

November 20, 2012

Investing in Agriculture for Food Security and Economic Transformation¹



*Empowered lives.
Resilient nations.*

UNDP South Sudan

October 2012

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November 20, 2012

About this document

This document is based on literature review and survey with segments of text lifted from other publications². The objective is to collect in one paper the main analytical insights and policy ideas to underpin prioritized solutions UNDP is planning to put in place with donor support in the period ahead.

² Annual Needs and Livelihoods Analysis 2011/2012, South Sudan, February 2012, UN February 2012; Crop and Food Security Assessment Mission to South Sudan, February 8 2012, FAO/WFP; Expanding Agriculture and Food Security Activities in South Sudan, Assessment Report for USAID/Sudan Economic Growth Team, June 2009; Sudan Institutional Capacity Programme: Food Security Information for Action (SIFSIA) project: Land Cover Database 2010, FAO

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Executive Summary

South Sudan's 90% estimated 640,000 square kilometers of land is considered suitable for agriculture of which 50% is prime agricultural land. Soil and climate conditions allow for a wide variety of food and cash crops. Over 80% of the population derives their livelihood from subsistence agriculture farming and livestock keeping. About 78% of households depend on crop farming or animal husbandry as their primary source of livelihood. Fifty three (53%) percent of food consumed at household level comes from own production, 32% market purchase and 15% from non-monetary informal exchange. Agriculture constitutes about one-third of the country's GDP employing estimated 67% of the population.

Cereal production on average covers about a million hectares with individual household cultivating on average 2.4 hectares of cereals and other crops. Large scale mechanized farms are about a quarter of land cultivated while the rest is predominantly by small scale subsistence farming. The country has a cattle population estimated at 12.2 million plus almost equal number of goats, and sheep. While livestock is kept as a productive asset, it plays a key role in socio-cultural life. About 75% of the population keeps livestock with an average number of livestock at 25 per household.

Agricultural production has remained far below its potential over the years partly explained by wars occasioning widespread poverty estimated at 51% of the population and food insecurity which affects between one third and one half of the population.

Markets play an important role as a source of food providing about 58% of total dietary energy consumption requirements while food purchases accounts for estimated 79% of households' total expenditure at the national level. The country's agricultural products imports amounts to around 12% of GDP.

Agriculture development and food security has faced many challenges which include lack of investment, low productivity, lack of value addition, insecure land tenure system, low funding, inadequate support services, infrastructure as well as lack of extension services and absence of research for disease resistant crops and inadequate training opportunities. Insecurity and natural hazards have contributed to underdevelopment of the sector and food insecurity in the country.

Substantial progress has been made to facilitate expansion of area cultivated and increase cereal harvested area, establishment of the Crop and Livestock Market Information System for food security management in the country, the development and enactment of the Food and Agriculture Framework 2006 and Forestry Policy 2007 while major strides have been made in drafting laws on land policy to address constraints on access to land and property rights. Several sectoral policies with significant agriculture and food security elements have been produced such as the Animal Resources Policy Framework, the Fisheries Policy Framework, the Transport Sector Policy, the Trade and Industry Policy which have the potential to facilitate rural development, increase agriculture and livestock productivity, empower the poor, and reduce food insecurity.

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To address agriculture production and reduce food security, interventions have been made ranging from improving crop production and post harvest system, livestock production and fisheries, advocacy and conflict resolution, agribusiness and income generation, developing information systems and coordination and monitoring of interventions.

A number of agencies in South Sudan have been helping in coordinating food security and livelihood activities with FAO as lead UN agency supported by WFP. Coordination is done in collaboration with the government and State ministry of agriculture. A bi-annual forum on food security and livelihood coordination held at the national level provides an opportunity to discuss major food security initiatives in the country.

The SSDP 2011-2013 identifies agriculture and livestock has having the potential and the most feasible option for broad-based economic growth and food security. To actualize this, it requires implementation of candid short, medium and long term actions focusing on the rural sector activities to increase investments in agriculture and livestock farming, information, improving storage, transport, market and financing access while addressing insecurity and conflict among the communities.

The main actions required include;

- Coordinated responses that draw on the strength of all stakeholders within coherent national strategies for agriculture, in partnership with other government departments, farmers, the private sector and civil society
- Development of an overarching national food security policy and strategy to harmonize all other related and supportive policies for consistency and transformational agriculture development and food security. The proposed Food Security Council (FSC) yet to be operationalized provides an opportunity to forge and promote multi-sectoral approaches.
- Land reform including enacting laws and policies to create enabling environment for private sector to venture into agriculture as a business.
- Build the institutional infrastructure and capacity development as a long-term and sustainable approach to identify, promote and realize socio-economic development goals that will transform the agricultural sector, reduce poverty, and promote food security.
- Establishment of agriculture research institution with a vibrant extension worker service to disseminate and train farmers how to utilize technology, improved seeds, fertilizers, improved crop and livestock husbandry practices among other measures.
- Investment in grain reserve storage facility and other improved local storage methods to reduce post harvest losses.
- Micro-irrigation and cultivation of short-cycle cereal varieties and crop diversification to reduce vulnerability to droughts.
- Replicate initiatives from countries within the region such as use of mobile phones to boost productivity. Through mobile phones, information on crop and animal diseases, market prices and give guidance on how to maximize yields are passed on to farmers.
- Rehabilitation and building of rural access roads to open up vast areas in the country.

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- Increase budgetary allocations to the agricultural sector in line with the Comprehensive Africa Agricultural Development Programme (CAADP).
- Develop efficient functioning markets to stabilize and improve the food security situation through initiating and organizing farmers to form cooperatives to help provide necessary rural facilities, including those relating to input and output marketing, and financial services.
- Elimination of uncertainty associated with unclear rules and regulations and corruption to facilitate trade for the benefits of traders in the country.
- Creating an enabling legislative and policy framework for PPPs to facilitate uptake of investments in all sectors in the country.

A comprehensive and complementing approach that involves investing in programmes at the local and national level to improve agricultural productivity and sustain the livelihood of individuals and households, especially vulnerable women and children, will represent the first step to overcoming food insecurity in the country. In addition, since conflict is both a cause and effect of under-development which affects food insecurity, there is a need to incorporate conflict interventions in livelihood programmes and vice versa. Deliberate efforts have to be made to include provision of basic infrastructure such as water for livestock, which is a trigger of conflicts. Similarly, peace-building initiatives backed up with monitoring activities to detect and contain security threats can greatly reduce tensions and to allow for productive economic engagements to reduce poverty and food insecurity.

1.0 Introduction

The South Sudan's estimated 640,000 square kilometers of land has vast potential for agricultural production. The country has abundant fertile land and water resources. About 90% of the total land is considered suitable for agriculture of which 50% is prime agricultural land. Annex I shows South Sudan livelihoods zones. Soil and climate conditions allow for a wide variety of food and cash crops. Most farmers grow sorghum, maize, millet, and upland rice according to location. Other crops grown include groundnuts, cassava, green grams, cowpeas, beans, sesame, pumpkins and tobacco. Crop production is mainly rain fed and is almost exclusively by manual means with rudimentary basic tools. The area of land cultivated is determined by family labor availability; and by the minimum acreage required for assurance of basic household food supply. Over 80% of the population derives their livelihood from agriculture with the majority producing at subsistence level³. Cropping areas are cultivated under a shifting regime due to declines in soil fertility after successive crops. Livestock keeping is important to the country as a major source of livelihood to the majority of the population and also makes significant contribution to the economy. Livestock are primary investment resources which generate food (meat, milk), cash income, fuel, clothing, employment and capital stock and also provide manure and draught power for crop production. In addition, livestock are stores of wealth which provide a sense of security, prestige, social status and cultural value⁴.

Despite the great potential, only about 4% of the land is used for crop production⁵. Per hectare yields are low compared to production from other countries within the region. At the same time, the country is a net importer of livestock products from the neighboring countries. Total area cultivated, low yields per hectare and limited economic activities have contributed to food insecurity in the country and greatly diminished the economic potential for the majority of the population residing and relying on agriculture and livestock for their livelihoods.

2.0 Agriculture Sector Contribution to the Economy

The agriculture sector in South Sudan is largely subsistent, consisting mainly of small-scale agriculture and livestock-raising. The sector is based predominantly on livestock and a wide range of crops such as grains, pulses, fruits, vegetables, coffee and tea with very little domestic commercial production. It is estimated that 78% of households depend on crop farming or animal husbandry as their primary source of livelihood⁶. Fifty three (53%) percent of food consumed comes from own production while market purchase accounts for 32% and the remaining 15% constitute non-monetary informal exchange such as labor contribution for food.

