access will increase access to well-functioning markets for high-value agricultural products and equally important component is ensuring that smallholder producers particularly women, have the capacity to take advantage of this increased access.

Rural households have diverse livelihood strategies, encompassing a range of activities. For most, agriculture is a key element of their strategy but many rural residents are also engaged in non-agricultural activities, including agro-processing, trading and other off-farm occupations. Interacting with agricultural markets is thus an important aspect of the livelihood strategies of many rural households. Markets and improved market access are of critical and immediate importance to rural poor households and are a prerequisite for enhancing agriculture-based economic growth and increasing rural incomes in the medium term. It is of importance to all rural households, and assisting rural poor people in improving their access to markets must be a critical element of any strategy to enable them to enhance their food security and increase their incomes.

Women ensure household food security and nutrition through their roles as food producers, processors, traders and income earners. Women account for a large percentage of household food production in sub-Saharan Africa. Despite this, they are often more vulnerable to nutritional problems because of their lower social and economic status as well as the physiological demands of motherhood. In addition, limited rights to control and own land restrict women's ability to gain access to credit. It is therefore important to incorporate gender considerations into the food security initiatives to enhance food productivity. Food security initiatives should strive to enhance women's access to credit, resources, technology and information and integrate women farmers as well as attending to land tenure issues training in literacy and better educating girls.

Comparative advantage ensures that a country or producer is able to produce where it is better suited for production of one product than another product. A country should focus on the products or services that it has comparative advantages in the production and use of the resources it can generate to import food. In the case of Kenya for instance, this would imply that the country should focus on producing more tea or coffee and maximize all it can earn from this product to import all the food it requires to feed itself.

Political will is important in ensuring that all food security initiatives are implemented and achieved. Through this, sound policies on food security and agriculture can also be formulated and implemented. It is therefore important to involve the political leaders of the region in the quest for food security.

The Governments take prime responsibility for enhancing food security but all other stakeholders should be involved. Governments are responsible for sound legal and policy formulation and implementation, budgetary allocations, targeted interventions and creating of favourable environments for investment. Legislators ought to enact sound laws and also carry out oversight over the Government to ensure they honour their initiatives and commitments. Regional bodies should continue engaging in dialogue, initiatives, strategies and policies, improved relations and peace efforts. The public/farmers should also take the initiative to explore better methods and improved agricultural production. Development partners should invest in sustainable agricultural methods as opposed to continuous emergency food aid.

The East African Common Market Protocol is an important instrument of Ensuring Food Security in the Region. The 2009 Economic Report on Africa (ERA, 2009) recognized the potential regional agricultural value chains supported by agribusiness and agro-processing as a basis for linking especially the smallholder producers to markets for food and other agricultural products. Therefore, the Common Market provides the best opportunity for building such value chains, because it provides a framework for exploiting economies of scale in the production and supply of food.

The realization of a regional economic bloc encompassing five countries leading to a combined population of over 120 million, land area of 1.85 million km² and a combined GDP of US\$ 73 billion, is an opportunity for enhancing food security that should be used with all the priority it deserves.

6.0 CONCLUSION

Poor political and economic governance are twin root causes of much of the malaise that afflicts Africa. They create general political and economic uncertainty, an unpredictable environment for business, political unrest and, sometimes, even war that make pursuit of economic growth difficult. Poor Governance also undermines formulation and implementation of policies and laws that can accelerate the process of economic growth and development. In the specific case of agriculture and rural development, improvements are sorely needed to adapt to changing market conditions and food security priorities. Policy, regulatory and institutional shifts are required to

enable all levels of farming practice to have a stable engagement with natural resources and markets.

The region's food systems have excluded the vast majority of those involved in producing food and feeding people from formulating food and agriculture policies - women, smallholder farmers, indigenous people, migrants, fishermen, agricultural and fishery laborers, pastoralists and forest dwellers. It is vital that the people have a voice in determining policies that affect everyone's lives on such a fundamental level as the right to food.

Increased investment in agriculture must include targeted investment in small scale farming, and in particular providing incentives to women small-scale farmers, building the entrepreneurship capacity of women to engage in agribusiness and grow cash crops, and ensuring that state investments in social protection are not sacrificed. Further, there is need to create national food balance sheet committees in the East African countries to ensure data on food security is up to date and readily available, there is need to carry out joint data validation exercises on a regular basis and the need to facilitate regional food trade by linking food needy and food surplus areas and populations. Updated food balance sheets will ensure that this data is readily available. Areas that require further research include production per hectare per crop, local vs. imported certified seed production and use, market size trends for farmers and consumers, yields vs. post harvest losses among others.

