

Annual Needs and Livelihoods Analysis

SOUTH SUDAN



January 2011



Annual Needs and Livelihoods Analysis Technical Group

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Abbreviations

ANLA	Annual Needs and Livelihoods Analysis
BSFP	Blanket Supplementary Feeding Programme
CES	Central Equatoria State
CFSAM	Crop and Food Security Assessment Mission
CFSVA	Comprehensive Food Security and Vulnerability Analysis
CPA	Comprehensive Peace Agreement
CSI	Coping Strategies Index
EES	Eastern Equatoria State
FAO	Food and Agriculture Organization of the United Nations
FCG	Food Consumption Group
FCS	Food Consumption Score
FEWS NET	Famine Early Warning System Network
FSMS	Food Security Monitoring System
FSNA	Food Security and Nutrition Assessment
FSTS	Food Security Technical Secretariat
GAM	Global Acute Malnutrition
GoSS	Government of South Sudan
HH	Household
IDPs	Internally Displaced Persons
IMSAM	Integrated Management of Severe Acute Malnutrition
IPC	Integrated Phase Classification
IYCF	Infant and Young Child Feeding
LRA	Lord's Resistance Army
MDG(s)	Millennium Development Goal(s)
MOAF	Ministry of Agriculture and Forestry
MOARF	Ministry of Animal Resources and Fisheries
MOH	Ministry of Health
MOPI	Ministry of Physical Infrastructure
MOSD	Ministry of Social Development
MT	Metric Ton
NBS	Northern Bahr el Ghazal State
NCDA	Nasir Community Development Agency
NGOs	Non-Governmental Organizations
RCA	Rapid Crop and Livestock Assessment
RCSO	Resident Coordinator's Support Office
SAM	Severe Acute Malnutrition
SDG	Sudanese Pounds
SFP	Supplementary Feeding Programme
SSRRC	South Sudan Relief and Reconstruction Commission
TFP	Therapeutic Feeding Programme
TFU	Therapeutic Feeding Unit
UNHCR	United Nations High Commission for Refugees
UNICEF	United Nations Children's Fund
UNKEA	Upper Nile Kala-azar Eradication Association
UNOCHA	United Nations Office for Coordination of Humanitarian Affairs
VAM	Vulnerability Analysis and Mapping Unit

WASH	Water, Sanitation and Hygiene
WBS	Western Bahr el Ghazal State
WES	Western Equatoria State
WFP	World Food Programme
WVI	World Vision International

Table of Contents

Acknowledgements	i
Abbreviations.....	iii
Table of Contents	v
List of Figures.....	viii
List of Tables	ix
Executive Summary	x
1 Background	1
1.1 General Introduction	1
1.2 Poverty and expenditure patterns	1
1.3 Objectives and methods.....	1
1.3.1 Introduction.....	1
1.3.2 Objectives	2
1.3.3 Approach	3
1.3.4 Methodology	3
1.4 Overview of crop and livestock conditions.....	5
2 Results of the Food Security Monitoring	6
2.1 Current food security situation and past trends	6
2.2 Characteristics of food insecure households.....	7
2.3 Programmatic implications of the profiles of food insecure households.....	10
2.4 Causes of food insecurity in 2010.....	10
3. Agriculture	12
3.1 Agricultural potential.....	12
3.2 Factors affecting agricultural production	12
3.3 Trends in agriculture.....	13
3.4 Trends in mechanized agriculture	13

3.5	Road infrastructure	14
3.6	Government (public) cereal reserves and Commercial stocks	14
3.7	Programmatic implications.....	14
4	Livestock Production.....	15
4.1	Livestock potential.....	15
4.2	Livestock diseases.....	16
4.3	Programmatic Implications	17
5	Fisheries resources	18
5.1	Background.....	18
5.2	Fishing potential of Southern Sudan	18
5.3	Fishing areas	19
5.4	Challenges for fishing	19
5.5	Response options for the fish sector	19
6	Markets and food prices	20
6.1	Limited Integration of local markets	20
6.2	Presence of multiple taxes and non-tariff barriers.....	21
6.3	Expectations during the referendum	22
6.4	Programmatic implications.....	22
7	Health and Nutrition	23
7.1	Prevalence of child malnutrition	23
7.2	Seasonal nutrition trends	24
7.3	Causes of malnutrition	25
7.3.1	Dietary intake	25
7.3.2	Illness.....	26
7.4	Programme implications	26
8	Water and sanitation	27

8.1	Drinking water source	27
8.2	Sanitation	27
9	Conflict and insecurity	29
9.1	Type of conflicts.....	29
9.2	Timing of the conflict.....	31
9.3	Effect of conflict and insecurity on livelihoods.....	31
9.4	Expectations during the referendum	31
9.5	Programming implications.....	32
10	Returnees resettlement and reintegration issues	34
10.1	Programming implications.....	34
11	Flooding	35
12	Food security outlook – December 2010 – March 2011.....	37
13	Expected scenarios and estimation of food and non-food assistance requirements in 2011	38
14	Community priorities, conclusions and recommendations	40
	Annex 1: Nutrition Assessment Results	43
	Annex 2: Calculation of Food Security Indicator.....	44
	Annex 3: State Summaries.....	48

List of Figures

Figure 1: Food security indicators	4
Figure 2: Rainfall performance, May-September, 2010	5
Figure 3: Vegetation conditions in October 2010 compared to last 10 years	5
Figure 4: Food security trends 2008-2010 (ANLA)	6
Figure 5: Changes in household food insecurity (% of HHs severely or moderately food insecure)	7
Figure 6: Food consumption groups.....	8
Figure 7: Consumption by food groups	8
Figure 8: Sorghum production categories (Total HH production)	9
Figure 9: Main sources of food	9
Figure 10: Frequency of consumption (days in the past 7 days) of main food groups by food security status	9
Figure 11: Expenditure on food.....	9
Figure 12: Reliability of income sources.....	9
Figure 13: Coping Strategies Index.....	10
Figure 14: Percent of households reporting shocks (ANLA/FSMS).....	11
Figure 15: Land cover map illustrating areas under crop cultivation during 2010.....	12
Figure 16: Constraints for crop cultivation in Southern Sudan	12
Figure 17: Agricultural production trends and 10 year averages -Units in 000's	13
Figure 18: Cumulative trends for cattle diseases (2001-2009).....	16
Figure 19: Fisheries potential areas of Southern Sudan.....	18
Figure 20: Evolution of market prices of key commodities in 2010	21
Figure 21: County level GAM Rates in South Sudan, updated November 2010.....	23
Figure 22: Child MUAC screening October 2010	24
Figure 23: Trends in GAM by state from various nutrition surveys and assessments, 2006-2010	24
Figure 24: GAM prevalence 1999-2006, Western Flood Plains Livelihood zone.....	25
Figure 25: Child illnesses in the past 2 weeks.....	26
Figure 26: Household drinking water source	27
Figure 27: Household toilet facilities	27
Figure 28: Cumulative conflict Incidents reported in 2010	29
Figure 29: Cumulative verified returnee population from 2005 – 2009	34
Figure 30: Flood-affected areas in 2010.....	35
Figure 31: Food Security Outlook (December to March 2001)	37
Figure 32: Community priorities (ANLA 2010/2011)	40

List of Tables

Table 1: Main features of the FSMS compared to the Annual Needs and Livelihood Assessment (Old ANLA)	2
Table 2: Number of households covered in October 2010 FSMS.....	3
Table 3: Food security status by State in 2010 (October FSMS).....	6
Table 4: Livestock population in South Sudan.....	15
Table 5: Main diseases of economic importance	16
Table 6: Main fishing areas.....	19
Table 7: Average rates of Global Acute Malnutrition from surveys in South Sudan	23
Table 8: Estimated Nutrition Cluster caseload in 2011	26
Table 9: Toilet type in the States (percentage of households).....	28
Table 10: Geographic distribution of conflict incidence in 2010.....	30
Table 11: Frequency of conflict by season in 2010	31
Table 12: A summary of various conflicting groups during 2009 (compiled by FEWS NET)	33
Table 13: Estimated food assistance requirements in 2011	39
Table 14: Proposed recommendations	41
Annex 1: Nutrition Assessment Results.....	43

Executive Summary

The findings of the 2010/11 Annual Needs and Livelihood Analysis (ANLA) indicate an improvement in food security compared to 2009. About 9.7% of the population will be severely food insecure compared to 21% in 2009. This severely food insecure is the segment of the population that is generally unable to meet their food and non-food needs from April onwards and would require unconditional humanitarian food and non-food transfers. The moderately food insecure category, generally able to meet their food needs unless there is a major shock, is estimated at 26% compared to 32% in 2009. They will require targeted conditional livelihood transfers, which include seeds, tools, training and income generation activities.

The food consumption score has improved markedly for most households and the number of households using distress or high-level coping strategies has declined. However, there is a continual reliance on unreliable and unsustainable income sources such as sale of firewood, building poles, which has direct consequences on the environment and also undermines other non-timber forest resources such as gum acacia and honey, which are potential income sources. Overall there was no significant difference in the consumption of cereals between the food consumption groups but the consumption of both animal and plant-based protein among the food consumption groups is clearly different. This is an indication of the need not only to pay attention to increasing food production but also the diversification of food base to ensure nutritionally adequate consumption.

There are number of risk factors that could undermine the gains in food security situation in 2010/2011. These include: continued high food prices due to expected declines in cross-border trade flows and number of traders during the referendum period, high returnee influx and potential adverse changes in security along the border area of northern and southern Sudan related to the outcome of the referendum.

Southern Sudan is continually affected alternately (or sometime in combination) by droughts and floods. An institutional mechanism is needed both at the state and GoSS-levels to support broad-based programming approaches encompassing early detection (through increased use of seasonal forecasts) and monitoring, preparedness and early response to minimize persistent effect of natural shocks on food production and supply. This requires the enhanced roles of the Food Security Technical Secretariat, focusing on hazard detection and monitoring and advocacy, and the Ministry of Humanitarian Affairs and Disaster Management dealing with preparedness and early response.

Insecurity has a multi-dimensional effect on livelihoods. It disrupts normal cultivation activities, constrains access to social facilities health, schools and markets, and affects movement and trade. It also creates conditions that limit access to food and potable water and affect the functioning and provisioning of health facilities. Therefore increased civilian protection as well as broad-based livelihood programming is required to address deep-rooted causes of conflicts as well as triggers of recurrent conflicts such as competition for resources.

The 2010/2011 ANLA mark a major shift in approach in the identification and estimation of needs from assessment to analysis. This shift is aimed to strengthen cross-sectoral analysis and partnership and promote broad-based programming. From 2010 the ANLA will be based on a system of regular food security monitoring rather than the one time single assessment conducted in the post-harvest season. This will generate information during the year which provides a basis for continuous engagement and analysis throughout the year.

This ANLA is based on the food security monitoring conducted in October 5-15, 2010 covering 1831 households in 8 out of 10 states. Data from secondary sources namely 2009 Sudan National Household Baseline Survey, 2006 Comprehensive Food Security and Vulnerability Assessment (CFSVA), Livelihood Analysis

Forum Analysis IPC-based food security outlook and Crop and Food Security Assessment Mission were reviewed, analyzed and integrated by the Annual Needs and Livelihood Analysis Technical Group.

Sudan is currently ranked 154th out of 169 in 2010 according to the UNDP Human Development Index. The poverty rate for southern Sudan is 50.6%. Southern Sudan is well endowed with natural resources, in addition to oil and minerals. However only 4% of arable land is cultivated, total livestock production is 20% of the potential, while fish production is only about 10% of the potential. These provide immense opportunities to enhance the overall economic and social well-being in southern Sudan. The exploitation of these resources is inhibited by structural factors including: limited infrastructure (roads, markets and social facilities), human capital and low integration and persistent insecurity. Especially increased public investment in infrastructure would assist to exploit this high potential.

According to the 2010 Crop and Food Security Assessment Mission (CFSAM), rainfall performance was favourable both in terms of onset and distribution. As a result there was a net increase in cereal production of close to 30% from 541,000 tons to 695,000 tons. This was attributed to an 8% increase in planted area in 2010 compared to 2009 and a modest increase in yield from 0.82 ton/ha to 0.95 ton/ha. However, the productivity gain is still very low compared to the average expected sorghum yield of 2.5-3.5 ton/ha. Overall agricultural productivity cannot be achieved in isolation; interventions to improve husbandry practices at the farm-level should be linked with improvements in infrastructure and markets, health and nutrition, water and sanitation and conflicts, among others. These are discussed in detail in the respective report sections and more sector-specific recommendations are given in Table 14 on page 42.

1 Background

1.1 General Introduction

The general election of April 2010 was an important milestone in the implementation of the Comprehensive Peace Agreement (CPA). Although it was not without challenges, it provides a key ingredient for having a functioning public sector, which is crucial for providing leadership and policy guidance in addressing the development challenges of southern Sudan.

The referendum on self-determination or unity underway for Southern Sudan will be the culmination of the implementation of the CPA since 2005. This is a key political event for southern Sudan which brings with it a number of challenges: returnees and the attendant issues of resettlement and reintegration, changes in security dynamics internally and along the border areas and possibilities of reduced cross-border trade as market fundamentals change, which would increase market prices.

Despite being well endowed with natural resources—in the form of arable land, livestock and fisheries, forestry and minerals—southern Sudan economy depends heavily on oil revenues that account for 98 percent of the Government budget. While significant improvements in well-being have been realized since the CPA, southern Sudan still experiences high poverty rate, lack of infrastructure and lack of economic diversification. These have created precarious food security and livelihood conditions.

1.2 Poverty and expenditure patterns

Sudan is currently ranked 154th out of 169 according to the UNDP 2010 Human Development Index. The National Household Baseline Survey of 2009 estimates the poverty rate of southern Sudan at 50.6 percent. Stated in other words, one out of two people is unable to meet the basic minimum consumption bundle of food and non-food items valued at SDG 72.9 per person per month. According to the report, food is the main category in the bundle accounting for 79 percent of the total consumption. Out of this cereals and bread accounts for 53.3 percent of the food expenditures. This high reliance on cereals increases vulnerability to crop failure and abnormal price movements.

The same report estimates that health and education accounts for 3 and 1 percent of the total consumption, respectively. This translates to an average expenditure of SDG 3 and SDG 1 per person/month and for the poor segment this is almost negligible. There is a need to increase public expenditures in these crucial sectors as they have an overriding effect on the development of human capital, which is a key driver of development for southern Sudan.

1.3 Objectives and methods

1.3.1 Introduction

The Annual Needs and Livelihood Analysis process has undergone significant changes in the last three years. This started with the inclusion of livelihoods in the needs identification process in 2006. This inclusion was prompted by the fact that needs and outcomes is the sum of the total livelihood context requiring broad-based and integrated solutions.

Needs identification in Southern Sudan has relied on a large one-time field assessment conducted in the post-harvest season. In 2010 a new data collection strategy based on regular food security monitoring (FSMS) has been adopted (see Table 1). It is hoped that this new system will provide continuous stream of information required to adjust programme priorities, serve as an early warning tool and trigger in-depth

assessments/surveys in specific areas and themes. It would also provide the basis for continuous engagement and dialogues between GoSS and development partners. The increased emphasis on collaborative analysis and programming necessitated that the acronym “ANLA” be renamed into the Annual Needs and Livelihoods **Analysis** because of the increased attention that will be given to multi-sectoral problem and response analysis. This strategic shift in the data collection approach simplifies the data collection effort, which allows for a continuous engagement of government and partners in detailed situational/problem analysis. This also allows an increased focus on response analysis and an articulation of interactions between main livelihood activities such as food security, agriculture and livestock, fisheries health and nutrition, water and sanitation, hygiene, population movements. The 2010/11 report harnesses the best practices from past reports and attempts to address additional livelihood sectors that have not featured strongly in the past reports.

Table 1: Main features of the FSMS compared to the Annual Needs and Livelihood Assessment (Old ANLA)

	Annual Needs and Livelihood Assessment	FSMS
Periodicity	Annual	Quarterly (Three Times a year)
Seasonality	Post harvest (November)	February (dry season), June (lean season), October (Harvest season)
Sampling	Purposive selection of households from typical locations representing different livelihoods.	Purposive selection of sentinel sites to represent main livelihoods and main administrative areas per State (10 sites x 25 households per State)
Pros	Useful when there was not continuous physical access.	Incorporates a greater variety of variables from complementary sectors, promotes continuous engagement of government and partners, generates data on seasonal trends.
Cons	Prone to measurement error, expensive, time consuming, limited identification of all main livelihood sector needs, unresponsive to changing needs throughout the year	Potential respondent fatigue and predictable responses. Substitution of sites due to lack of accessibility or insecurity may bias state-level findings.

1.3.2 Objectives

The primary purpose of the 2010/11 ANLA is to strengthen partnership and promote cross-sectoral analysis of food security and livelihoods. It brings expertise from different sectors to recommend broad-based food security and livelihood interventions that not only address the immediate short-term food and non-food needs but also the longer-term priorities. Therefore, this report is a product of collaborative engagement of GoSS, the United Nations, international and national NGOs and development partners.

The food security and livelihood outcome is a sum-total of the total livelihood context. Therefore the report focuses on the complex inter-sectoral linkages to describe the main food security and livelihood issues that require attention in 2011.

Specific objectives:

- 1) Assess the short-term and longer-term food security and livelihood needs.
- 2) Examine inter-sectoral linkages underpinning food security and livelihood outcomes.
- 3) Identify the programming implications of these livelihood implications and make recommendations.

1.3.3 Approach

The entire ANLA process was undertaken collaboratively with the support of the Annual Needs and Livelihood Analysis Technical Working group (ATWG) consisting of Food Security Technical Secretariat (FSTS), MoAF, MoARF, MoH, UNICEF, WFP, FAO, FEWS NET, VSF-B and CRS. This was constituted under the auspices of the FSTS to brainstorm and guide the ANLA re-engineering process. The terms of reference for the technical group was to review current analysis and reporting of past need assessment reports; recommend additional topics and analysis required to strengthen needs identification and response analysis; Identify livelihood topics that would expand the livelihood scope for the 2010 Annual Needs and Livelihood Analysis Report.

Ultimately the Technical Analysis group was divided into the following sub-groups to look into the following thematic areas: conflicts, returnee resettlement and reintegration, health and nutrition, agriculture and seed security, livestock and fisheries production and WASH.

The analytical process was supported by data from both primary and secondary sources.