³ South Sudan Development Plan 2011-2013

⁴ Economic impact of east coast fever in Central Equatoria State of South Sudan in the International Research Journal of Agricultural Science and Soil Science, August 2011

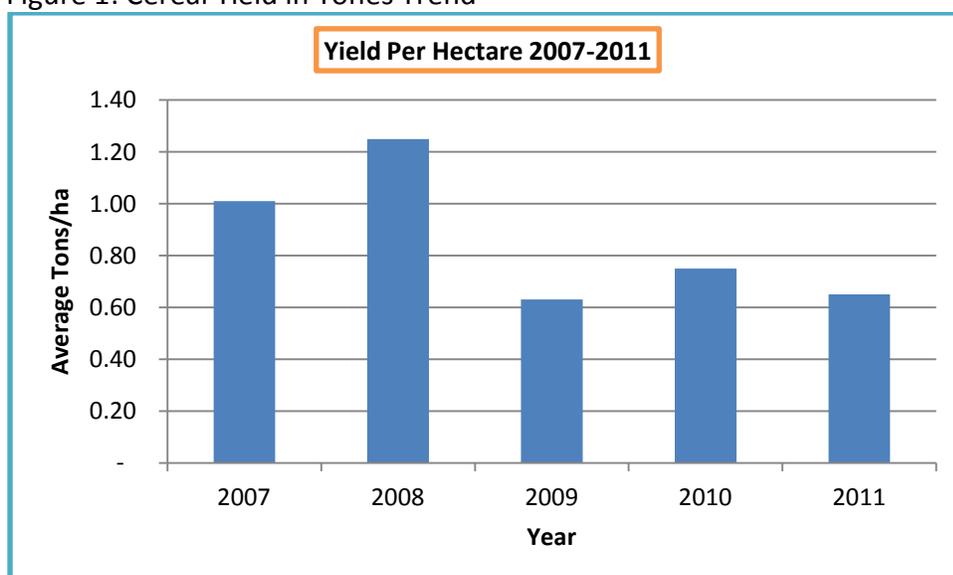
⁵ FAO SIFISA Land Cover Database, 2010

⁶ South Sudan Development Plan 2011-2013

The agricultural sector has the potential to be an additional engine of growth to the oil sector that would allow the country to diversify its economy to achieve transformational development and reduce poverty and food insecurity.

The agricultural sector employs about 80% of the population mainly in the form of small-scale subsistence farming including agri-business⁷ and constitutes about one-third of the country's GDP⁸. Cultivated area in South Sudan has historically ranged between a minimum of one percent and a maximum of two percent of the total area (i.e. 650,000 – 1,300,000 ha)⁹. According to FAO-WFP (Crop and Food Supply Assessment Mission for South Sudan-CFSAM 2009), about 1 million hectares were put under cultivation in 2008, an increase from 2007 levels associated with increasing numbers of returnees. Harvest of the “traditional” (non-irrigated) sector for 2008 was estimated to be 1.25 million tons of cereal crops. Sorghum is the main cereal, followed by millet and maize, with an average yield of 1.01 tons/ha compared to Africa's yields range of 1.04 to 1.14 tons/ha¹⁰. Figure 1 shows yield per hectare for various years.

Figure 1: Cereal Yield in Tones Trend



More recent data indicate that cereal production covers 859,622 hectares with a household cultivating an average of 2.4 hectares for cereals and other crops. See Annex II on cereal harvested area and net production by State since 2007. Figure 2 shows cereal harvested area

⁷ South Sudan Agricultural Market Investment: Innovative Use of a PPP to Build Institutional Capacity Rapidly, FAO 2008

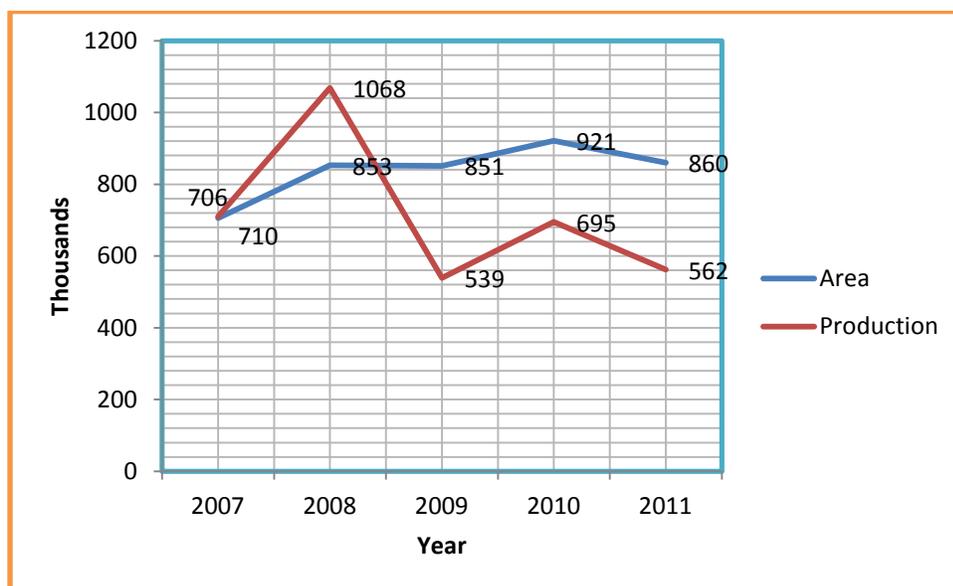
⁸ Expanding Agriculture and Food Security Activities in South Sudan, USAID 2009

⁹ World Bank, Interim Note for the Republic of Sudan, March 2008. Report No. 43036-SD

¹⁰(FAO: The World Sorghum and Millet Economies: Facts, Trends and Outlook. Document Repository <http://www.fao.org/docrep/W1808E/w1808e02.htm#TopOfPage>)

and net production by the small scale farmers (traditional sector). About a quarter of land cultivated is by large scale mechanized farms while the rest is predominantly by small scale subsistence farming¹¹. According to Crop and Food Security Assessment (FAO/WFP Feb 2012), South Sudan's national cereal production in 2011 was about 19% below the previous year and 25% lower than the average for the last five years. The cereal deficit for 2012 is estimated at more than 470,000 metric tons which is almost half of the country's total consumption requirements for the year. The deficit is attributed to poor production methods, large number of returnees and trade restrictions between Sudan and South Sudan and inter-communal conflicts. The report finds that the level of food insecurity in the country has risen sharply among the population from 3.3 million in 2011 to 4.7 million in 2012.

Figure 2: Cereal area and Production Trend



Source: Statistics from FAO/WFP Crop and Food Security Report February 2012

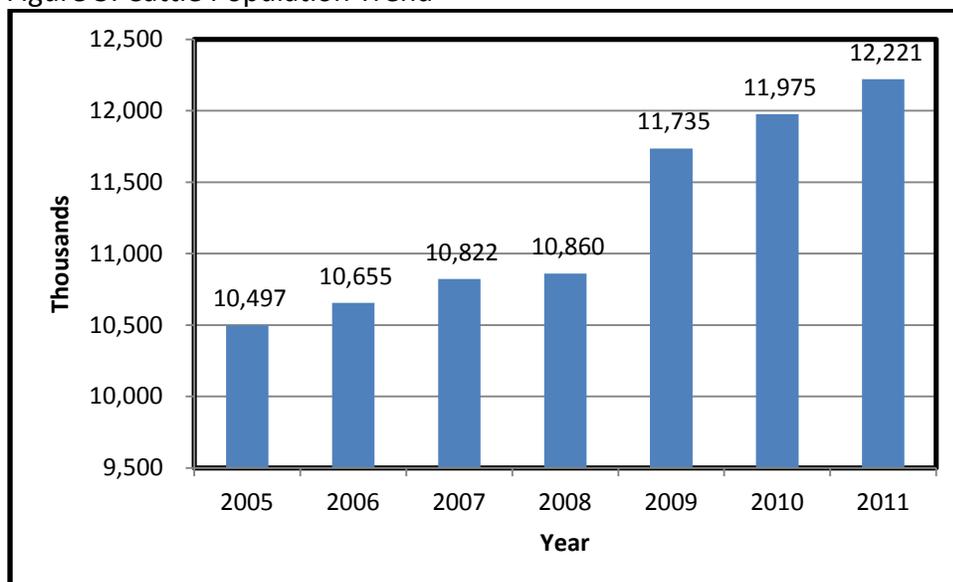
The rangelands of South Sudan have got a large number of animals available in all the livelihood zones. Annex III shows cattle distribution in the country by State while Figure 3 is a trend of cattle numbers since 2005. The livestock production system is based on agro-pastoral and pastoral exploitation with a cattle population estimated at 12.2 million (with an asset value of over US\$2.4 billion¹²), plus almost equal number of goats and same number of sheep. Livestock is a productive asset which is a source of food, income and draught power. Livestock also plays a key role in socio-cultural life of pastoralist communities. About 75% of the population keeps livestock. The livestock population in South Sudan makes it one of the countries densely populated with livestock (mainly cattle and small ruminants) and with a calculated average

¹¹ Annual Needs and Livelihoods Analysis 2011/2012, February 2012

¹² Annual Needs and Livelihood Analysis 2011/2012

number of livestock at 25 per household¹³. Although livestock provide source of food and income, the huge numbers kept are more for cultural rather than commercial purposes.