Africa's leaders have registered food security as a priority but very little has been achieved. The biggest challenge in achieving food security is the lack of will to implement the proposed strategies and solutions. In calling for African Green Revolution, H.E Kofi Anan while speaking at a special meeting of African heads of state and leading policymakers organized by the Ethiopian Government and the Hunger Task Force of the UN Millennium Project remarked that *"the knowledge required for Sub-Saharan Africa to achieve its own green revolution is not lacking, what is lacking as ever, is the will to turn this knowledge into practice.."* The importance of political will and the context of the international political economy are two recurring themes and it is therefore upon Governments in the region to have the political will to implement the already known strategies and initiatives in order to achieve food security and end the cycle of poverty in East Africa.

REFERENCES

ADB/NEPAD/ECA-CEA/FAO (2011) *Improving Statistics for Food Security, Sustainable Agriculture and Rural Development; An Action Plan for Africa 2011-2015*

African Union (2003) *Maputo Declaration on Food Security*, Addis Ababa, Ethiopia

African Union and NEPAD (2006) *Towards a prioritised outcome-based approach to implementing Africa's food security commitments, Beyond Diagnosis and Prescription to Action*, Summit on Food Security in Africa, 4-7 December, Abuja, Nigeria.

Ayieko M.W, Tschirley D.L, (2006) *Enhancing Access and Utilization of Quality Seed for improved Food Security in Kenya, Working Paper No 27/2006*, Tegemeo Institute of Agricultural Policy and Development, Nairobi, Kenya.

Boon E.K, *Food security in Africa: challenges and prospects*, Regional Sustainable Development Review, Vol. 1, Accra, Ghana.

Boussard J, Daviron B, Gérard F, Voituriez T (2006) *Food Security and Agricultural Development in Sub-Saharan Africa: Building a Case for More Support, Working paper No. 1E*, Rome, Italy

CAADP (2009) *How are countries measuring up to the Maputo declaration?* Policy Brief, South Africa

Diouf Jacques (2008) *High Food Prices: Causes and Possible Actions*, FAO, Rome, Italy

East Africa Community, (2006) *Agricultural and Rural Development Policy for the EAC*, EAC Secretariat, Arusha, Tanzania

East African Community, (2011), *EAC Food Security Action Plan 2011-2015*, Nairobi, Kenya

Food and Agriculture organization of the United Nations (2010) *The State of Food Insecurity in the World, Addressing food insecurity in protracted crises*, Rome, Italy

Food and Agriculture Organization of the United Nations, (2011) *The State of Food Insecurity in the World. How does international price volatility affect domestic economies and food security?* Rome, Italy

Hine R., Pretty J. (2008) *Organic agriculture and food security in Africa*, United Nations Publication, New York, Geneva

Kidane W., Maetz M., Dardel P. (2006) *Food Security and agricultural development in Sub-Saharan Africa*, Rome, Italy

Kiome Romano (2009) *Food Security in Kenya*, Ministry of Agriculture, Nairobi, Kenya

Morris M, Kelly A.V, Kopicki R.J, and Byerlee D. (2007) *Fertilizer use in African Agriculture, Lessons learnt and Good Practice Guidelines*, Washington DC, United States

Mukhebi A., Mbogoh S., and Matungulu K., United Nations Economic Commission for Africa sub-regional office for Eastern Africa, *An overview of the food security situation in Eastern Africa*

NEPAD (2011) *Annual Report*

NEPAD (2010) *Implementing CAADP for Africa's Food Security needs: A progress report on selected activities*

<http://www.ifpri.org/publication/agriculture-s-critical-role-africa-s-development>

United Nations Economic Commission for Africa/Africa Union (2009), *Economic Report on Africa; Developing African Agriculture Through Regional Value Chains*, Economic Commission for Africa, Addis Ababa, Ethiopia

USAID (2005) *Food aid and food security, Policy Paper*, United States

World Bank (2008) *World Development Report on Agriculture and Development*, Washington DC, United States

World Bank (2010) *World development report background paper, food, security and conflict*, Washington DC, United States

Zorya S, Morgan N, Rios D.L, Hodges R. (2011) Bennett B, *Missing food: The Case of Postharvest Grain Losses in Sub-Saharan Africa*, Washington DC, United States.