- i) Data on food consumption and livelihood strategies was obtained through the Food Security monitoring system (FSMS) implemented by WFP. FAO and UNICEF with support of FSTS and GoSS ministries of Agriculture, Health and Animal resources and Fisheries.
- ii) Quarterly Livelihood Analysis Forum provided the IPC-based food security outlook for Dec 2010-March 2011.
- iii) A number of secondary data sources were also used: SSCSE Household Baseline survey, the Crop and Food Security Assessment Mission (CFSAM) report, UNICEF/WFP Jonglei Food Security and Nutrition Assessment report, Comprehensive Food Security and Vulnerability Analysis (CFSVA) report of 2007, and other multiple food security and livelihood reports.
- iv) Combined nutrition data from the nutrition and health cluster.

1.3.4 Methodology

Primary data for food security and livelihood data was collected through the FSMS which was implemented in 8 out of 10 states in October and November 2010 (Table 2).

The FSMS is implemented through 10 sentinel sites (per state) selected purposively to represent livelihoods and administrative areas and from which food security, livelihood and nutrition indicators are monitored. From each site 25 households were visited. For this round, the FSMS covered 1,831 out of 2,000 households (Table 2), due to physical access constraints and insecurity. Data was collected using household questionnaire and semi-structured community questionnaire. Data entry support was provided by the FSTS.

Table 2: Number of households covered in October 2010 FSMS

State	# of HHs
Eastern Equatoria	198
Jonglei	240
Lakes	250
Upper Nile	199
Western Bahr el Ghazal	249
Northern Bahr el Ghazal	250
Warrap	246
Unity	199
Total	1,831

Food security analysis¹ encompasses the integration of three main indicators: food consumption, food access and coping strategies (Figure 1). The analysis is done in following stages (see Annex 2 for more details):

¹ See also WFP (2009). *Emergency Food Security Assessment Handbook*. 2nd Edition. World Food Programme. Rome, Italy.

Stage 1: Food consumption pattern is computed based on food consumption score (FCS), which is a weighted score of frequency of food consumption and the nutritional value of the food. Based on the FCS, households are classified into three food consumption groups (acceptable, borderline and poor).

Stage 2: Food access indicator is derived by combining reliability and sustainability of income sources with relative expenditure² on food. Households are then classified as having poor, medium and good food access.

Stage 3: Coping Strategies Index (CSI) is computed based on the severity and frequency of coping strategies used. Based on this, households are then classified as having high, medium and low coping. A high CSI indicates severe stress and implies use of negative coping strategies that undermine the household's future ability to meet its needs.

Stage 4: Food security groups are obtained by combining food access and coping strategies with food consumption. Households are categorized into three food security groups: severely food insecure, moderately food insecure and food secure groups.

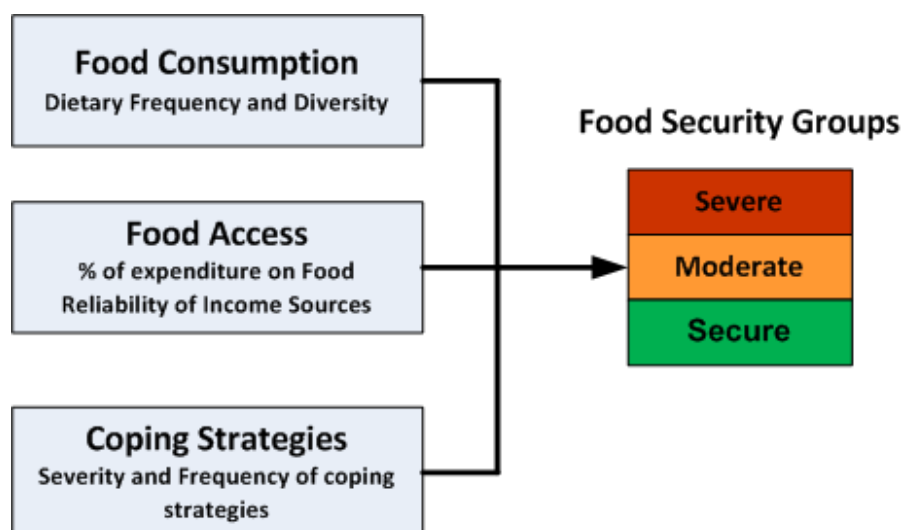


Figure 1: Food security indicators.

² Relative expenditure on food may be underestimated in cases where households rely on food aid or own consumption.

1.4 Overview of crop and livestock conditions

Compared to 2009, the 2010 agricultural season was characterized by timely onset and generally well distributed rainfall (Figure 2). Short-lived localized dry-spells, lasting 2-6 weeks, were reported in May-June in Upper Nile, Unity, Warrap and Jonglei states but this had minimal to moderate effect on crop production. The only exception was Central Equatoria where the delayed start of rains followed by dry spell in July affected the performance of the first season, but was compensated by the second season. In August and September, torrential rains and river-overflow caused localized flooding mainly in Jonglei, Northern Bahr El Ghazal as well as parts of Lakes, where it caused temporary displacements and some crop losses. A rapid assessment conducted in Northern Bahr el Ghazal in October 2010 observed that flooding had minimal direct effect on

crop as more than 70 percent of the crop was in the ripening/mature stage. However, post-harvest losses are likely to be higher than normal in all the flood-affected areas.

The 2010 CFSAM estimated an increase in cereal cultivated area of 8 percent from 852,000 hectares in 2009 to 921,000 Ha in 2010. Similarly a modest increase was noted in yield from 0.82 ton/ha to 0.95 ton/ha resulting in an overall increase in net cereal production from 541,000 tons to 695,000 tons in 2010, nearly 30 percent increase from last year. Although there is a modest increase in yield it is still much lower than the expected sorghum yields of 2.5-3.5 ton/ha.

A similar improvement in livestock conditions occurred both in terms of an increase in forage biomass and increased water availability for animals and domestic use. No major disease outbreaks were reported except for East coast fever in Jonglei and Central Equatoria, which resulted in loss of livestock. In these circumstances it is estimated that livestock will stay longer in the wet season areas, nearer to the homesteads which will prolong

Figure 2: Rainfall performance, May-September, 2010

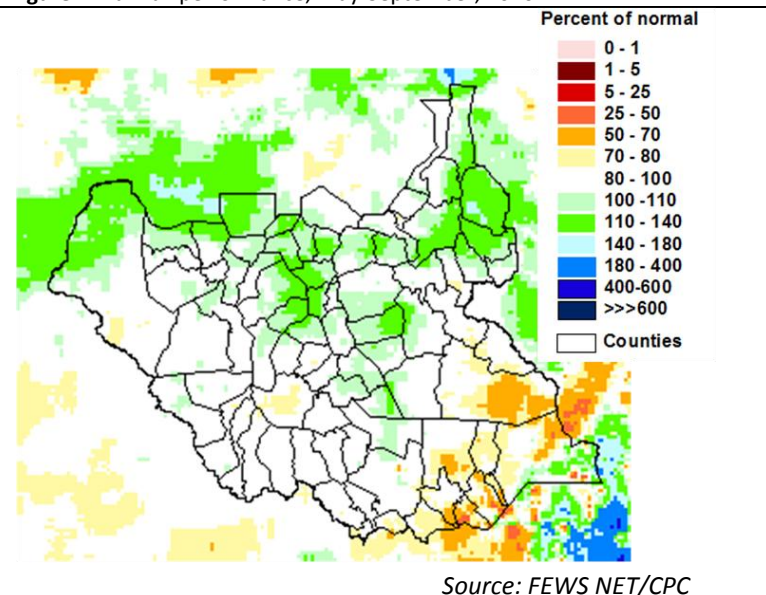
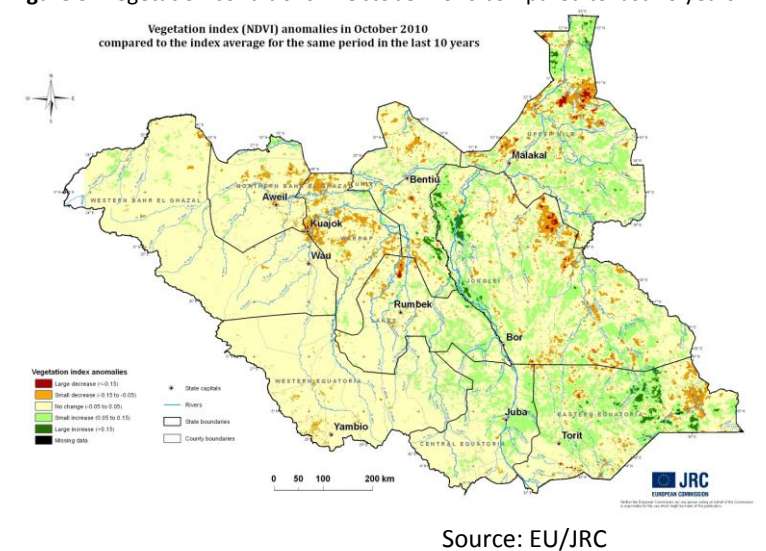


Figure 3: Vegetation conditions in October 2010 compared to last 10 years



availability of milk to cattle-keeping households (Figure 3).

2 Results of the Food Security Monitoring

2.1 Current food security situation and past trends

Based on the estimates from the 2010 FSMS, 886,000 people (9.7 percent) in Southern Sudan are severely food insecure. This category would require unconditional humanitarian food and non-food transfer. An additional 2.4 million people (26 percent) are moderately food insecure. This category requires well targeted conditional livelihood support (Table 3). This is a significant improvement in the food security in 2010 compared to 2009 when an estimated 21 percent were severely food insecure and 32 percent were moderately food insecure (Figure 4).

Table 3: Food security status by State in 2010

State	Projected population (2011)*	% rural population***	Projected rural population (2011)	% severely food insecure	% moderately food insecure	% food secure	All (Rural and Urban)		
							Severely food insecure	Moderately food insecure	Food secure
EES	985,637	91%	898,164	14.5%	34%	51%	143,000	337,000	506,000
Jonglei	1,477,874	90%	1,337,079	14.8%	24%	61%	219,000	351,000	908,000
Lakes	807,203	91%	731,750	13.2%	28%	59%	106,000	224,000	477,000
NBS	848,066	92%	782,896	6.9%	36%	57%	58,000	309,000	481,000
Upper Nile ⁺⁺	1,036,228	75%	777,171	7.0%	31%	62%	73,000	319,000	645,000
Warrap	1,071,435	91%	977,953	14.4%	34%	51%	154,000	367,000	550,000
WBS	367,535	57%	209,969	6.5%	20%	74%	24,000	72,000	272,000
WES**	675,274	84%	566,151	2.7%	18%	79%	18,000	123,000	535,000
CES**	1,224,425	65%	800,184	4.2%	17%	79%	51,000	211,000	962,000
Unity ⁺⁺	664,068	79%	527,139	6.0%	15%	79%	40,000	97,000	527,000
Total (weighted)	9,157,745	83%	7,608,458	9.7%	26.3%	64.0%	886,000	2,410,000	5,863,000

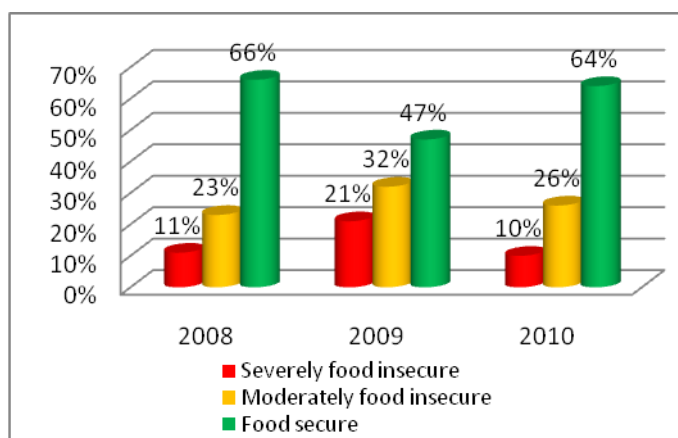
*Based on 2008 census, annual population growth 2.052% plus returnees

**Based on estimate (preliminary findings of National Health Survey and field visits).

***Based on 2008 population census

++FSMS estimates adjusted using preliminary findings of National Health Survey and field visits).

Figure 4: Food security trends 2008-2010 (ANLA 2010/2011)



The improvement in general food security status is attributed to better rainfall compared to 2009, and increased agricultural production and good livestock conditions.

More specifically:

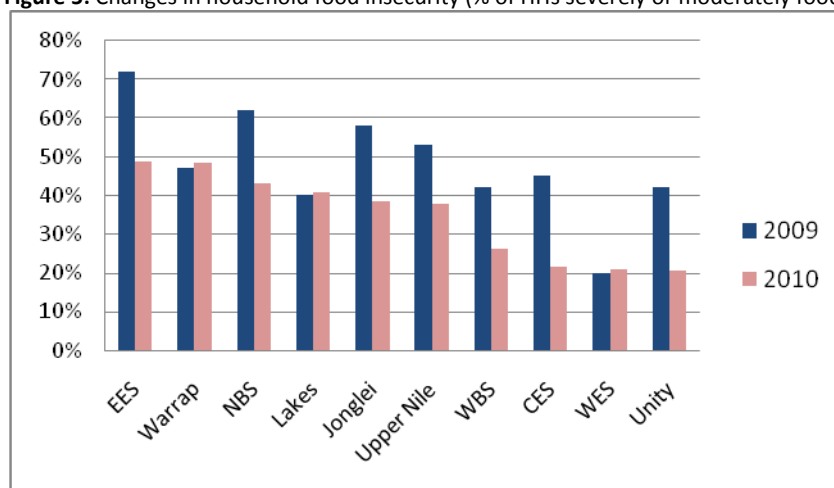
- Food consumption based on dietary diversity and frequency has improved. Households with poor food consumption reduced from 26 percent to 19 percent, while households with acceptable food consumption increased from 47 percent to 57 percent
- A higher number (47 percent) of households rely on own food production compared to 37 percent in the same period last year.

- iii) The number of households considered to have high share of food expenditure has declined from 41 percent of households in 2009 to 27 percent in 2010, an indication that households rely more on their own production.
- iv) The number of households using medium to high level/adverse coping strategies have declined from 28 percent in 2009 to 6 percent in 2010. Distress sale of livestock has reduced and in general households that reduced the number of meals and meal sizes reduced from 65 percent in 2009 to 23 percent in 2010.

However, there are a number of risk factors that could undermine the gains in food security situation. These include: 1) continued high food prices due to expected declines in cross-border trade flows and number of traders and change in trader behaviour; 2) Increased food demand due to large number of returnees 3) adverse changes in security dynamics along the border areas of northern and southern Sudan. Detailed scenarios are discussed in the section on the estimated needs (Chapter 13).

In terms of geographic distribution of food insecurity, the five worse off states include: Eastern Equatoria, Warrap, Northern Bahr el Ghazal, Lakes and Jonglei. Compared to the previous year, the food security situation improved across the entire region except for Warrap and Lakes where food insecurity levels remained the same. This is an indication that households were not yet able to recover from the drought last year due to their exposure to floods and increased insecurity restricting the mobility of people and livestock this year (Figure 5).

Figure 5: Changes in household food insecurity (% of HHs severely or moderately food insecure)



Source: FSMS October 2010, ANLA 2009/2010

2.2 Characteristics of food insecure households

The profile of food insecure households is based on food consumption, food production, income source and expenditures on food presented in Table 4 and Figures 6-13.

Severely food insecure households

Households classified under this category cultivate less than 2 feddans with an average household production of 1.8 (90kg) bags. In terms of food consumption, 98 percent have poor food consumption score, which means that households have low dietary frequency and diversity. Majority (75 percent) of the severely food insecure group consume <4 food groups. The mean consumption of protein is 1 day per week. In terms of livelihoods, majority (60 percent) of households in this category spend more than 65 percent of income on food but nearly half of the household depend on very unreliable income sources such as extraction of natural resources: firewood, charcoal burning and collection of other bush products. This indicates that this group has very

limited income opportunities. A significant proportion of households (16 percent) in this category depend on food aid in addition to own production and market purchase. These households are using low-level coping strategies which are expected to continue after the harvest season. In general this category of households has low resilience to multiple shocks and therefore requires unconditional humanitarian food and non-food resource transfers.

Moderately food insecure households

Households classified under this category cultivate slightly above 2 feddans with an average household production of 2.5 (90kg) bags. In terms of food consumption, slightly over 20 percent have poor food consumption score, which means that some households have low dietary frequency and diversity. Almost one-third of the household consume <4 food groups, with an average protein consumption of 4 days per week.

In terms of livelihoods, half of households in this category spend more than 65 percent of income on food but about 40 percent of the households depend on unreliable income sources such as extraction of natural resources: firewood, charcoal burning and collection of other bush products. These households depend primarily on own food production and market purchase. This category of households can generally meet their food needs but in the event of a shock their food security situation can deteriorate. These are candidates for conditional livelihood support and protection.

Food secure households

Households classified under this category cultivate slightly above 2 feddans with an average household production of 2.5 (90kg) bags. In terms of food consumption, over 70 percent have good food consumption score, which means that households have good dietary frequency and diversity. Over three-quarters of households in this category consume more than four food groups, with an average protein consumption of 5 days out of seven days.

In terms of livelihoods, about 70 percent of households in this category spend less than 50 percent of their expenditure on food and slightly over half (53 percent) of the households depend on more reliable income sources such as sale of agricultural produce and livestock. These households depend primarily on own food production and, to some extent, on market purchases. This category of household generally can meet their food needs but in the event of a shock they can become moderately food insecure.