Figure 3: Cattle Population Trend



The drastic increase of the livestock numbers in 2009 is as a result of including population numbers for Lakes State which was not available in the previous years.

Over the years, agricultural production has remained far below its potential in the country. This is partly explained by the fact that South Sudan has been a battleground for two civil wars that resulted in severe suffering, loss of life and opportunities, widespread poverty, greatly undeveloped capacity and food insecurity. The level of food insecurity has ranged between one third and one half of the population over the past three years¹⁴ but several factors have continued to constrain productivity. Similarly, the level of poverty is extremely high. South Sudan ranks among the lowest countries in the world in terms of most standard human development indicators. Available human development index (HDI) is for Sudan which includes South Sudan at 0.408¹⁵ in 2011 and is ranked among low human development countries. Although there is no HDI for the new country, the parameters used to gauge

Households in South Sudan rely on a combination of agriculture, wild food gathering and hunting, fishing, livestock keeping and barter/exchange as the basis of their livelihoods. Access to food is seasonal and location-dependent. By carefully balancing household food needs with strategic movements to seasonal areas of supply, households are able to increase their resilience in the face of regular natural hazards, such as droughts and floods. It is only when insecurity keeps people or cattle from moving that period of unusually acute hunger occurs. Southern Sudan Livelihood Profiles: 2nd Edition, May 2007

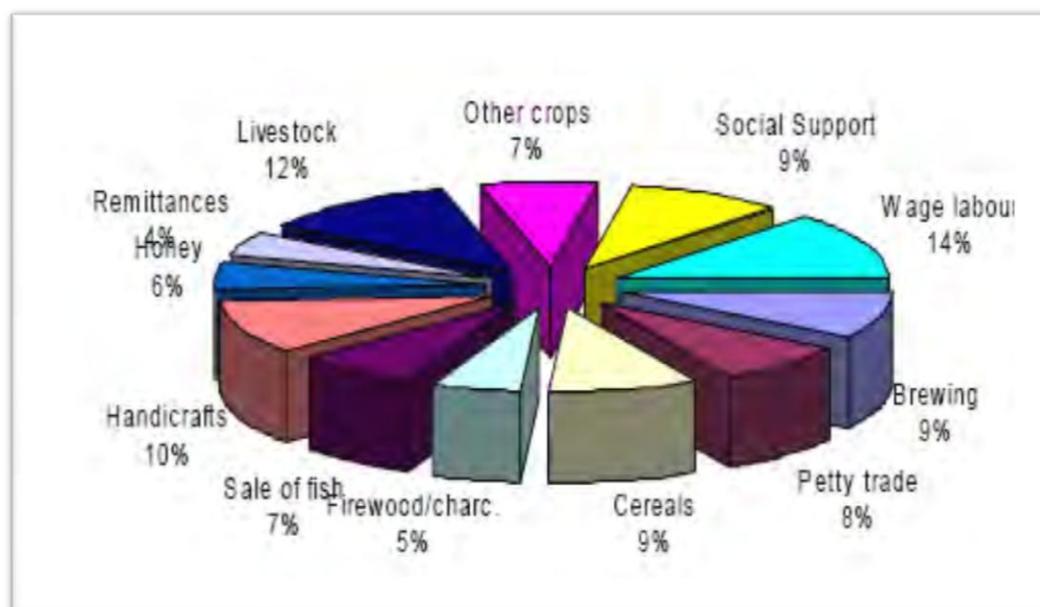
¹³ FAO/WFP CFSAM report 2011, and Musinga, et al. 2010

¹⁴ SSDP 2011-2013

¹⁵ International Human Development Indicators, UNDP 2011

the level of human development are the lowest within the region. Poverty levels are estimated at 51% of the population, only 27% of the population is literate while health indicators remain wanting. Economic livelihoods are largely dependent upon subsistence agriculture, livestock production and a variety of small scale off-farm income generating activities. Figure 4 shows various sources of income in rural South Sudan.

Figure 4: Source of Household Income in South Sudan



Source: WFP-FAO-MAF, (2006)

Sources of household income in South Sudan are highly diversified but related to agriculture sector. Apart from remittances that accounts for only 4%, sources of income in the rural areas are from farm related activities with livestock at 12% while cereals and other crops account for 16%. Labor, which is important in farming and herding activities, contributes 14% of the rural income.

2.1 Role of Markets on Household Food Supply

Market purchases are important source of food for South Sudanese households according to the 2009 National Household Baseline Survey (NHBS), which supply accounts for 58% of total dietary energy consumption requirements. Food purchases also represent a substantial portion of households' total expenditure, accounting for 79% at the national level.

Markets have low volumes of agricultural products. According to one FoodNet study, some 55% of farmers in the study sample were more than 6 kilometers from the nearest market. It is almost exclusively women traders who sell agricultural products in markets; mainly women traders with very few marketing their own produce. In large markets, a large percentage of goods are imported. FOODNET/CRS/SSARP Market Opportunities Identification for Selected Crops in the Equatoria Region of Southern Sudan – Phase II.

South Sudan's imports of agricultural products amounts to around 12% of GDP while exports are negligible¹⁶.

According to FSMS data, only 16% of South Sudan households derive their financial income through cereal sales and an additional 7% of household principal income is generated through sales of other food crops. It is evident that markets and own food production are the main sources of food in the country. A significant proportion of South Sudan imports are comprised of food items either processed or raw materials¹⁷.

2.2 Challenges Facing Agriculture Development

There are many challenges facing agriculture development and food security in South Sudan. The major obstacles include lack of investment in agriculture and livestock production, insecure land tenure system, absence of facilitative laws for private investment, as well as inadequate support services and infrastructure.

South Sudan's rain-fed mechanized sector is mainly found in two states, Upper Nile and Unity. Mechanization is limited to only land preparation while all other operations from sowing to harvesting are manual¹⁸. Individual farms are expansive and can cover several thousands of hectares of crops mainly sorghum, millet, maize, sesame and sunflower. A farmer would make a decision at the end of the season as to which parts of his crop to harvest or abandon based on the cost of manual harvesting, the estimated yield and the prevailing market price. All these factors contribute to losses either at the farm level or on the market chain.

The FAO/WFP assessment (February 2009) report points out that a major obstacle to the sector progress is the state of the transportation infrastructure. The cost of transporting produce from producing areas to the markets is prohibitive. Absence of grinding mills (maize to maize flour) or processing plants (fresh cassava to tapioca/gari) that might add value to the products, compounds the problem. Transportation poses a major problem for the movement of both people and commodities throughout the country especially during the rainy season largely due to poor and undeveloped nature of road infrastructure and limited availability and high cost of transport facilities. It also serves as a disincentive to produce surplus food products, as farmers find it expensive and very difficult to transport surpluses to markets. This discourages farmers in fertile areas from producing at capacity, even when there are food shortages in surrounding states.

A survey done by the Ministry of Agriculture and Forestry with FAO and WFP in 2006 to identify constraints for improved crop production ranked pests/crop diseases and shortage of seeds as

¹⁶ Approved Budget 2012-2013

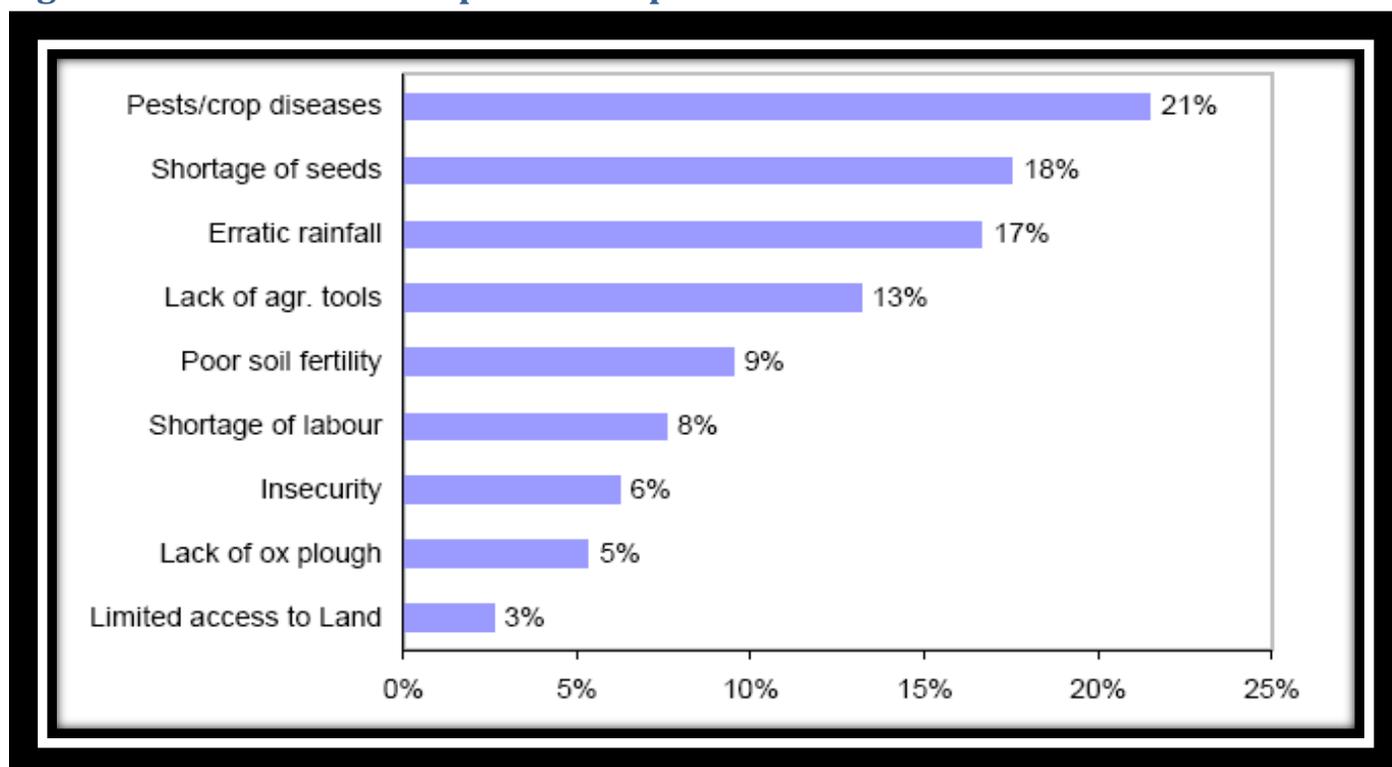
¹⁷ Draft report on a study on South Sudan's Competitiveness and an Assessment of the Country's Cross Border Trade with Neighboring Countries, June 2012

¹⁸ FAO/WFP Crop and Food Security Assessment Mission to South Sudan February 2012

the main hindrances as shown in Figure 5. Productivity decline in agriculture and food insecurity can also be explained by the lack of extension services and the absence of efficient research for disease resistant crops and inadequate training opportunities. Provision of extension services is negligible, and the majority of farmers have no education on better farming methods. This is exacerbated by inadequate marketing and transport services. Because of transport bottlenecks that stem from poor state of roads, short and expensive supply of motorized transport services, farmers cannot market their goods or access basic supplies from the main cities. Constraints on access to land and unclear property rights, including inequalities between men and women over control of resources are key impediment to agriculture production.

Another factor limiting agriculture growth potential includes partial commercialization of agriculture in the country associated to lack of appropriate storage facilities. Farmers lose a significant amount of harvested crops to pests and insects due to grain decays or infestation by pests. There are also economic losses from low prices due to lack of access to markets for poor quality grain, or arising from poor quality or contaminated food. Physical grain losses contribute to high food prices by removing part of the food supply from the markets.

Figure 5: Constraints to Improved Crop Production

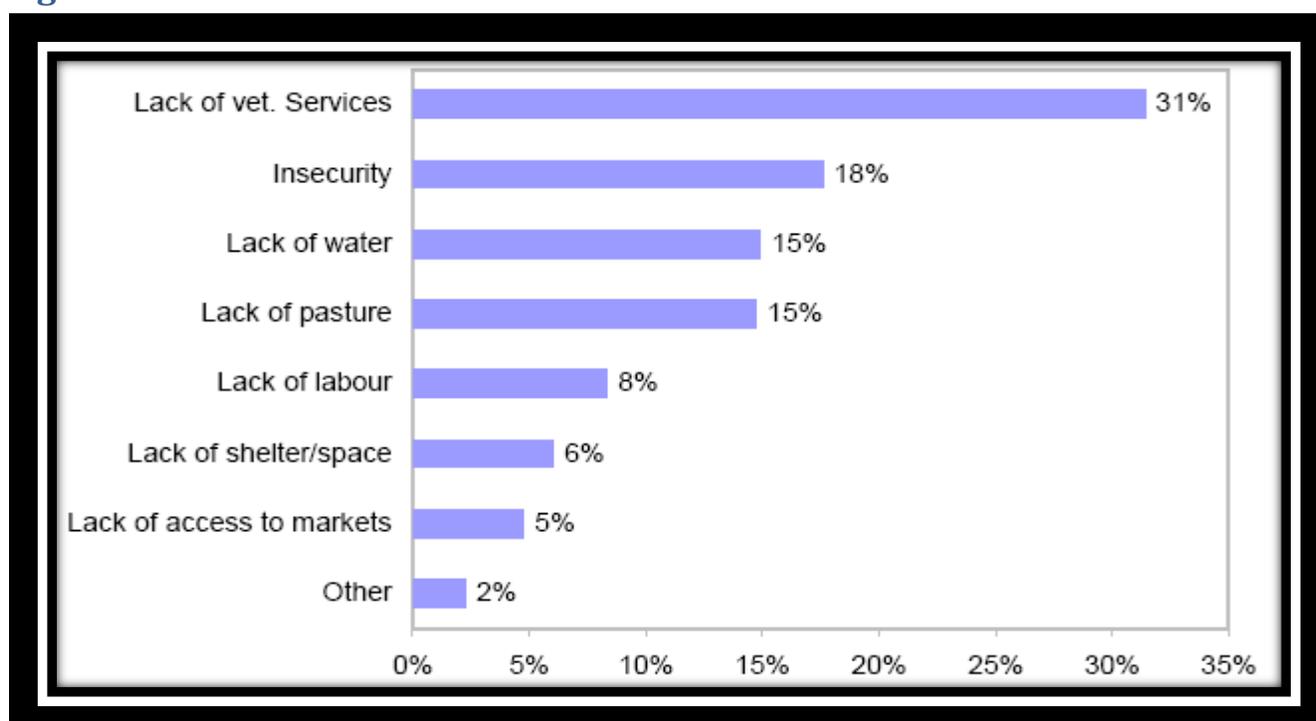


Source: WFP-FAO-MAF 2006

The livestock production system is characterized by low milk production, poor quality of meat and low production for market, lack of value addition on products and high mortality for

livestock. According to Annual Needs and Livelihood Analysis Report (2012), there has been increasing trend in demand for live animal and products. However, the current livestock production is less than 20% of the potential due to high calf mortality rate (of about 40-50%) and adult livestock mortality (10-15%). The report indicates the challenges facing the sector as inadequate veterinary and advisory services, low breed potential, traditional husbandry practices, seasonal feed and water availability and quality, and poor livestock marketing structure. From the FAO and WFP 2006 survey, livestock farmers identified lack of veterinary services as the main constraint at 31% of the assessed households. Figure 6 shows identified livestock production constraints as reported by livestock keepers. Agriculture farming and livestock keeping indicate lack of labor at 8% in both cases. This is explained by rural-urban migration phenomena as young people migrate to urban areas to seek other livelihood opportunities other than agriculture and livestock causing serious problem of labor.

Figure 6: Livestock Constraints



Source: WFP-FAO-MAF 2006

The other factors contributing to low livestock productivity include poor pasture management, water and relatively unproductive breeds, both consequences of the fact that cattle are kept more for social than for direct commercial reasons and that numbers are therefore more important than quality.

Insecurity is a major contributing factor for low economic engagement in most parts of the country. For livestock keepers, armed cattle rustling are a serious problem in the country. Incidents of cattle raiding are common especially in the northern states of the country. Insecurity associated with cattle raiding, intra and inter ethnic conflicts, and rebels militia result in displacement of population and directly impact agricultural production (through loss of assets) and inhibit access to far fields used for cultivation. There are huge losses of livestock assets compared to the potential associated with insecurity and conflicts. In order to mitigate the potential repeated attacks, there has been an increase in the concentration of livestock in areas in close proximity to urban centers¹⁹. However, the pattern of livestock movement intensifies demand on pasture, increasing the potential for the continuation of conflicts over grazing rights.

Conflict is the most damaging hazard for livelihoods and basic food security in South Sudan. Continuous fighting over the past 20 years and its attendant consequences have continually undermined access to markets and migration, and denied households the opportunity to effectively address structural seasonal food deficits which typically occur between April and August²⁰.

Natural hazards and droughts that stem from the lack of seasonal rains do contribute to poor harvests, livestock death and food insecurity in many parts of the country. Poor harvest, poverty, failed rains and pasture shortages, together with an unstable social and political environment that can be traced to civil wars and conflict, as well as the absence of good governance have combined and contributed to underdevelopment, serious food crisis and food insecurity in the country.

Flooding is a common phenomenon in some parts of South Sudan, especially in the western and eastern flood plains. As flood prone areas are dominated by clay soils, heavy rains generate water-logging and local floods in low-lying flat agricultural land often results in heavy crop and livestock losses and displacement of many people. Current attempts by relief and development agencies in mitigating the effect of floods include construction of dykes and emergency provision of short maturing crop varieties.