Figure 6: Food consumption groups

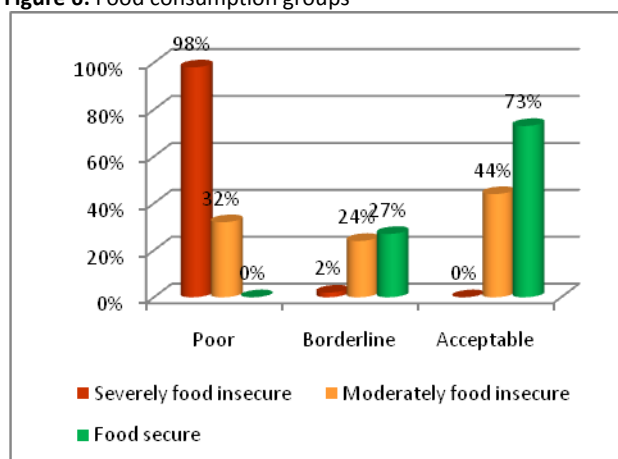


Figure 7: Consumption by food groups

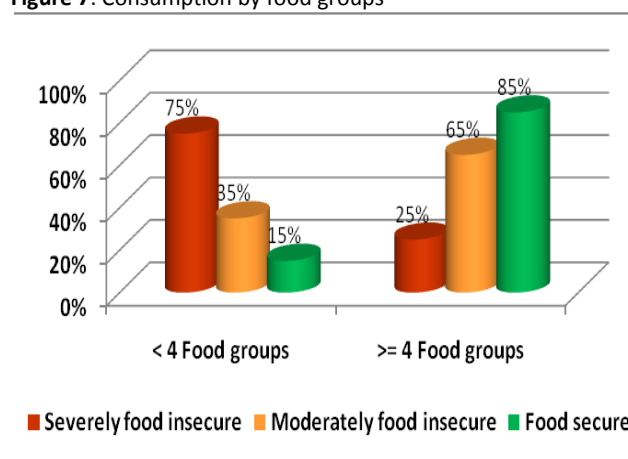
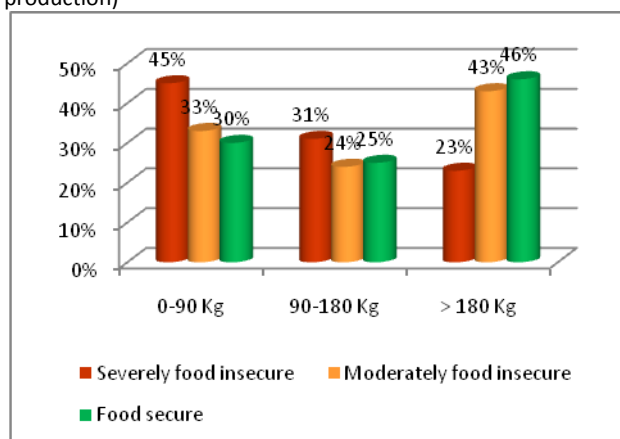
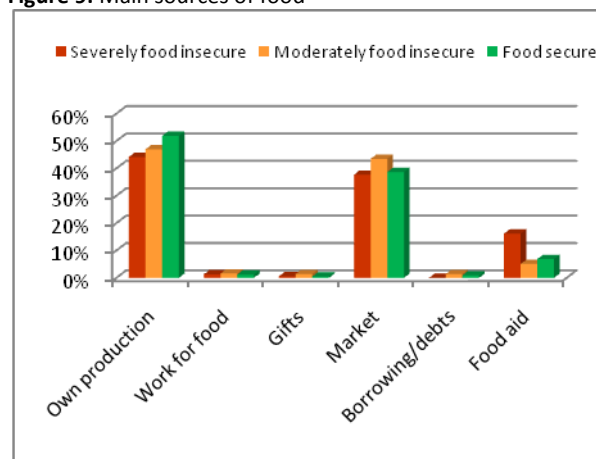
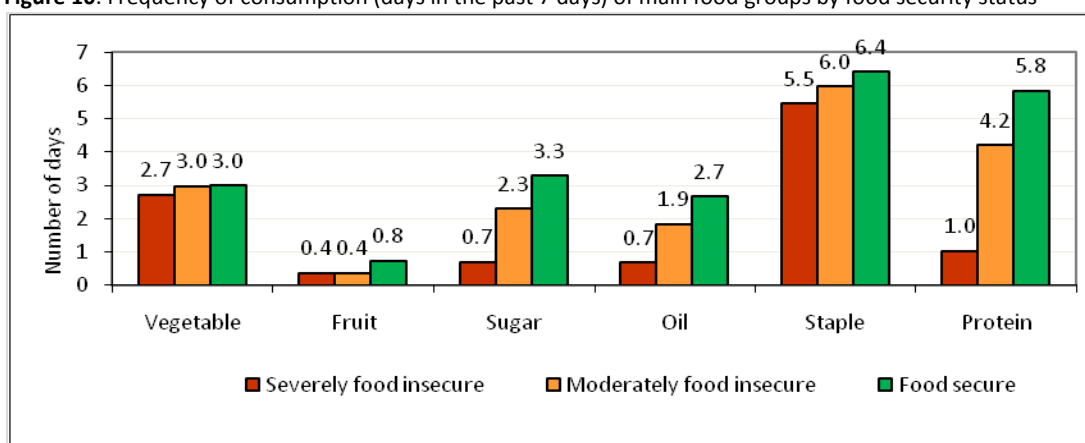
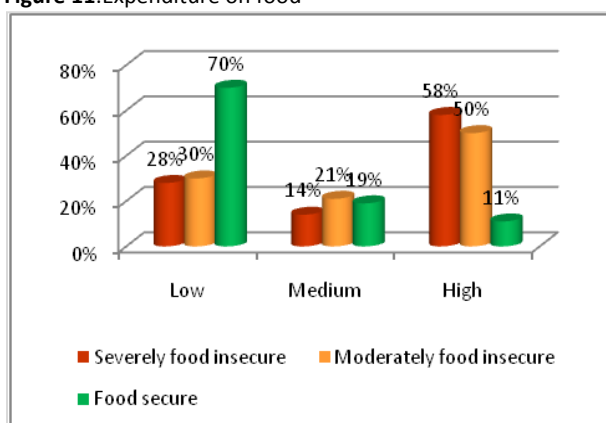
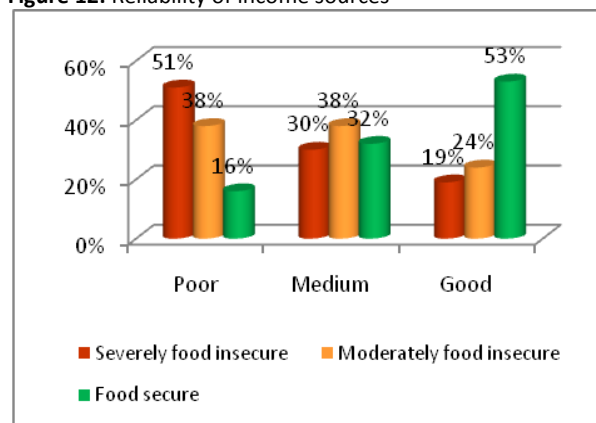
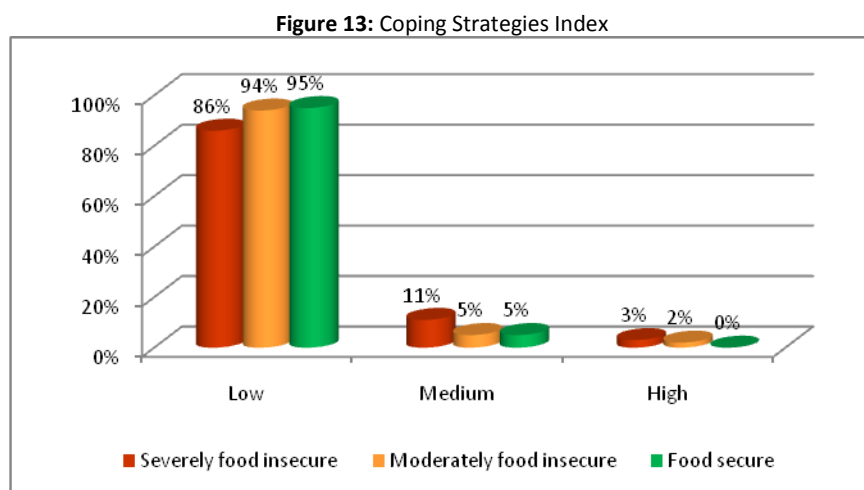


Figure 8: Sorghum production categories (Total HH production)**Figure 9:** Main sources of food**Figure 10:** Frequency of consumption (days in the past 7 days) of main food groups by food security status**Figure 11:** Expenditure on food**Figure 12:** Reliability of income sources



Source: FSMS October 2010

All households applied low level coping strategies which mainly consist of switching to less preferred and less expensive foods (Figure 13). This is a likely response considering that high food price was reported as a shock by a majority of the Households. Although 95 percent of food secure households reported use of low-level strategies, the frequency of switching to less preferred foods was lowest (1.09) among the food secure group compared to 1.72 (severely food insecure) and 1.16 (moderately food insecure).

2.3 Programmatic implications of the profiles of food insecure households

Households are currently relying on low level coping mechanism to smoothen shortfalls in their consumption, including a switch to less preferred foods. Apart from the dietary adjustments, the main source of income is the sale of agricultural products and livestock for the secure and moderately food insecure households. But the food insecure households rely increasingly on the extraction of natural resources: grass, firewood, building poles, charcoal. Apart from contributing to environmental degradation, these extractive activities undermine the potential non-timber forestry products such as gum acacia and honey.

Since it is evident that households depend on selling some of their produce to obtain income, there is a strong need to stimulate household production to generate food surpluses for sale. This requires improvements in infrastructure, markets, institutions (legal framework, research and extension services), appropriate agricultural tools and seeds and agricultural skills.

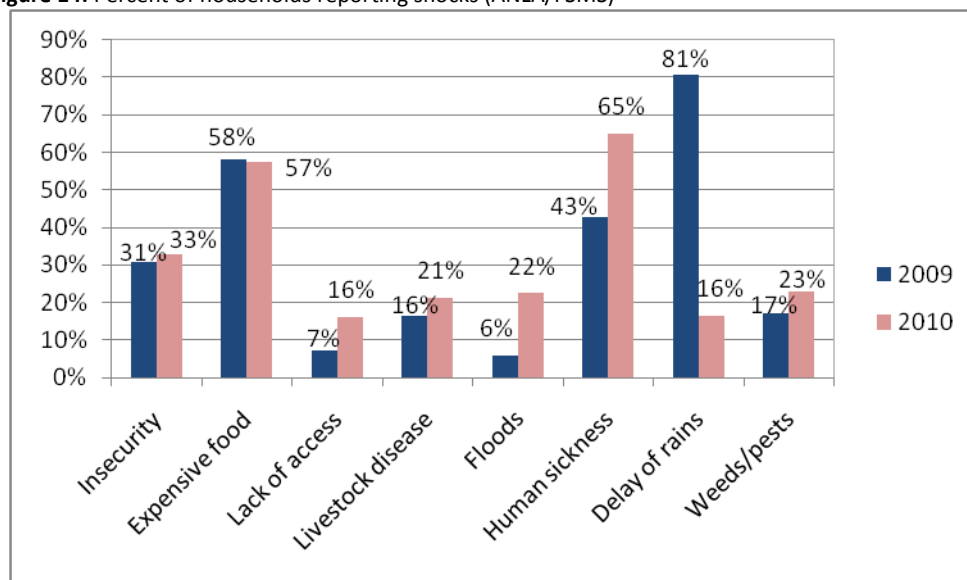
The consumption of cereal among food groups is quite comparable at this time. However, the main difference in consumption is the number of food groups consumed, especially the frequency of protein consumption. This has implications for seed diversification to include plant protein such as pulses because the level of farm diversification is very low. There is additional need to expand non-cattle enterprises (such as poultry) to augment protein sources.

2.4 Causes of food insecurity in 2010

Food insecurity continues to be a result of a combination of structural effects exacerbated by frequent exposure to multiple and unpredictable shocks. Structural causes manifest in the form of low agricultural productivity and income, low human capital-knowledge and skills, limited access to social facilities, high disease burden and poor market integration. These undermine household resilience and increases vulnerability to shocks.

Three main types of shocks are in existence in southern Sudan: climatic—floods and drought; biological—pests, human and livestock diseases and man-made—insecurity and conflicts and high food prices. According to the October 2010 FSMS, the main shocks affecting households included human sickness, high food prices, insecurity and its related effects on impaired physical access and flooding. These are not so different from the shocks reported in 2009 which included erratic rainfall, human sickness, high food prices and insecurity (Figure 14).

Figure 14: Percent of households reporting shocks (ANLA/FSMS)



Source: FSMS October 2010

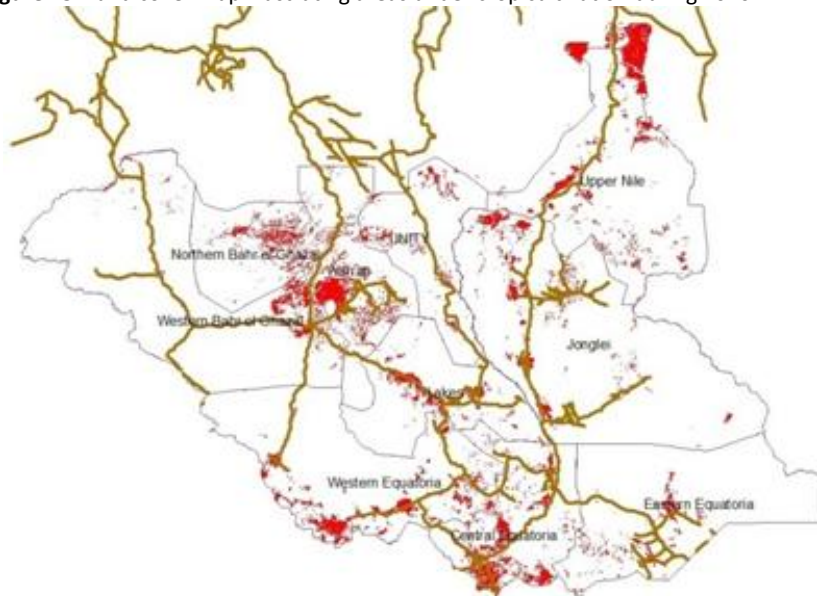
It is therefore clear, in the situation of low resilience, households also continue to face multiple and unpredictable shocks. How these affect livelihood and food security are discussed in details in the next sections of the report.

3. Agriculture

3.1 Agricultural potential

Southern Sudan has an immense agricultural potential. The total surface area of Southern Sudan is about 650,000 square kilometers. Studies before the war showed that only 2 percent of arable land was cultivated. But in 2010 the cultivated area has increased to 4 percent (Figure 15). Large areas of the land area are made up of swamps and marshland, which is not suitable for arable agriculture unless drained. There are also arid to hyper-arid areas especially in Eastern

Figure 15: Land cover map illustrating areas under crop cultivation during 2010

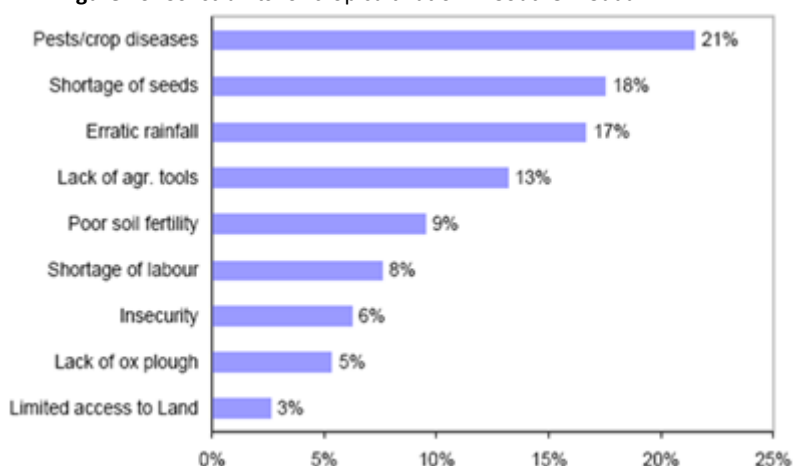


Source- FAO

Equatoria and Jonglei which are suitable only for pastoralism. But equally vast are highly productive areas such as the greenbelt area with bimodal rainfall of around 1800 mm/year. Some of the main crops grown in Sudan include maize, sorghum, finger millet, cassava, sesame, sweet potato, and groundnuts. Small scale rice production is done in Northern Bahr El Ghazal. Other crops grown include: pumpkins, okra, cowpeas, tobacco, and beans. In general there is limited crop diversification and there is an over-reliance on cereals as the main source of food.

Cultivation consists mainly of rain-fed traditional subsistence agriculture characterized by low productivity and rudimentary cropping techniques such as shifting cultivation and seed broadcasting. Given the vast unused potential, agriculture is considered an engine for economic growth and the challenge is how to transform traditional subsistence agriculture into a productive surplus generating enterprise.

Figure 16: Constraints for crop cultivation in Southern Sudan



Source WFP/FAO/MAF 2006

3.2 Factors affecting agricultural production

Agriculture is mainly affected by pests and diseases (e.g. *Striga* infestation), seed shortages, erratic rainfall, lack of tools, labor and insecurity (Figure 16). This is coupled with limited road infrastructure and the absence of credit and other input support services, improved technologies and low labour supply. Ox-plough

technology has been used in Central Equatoria, Western Equatoria, Lakes, Warrap and Bahr el Ghazal States to overcome the labour constraints. Mechanized farming is practiced mainly in the Upper Nile counties of Renk, Melut and Wadakona and to a limited extent in Malakal and Bentiu in Unity State. The government has bought over 400 tractors for the 10 states to enhance the mechanized land preparation mainly through farmer groups at a cost of 50 to 200 SDG/feddan.

3.3 Trends in agriculture

Production has increased considerably after 2005 to over 600,000 MT compared to the earlier period when it was slightly over 400,000 (Figure 17). This has been attributed to improved security situation. Before 2005, specifically around 2001-2002, cattle raiding and reprisals, and inter-ethnic conflicts, exacerbated by low rainfall hampered agricultural production.

Even though the main source of threat to production was eliminated in 2005, productivity has dwindled and consequently production has not increased in proportion to the cultivated area even in relatively good

Figure 17: Agricultural production trends and 10 year averages -Units in 000's



Source: FAO/MARF

seasons. This is an indication of the effect of structural factors already identified in Figure 16. Recurrent effects of natural hazards such as floods, drought, pest and diseases as well as the occurrence of low level conflicts have also undermined increases in productivity. Although production was above normal in 2007, flooding occurred, which affected 56,000 hectares of land and nearly 90,000 people. Flooding also occurred in 2008. But in 2009, a combination of erratic rainfall and unprecedented insecurity affected production. In 2010, the cereal harvested area is expected to increase by 8 percent and yield by 17 percent compared to 2009 resulting in an overall production increase of close to 30 percent. Over the 10 years, the average area cultivated in southern Sudan has been 750,000 hectares while the average cereal production has been 650,000 MT (Figure 17). This suggests that addressing the structural factors is important to enhance food production. Despite significant production improvements this year, structural food deficits occur in April/May, which is an indication that the production is inequitable and highly localized in the potential surplus areas such as the Green-belt from where transfers to deficit areas are constrained by poor road infrastructure and high transport costs.

3.4 Trends in mechanized agriculture

Cereal production from the rain fed mechanized sector is concentrated in Renk County of Upper Nile. This area has produced an average of 185 000 tons in the past 5 years (2005-2009). Though this production is located in southern Sudan and produces an equivalent of 30 percent of total production of traditional sector, all the cereals go to the northern Sudan. With proper policy arrangements production from these areas can boost food supplies in the southern Sudan. However, challenges of lack of infrastructure (roads and storage

facilities), access to credit must be addressed as most of the large-scale farmers presently are funded by the Agricultural Bank of Sudan.

3.5 Road infrastructure

A joint MAF/MARF/FAO baseline survey study conducted in 2010 indicates that up to 55 percent of rural households have no access to feeder roads most of the time and face the difficulty of selling their harvest in the nearest markets. Despite the challenges, there have been significant improvements on major routes such as Rumbek, Yei as well as Northern Bahr el Ghazal which have improved cross-border trade between Uganda and southern Sudan. The planned road connecting Malakal and Ethiopia through Nasir would also boost trade links with Ethiopia.

3.6 Government (public) cereal reserves and Commercial stocks

GoSS started cereal reserves programme in 2006, which continued to 2009. This programme was intended to cushion net food buying households from high food prices. However, monitoring or assessing the impact of this activity on food security has been difficult due to constant lack of data on planned and available grain stocks at state level. Likewise, commercial cross-border inflows are not monitored, which makes it difficult to determine the contribution of trade to the overall food availability. Monitoring of flows as well as commercial and public cereal stocks is an important area for decision-making concerning cereal availability considering the likely effect of the anticipated reduction on commercial inflows from northern Sudan and from Eastern Africa due to the referendum.

3.7 Programmatic implications

- It is evident that there is need to address the structural problems of agriculture to enhance agricultural productivity. This requires combination of improved agricultural technologies and inputs, skills and training, infrastructure and policy incentives.
- The issue of seed security are addressed in a separate report on seed assessment. However, it is necessary to strengthen local seed production and diversity.
- Evaluate the mechanization programme with the aim of increasing its benefits for southern Sudan.
- There is need to strengthen research and development for seed improvement and other agricultural technologies that would mitigate against drought and floods (such as drought resistant varieties and increased use of recessional agriculture in flood-prone areas and small-scale irrigation systems). This should also be accompanied by improved extension service to increase agricultural skills.
- Establish the national cereal reserve to boost preparedness of GoSS, provide incentives to increase household food production, incomes and enhance domestic food availability.
- There is need to strengthen cross-border trade monitoring to provide information on decision-making for market-based interventions.
- Establish rural micro-finance programmes to support small-scale farmers who would like to increase production of food surpluses for purchase programs either by Government or other initiative such as the WFP's Purchase for Progress. Co-operatives and farmer association would provide entry points for micro-finance and extension programs.

4 Livestock Production

4.1 Livestock potential

Based on the livestock population estimate figure (Table 4), the total livestock production monetary value is worth 7 billion SDG, with a potential annual value of milk production estimated at SDG 1.6 billion. This value positions southern Sudan as the 6th livestock producing country in Africa. The marketing chain is composed of an estimated 950,000 livestock producers, 4,500 live animal traders, about 2,000-4,000 butchery owners, 500 market-based private owners of kraals and a total of 167 livestock markets in all the ten states of southern Sudan.

SNV Value Chain Survey of August 2010 indicates that about 6 million heads (1.5 million and 4.5 million shoats) are marketed through the domestic markets. However, the domestic market can absorb only 35 percent of the current supply. This therefore, indicates that the sector has a wide opportunity to exploit export markets, even with minimum production capacity. Due to increased urbanization, the current domestic demand for livestock is estimated to be worth 1.43 billion SDG annually from sales of 470,000 cattle and 2.5 million shoats. This is expected to increase further with the increasing population growth in southern Sudan.

Table 4: Livestock population in South Sudan (Figures rounded up to the nearest '000)

State	Total	Goats	Sheep	Cattle
Upper Nile	2,088,000	651,000	447,000	990,000
Unity	4,484,000	1,511,000	1,784,000	1,189,000
Jonglei	4,126,000	1,423,000	1,227,000	1,475,000
Northern Bahr el Ghazal	4,554,000	1,306,000	1,658,000	1,590,000
Western Bahr el Ghazal	3,579,000	1,184,000	1,139,000	1,256,000
Lakes	4,061,000	1,252,000	1,489,000	1,320,000
Warrap	4,241,000	3,131,000	1,392,000	1,539,000
Central Equatoria	3,342,000	1,286,000	1,173,000	883,000
Eastern Equatoria	3,088,000	1,042,000	1,151,000	895,000
Western Equatoria	3,020,000	1,189,000	1,151,000	680,000
Total	36,583,000	13,975,000	12,611,000	11,817,000

Source: FAO (2009) and Federal Ministry of Animal Resources and Fisheries

Despite the increasing trend in demands for live animal and products, the current livestock production is less than 20 percent of the potential. This is due to:

- High calf mortality rate (of about 40-50 percent) and adult livestock mortality (10-15 percent), which are well above the acceptable rates. This accounts for annual losses of 1.76 million cattle and 5 million shoats in southern Sudan.
- Inadequate veterinary and advisory services.
- Low breed potential.
- Traditional husbandry practices.
- Seasonal feed and water availability and quality.
- Lack of clear legislation to absorb and regulate the middle cadre in animal health service delivery and support privatization.
- Inadequate diagnostic capacity in the states and at the borders points.

Specifically for marketing some of the constraints include: Lack of market information at both primary and terminal markets; poor or inadequate physical infrastructure along marketing routes e.g. holding grounds and quarantine facilities; non-transparent taxation and charges; inadequate veterinary and extension advisory services at holding yards and auctions and cattle rustling.

4.2 Livestock diseases

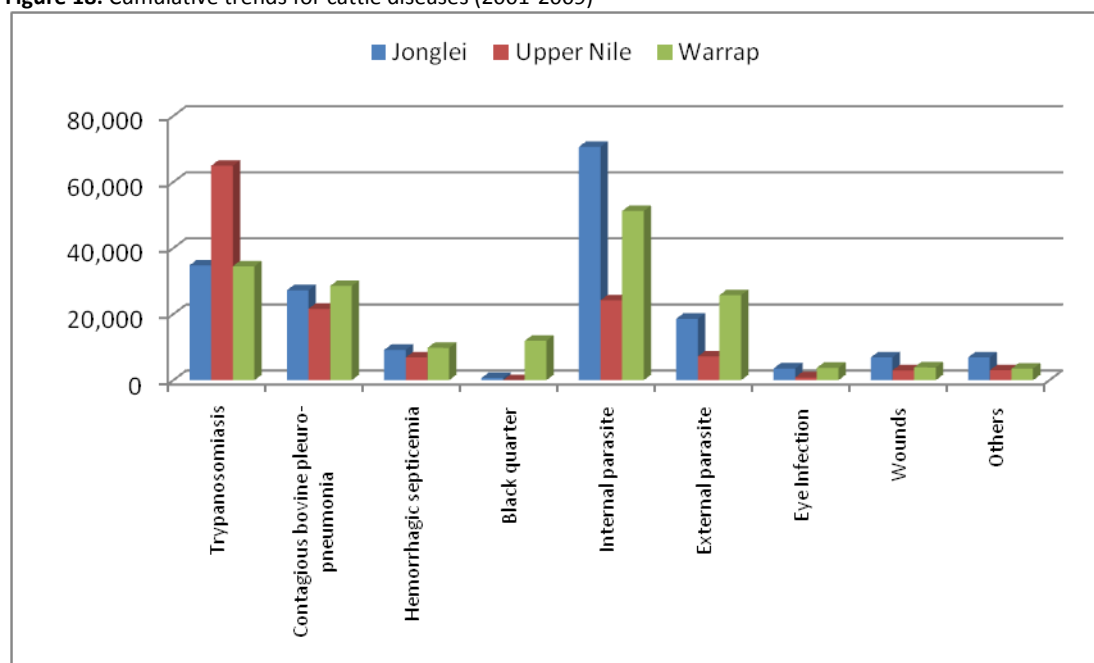
The main diseases of economic importance in southern Sudan include: Trypanosomiasis, Contagious pleura pneumonia, East coast fever and Fasciolosis (Table 5). Data from VSF-B from 2001 and 2009 from Jonglei, Warrap and Upper Nile show that Trypanosomiasis Contagious Bovine Pleuropneumonia and internal and external parasites are the main diseases affecting cattle in those areas (Figure 18).

Table 5: Main diseases of economic importance³

	Priority 1	Priority 2	Priority 3	Priority 4	Priority 5	Priority 6
Multi-species	Anthrax	Brucellosis	Rabies	Rift Valley Fever	Tuberculosis	FMD
Cattle	Trypanosomiasis	ECF	Fasciolosis	Black Quarter	LSD	CBPP
Sheep & Goats	Mange	PPR	Heartwater	CCPP	Pox	Lice
Poultry	Newcastle Disease	Fowl Typhoid	Fowl Pox	Coccidiosis	Gumboro	

Source: VSF-B (LESP S Project)

Figure 18: Cumulative trends for cattle diseases (2001-2009)



Source: VSF-B (LESP S Project)

Despite the importance of livestock, the contribution of livestock to food security is little understood because of the strong sentimental cultural values attached to cattle and no studies have been done to quantify the contribution of livestock to food security. There is need to enhance the economic value of livestock by providing off-take through export sales of livestock to absorb excessive supply.

Livestock disease is a significant constraint to livestock productivity and particularly emerging diseases such as East Coast Fever is a threat to productivity. Presence of diseases like Foot and mouth disease, Contagious bovine pleura-pneumonia will prevent export of livestock and livestock products to countries which do not

³ A study to identify and assess the relative importance of priority animal diseases in Southern Sudan (LESP S project)

have or have already eradicated these diseases. Therefore, increased efforts are required to contain the spread of such diseases.

Livestock in south Sudan are usually trekked for long distance in search of pasture in certain seasons of the year, this causes production losses. This movement also increases the chance of disease spread. Some facilities are therefore required to enhance water and feed availability. Improvement in livestock marketing infrastructures in production areas will stimulate livestock off-take.

4.3 Programmatic Implications

South Sudan needs to strategize to exploit the high potential of livestock and livestock products so as to export to the external market, and this will be possible only if there are measures in place to ensure that it complies with the international sanitary and phytosanitary standards (SPS).

There is urgent need to:

- Target the pastoralists with provision of drugs and rigorous vaccination against major diseases livestock diseases according to the seasonal calendar of disease occurrence in the country.
- Formulate disease control strategies with emphasis on trans-boundary diseases.
- Formulate policies and regulate the practice of veterinary cadre with emphasis on community based animal health workers.
- Strengthen the disease surveillance and diagnostic capacity at all levels.
- Improve market infrastructure.
- Embark on a long-term strategy of improving the local breed.
- Consider programmatic approaches and plans that will minimize resource-based conflict with special focus on cattle rustling.
- Strengthen the current market information system established by SIFSIA to empower livestock producers to make better marketing decisions and also to enable them obtain better price for their livestock.
- The Ministry of Animal Resources and Fisheries both GOSS and state levels, in consultation with taxation department, have to define clear policy guidelines that specify who collects what and how much from livestock traders and producers, in order to curb illegal and over-taxation of livestock traders and producers.

5 Fisheries resources

5.1 Background

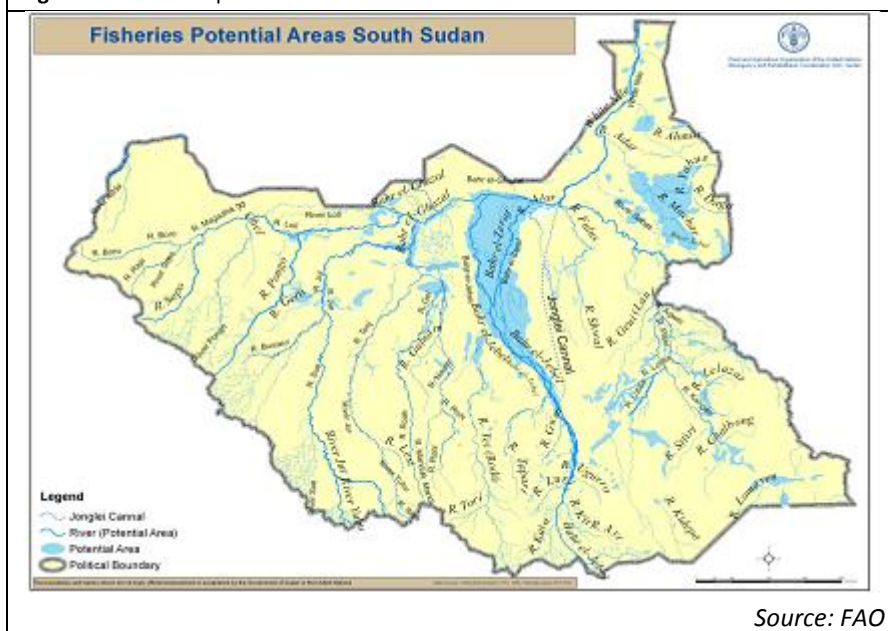
Fishing is an important livelihood activity among the fishing communities of South Sudan. It provides livelihood support as a direct source of food and as important source of income for the fisher folks. Fish is therefore considered as a significant component of the food basket, alongside livestock or agriculture products. Fishing also constitutes an important coping mechanism to respond to shocks that affect the agricultural or livestock sector and is a critical source of food during the lean season period.

The main advantage of fishing as a livelihood activity is that it suffers little damage from looting or pillage except in situation of conflict when communities have no access to their traditional fishing grounds.

5.2 Fishing potential of Southern Sudan

Fish is a seasonally important source of food in many parts of the country, and throughout the year within the Sudd. Southern Sudan represents about one-third of total area of the Sudan, yet it accounts for over 60 percent of the fisheries resource of the country. This is largely concentrated within the 100,000 hectare Sudd swamps (Figure 19). The total catch from Southern Sudan is estimated 40,000 tons per annum which is negligible considering the vast unexploited potential of between 300,000 and 400,000 tonnes per annum⁴. This points to the need for investment to harness the vast fish potential to boost food production, incomes and employment.

Figure 19: Fisheries potential areas of Southern Sudan



About 115 different species of fish are found in the Nile basin most of which are of economic importance. The most important of which are *Tilapia*, *Synodontis*, *Lates nilotica*, *Alestes*, *Hyrocynus*, *Labeo*, *Barbus*, *Distichodus*, *Citharinus*, *Heterotis*, *Clarias*, *Protopterus*, *Mormyrus*, *Bagrus*, *Shilbe*, *Heterobranchus*, *Heterotis*, *Polyterus*, *Gymnarchus*, *Gnathonemus*, *Marcusenius*, *Petrocephalus*, *Hyperropisus*, *Eutropius*, *Malapterurus*, *Clatotes*, *Tetradon*, *Auchionoglanis*, *Chrychthis*.

⁴ FAO, 2008: Food Security and Livelihoods Interventions in Southern Sudan

There are three major types of fisheries products, depending of the mode of preservation: sun-dried fish (without salt, with coarse salt, coarse salt with brine), Wet salted fish and smoked (cold and hot smoking). Other products include deep fried fish and pounded fish.

5.3 Fishing areas

Southern Sudan is traversed by many rivers and wetlands which provide fish habitats and fishing grounds spread throughout all the states making fish a readily available resource (Table 6).

Table 6: Main fishing areas

State	Main fishing areas
<i>Central Equatoria</i>	Lake Jor, Lake Muni, Lake Bayak, Lake Reiyi, Lake Bulliat and River Nile in Terekaka county, Juba and Kajo Keji counties. Seasonal rivers: River Yei (Yei) and others in Lainya.
<i>Eastern Equatoria State</i>	Apala, Pacidi, Lohila, Lohiri, Logurony, Hafriere, Trangore, Bur, Aribo, Aswa and Tikweli, Aswa River tributary. Others include Olobo Kowo, Tolu, Cicii and Ikodo.
<i>Unity State</i>	Barkair, Barar, Paut, Thut, Laek, Kuach, Gail, Nenigai, Laydab, Toza, Paul jaw, Chal, Pai, Tongaid, Gaany, wowpany, Marlual and Lake No.
<i>Upper Nile State</i>	<i>White Nile:</i> Jelhak (Renk), Kaka Thorwang (Manyo); Khor thak (Melut), Ditwak, (Zurzur), Lul (Kodok); Papwojo (Panyikang). <i>Sobat:</i> Nasir, Jikmir (Nasir); Ulang (Ulang); Adong (Baliet) Seasonal rivers: Maban, Maiwut and Lungochuk
<i>Jongle State</i>	The major fishing grounds are Bour Akok, Dhiam- Dhiam, Jonglei, Kawer, Pan Nhial, Pangak and <i>toich</i> .
<i>Lakes</i>	The fishing grounds are Lake Yirol, Lake Shambe and the Nile
<i>Warrap</i>	Anil, Agogo, Nyank and Nyagocil (Gogrial East); Mabior Adel (Tonj East); Toich, Aliak River and Bieycle and rive Jur (Kwajok)
<i>Northern Bahr el Ghazal</i>	Namlel, Bongo Nuer which are swampy areas
<i>Western Bahr el Ghazal</i>	Rivers Bussere, Jur, Namatina, Kur River, Belli river, Raga, Khor Ganna

Source: FAO

5.4 Challenges for fishing

Markets for fish is readily available but the existing infrastructures do not support effective marketing of fish and fish products in Southern Sudan. The state markets are located in state capitals in Juba, Wau, Bor, Malakal, Rumbek, Bentiu, Yambio, Torit and Aweil. Due to lack of fish handling and preservation facilities, there are high post-harvest losses estimated at 40 percent.

In addition to marketing, also lack of credit, poor physical access and limited technical knowledge, as well as lack of electricity are challenges to be overcome so as to increase fish production.

5.5 Response options for the fish sector

- Improving access to appropriate fishing gears that ensures sustainable fishing practices.
- Skills transfers in fishing methods, post harvest management including processing and preservation.
- Improving infrastructure to support the fish industry like construction of landing sites, marketing infrastructures (cleaning and storage facilities) and access roads.
- Provision of targeted credit system to promote the fisheries sector.
- Sustainable management of fisheries resources through appropriate policies and legislation and strengthening institutional capacity.
- Value chain studies to estimate fish production, consumption and contribution to food security.

6 Markets and food prices

The market situation is predominated by high prices, which was the second-most frequently reported shock affecting slightly over 50 percent of households. This is mainly due to limited integration of local markets due to poor infrastructure (resulting in high transport costs), presence of many tariff and non-tariff barriers. Conflict also to a certain extent has also been a defining factor for the high market prices.

Current market prices seem relatively stable in most markets largely in response to improved seasonal availability after the harvest albeit higher than the five-year average in most markets (Figure 20). Earlier in the year, a combination of low supply conditions, due to overall general crop failure in 2009 caused price increases. In addition the April 2010 elections in Southern Sudan created a significant shortfall in trade inflows from Uganda causing a spike in food prices in markets especially in Juba and Rumbek, which depend on cross-border trade with Uganda. Damage of roads and bridges during the rainy season also accounted for increased transport cost and disruption of supplies to markets such as Wau, which also contributed to high prices.