3.0 Initiatives in the Agriculture Sector and Related Sectors

3.1 Government Focus

The main objective in the SSDP 2011-2013 economic development pillar is to attain diversified private sector-led economic growth and sustainable development that improves livelihoods and reduces poverty. The Natural Resources sector under the economic pillar intends to improve livelihoods, income generation and food security for the people of South Sudan through

¹⁹ Crop and Food Security Assessment, February 2012

²⁰ Southern Sudan Livelihood Profiles, 2nd Edition May 2007

sustainable use of natural resources and land management. This is geared towards increased agriculture and livestock production in the country.

Substantial progress has been made by the government over the years (since 2005) which have led to expansion of area cultivated and increase the cereal harvested area for cereals. At the same time, agricultural and forestry equipment and seeds have been distributed to vulnerable farmer groups to increase production. The establishment of the Crop and Livestock Market Information System with the help of partners has improved food security information sharing in the country through market data collection and analysis in selected localities. This helps in monitoring of market prices of major agricultural and livestock products which is important for addressing the supply and demand pattern and access dimension of food security.

Another significant accomplishment is the development and enactment of the Food and Agriculture Framework 2006 legislation and Forestry Policy 2007. Major strides have been made in drafting of laws on land policy, which would help to address constraints on access to land and property rights if implemented.

The government has developed several sectoral policies with significant agriculture and food security elements that have potential to facilitate rural development, increase agriculture and livestock productivity, empower the majority poor, and reduce food insecurity. Among the policies include the Animal Resources Policy Framework, the Fisheries Policy Framework, the Transport Sector Policy, the Trade and Industry Policy among others.

While these accomplishments are laudable and may transform the agriculture sector and hence the rural development, implementation of these policies appears to be slow. This can partly be explained by lack of appropriate institutional arrangement to coordinate various policies, and their interconnectedness with other sectoral policies and actors. Further explanatory factors include unclear targets to enable monitoring and evaluation, inadequate resource allocations and generally poor business environment that fail to create incentives for investment and trade in agriculture and agricultural related products.

3.2 Initiatives from other Organizations

By July 2008, over 120 agencies (NGOs, CBOs and UN agencies) were undertaking some interventions to support food security in the country²¹. The major focus of interventions range from improving crop production and post harvest system, livestock production and fisheries, environmental protection and natural resource use, advocacy and conflict resolution, agribusiness and income generation, nutrition and food aid assistance, developing information

21 Food security and Livelihoods Interventions in Southern Sudan, July 2008

systems and coordination and monitoring of interventions. The interventions have been taking place in collaboration with a number of South Sudan government ministries.

Several agencies are involved in interventions to improve crop production and productivity. The interventions range from seed and tool distribution, promotion of animal traction and agricultural mechanization, support to local tool production, promotion of soil and water conservation, promotion of dyke construction to mitigate flooding and training on improved practices.

Livestock being a key livelihood activity for South Sudanese people, focus by various institutions have been on providing extension services in livestock production and health; improving veterinary public health through construction of slaughter houses and slabs and training of meat inspectors; animal restocking; some limited work in providing water sources among other interventions. On the fishing industry, interventions mainly have been in provision/distribution of fishing gear (twines, spools, hooks, floaters, sinkers etc), training on net and boat making, good fishing practices and fish preservation and processing.

The main source of livelihood for about 76% of the South Sudan people is crop, livestock production and fishing while wages and salaries comprise of 12%. About 4% of the population operate own enterprises²². The remaining 8% of the population relies mainly on other sources such as property income, remittances, pensions and aid for their livelihoods. Interventions in this area that are geared towards improving food security focus mainly on empowering groups, associations and cooperative societies by promoting income generating activities or enterprises. By supporting various group outfits involved in income generating activities, such as saloon services, tailoring, masonry, carpentry and tea shops, the groups would generate income and purchase food from items from the markets.

Food utilization is one of the components of food security quality aspects. Understanding the basics of nutrition is vital in attaining food security. Interventions in nutrition area have been directed at providing basic nutrition education, supplementary feeding programme, inpatient feeding programme and therapeutic feeding programme which target mainly pregnant women, breastfeeding mothers and people living with HIV/AIDS.

A number of agencies in South Sudan have been helping in coordinating food security and livelihood activities with FAO as lead UN agency supported by WFP. Coordination is done in collaboration with the government and State ministry of agriculture. There is a major bi-annual forum on food security and livelihood coordination which is held at the national level while coordination meetings take place monthly at the State level. Through the coordination meetings, agencies share their experiences; draw lessons learnt and come up with common points of action. The major UN agencies in food security and livelihoods (FAO, WFP and UNICEF) work in partnership with over 50 NGOs/CBOs in the implementation of their

²² National Baseline Household Survey 2009

project/programme²³. There are many NGOs and CBOs on the ground involved in food security and livelihood activities supported by UN agencies.

4.0 Developing Agriculture to Transform and Feed the Country

While agriculture has the potential to provide a feasible option for broad-based economic growth and improve food security that promises to transform rural economy and create wealth, it is important that candid short, medium and long term actions are taken. The government in the SSDP 2011-2013 identifies agriculture and livestock has having the potential and the most feasible option for broad-based sustainable economic growth and food security. This entails refocusing on the rural sector activities to increase investments in agriculture and livestock farming, information, improving storage, transport, market and financing access while addressing insecurity and conflict among the communities. To achieve food security, it is necessary to pay attention to both supply and demand side variables (production and consumption). As the sector represents the mainstay of the livelihoods for the majority of South Sudanese citizens, its development is central to transformational change ensuring food security, equitable wealth creation and distribution, and peace restoration.

4.1 Legislative and Policy Framework

Addressing the challenges facing agriculture and food security requires co-ordinated responses that draw on the strength of all stakeholders. They must be addressed within coherent national strategies for agriculture, in partnership with the state departments of agriculture, other government departments, farmers, the private sector and civil society. This requires putting in place appropriate policies, legislation, programmes and institutions, as well as mobilizing resources at the national and state levels.

The government needs to develop clear and measurable policy objectives to be monitored and evaluated with specific timelines to assess progress towards achieving the proposed goals for addressing agricultural productivity and food security. Such policy objectives should be accompanied by relevant strategies that require collective action and multi-sectoral effort. Currently, various dimensions of food security have not been adequately and systematically captured in most of the sector policy documents. For instance, a transport policy needs to be clear on how it would facilitate opening up of rural feeder roads to ease transportation of agricultural inputs and products to the markets.

It is important to have an overarching national food security policy and strategy to harmonize all other related and supportive policies for consistency and development of the sector for transformational economic development and food security. A comprehensive food Security strategy will provide direction and clear guidance for developing and updating relevant sector

²³ Food security and Livelihoods Interventions in Southern Sudan, July 2008

policies and strategies. It will also contribute in providing an environment in which agriculture and food security issues are discussed and acted upon by all stakeholders. The proposed Food Security Council (FSC) yet to be operationalized provides an opportunity to forge and promote multi-sectoral activities. The draft food and agricultural development policy (2011) if passed and implemented will provide a broader policy framework for agricultural development including policies for: i) production support services– with a special look at how the private sector can be harnessed to provide various services including input delivery and mechanization; ii) expanding agricultural markets, value chain development and finance – with a special emphasis on agribusiness development; iii) interrelationships between food security, social development and climate change; iv) policy coordination; and v) monitoring and evaluation of progress

Land ownership structure makes it difficult for large agricultural enterprises to set up farming businesses and deploy modern technology and equipment that small, individual farmers can access. The right to use land within a village is linked to the customary kinship structure which is still being practiced. One of the key arguments against customary land tenure has been that it inhibits the individual from utilizing the land to produce commercially for the market and create personal wealth. In this regard, customary land tenure is seen to be more appropriate to subsistence production and it is suggested that in order for land to be used productively, customary land tenure must be transformed and give way to modern tenure that is based on markets. Land reform to address access to land including measures to resolve potential land disputes is critical to create facilitative environment for private sector to venture into agriculture farming as a business. This will require enacting laws and policies to safeguard both public and private entrepreneurs' interests which currently receive very minimal protection. Access to land and guarantees for both the investor (guaranteed length of time for use of land) and the community (guarantee that there will be benefits to community members) need to be clear as the government promotes agricultural commercial investments in the country.

In addition, it is necessary that such investments are in line with its priorities of improving food security, reducing poverty, and developing rural areas. The government's recognition of customary land tenure in the transitional constitution and the Land Act is a step in the right direction, but affected populations in rural areas need to be protected from would be opportunistic investors. This will ensure investors and their local partners do not benefit from opaque rules and procedures as the country puts in place a framework for a responsible private investment in South Sudan.