The price of sorghum in Bor has been stable and quite comparable to 2009 prices while in Aweil the prices have even declined below last year's price movements. In Aweil the relatively stable situation is attributed to large inflow of sorghum by railway from the North and more recently to the high possibility of improved local food availability due to the above-average agricultural season in most counties of Northern Bahr el Ghazal except the flood prone area of Aweil Centre and Aweil South counties. The favorable price trends in northern Bahr el Ghazal could also be as a result of improved road infrastructure in most parts of the state. This has reduced transactional costs related to transportation that accounts for 30-40 percent of the market price.

Despite the declining seasonal trends, market prices continue to rise unusually in Malakal, Bentiu, Rumbek and Juba. Anecdotal evidence indicates that the uncertainties around the referendum are changing the market fundamentals both in terms of number of traders and quantity of grains from northern Sudan. It is reported that most of cereal traders mainly from northern Sudan have closed-down their shops or scaled-down trade activity because of the political uncertainties of the aftermath of the referendum. This is likely to reduce inflow of grain and increase market prices as the number of traders and scale of trade declines on the one hand, and increased demand for food because of large number of returnees.

The terms of trade for pastoralists and agro-pastoralists is mostly favorable, which is an indication of potential improvement in food access among the pastoral communities.

6.1 Limited Integration of local markets

Most markets in Southern Sudan are not well integrated as they are very much isolated from each other in terms of road infrastructure and commodity exchange. This limits the flow of commodities between different markets and prices move independently of the differences in transaction costs.

The lack of established trading networks constrain the expected flow of food commodities from surplus producing green-belt area to the traditional food deficit areas. This is a hindrance to market development and increased household productivity. WFP's Purchase for Progress Programme aims to create market incentives to stimulate small-holder food production by providing market opportunities for small-holder farmers in surplus producing areas. However, infrastructure improvement is a key priority for market and overall development.

Figure 20: Evolution of market staple prices in 2010

Source: WFP/VAM, Juba

6.2 Presence of multiple taxes and non-tariff barriers

Taxes are imposed at check points at the payam, county, and even at town exit points. The need to collect revenue to cover Governments expenses for social services and other economic development activities is understood. However, the current method of collection of arbitrary multiple taxes is a disincentive to trade as

it increases transactional costs and reduces competitiveness of prices of local production. It is therefore not surprising for traders to import agricultural commodities from the neighbouring countries, which is cheaper than the locally produced commodities. Multiple taxes are thus one of the serious threats to food security.

6.3 Expectations during the referendum

- Market prices are expected to increase during the referendum period as a result of the expected decline in food stocks due to potential increased insecurity along the border areas and high demand from the large number of returnees expected during the referendum period. The closure of main cereal shops operated by traders from the northern Sudan can also not be ruled out due to increased perceived high risks of doing business.
- Reduced inflows from the north would affect mainly Upper Nile State, Northern Bahr el Ghazal, Western Bahr el Ghazal, Unity and Jonglei and Warrap while reduced supplies from East Africa will affect Lakes, Jonglei as well as the catchment areas for Juba in Central Equatoria.
- The decline in inflows from the north is also likely to affect availability of wheat flour which is the main food staple in the main urban areas of Wau, Malakal and Aweil. This would further increase the demand for substitutes such as sorghum which would affect availability and price in the rural areas.
- Food accounts for nearly 80 percent of the total consumption out of which cereals and bread account for 53.3 percent of the total calorific consumption of the food bundle. This indicates increased household vulnerability to abnormal price movements, given that market accounts for at least 60 percent ⁵ of total dietary energy consumption during the dry and lean season. Therefore price increases are likely to lead to severe erosion of purchasing power and increase food insecurity during the lean season.
- Continued rise in market prices will erode purchasing power of net food buying households and aggravate food insecurity especially during the border areas. This would lead to a switch to foods of low nutritional value, which undermine nutritional adequacy of the diet.
- It is expected that traders will return after the referendum but this will depend on the outcome of the referendum. This is likely to prolong the scarcity of food supplies and sustain market prices at high levels unless there is a countervailing response from Government, which may be inadequate at this point because of lack of an emergency reserve.

6.4 Programmatic implications

- There is need to address the presence of multiple taxes and non-tariff barriers such as road blocks as this inhibits free trade flow of commodities.
- Traders are generally fearful that the outcomes of the referendum could jeopardize their businesses. The Government should increase protection of civilians and assure traders of their safety and security.
- A functional and structured food reserve should be considered in the future to boost government preparedness for emergency response.
- Increased public investment in infrastructure is required to improve market integration, reduce transport costs and enhance movement of goods and services.

⁵ See the results of the SSCCSE's national household baseline survey draft report for 2010.

7 Health and Nutrition

7.1 Prevalence of child malnutrition

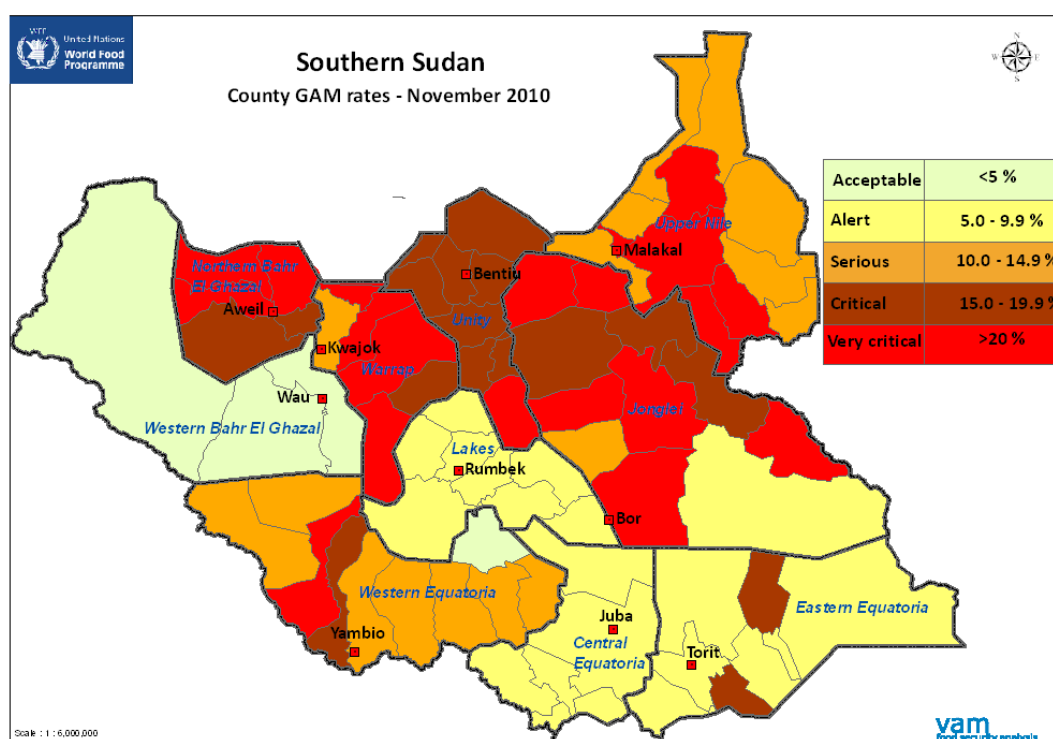
High rates of global acute malnutrition (GAM), which regularly exceed the emergency threshold of 15 percent, contribute to excess morbidity and mortality among vulnerable population groups and constitute a significant public health challenge in Southern Sudan. According to the 2006 Sudan Household Health Survey (SHHS), the latest published representative results for Southern Sudan, 22 percent of children were acutely malnourished with severe acute malnutrition (SAM) rates of above 4 percent. Seven out of 10 states had rates above the emergency level of 15 percent⁶.

Localized surveys in some states and counties, in recent years indicated average rates of 20.4 percent in 2009 and 18.4 percent in 2010 (Table 7), but while these occurred primarily in areas of NGO operation in priority nutrition states,⁷ the results do not provide a comprehensive picture of the nutrition situation at the state or South Sudan level. Figure 21 shows the most recent county level rates of acute malnutrition.⁸

Table 7. Average rates of Global Acute Malnutrition from surveys in South Sudan

	2006	2008	2009	2010	2010
Average GAM	22.0%	15.8%	20.4%	18.4%	14.6%
Number of assessments	SHHS	ANLA	8	17	FSMS

Figure 21: County level GAM Rates in South Sudan, updated November 2010⁹



⁶ This is followed by 2010 SSSHHS, the results of which is yet to be published

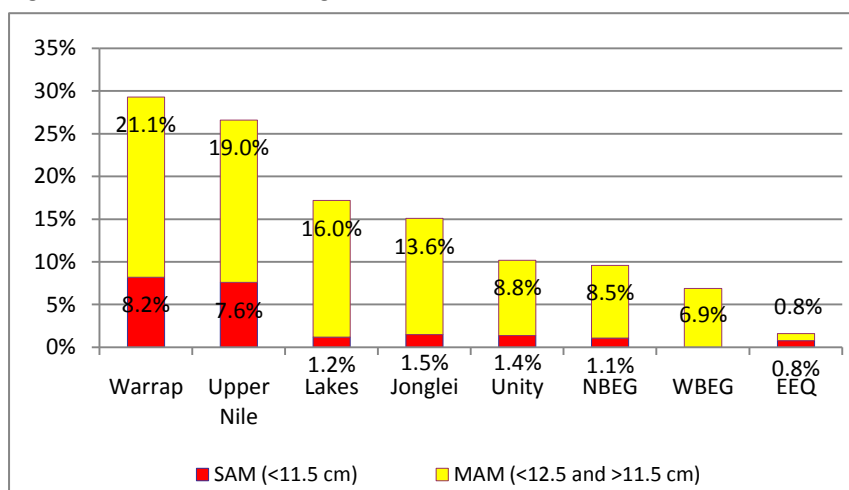
⁷ Warrap, Upper Nile, Lakes, Unity, Northern Bahr el Ghazal, Jonglei, Eastern Equatoria.

⁸ Where county level data was not available, state level data was filled in by default.

⁹ Combination from available surveys from the past years (see Annex 1 for survey details)

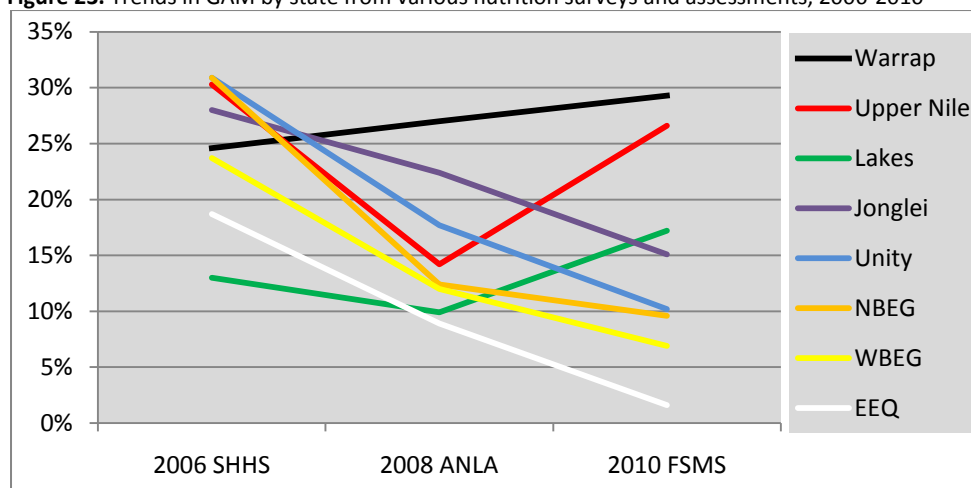
Source: MoH/UNICEF/ Nutrition Agencies

MUAC screening of 1,193 children 6-59 months¹⁰ conducted as part of FSMS in October 2010 reveals an average GAM rate of 14.6 percent with high variability between states (Figure 22); however, due to FSMS purposive sampling methodology and limited numbers of sentinel sites per state, the data is only indicative. In terms of trends in acute malnourishment since 2006 SHHS, nearly all states saw a decrease in GAM rates for

Figure 22: Child MUAC screening October 2010

Source: FSMS October 2010

2008 ANLA and further reduction for 2010 FSMS, notably Eastern Equatoria and Western Bahr el Ghazal (Figure 23). Warrap and Lakes saw an increase, while the rate in Upper Nile decreased between 2006 and 2008 and increased again in 2010. A second representative health survey (SHHS) was conducted in June 2010 but results have not yet been released.

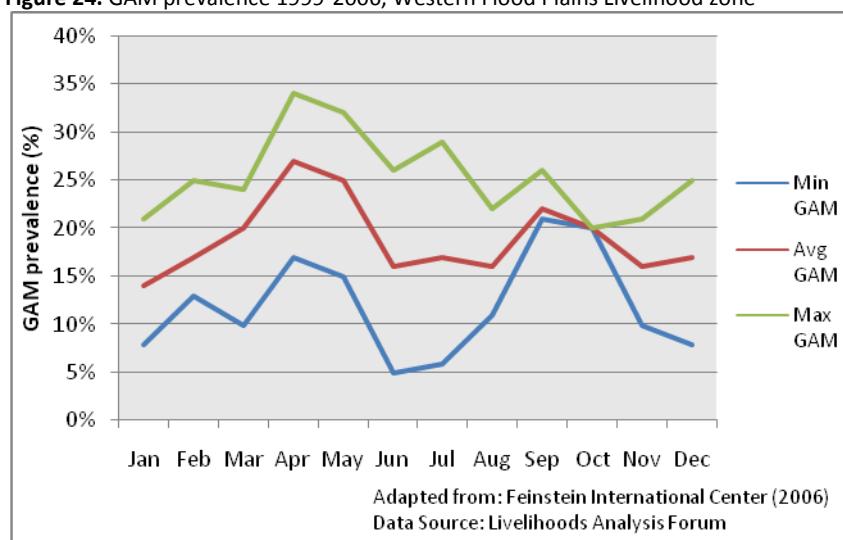
Figure 23. Trends in GAM by state from various nutrition surveys and assessments, 2006-2010

Source: MoH-DN/UNICEF/Nutrition Agencies

7.2 Seasonal nutrition trends

Acute malnutrition exhibits seasonal patterns in Southern Sudan, with a peak from April to June which coincides with the dry season and links to the high incidence of diarrhea and to some degree with livestock and population movements and the agricultural lean season. A second smaller peak is associated with increased malaria incidences during the height of the rainy season in August and September (Figure 24).

¹⁰ 116 to 188 children per state

Figure 24. GAM prevalence 1999-2006, Western Flood Plains Livelihood zone

7.3 Causes of malnutrition

Inadequate intake of food and illness constitute the direct causes of malnutrition, which are in turn linked to food shortages caused by recurrent shocks (e.g. drought, crop failure, insecurity, high food prices), poor infant and young feeding practices, poor hygiene and sanitation and poor access to quality health services.

7.3.1 Dietary intake

Inadequate food intake constitutes a major contributing factor to malnutrition in Southern Sudan. Young children need at least four meals per day as they are not able to absorb larger quantities in fewer meals. According to 2010 FSMS, only 4 percent of under-five children had four or more meals in the previous day, while two-thirds of under-five children had two or fewer meals. Some 30 percent had 3 meals and 50 percent had 2 meals per day. Stratification among healthy children (MUAC ≥ 12.5 cm) and malnourished children (MUAC < 12.5 cm) did not reveal a significant difference in the number of meals taken in the previous day.

Besides frequency of feeding, dietary diversity is an important consideration for nutritional status among young children. FSMS collected information about the number of different food groups¹¹ eaten by children 6-24 months in the previous day. Almost two-thirds of children less than 2 years (63 percent) consumed foods from three or fewer food groups in the previous day and more than one-third (39 percent) consumed two or fewer. Stratification among healthy children (MUAC ≥ 12.5 cm) and malnourished children (MUAC < 12.5 cm) did not reveal a significant difference in the number of food groups consumed in the previous day.

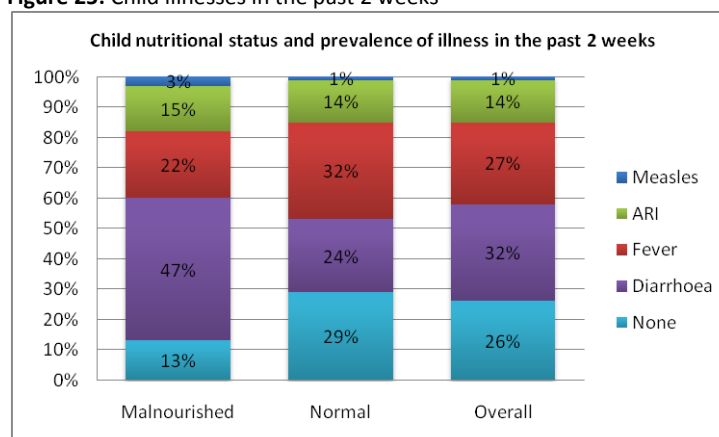
2006 SHHS reported poor breastfeeding and infant feeding practices—only 11 to 28 percent of children under six months exclusively breastfed and only every third child received timely complementary feeding. 2010 FSMS reported high breastfeeding practices among children under 2 years—76 percent of children 6-23m had breastfed in the previous day; however the assessment did not measure rates of exclusive breastfeeding among children less than 6 months.

¹¹ Grains and tubers, legumes and nuts, dairy products, fresh animal flesh, eggs, vitamin A rich fruits and vegetables, other fruits and vegetables, breast milk.

7.3.2 Illness

Approximately three quarters of all children under 5 experienced illness in the 2 weeks prior to FSMS interview (Figure 25). More than double the proportion of healthy children (MUAC ≥ 12.5 cm) reported no illness in the past week as compared to malnourished children (MUAC < 12.5 cm). Conversely, almost double the proportion of malnourished children experienced diarrhea compared to healthy children in FSMS. But fever was 10 percent point higher in normal children than malnourished children. This finding is a clear indication of a strong potential association between of wasting and diarrhoea but this needs to be investigated further to see to what extent it is related to WASH factors.

Figure 25: Child illnesses in the past 2 weeks



Source: FSMS October 2010

7.4 Programme implications

Nutrition has a low priority within the Ministry of Health (MoH). The Nutrition Directorate was recently abolished and reassigned under the Directorate of Community and Public Health. The structural change is likely to further reduce the insufficient allocation of staff and resources to support sustainable nutrition programme implementation and delivery.

Coverage of targeted therapeutic and supplementary feeding programmes in Southern Sudan has traditionally been low and mainly concentrated in few pockets in selected states run by NGOs. While MoH and nutrition cluster have recently endorsed the integrated management of severe acute malnutrition (IMSAM) approach to management of severe acute malnutrition (SAM) guidelines and committed to treat 80 percent of the estimated caseload, a standardized protocol for management of moderate acute malnutrition has not been adopted at national level and the expected coverage for MAM cases is less than 25 percent for 2011 (Figure 8). Low coverage of targeted SFP programmes combined with the generally high global acute malnutrition rate justify continued implementation and expansion of blanket supplementary feeding programmes in 2011, leading up to and during the two seasonal peaks in acute malnutrition, in March to May and August to September.

Table 8: Estimated Nutrition Cluster caseload in 2011

	U5s – Treatment		U2s - Prevention
	SAM	MAM	BSFP
Estimated need	78,000	246,000	380,195
Estimated caseload	62,400	56,000	250,000
Estimated coverage	80%	23%	65%

Source: Southern Sudan Nutrition Cluster

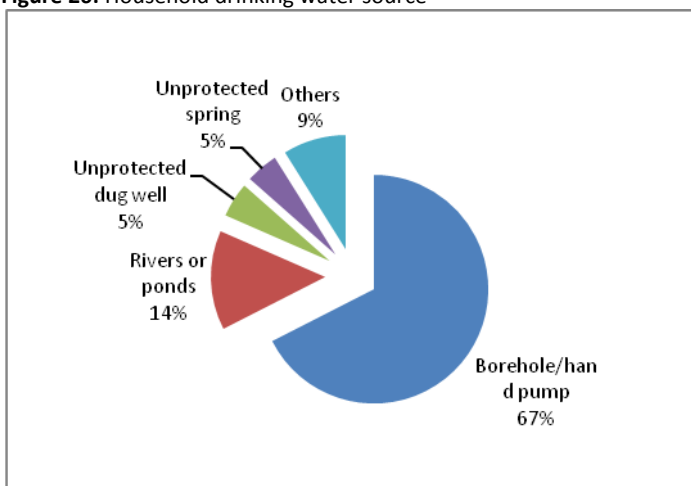
8 Water and sanitation

Safe drinking water and appropriate sanitation are core elements for good health. Studies have shown that improvements in one or more components of water, sanitation and hygiene can substantially reduce the rates of morbidity and severity of ascariasis and diarrhoeal diseases among other water-borne/related diseases¹², is directly related to general morbidity and mortality but are critical determinants of nutritional status and child survival.

8.1 Drinking water source

In 2006 (SHHS) some 56 percent of the population in Southern Sudan obtained water from boreholes and unprotected wells. However, there is evidence that households within the range of functional boreholes still prefer to get water from unsafe sources (e.g. KAP survey conducted by International Mercy Corps (IMC) in Pochalla in 2010). The survey also showed that most of the functional boreholes are not operating at full capacity because of lack of maintenance. The time used to fetch drinking water from the source was an average time of 42.9 minutes according to the 2006 SHHS. The ongoing analysis of the 2010 SHHS will indicate new trends in the sources of drinking water.

Figure 26: Household drinking water source

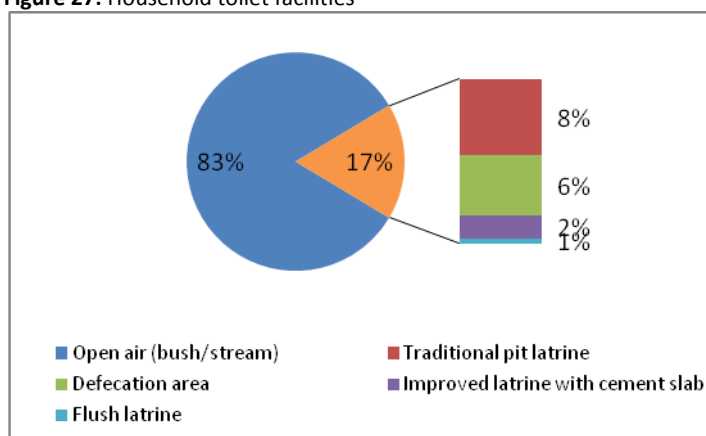


Source: ANLA 2009/2010

8.2 Sanitation

Access to latrines in Southern Sudan is very limited. Based on the SHHS 2006, 31 percent in Sudan used sanitary means of excreta disposal. The percentage was much lower for the Southern States where the percentages varied between 2 percent (Warrap) and 14 percent (Central Equatoria). More recent data from ANLA 2009/2010 found a slight improvement with some 11 percent of the households having access to some kind of latrine. However, the majority (83 percent) utilized open air (Figure 27). The access to

Figure 27: Household toilet facilities



Source: ANLA 2009/2010

latrines varies between the states with Western Bahr El Ghazal and Upper Nile having the largest access to pit latrines (Table 9). The ANLA did not collect information from Western and Central Equatoria states, but it is

¹² See Esrey, S.A., Potash, J.B., Roberts, L. and Shiff, C. (1991). Effects of improved water supply and sanitation on ascariasis, diarrhea, dracunculiasis, hookworm infection, schistosomiasis and trachoma. *Bulletin of World Health Organization* 69 (5): 609-621.

expected that Central Equatoria would have better access due to the proximity to Juba, the capital city of Southern Sudan.

Table 9: Toilet type in the States (percentage of households)

Toilet type	EES	Jonglei	Lakes	Upper Nile	WBS	NBS	Warrap	Unity
Traditional pit latrine	7	9	2	14	16	2	6	9
Improved latrine with cement slab	0	0.4	0.6	11	7	1.3	0	1.0
Flush latrine	1	0.8	0	1.1	0.3	0.0	0	0
Defecation area	13	2.3	0.6	9	7	13	0.3	6
Open air (bush/stream)	79	88	97	65	70	84	93	84

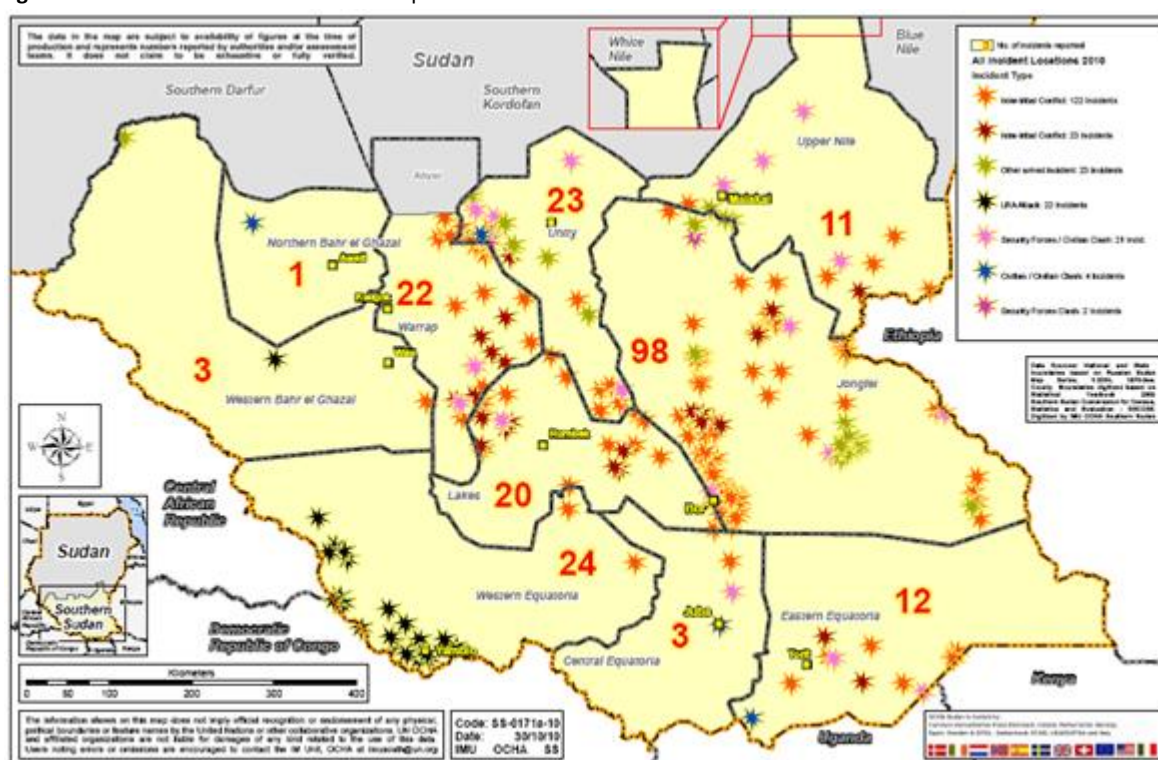
Source: ANLA 2009/2010

9 Conflict and insecurity

According to the 2010/2011 FSMS, insecurity was reported as a major shock by over 30 percent of the households, which is similar to last year. However, the proportion of households affected is much higher because there were many locations that could not be accessed due to insecurity especially in northern Jonglei, Unity and parts of Upper Nile.

The longstanding civil conflict which ended with the signing of CPA in 2005 was the main cause of displacement, loss of lives and lack of development. However, after the CPA the presence of low level localized conflicts in the form of ethnic and tribal clashes, resurgence of traditional hostilities, armed insurgencies, cattle raiding and Lord's Resistance Army (LRA) attacks continue to occur with significant impact on livelihood and food security (Figure 28). There have also been livelihood conflicts which are becoming increasingly significant. Some examples include: Jurbel agriculturalists and Dinka agropastoralists in Wullu and Mvolo counties of (Lakes and Western Equatoria states, respectively), Misseriya nomads and their Dinka hosts (Western Bahr El Ghazal), Bari and Mundari in Juba county (Central Equatoria State) (For more details see Table 12 at the end of this chapter).

Figure 28: Cumulative conflict Incidents reported in 2010



Source: UNOCHA Incidence Database

Unprecedented levels of conflict in 2009 displaced close to 400,000 and killed over 3,500. This upsurge in conflict combined with poor rainfall conditions increased levels of food insecurity. In 2010 215,000 people were affected by conflict-related factors.

9.1 Type of conflicts

In 2010, according to the UNOCHA incidents database, some 225 incidents were reported. About 67 percent of the incidents were related to tribal conflicts (both inter-and intra-tribal conflicts), 21 percent to armed incidences and about 10 percent for LRA attacks (Table 10). Jonglei accounted for 44 percent of all incidences recorded, followed by Warrap, Unity, Upper Nile and Western Equatoria (each 11 percent) and Lakes (10

percent). In all these areas the conflict is predominated by inter- and intra-tribal conflicts, with the exception of the Western Equatoria, where the LRA is the main issue.

Table 10: Geographic distribution of conflict incidence in 2010

State	Typology of Incidences (Number and Percent)							Overall Number and Percent
	Civilian/Civilian Clash	Inter-tribal Conflict	Intra-tribal Conflict	LRA Attack	Other armed incident	Security Forces/Civilian Clash	Security Forces Clash	
Western Equatoria	0 0%	3 12.5%	0 0%	21 87.5%	0 0%	0 0%	0 0%	24 11%
Eastern Equatoria	1 8.3%	7 58.3%	2 16.7%	0 0%	0 0%	2 16.7%	0 0%	12 5%
Jonglei	0 0%	72 72.7%	6 6.1%	0 0%	16 16.2%	4 4%	1 1%	99 44%
Lakes	0 0%	12 54.5%	8 36.4%	0 0%	0 0%	2 9.1%	0 0%	22 10%
Upper Nile	0 0%	5 45.5%	1 9.1%	0 0%	1 1%	4 36.4%	0 0%	11 5%
Western Bahr el Ghazal	0 0%	1 33.3%	0 0%	1 33.3%	1 33.3%	0 0%	0 0%	3 1%
Northern Bahr el Ghazal	1 100%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	1 0%
Warrap	0 0%	15 62.5%	6 25%	0 0%	0 0%	3 12.5%	0 0%	24 11%
Central Equatoria	1 20%	1 20%	1 20%	0 0%	0 0%	1 20%	0 0%	5 2%
Unity	1 4.2%	10 41.7%	1 4.2%	0 0%	5 0%	6 25%	1 4.2%	24 11%
Total	4 1.8%	126 56%	25 11.1%	22 9.8%	24 10.7%	22 9.8%	2 0.9%	225 100%

Source: OCHA Incident Database

LRA attacks have mainly been concentrated in Western Equatoria but have also been reported in Western Bahr el Ghazal. Due to the attacks over 75,000 were displaced in 2009. Continued attacks in 2010 has led to displacement and constrained livelihood capacities of nearly 40,000 people, who hitherto were food secure and self-reliant. The IDPs Emergency Food Security Assessment done in May 2010, reveals a worrying occurrence of localized food insecurity attributed to the constant fear of unpredictable LRA attacks, which continues to undermine cultivation and food production.

Although LRA effects are concentrated in Western Equatoria, it has become a regional threat not only in Southern Sudan but also to Democratic Republic of Congo and Central African Republic. There is a possibility of LRA activity along the border areas of Central Africa Republic and Western Bahr el Ghazal as LRA has moved to South Darfur.

The signing of US LRA Disarmament and Northern Ugandan Recovery Act in May 2010 and the release of LRA Disarmament Strategy 24 November 2010 is a clear recognition of the magnitude of the threats posed by LRA problem on regional security.

9.2 Timing of the conflict

The timing of conflicts is an important factor in determining the effects of conflicts on livelihoods. Nearly 80 percent of the security incidences reported in 2010 occurred during the dry or hunger season. There is a statistically significant relationship between the seasonality and frequency of incidences (Table 11). These coincide with the periods of low food supply, increased dependence on cash

income and markets to meet livelihood needs. This suggests that the scarcity of pasture and water is a trigger for conflicts especially inter-clan conflicts. Monitoring of the incidences from year to year would give a better picture of these seasonality trends and increase the understanding of where these conflicts are likely to occur and to what extent they affect livelihoods.

Table 11: Frequency of conflict by season in 2010

Type of Conflict	Hunger			Total
	Dry Season (Jan-Apr)	Season (May-July)	Harvest (Aug-Dec)	
Inter-tribal Conflict	68 (54%)	40 (32%)	18 (14%)	126
Intra-tribal Conflict	12 (48%)	7 (28%)	6 (24%)	25
LRA Attack	6 (27%)	14 (64%)	2 (9%)	22
Other armed incident	3 (13%)	11 (46%)	10 (42%)	24
Security Forces / Civilian Clash	13 (59%)	4 (18%)	5 (23%)	22
Total	102 (47%)	76 (35%)	4 (19%)	219

$X^2=28.232$ ($p=0.01$) *Statistically significant relationship between incidence and seasonality.*

9.3 Effect of conflict and insecurity on livelihoods

The presence of conflict have continued to disrupt livelihood activities, resulted in loss of assets, impeded physical access to markets and social facilities, reduced movement of people and commercial food and non-food supplies and undermined the realization of development as a peace dividend of the comprehensive peace agreement. Many areas prone to insecurity are inherently remote, lack physical social facilities and continue to face poor physical challenges.

Conflicts have a multi-dimensional effect on livelihoods. It disrupts normal cultivation activities, constrains access to social facilities health, schools and markets, and affects movement and trade. It also creates conditions that limit access to food and potable water and affect the functioning and provisioning of health facilities. These factors cumulatively create a perfect combination for disease outbreaks and high malnutrition. Conflict among other factors has been isolated as one of the contributing factors of the resurgence of Kala-azar especially in Jonglei state (Pigi and Old Fangak) and is a clear demonstration of a possible link between conflict and disease occurrence. A study¹³ on Kala-azar and conflict noted that the long duration of illness and poor nutritional status were exacerbated by war, which prevent access to treatment and disrupts food supplies.

Similarly, limited access to grazing and water resources in pastoral areas leads to clustering of livestock in small areas and increase the risk of transmission of livestock diseases. It also impedes humanitarian access and it is a disincentive for private-sector participation in development.

9.4 Expectations during the referendum

- Although there are efforts by the international community to ensure that there are clear protocols and agreements to safeguard potential direct confrontation between northern and southern Sudan, there is likely to be increased tension and insecurity along the border areas especially as the Popular Defence

¹³ Collin, S. et al. (2004). Conflict and Kala-azar: Determinants of adverse outcomes of Kala-azar among patients in Southern Sudan. *Clinical Infectious Diseases*. 2004:38

Forces (PDF) and other militia groups are used to secure the border areas. This could affect movement of food and other commercial supplies.

- As the government devotes its resources and security manpower for the referendum, there is a likelihood of increased inter-tribal and cattle raiding conflicts as groups with unresolved cultural and tribal issues take advantage of the situation.
- The anticipated return of large numbers to participate in the referendum is likely to raise protection issues such as distressed sale of assets (where sale of assets are permitted), assaults, threats to vote for unity and in some cases even rape while *en route*.

9.5 Programming implications

- Majority of incidents seem to be tribal-related. This could point out to deep-seated unresolved historical and cultural conflicts, which justifies continued grass-roots peace-building initiatives. However, since hunger and competition of communal resources such as land, water and pasture, health and education facilities are also notable triggers of conflicts, it is essential that peace building initiatives be carried out within a broader framework of livelihood support.
- There is also the need for the GoSS to strengthen and enforce civil security and governance to contain and address internal security. This is because some incidences especially in Lakes and Warrap States have been associated with lack of law and order.
- Disarmament has caused tensions and conflict in some states, implying the need for an improved strategy.
- More efforts should be devoted to develop a conflict early warning system to assess the effects of conflicts on livelihoods, pre-empt conditions from escalating into violence or emergency conditions. This Early Warning system would tie community-level indicators into mechanisms or forums charged with responding to violence or food security issues. Indicators might include the following:
 - Frequency of food consumption
 - Migration
 - Below-normal rainfall levels that might contribute to drought conditions
 - Upstream flood conditions
 - Cattle raiding starts
 - Encroachment by pastoral communities onto cultivated farmlands
 - Stealing of cattle or other food sources
- OCHA incident database, used to support this analysis is a good start in collecting, classifying and mapping conflicts, which should be continued to provide time-series data in conflict trends. FEWS NET has recently compiled a summary of conflicting groups in Southern Sudan during 2009, which is a potential monitoring tool for conflicts (Table 12).