4.2 Building and Strengthening Capacity

Capacity development represents one of the most significant variables that can enhance productivity, transform the agricultural sector, reduce poverty, and thus promote food security and socio-economic development. Building the institutional infrastructure in the country and capacity development as a long-term and sustainable approach by individuals, groups, societies, and institutions to identify, promote and realize their socio-economic development goals, and thereby transform and improve the conditions and quality of life for members of the community is critical. There is a need to strengthen government capacity for policy formulation, implementation and monitoring and information collection and management, at the national and state levels. At the State level, there is also a need to strengthen capacity to develop strategies and priorities and to monitor and evaluate programmes. In addition, building capacity to support the immediate needs of the agricultural sector through specific short term skill development training is important.

Public sector capacity to provide services and develop policy, legal and regulatory frameworks is needed to create the necessary infrastructure for agriculture and livestock to achieve its full potential. There are a number of intra- and inter-ministerial institutional arrangements for proposed activities that aim to contribute to food security dimensions. However, the establishment of these institutions is not time bound. In some cases, coordination mechanisms with other institutions that promote a specific activity supporting food security dimensions is not mentioned or not well developed.

South Sudan does not have a functioning agricultural research agency. Key initiatives include building the capacity of research institutions and the establishment of a positive relationship between the research institutions and farmers through a process where trained technical extension specialists serve the agriculture sector, especially those in the rural area.

4.3 Research and Extension Services

Agricultural productivity growth requires the development, dissemination and adoption of relevant technology by farmers. Challenges in the sector include weak or non-existent agricultural and livestock research and extension services, poor quality animals, lack of animal health services, as well as pests and diseases of both crops and livestock. South Sudan needs to come up with an established mechanism for effectively passing on research findings to the farmers. A vibrant extension worker service is crucial if the benefits of research findings are to benefit farmers. This is based on the understanding that extension workers are the link between farmers and a research programme. Village extension workers could disseminate innovations (improved technologies), from the research programme to farmers with the aim of increasing yields. At the same time, village extension workers could communicate production problems from the farmers to the research programme for solutions. For effectiveness and efficiency in agricultural and livestock production, village extension workers would have to be trained in extension methods and communication on the subject. Extension workers should be deployed at the lowest state levels to be closer to the farmers to advise on improved farming practices on food production. Research will have to be publicly funded or more realistically in

the short run, funded by donors where its outputs are such that all people can enjoy research benefits.

Most farming activities are carried out in the rural areas where the literacy rate is very low with 76% of people who can neither read nor write. This partly explains why many farmers in South Sudan still use traditional methods and follow the old established pattern of farming. To be efficient and to increase productivity, farmers have to be trained to learn and use improved farming methods to increase yields for own consumption and for markets. The effective way of reaching out to the farmers is through on-farm training and demonstrations on improved farming methods including visible examples of success.

4.4 Reducing Post-harvest Losses

The rate of post-harvest losses is estimated within the regional countries to range from 15% to as high as 50% of what is produced. The causes include: harvesting at an incorrect stage of produce maturity, excessive exposure to rain, drought or extremes of temperature, contamination by micro-organisms and physical damage that reduces the value of the product. Crops also lose value because of spillage, damage from inappropriate tools, chemical contamination or rough handling during harvesting, loading, packing or transportation as well as pest infestation. In Guinea where between 70% and 80% of the population depends on agriculture for its livelihood, a project by FAO was designed to reduce post harvest losses from around 20%. Some 100 silos, ranging in capacity from 100 to 1800 kilogrammes were distributed to the farmers. Dozens of artisans were trained in the construction and installation of silos. As a result, farmers were able to reduce losses in their grain stocks to a minimum and defer sales until better market conditions prevailed. Such initiatives are easy to adopt in the country ensuring that they are tailored to suit local conditions. To make technologies such as silos accessible to small scale farmers, interventions also are needed in other areas. In most cases, farmers cannot afford the materials to build the silos. Therefore, setting up funding mechanisms through revolving funds and loans to facilitate the diffusion of better storage containers would greatly reduce losses.

Other initiatives to reduce losses can include farmer training centers with examples of improved local storage facilities. There are traditional on-farm seed storage facilities consisting of thatch and mud construction in the country. It is common for crops to be stored over the kitchen fire as one way to decrease pest infestations. Improvements of such local storage methods can be a starting point towards cutting down post-harvest losses.

4.5 Increasing use of Agriculture and Livestock Inputs

Agriculture plays a crucial role in sustainable development and in hunger and poverty eradication. Agricultural productivity growth can bring about swift and sustainable reductions in hunger and poverty. Increasing agricultural productivity remains one of the most effective ways to combat hunger and poverty. In South Sudan, productivity of farms has to be improved

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in order to increase agricultural production. While at least 80% of households are engaged in cultivation, low productivity is a primary concern with an average cereal yield of 0.5-0.8 t/ha in the small-holder sector compared to a possible 2.2-3.2 t/ha in neighboring countries²⁴. Increasing productivity would require utilizing technology, improved seeds, fertilizers, water management and micro-irrigation schemes, improved crop and livestock husbandry practices and substantially increased use of ox-ploughs to improve the timeliness of land preparation among other measures.

Transforming the traditional subsistence agriculture into a productive enterprise that goes beyond meeting household's food needs is key for making agriculture the engine of economic growth in the country. This could be achieved through the expansion of farmer training opportunities such as Farmer Field Schools (FFS) and demonstration farming to boost subsistence farming. Developing appropriate mechanisms to support improved access to high quality seeds, tools and credit is crucial.

Sustainable livestock production requires some investment in the abundant pasture and water resources to increase both production and productivity. Although livestock are an important asset with tremendous economic potential, cultural values overshadows cattle as a livelihood and economic tool. Livestock production system needs to be fully integrated with crop production system, which is one way of reinforcing the two enterprises. Some of the actions required to improve livestock production and productivity include livestock marketing, improving animal disease monitoring and surveillance and to ensure effective disease prevention and control measures and developing pastoralist early warning system indicators. The government can spend money on veterinary services to cover the public veterinary functions of epidemic monitoring and inoculations as a public good while at the same time introducing and creating incentives for private sector investments to also provide such services.

There is also need for investment for value addition for livestock products ranging from the processing of meat, milk to hide and skin. This may require substantial initial capital outlay; and suitable. Such initiatives may warrant private-public partnerships. Factories for the above would definitely create demand, commercial value and market for livestock.

Farming in the country is subject to recurrent production failures due to drought and floods. Micro-irrigation, water harvesting and cultivation of short-cycle cereal varieties is an option that could reduce vulnerability to droughts. Households are over-dependent on cultivation of cereals. Therefore crop diversification could help households to maximize production of the entire cropping season. Diversification in the rural economy could unlock new potential and expand rural economies. Expansion should include value addition and development of new opportunities and enterprises in agricultural production and service provision that could

²⁴ South Sudan Annual Needs Livelihood Analysis, February 2012

revolutionize rural transformation. This can be achieved through improving private and public partnerships in supporting rural agricultural entrepreneurial development, through agro-processing and other value adding initiatives for niche, rural products and promoting programmes that encourage innovative entrepreneurial development for rural agricultural produce by creating market opportunities and availing information.

South Sudan can replicate use of mobile phones to boost productivity by utilizing services of what is referred to as Community Knowledge Workers (CKWs)²⁵. Uganda has a network of more than 850 CKWs. A CKW is a local person, often a subsistence farmer, chosen by their community. Equipped with a phone and trained in how to effectively use it, they spend a portion of each day visiting the fields of other farmers. They are called upon to help find information on crop and animal diseases, provide market prices and give guidance on how to maximize yields. They also collect information from the farmers such as which crops are growing and expected yields on behalf of organizations ranging from the World Food Programme to Great Lakes Coffee (a local coffee purchaser) that lack an affordable means of collecting such real-time information. This network helps farmers increase productivity and earn more for their efforts while providing much-needed information to organizations that work with these farmers.

4.6 Developing Supportive Infrastructures

Among South Sudan's top developmental challenge continues to be the shortage of physical infrastructure. Greater economic activity, enhanced efficiency and increased productivity are hampered by inadequate transport, communication, water and power infrastructure. Poor rural infrastructure severely hampers access to markets. While regional countries may be eager to do business with South Sudan, it is difficult to access South Sudan markets, especially in the interior, due to poor infrastructure. The lack of infrastructure is a serious obstacle to overall development and contributes to low level of intra-state trade and trade within the region.

Rehabilitation and building of rural access roads is important to open up vast areas in the country. Countries within the region have reported significant increases in the farm-gate prices of staple food crops such as cassava, maize, and milk in Uganda and maize in Kenya. The positive changes in agricultural prices are due to the significant improvement in the road network to highly productive areas previously unable to access markets for appropriate agricultural inputs. At the same time, there is increased accessibility to the farms by produce buyers due to a reduction in transportation costs and travel time from rural areas to major towns. Further, post-harvest losses have been cut by approximately 20% in Uganda, notably for perishables such as milk, cabbages, tomatoes, pineapples, and water melons. Other benefits as a result of opening up rural areas are the emergence of several rural growth/trade centers, and more permanent houses and new schools and health facilities.

²⁵ Making mobile phones work for the poor

4.7 Increasing Budgetary Allocations

The allocated budget for agriculture in 2012/13 budget amounted to SSP343 million, a decrease by 4% from the 2011/12 budget. However within the fiscal year allocation, it represents an increase of 5.2% from 3.5% in the previous period. The principal components of the Ministry of Agriculture's activities focus on enhancing the technical capacity of the relevant institutions. While the overall sector allocation appears to move in the right direction in increasing budgetary allocations to agriculture sector to 10% of the government budget as agreed by the African countries in the 2003 Maputo Declaration, the aggregates masks serious reductions in other supportive sub-sectors. For instance, allocation in the animal resources and fisheries budget fell by 18% from the previous period while there is no allocation for cooperatives and rural development sub-sector. While the current year had unique challenges, it would be important for the government to move in the direction of the Maputo Declaration and increase the budgetary allocations to the sector. Adoption and implementation of the Comprehensive Africa Agricultural Development Programme (CAADP), which is an African governments' commitment towards addressing issues of agricultural sector growth, rural development and food security will greatly boost the sector in the country.

4.8 Developing Well-Functioning Markets and Trade Facilitation

Adequate supplies and efficient functioning markets are important to stabilize and improve the food security situation. At the same time, higher prices provide the potential to benefit households' selling surplus produce.

To help the rural poor participate in the markets, agricultural output must diversify, quality of produce must improve, and agro-based processing must add value to primary products. Rural agricultural communities must also obtain greater access to credit. The communities can become better organized through cooperatives, which can help provide a range of necessary rural facilities, including those relating to input and output marketing, and financial services. Cooperatives provide a good linking mechanism, allowing farmers to collectively access the marketplace, both to market their crops and to access credit and farm inputs at reasonable rates.

Agricultural co-operatives play an important role in supporting small agricultural producers and marginalized groups such as young people and women. Using cooperative model in the country will ensure empowerment of their members economically and socially and would create sustainable rural employment through business models that are more resilient to economic and environmental shocks.

Prices for various food items differ considerably from one state to another. The price differentials that exist between markets serves to illustrate the lack of spatial market

integration, primarily attributed to high transfer costs, given the large distances between major markets and poor transport infrastructure. Given this high degree of market segmentation, any disruption of established trade routes severely constrains local supplies. Furthermore, potential opportunities to market surpluses exist with improvement of usable feeder roads to enable farmers to access farming inputs which act as incentives to expand production. In the short to medium term, rehabilitation of the national road networks should be a priority to help address obstacles for efficient market functioning. The budgetary allocation for infrastructure development in 2011/12 was about 10% but drastically reduced to about 2% in the 2012/13 budget which is inadequate for any meaningful improvement of road conditions. Increased allocations for infrastructure improvement and development will open up rural areas and boost agriculture productivity and food security.

A further factor affecting efficient market functions and higher prices is the multiple unauthorized road blocks and check points, adding to overall costs and delivery time. These additional costs amounts to a prohibitive level of “taxation” on the marketing of surplus food, and may be a major reason for food insecurity. The government needs to undertake effective measures to eliminate unofficial check points and heavily sanction any remaining unauthorized road blocks. Elimination of uncertainty associated with unclear rules and regulations and graft at customs agencies will facilitate trade and act as an incentive for farmers to produce more. This, together with a set of rules, standards and taxes that are stable, predictable and common across states and also along the borders with other countries would go a long way to convince farmers that investing in food production and trade makes sense.

4.9 Fostering Public Private Partnerships

Governments and public authorities are increasingly turning to Public Private Partnerships (PPPs) to deliver efficient and cost-effective services to citizens. PPPs can help public sector entities shorten delivery times, share risks, achieve better value for their money and increase innovation in their service provision. Such partnerships allow private sector organizations to apply their skills and experience to agriculture development and operation and mobilize finances for long-term investments. Despite their potential, however, PPPs are highly complex policy instruments and must be fully understood and professionally implemented and managed if they are to deliver on their potential²⁶.

The public sector has to transform if private sector is expected to take a key role in agriculture development. South Sudan has to transform its predominantly smallholder based agriculture in order to become a more efficient in production and competitive in the regional and world markets. This will require addressing public-private partnerships challenge related to the transformation of the public sector and how policies and regulatory frameworks can be

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accelerated with catalytic public investment made in order to create the enabling environment for private investment.

PPPs hold great promise for achieving agricultural development in South Sudan. PPPs are necessary considering that no single institution can, by itself, achieve the task of improving farmers' livelihoods. It is imperative that partners working across the agricultural value chain be mobilized and organized to provide synergy and sustainability of deployed innovations on farmers' fields. This will lead to increase in institutional alliances, which strive to unite a wide variety of public and private sector organizations around shared research and development objectives.

In order to be effective in fostering the creation of PPPs and in unlocking their latent potential for food security, it is important the government invests in understanding what it takes to make such partnerships effective. In addition, creating an enabling legislative and policy framework for PPPs will facilitate uptake of investments in the country, not only in agriculture but also in other equally crucial areas that need heavy investments such as infrastructure (roads, telecommunications, water, power) development.

5.0 UNDP Action Point

Working with partners and within UNDAF, UNDP interventions to reduce food security in the country will be in three tiers, i) enhancing and building capacity, ii) increasing agriculture and livestock productivity, iii) reducing post-harvest wastage, iv) promoting a vibrant public-private partnership, v) conflict intervention in the livelihood and vi) facilitating production of a communication strategy.

i) Enhancing and Building Capacity

UNDP will provide technical and financial support as appropriate in drafting laws, policies and guidelines especially those relating to access to land to encourage private investment in agriculture and livestock production. UNDP will use regional and international networks to provide the appropriate models that can be replicated to suit location conditions for sustainable land utilization for increased food production.

ii) Increasing Agriculture and Livestock Productivity

There are several institutions working on initiatives to increase food productivity. UNDP will collaborate with such agencies and institutions especially in providing training on innovative technologies. This will be done in conjunction with training institutes at appropriate states by using a combination of methods such as extension services, field demonstrations among others. This will build community-based extension cadre to impart basic knowledge and skills to improve household food production. The trained personnel will offer extension services at the state and lower levels. UNDP will also collaborate with partners to support a research programme linked to farmers that is geared towards increasing crop productivity and livestock breed upgrading.

iii) Reducing Post-harvest Losses

UNDP will provide appropriate support on handling and improved storage facilities to reduce post-harvest losses. This includes handling of perishable commodities such as milk, vegetables, meat among others. Improving milk production and promoting marketing of milk and dairy products including milk hygiene and safety will reduce losses; provide the commodity to markets which are readily available while providing income to the livestock keepers. In addition, UNDP will support scaling up of initiatives such as cooperative movements to assist small-scale farmers in accessing inputs and markets for their products. Value-addition will be the ultimate objective of UNDP's intervention.

iv) Promoting Public-Private Partnership

To ensure participation of the private sector in agriculture and livestock production and value-addition, UNDP will collaborate in providing the necessary support to create

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awareness of the importance of PPPs. This will facilitate creation of an enabling legislative and policy framework to unlock the potential in PPPs especially investment large irrigation projects, food processing, hides and skins tanning to boost food security and employment in the country. PPPs hold the potential to invest in other sectors that need huge investment outlays which the government is unable to undertake. The government only needs to create conducive environment for the private sector to thrive.

v) *Conflict Intervention in the Livelihood*

UNDP will incorporate conflict interventions in livelihood programmes to include provision of basic infrastructure such as water for livestock, which is a trigger of conflicts. Peace-building will be done together with introduction of economic activities for the youths and will be backed up with monitoring activities to detect and help contain security threats which will require conflict early warning systems as well as security mechanisms to deal with impending events.

vi) *Communication Strategy*

UNDP will work initiate development of a communication strategy to ensure the initiatives undertaken are communicated and disseminated not only to the beneficiaries but to other potential stakeholders to encourage scaling up of what works. Particularly, this will be focusing on extension and community development to orient rural development focusing on agriculture and livestock. The main thrust to communicate to the farmers and livestock keepers the new ideas and practices in order to improve their living conditions.

6.0 Conclusion

As noted by the World Bank in its “Interim Strategy Note” (March 20, 2008), the key challenges in the agriculture sector are to overcome a legacy of public bias toward large-scale public irrigation rather than the rain-fed agriculture practiced by the poor, improving access to more reliable domestic water through rainwater harvesting, improving resilience in the face of shocks, addressing environmental degradation, improving marketing efficiency, and strengthening capacity for agricultural support services and technology adoption. A long term strategy is to use oil resources to fund micro-irrigation schemes and water harvesting while at the same time, setting up improved mechanisms to address production, storage, and marketing to minimize losses. To underpin all these, it will also be necessary to facilitate access i) to land with durable, enforceable property rights for farmers to ensure that necessary private investments is forthcoming; ii) to markets outside the local area, including export markets.