Table 12: A summary of various conflicting groups during 2009 (compiled by FEWS NET)

Jonglei		Lake State		Upper Nile State	
<i>Group/Area</i>	<i>Type of conflict</i>	<i>Group/Area</i>	<i>Type of conflict</i>	<i>Group/Area</i>	<i>Type of conflict</i>
Murle – Dinka Murle – Lou Nuer Lou – Jikany	Tribal Tribal Clan	Dinka and Jur (Wullu) Dinka-Nuer SPLA – Dinka Dinka and Mundari Dinka - Dinka	Tribal/livelihood Tribal Disarmament Tribal Clan	Dinka - Shilluk Lou –Jikany	Tribal/border
Warrap		Unity		East Equatoria	
<i>Group/Area</i>	<i>Type of conflict</i>	<i>Group/Area</i>	<i>Type of conflict</i>	<i>Group/Area</i>	<i>Type of conflict</i>
Dinka - Nuer Dinka -Dinka	Tribal Clan	Nuer – Dinka Nuer - Misseriya Dinka – Misseriya SPLA – Misseriya	Tribal Livelihood Livelihood	Toposa–Turkana/Kenya	Tribal
Western Equatoria		Central Equatoria		Western Bahr El Gazal	
<i>Group/Area</i>	<i>Type of conflict</i>	<i>Group/Area</i>	<i>Type of conflict</i>	<i>Group/Area</i>	<i>Type of conflict</i>
All areas Dinka -Jur (Mvolo) Dinka-Moro (Mundri)	Livelihood Livelihood	Bari – Mundari	Tribal	Raga	LRA attacks starting October 2009

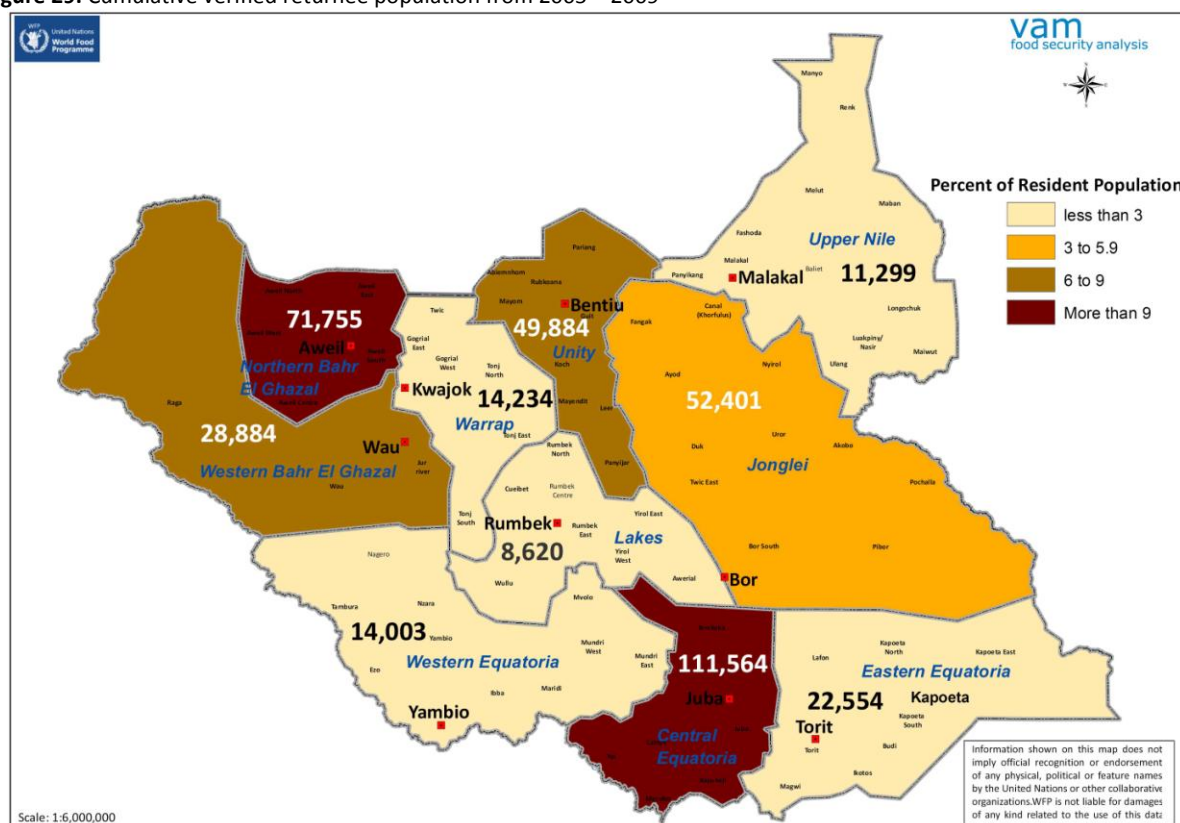
Source: UNDSS (Compiled by FEWS NET)

10 Returnees resettlement and reintegration issues

At least 372,000 verified returnees returned between 2005-2009 (Figure 29). However, the actual number of returnees is much higher because the spontaneous category who form a greater bulk of the returnees is not included.

Between October-December 2010 about 78,000 people returned according to UNOCHA and more could be expected depending on the response to the outcome of the referendum. Majority are concentrated in Unity, Warrap, Northern Bahr el Ghazal and Upper Nile states. Figure 29 shows that Northern Bahr el Ghazal and Central Equatoria have received the highest proportion of returnees (> 10 percent of the resident population). In general influx people into host areas has implications of access to basic social facilities, security and community coping capacities in terms of additional essential food and non-food supplies.

Figure 29: Cumulative verified returnee population from 2005 – 2009



10.1 Programming implications

The anticipated large number of returnees is likely to change the dynamics of food insecurity with an increasing likelihood of food insecure people congregating in the urban and peri-urban areas. Therefore returnee assistance should be done in a manner that avoids creating centres of attraction in urban/peri-urban areas. Increased attention is needed to ensure that basic services are placed in the main areas of return to cater for the additional numbers of returnees.

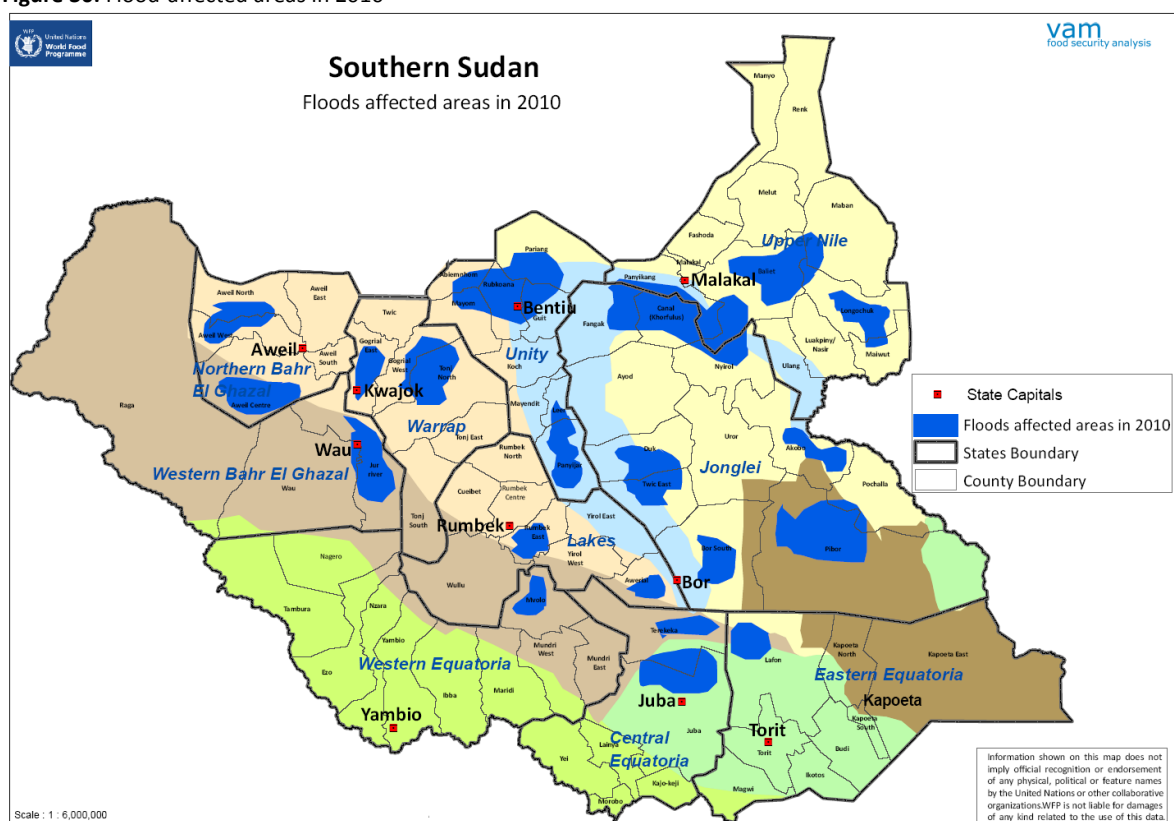
Providing assistance to returnees should be done in a way that also caters for the host communities otherwise an over-emphasis on returnees could create ill-will and social discontentment with the returnees. Therefore reintegration assistance should be broad-based and should also be beneficial to the resident population.

11 Flooding

Flooding is an integral part of the livelihoods in the floodplain livelihood zones. It provides water and pasture for livestock, increases fish supplies and increases opportunities for recessional farming. Due to the largely flat terrain and large flood prone areas it is quite difficult to distinguish unusual flooding effects. In the last three years (2007, 2008 and 2010) floods have occurred with the exception of 2009, which was a drought year. In 2010, flooding was due to torrential rains and over-flow of rivers emanating from Central African Republic and Ethiopia Highlands. In some cases flooding was aggravated by the newly constructed roads without adequate provision of drainage structures or at the river banks where no bank protection has been done after constructing a bridge. In some areas, as in the 2010 flooding in Aweil Town, most of the flood affected people were living in the outskirts of the town which are well known wetland areas adjacent to the Aweil Rice irrigation scheme.

In 2010, the seasonal forecast for the July-September for Southern Sudan was above normal to normal rains, which led to localized flooding and affected at least 140,000 people in flood-prone areas of Jonglei, Northern Bahr el Ghazal, Lakes, Warrap, Upper Nile, Unity and as well as Central Equatoria (Figure 30).

Figure 30: Flood-affected areas in 2010



Source: WFP/UNOCHA field reports

The causes and impacts of the flooding are documented in the FAO Study¹⁴ on vulnerability and impact of hazards. The impacts include: displacement, loss of assets, loss of crop, damage to infrastructure and upsurge

¹⁴ FAO (2009). *Vulnerability, Impact of Hazards and Disasters in Southern Sudan*. A Study Report. FAO, Juba.

of water-borne diseases. Despite the short-term disruptions, which can be mitigated through preparedness, flooding replenishes water and pasture for livestock, increases fish production and also provides opportunities for recessionary farming. Therefore actions in flood management should be geared towards improving the detection and monitoring of flood occurrence. In 2010, the high risk of flooding was detected as early as March 2010 but forecast was not used to improve preparedness. There is need to pay a greater attention of seasonal and short-term forecasts to anticipate preparedness and response actions.

A crisis management committee was created in Northern Bahr El Ghazal to coordinate humanitarian flood assistance in 2010. This was a good model which should be institutionalized and given a broader mandate for overall disaster preparedness at the state level from early warning, monitoring, preparedness and response. An institutional mechanism is also needed at the GoSS-level to support broad based approach encompassing early detection, preparedness and early response. This requires the enhanced roles of the Food Security Technical Secretariat focusing on hazard detection and monitoring and the Ministry Humanitarian Affairs and Disaster Management dealing with preparedness and response.

Communities should also be mobilized to build flood-control structures such as dykes to minimize destruction to their houses and crops.

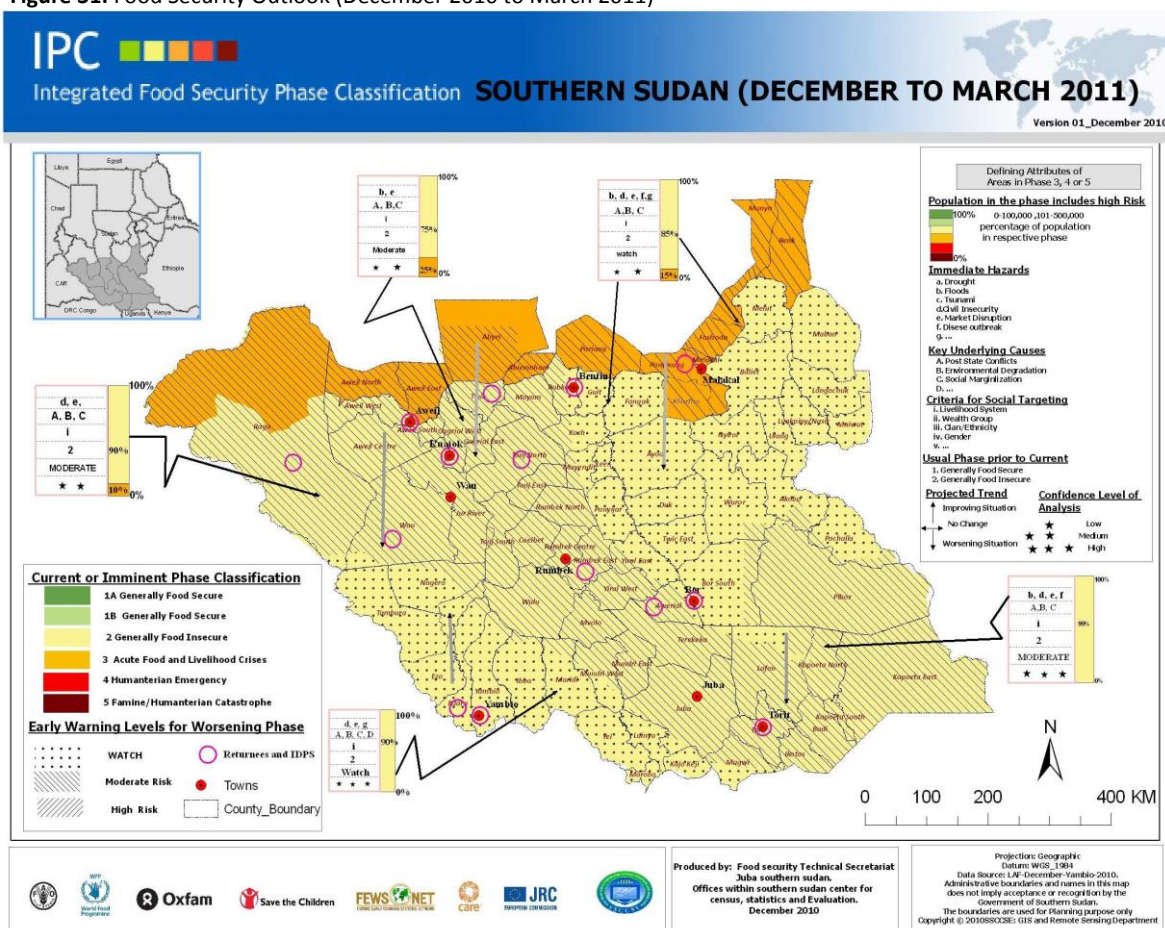
12 Food security outlook – December 2010 – March 2011

The Livelihoods Analysis Forum met on November 30 - December 3 and reviewed the food security outlook for December-March (Figure 31). Based on the seasonal performance, which is associated with generally improved crop and livestock conditions and food access, most areas of southern Sudan are classified as Phase 2 “generally food insecure” with moderate risk of change over Warrap, Western Bahr el Ghazal, western half of Unity Central and Eastern Equatoria and Southern Jonglei especially areas likely to face increased cattle raiding during this time.

However, the border areas between northern and southern Sudan are likely to face an acute food and livelihood crisis (Phase 3) due to the expected deterioration of security conditions along the border areas likely to be associated with displacement/returnees.

The main driving factors of food security will include: high food prices and possible insecurity related to referendum, influx of returnees likely to increase urban vulnerability, reduced trade flow and movement of goods and services (because of reduced number traders and scaled-down trade activities), cattle raiding (Jonglei, Warrap, Lakes, Unity and Eastern Equatoria) and human diseases. Conflicts have a multi-dimensional effect on livelihoods. It disrupts normal cultivation activities, constrains access to social facilities health, schools and markets, and affects movement and trade. It also creates conditions that limit access to food and potable water and affect the functioning and provisioning of health facilities.

Figure 31: Food Security Outlook (December 2010 to March 2011)



Disclaimer: The information shown in this map does not imply official endorsement of any physical, political or feature names by the United Nations of any other collaborating organization

Source: Livelihood Analysis Forum/Food Security Technical Secretariat, Dec. 2010

13 Expected scenarios and estimation of food and non-food assistance requirements in 2011

The estimation of food and non-food needs is based on two scenarios developed around the referendum and its possible outcomes.

Best-case scenario: Peaceful referendum without major change in the security status but higher food prices expected due to temporary reduction of trade-flows combined with increased demand from returnees). Key assumptions in this scenario include:

- i) High prices expected caused by increased demand from returnees and temporary reduction of trade flows affecting inflows of staple foods and other essential non-food items.
- ii) Peaceful referendum resulting in the resumption of trade flows but prices remain inelastic due to the perceived higher risk of doing business in the immediate period after the referendum.
- iii) Majority of rural households remain resilient during the initial three months due to the favourable 2010 harvest and increased local food availability but they would become vulnerable during the lean season when they depend highly on market purchases.

In this best-case scenario only severely food insecure households in rural areas will be targeted through food distributions for four months during the lean season starting April 2011. The total food assistance requirements for 2011 are estimated at 87,000 MT for an average monthly caseload of around 816,000 beneficiaries (See Table 13). In the period after the referendum, the number of returnees is expected to increase depending on the response of the outcome of the referendum in Northern Sudan.

Contingency scenario: Increased insecurity in the post-referendum period combined with reduced trade inflows, high demand leading to persistent high food prices. Key assumptions:

- i) Persistent high food prices due to reduced trade flows
- ii) Large-scale return from Northern to Southern Sudan
- iii) Increased instability in the border areas between northern and southern Sudan due to increased activity of armed militia groups.
- iv) Escalating tensions, internal fragmentation and localized conflicts in the post
- v) In addition to the severely food insecure population, moderately food insecure households in border states (Unity, Upper Nile, Warrap, Northern Bahr El Ghazal, Western Bahr El Ghazal) and Jonglei are affected by multiple shocks and would require assistance in the peak lean season (May to July).

In the contingency scenario, 132,000 MT will be required for a monthly average caseload of 1.14 million beneficiaries. This estimation includes a 3-month ration for the current moderately food insecure households in five border states likely to be impacted by multiple shocks (Table 13). The scenarios will be revisited after the 2011 February FSMS.