A comprehensive approach that involves investing in programmes at the local and national level to improve agricultural productivity and sustain the livelihood of individuals and households, including that of vulnerable women and children, will represent the first step to overcoming food insecurity in the country. Since different states have potential for different types of crops produced locally, improvements in indigenous crops and species together with local planning and the adoption of indigenous methods of dealing with anomalies in climate will go a long way in helping overcome food insecurity.

Investment in the agricultural sector and creation of employment opportunities for income are essential for the achievement for food security. Since majority of Sudanese citizens rely on agriculture, livestock and related services for their livelihood, investment in the sector will create employment opportunities that will enable people to have income that will be used for food purchases in the markets. The public-private partnerships also will provide opportunities for investment in value-addition providing more employment opportunities.

Initiatives to improve crop storage and transport facilities could result in expanded food supplies in a relatively short time by reducing losses to pests and spoilage after harvest. This perspective is very similar to the position of the FAO/World Bank (2011) which states that reducing food losses is increasingly recognized as part of an integrated approach to realizing agriculture’s full potential, along with making effective use of today's crops, improving productivity on existing farmland, and sustainably bringing additional acreage into production. Thus, addressing waste across the entire food chain must be a critical pillar for national food strategy. Investing in post-harvest technologies to reduce food losses could significantly increase the food supply. Government should create an enabling environment; reduce market transaction costs by investing in infrastructure such as roads, electricity and water; slashing illegal taxation of agriculture production and strengthening agricultural research and extension, particularly in identifying where losses occur along the food chain and how to tackle them.

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There is evidence that households sell some of their produce to obtain income which indicates the potential to apply market incentives to stimulate production of marketable surpluses, which in the long-run will also boost household food availability. This also requires concomitant improvement in road and market infrastructure as well as agricultural inputs supported by necessary institutional arrangements (legal and policy research, extension services). Income and livelihood diversification activities would help to expand income options for households to boost their resilience.

Like in many other African countries, South Sudan needs to foster collaborative efforts between the public and private sectors towards growth and development of agriculture. Partnerships are important since the public sector alone cannot provide the level of investment needed to drive the much needed agricultural sector transformation. The government must be ready to create an enabling environment for effective operation by the private sector through strategies such as providing the framework for the partnership, assisting in removing barriers to trade, investment in critical infrastructure and human resource and promoting linkages between the agricultural sector and industry.

Conflict is both a cause and effect of under-development which affects food insecurity. There is a need to incorporate conflict interventions in livelihood programmes and vice versa. This should include provision of basic infrastructure such as water for livestock, which is a trigger of conflicts. Peace-building backed up with monitoring activities to detect and contain security threats can greatly reduce tensions. This requires conflict early warning systems as well as security mechanisms to deal with security threats.

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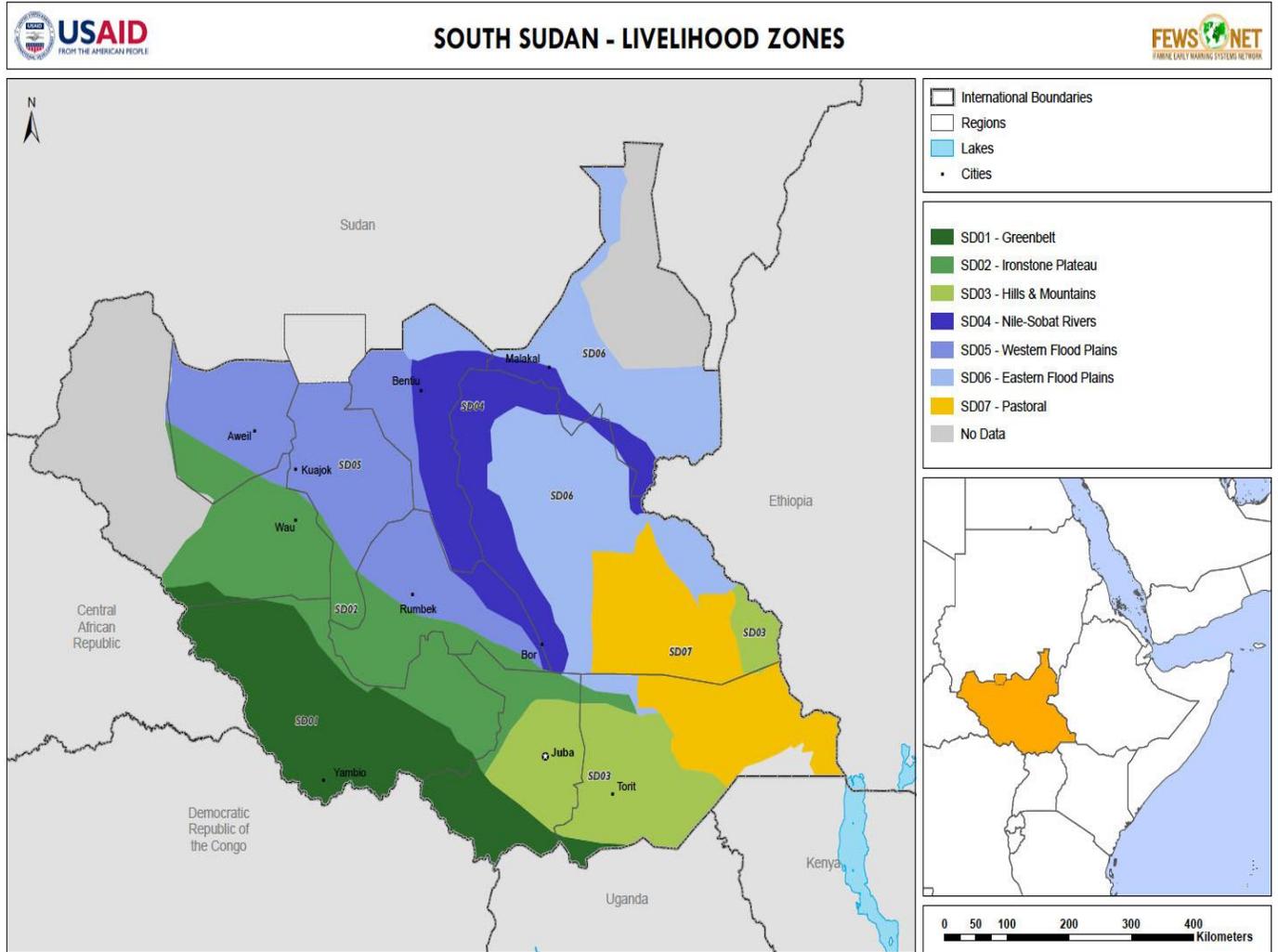
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8.0 Annexes

Annex I:



Source: Fewsnets, November 2009

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Annex II: Cereal Area Harvested and Net Production

Area under Cereal Cultivation Trend (000) in the Traditional Sector					
State	2007	2008	2009	2010	2011
Upper Nile	55	79	77	78	68
Unity	27	43	37	40	34
Jonglei	90	115	104	143	128
N Bahr el Ghazal	50	59	71	79	68
W Bahr el Ghazal	32	34	39	37	41
Lakes	77	84	69	76	70
Warrap	112	116	119	126	84
Central Equatoria	106	131	121	127	123
Eastern Equatoria	66	85	98	103	115
Western Equatoria	91	107	116	112	129
South Sudan	706	853	851	921	860

Net Production Trend in the Traditional Sector (000)					
State	2007	2008	2009	2010	2011
Upper Nile	48	67	34	49	26
Unity	25	42	18	24	8
Jonglei	76	126	38	84	65
N Bahr el Ghazal	37	44	49	60	40
W Bahr el Ghazal	39	52	30	34	35
Lakes	79	101	53	66	45
Warrap	103	145	90	94	46
Central Equatoria	112	201	72	93	78
Eastern Equatoria	55	94	53	79	99
Western Equatori	136	196	102	112	120
South Sudan	710	1068	539	695	562

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Annex III: Cattle Numbers in Thousands by State (2005-2011)							
State	2005	2006	2007	2008	2009	2010	2011
Upper Nile	990	1,005	1,021	1,024	983	1,003	1,024
Unity	1,189	1,207	1,226	1,230	1,180	1,204	1,229
Jonglei	1,475	1,497	1,521	1,526	1,465	1,495	1,526
N Bahr el Ghazal	1,590	1,615	1,640	1,646	1,579	1,611	1,644
W Bahr el Ghazal	1,256	1,275	1,295	1,300	1,248	1,274	1,300
Lakes					1,311	1,338	1,365
Warrap	1,539	1,562	1,586	1,592	1,528	1,559	1,591
Central Equatoria	895	908	922	926	878	896	914
Eastern Equatoria	883	896	910	913	888	906	925
Western Equatoria	680	690	701	703	675	689	703
South Sudan	10,497	10,655	10,822	10,860	11,735	11,975	12,221