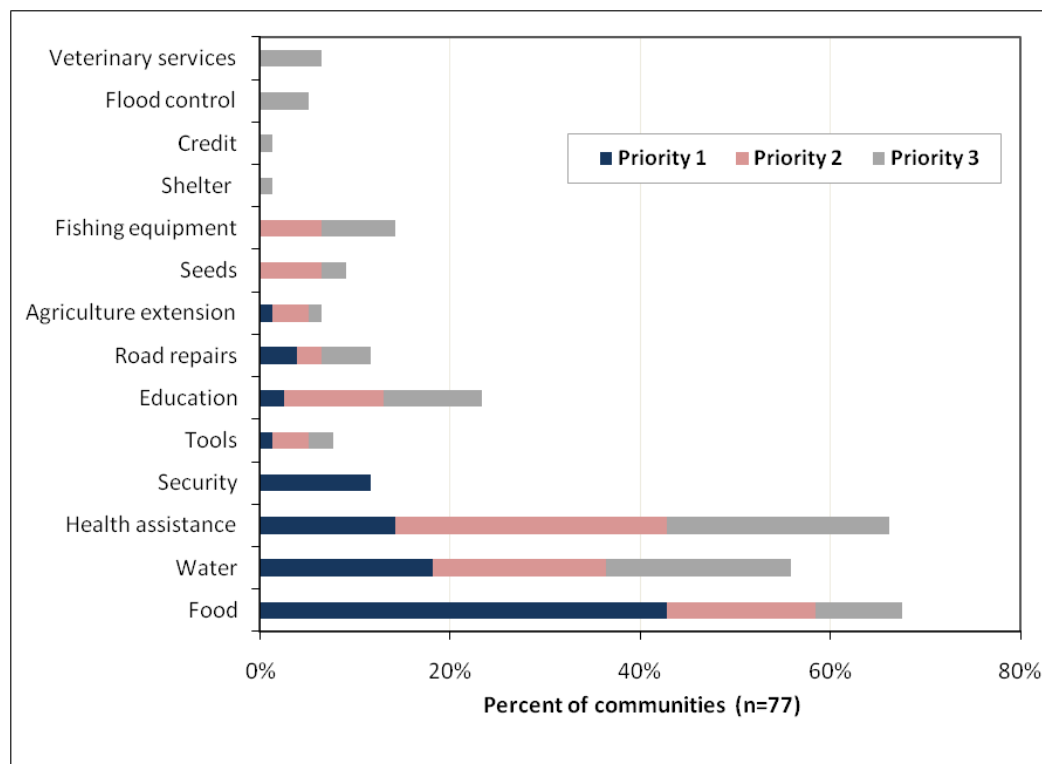
Table 13: Estimated food assistance requirements in 2011

State	Best case scenario		Contingency	
	Av. Monthly beneficiaries	Total MT	Av. Monthly beneficiaries	Total MT
Jonglei	157,100	17,576	236,400	28,712
EES	94,200	9,225	94,200	9,225
WES	19,500	4,570	19,500	4,570
CES	22,700	4,704	22,700	4,704
Warrap	121,200	12,311	204,900	24,063
WBS	71,800	7,354	85,900	9,370
NBS	80,400	7,494	151,800	17,507
Lakes	84,400	8,307	84,400	8,307
Upper Nile	104,200	8,694	164,000	17,096
Unity	60,700	5,952	79,900	8,654
Total	816,200	86,188	1,143,700	132,207

14 Community priorities, conclusions and recommendations

The report attempts to address issues from different sectors that have an implication of food security and livelihoods. Due to the inter-play of chronic and transitory factors affecting food security it is essential to look at a combination of short- and medium-term interventions to address the needs for the food security and livelihood cluster. The need for cross-sectoral interventions is identified clearly through the multiplicity of priorities identified by some 77 communities interviewed during the FSMS (Figure 32). These include food, health assistance, water and security and education. These priorities also reflect the anticipated pressing resettlement and reintegration needs for the returnees. Some proposed sector-specific recommendations are presented in Table 14.

Figure 32: Community priorities (ANLA 2010/2011)



Source: FSMS October 2010

Conclusions

- Natural hazards especially floods and droughts are a constant factor in the emergency food insecurity. The occurrence of multiple and unpredictable shocks requires an enhanced Government response capacity to deal with quick onset emergencies. This requires a broad-based approach focused on early detection, preparedness and early response. This requires the enhanced role of the Food Security Technical Secretariat working together with the Ministry Humanitarian Affairs and Disaster Management.
- There is need for collaborative programming to exploit the vast potential to create and enhance local production and incomes.
- Insecurity is a disruptive factor in livelihoods. Peace building should be considered within a broader framework of livelihood support and not in isolation.
- Secure short-term food and non-food short-term needs of vulnerable households, including returnees through targeted conditional and unconditional humanitarian food and non-food transfers.

- The connection between nutrition, health, water and sanitation and food security is intractable and requires more thorough analysis to determine the extent to which these factors contribute to malnutrition.
- Continued monitoring of food prices is required to get a handle on the likely effects on food access. Similarly monitoring of cross-border trade-flows should be instituted to support GoSS preparedness efforts.

Proposed sector specific recommendations are summarized in Table 14.

Table 14: Proposed recommendations

Agriculture	<ul style="list-style-type: none"> • Increase agricultural productivity to comparable levels with the rest of sub-saharan Africa through improved agricultural technologies, skills and training, infrastructure and policy incentives. • Strengthen local seed production. • Evaluate the mechanization programme with the aim of increasing its benefits for southern Sudan. • Establish the national cereal reserve to boost preparedness of GoSS, provide incentives to increase household food production and income and enhance domestic food availability. • Establish rural micro-finance programs to support small-scale farmers who would like to increase production of food surpluses for purchase programs either by Government or other initiative such as the WFP's Purchase for Progress. • Encourage co-operatives and farmer associations as entry points for providing for micro-finance and extension programs. • Strengthen research and development for seed improvement and other agricultural technologies that would mitigate against drought and floods. • This should also be accompanied by improved extension to increase agricultural skills.
Livestock	<ul style="list-style-type: none"> • Target the pastoralists with provision of drugs and rigorous vaccination against major diseases livestock diseases according to the seasonal calendar of disease occurrence in the country. • Formulate disease control strategies with emphasis on trans-boundary diseases • Formulate policies and regulate the practise of veterinary cadre with emphasis on community based animal health workers • Strengthen the disease surveillance and diagnostic capacity at all levels • Improve market infrastructure and market information system • Embark on a long-term strategy of improving the local breed • Consider programmatic approaches and plans that will minimize resource-based conflict with special focus on cattle rustling • Strengthen the current market information system. • Define clear policy guideline taxation of livestock
Fisheries	<ul style="list-style-type: none"> • Improving access to appropriate fishing gears that ensures sustainable fishing practices • Skills transfers in fishing methods, post harvest management including processing and preservation and introduction of appropriate technology for post harvest handling and marketing • Improving infrastructures to support the fish industry like construction of landing sites, marketing infrastructures and access roads • Provision of targeted credit system to promote the fisheries sector • Sustainable management of fisheries resources through appropriate policies and legislation and strengthening institutional capacity for effective fisheries resource management • Value chain studies to estimate fish production, consumption and contribution to food security

Health and Nutrition	<ul style="list-style-type: none"> • Nutrition has a low priority within the Ministry of Health (MoH). There is need for advocacy and fund-raising • Adopt a standard protocol for management of moderate acute malnutrition and increase coverage of MAM cases • Expand blanket supplementary feeding programmes to address the two seasonal malnutrition peaks, in March to May and August to September. • Strengthen complementary interventions WASH and health services
Conflicts and insecurity	<ul style="list-style-type: none"> • Grass-roots peace-building initiatives to be incorporated in broader livelihood framework • Strengthen and enforce civil security and governance • Develop conflict early warning system
Markets	<ul style="list-style-type: none"> • Address the presence of multiple taxes and non-tariff barriers • Functional and structured food reserve that can buffer households from price spikes • Improved infrastructure to reduce transport costs and increase trade • Institute cross-border trade monitoring to provide information on decision-making for market-based interventions.
Returnees and Reintegration	Assess basic needs for reintegration: schools, health facilities, water supply, livelihood potential
Vulnerability	<ul style="list-style-type: none"> • Increase generation activities to reduce reliance on the extraction of firewood, charcoal, building poles • Households need to cultivate more and adopt more productive methods to boost household food production • There is also the need to boost dietary diversity to enhance the food base to reduce susceptibility to crop failure • Increased use of seasonal forecast to enhance preparedness for natural hazards such as floods/droughts through increased role of FSTS • Boost government response capacity through the establishment of national grain reserve • Address short-term needs through a combination of unconditional food and non-food humanitarian transfers as well as conditional transfers for livelihood support

Source: Annual Needs and Livelihood Analysis Technical Group

Annex 1: Nutrition Assessment Results

2010 Nutrition surveys

State	County	GAM Rate	Date	Lead Agency
Western Equatoria	Ezo	22.0	Jul-10	UNICEF
Eastern Equatoria	Magwi	6.4	Jul-10	UNICEF
Eastern Equatoria	Ikotos	15.2	Jul-10	UNICEF
Eastern Equatoria	Kapoeta North	15.8	Mar-10	SCiSS
Jonglei	Duk	15.2	Dec-10	John Dau
Jonglei	Pibor	8.1	Oct-10	UNICEF
Jonglei	Twic East	14.9	Oct-10	UNICEF
Jonglei	Akobo	16.9	Oct-10	UNICEF
Jonglei	Ayod	19.9	Oct-10	UNICEF
Jonglei	Uror	22.4	Feb-10	Tearfund
NBS	Aweil East	23.1	Jun-10	ACF
NBS	Aweil North	23.6	Jun-10	Concern
NBS	Aweil West	25.7	Jun-10	Concern
Unity	Panyijar	20.0	Jun-10	MSF-F
Warrap	Twic	24.1	Mar-10	GOAL
Warrap	Gogrial West	20.0	Feb-10	ACF
Warrap	Tonj North	20.0	2010	ACF
Average		18.4		

2009 Nutrition surveys

State	County	GAM Rate	Date	Lead Agency
Eastern Equatoria	Ikotos	15.20%	2009 Nov	Medair
Jonglei	Wuror	23.20%	2009 Mar	Tearfund
Lakes	Minkaman	27.10%	2009 June	MSF-SWISS
Upper Nile	Balirt & Ulang	21.20%	2009 May	GOAL
Warrap	Aweil East	22.80%	2009 June	ACF-USA
Warrap	Tonj South	20.50%	2009 June	WVI
Warrap	Twic	22.80%	2009 Mar	GOAL
Western Equatoria	Mvolo	3.20%	2009 Nov	Medair

Annex 2: Calculation of Food Security Indicator

1) Food access indicators

Food consumption is alone unable to explain the complexities of household level food security, due to its short recall period and singular focus on eating habits. The sustainability of this food consumption status has to be assessed by looking at a *household's ability to access food in the future*.

An analytical process was followed by which a wealth of data was explored to find context-specific indicators of food access. The analysis employed state level aggregation to ensure that context sensitive vulnerability indicators were not hidden by national averages. In the end, two indicators were chosen:

a. Reliability and sustainability of income sources

Survey data on the three main income sources was analyzed to categorize households as having poor, medium or good sources in terms of reliability and sustainability. This was done through several steps:

- i. Each of the potential income sources was categorized as good (4), medium (2) or poor (1).
- ii. For each household, the rating of the three sources were summed to come up with a final income source rating. No source equals a rating of 0.

Example:

	Type of source	Rating
Main source	Sale of cereals	4
Second source	Grass sales	1
Third source	None	0
	Total rating	5

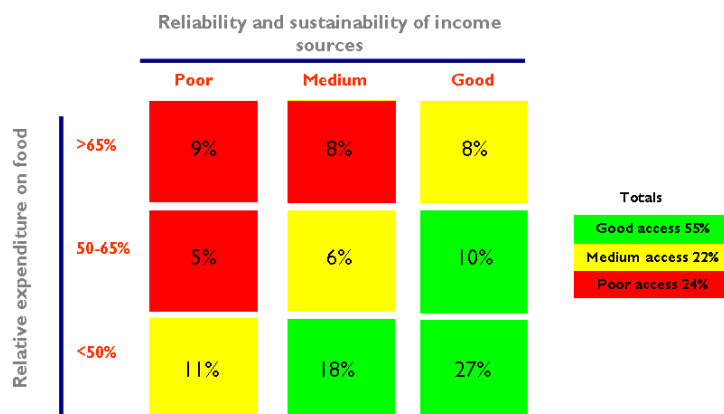
- iii. The total rating now incorporates both the type of sources, and the number of sources.
- iv. This total rating was then split in three categories after careful analysis of the meaning of the score. A score of 0-3 was categorized as poor, 4-5 as medium, and 6-9 as good.

b. Relative expenditure on food:

Relative expenditure on food is one of the core indicators of food security. Households that spend most of their income on food have generally little income and they do so at the expense of other essential posts, such as non-food items, clothes and education. The below categorization was used for this indicator.

Relative expenditure on food		
>65%	50-65%	<50%
Poor	Medium	Good

The two access indicators from step 2 were then consolidated into one measure of food access through a simple cross tabulation as shown below.



2) Analysis of food consumption

The Food Consumption Score is constructed that incorporates both the dietary diversity, frequency of consumption, and nutritional value of different food groups collected through a seven-day dietary recall exercise. Based on this score, a household can be classified as having poor, borderline or acceptable consumption¹⁵. Data Collection Module is described in the Southern Sudan Food Security Monitoring System.

	FOOD ITEMS (examples)	Food groups (definitive)	Weight (definitive)
1	Maize, maize porridge, rice, sorghum, millet pasta, bread and other cereals	Main staples	2
	Cassava, potatoes and sweet potatoes, other tubers, plantains		
2	Beans, Peas, groundnuts and cashew nuts	Pulses	3
3	Vegetables, leaves	Vegetables	1
4	Fruits	Fruit	1
5	Beef, goat, poultry, pork, eggs and fish	Meat and fish	4
6	Milk yogurt and other dairy	Milk	4
7	Sugar and sugar products, honey	Sugar	0.5
8	Oils, fats and butter	Oil	0.5
9	Spices, tea, coffee, salt, fish power, small amounts of milk for tea.	Condiments	0
10	Corn Soya Blend	CSB	2.5

- I. Sum all the values for each of the food groups, and multiply the value obtained for each food group by its weight (see weights in table above).
- II. Sum the weighed food group scores together, thus creating the food consumption score (FCS).
- III. Using the appropriate thresholds (see below), group the food consumption scores into categories.

¹⁵ For more information, validation of the indicator as a proxy of food security, and discussion of these thresholds, please refer to the Food Consumption Score Technical Guidance Sheet, WFP Vulnerability Analysis and Mapping Branch (January 2008).

Once the food consumption score is calculated, the context-specific thresholds are determined based on the knowledge of the consumption behaviour in each country.

FCS	Profiles
0-21	Poor consumption
21.5-35	Borderline consumption
> 35	Acceptable consumption

Hence, a household with a score below 21 is categorized as having poor consumption, between 21.5 and 35 as borderline, and above 35 as acceptable.

3) Coping Strategies

The severity and frequency was combined to assign each household a Coping Strategies Index (CSI).

- Thus, in this a high CSI indicates severe stress and the use of negative coping strategies that will undermine a households' ability to fend for itself the future, or in extreme cases it will even put lives at risk.

Based on the CSI, household were then categorized in three:

- High Coping - Those that frequently employ many of the severe coping strategies at the same time
- Medium Coping – Those that from time to time use negative coping strategies
- Low – Those that used no coping strategies or only some of the less dangerous ones

4) Food Security

Finally, our three dimensions (consumption, access and coping) were combined to see which households are most at risk. 3 categories of people were found:

- Severely Food Insecure
- Moderately Food Insecure
- Food Secure

The table below shows how the three dimensions were combined to create the Food Security indicator.

				Food Consumption				
					Poor	Borderline	Acceptable	
Ability to access food	Poor	Coping Strategies Index	High					Totals
			Medium					
			Low					
	Medium	Coping Strategies Index	High					
			Medium					
			Low					
	Good	Coping Strategies Index	High					
			Medium					
			Low					

Severely Food Insecure	%
Moderately Food Insecure	%
Food Secure	%

Annex 3: State Summaries

Jonglei

Overview

The State has 4 livelihood zones; Nile Sobat Rivers, Pastoral, Hills and Mountains and Eastern Flood Plain. The majority of the communities are agro pastoralists with smaller proportions of pastoralists and sedentary agricultural communities, the latter being present in Pochalla county and Boma region. The agro pastoralists rely both on farming and livestock, mostly cattle and goats. Pastoralists also have sheep. The main food crops cultivated are sorghum, maize, ground nuts, okra, pumpkin, beans and other legumes. However, they also use varieties of wild foods including water lilies, lalop, roots, vines, berries, leaves, bark, and tubers.

Security situation:

The state experiences insecurity often related fighting between tribes, cattle rustling and clashes in the borders with northern Sudan.

Rainfall:

Rainfall was good in the state although in some areas rains started later than usual. However, the intensity, distribution and average are normal to above normal. Flooding was reported in seven out of 11 counties: Bor, Twic East, Pibor, Ayod, Urur, Akobo and Nyiror. The impact was non-negligible.

Main findings of the FSMS and CFSAM:

Demographics:

The average household size was 7.1 members (1-40). 55% were male-headed. The majority of the households were residents (85%) while 11 % were returnees and 3% IPDs. 24% of the households were hosting IDPs and/or returnee.

Food production:

69% of the households cultivated in 2010. The average area for those households who cultivated was 1.3 feddans for sorghum, 0.2 feddans for maize and 0.02 feddans for groundnut. Based on CFSAM 2010, the estimated cereal area cultivated was 142,705 ha with 0.73 t/ha yield (range 0.60-0.75 t/ha). The estimated net cereal production was 83,873 tonnes.

Livestock

Based on FSMS 63% of households own livestock and FAO estimates that there are 1,475 cows in the state. The CFSAM found the body conditions being good due to above average availability of pasture and water. An outbreak of East Coast Fever was reported in Bor and Pibor counties.

Fishing:

About 14% of the households were involved in fishing activity out of which some 79% sell at least part of their landings. Fish was consumed 1.2 days per week for the whole sample while fishing households consumed fish 2.1 days per week.

Main income sources:

The main income sources were sale of natural resources (26%), agriculture (22%), and livestock (12%).

Income reliability and sustainability:

21% of the households rely on poor income sources such as sale of natural resources. The medium and good reliable income sources each account for 37% and 42% respectively.

Expenditure on food:

32% of the households allocate more 65% of its monthly expenditure on food, down from 63% of 2009 ANLA while 46% and 22% spend <50% and 50-65% on food respectively.

Food access:

29% of the households had poor food access, down from 41% of ANLA 2009. 22% had medium and 49% had good food access. Food access is a combination of income reliability and food expenditure indicators.

Food consumption:

18% of the households had poor and 24% borderline consumption which is an improvement compared to the 2009 ANLA findings (34% and 24%, respectively). The remaining 59% of the households had acceptable food consumption. Cereals were consumed on average 6.5 days per week while the average protein (meat, fish, eggs,

pulses) consumption was about 4 days (3.9) per week. Adults had 1.9 and children 2.2 meals per day.

Main food sources:

The main food source for sorghum was own production (48%), followed by market (27%) and food aid (20%). 59% of the maize was own produce while 38% was bought from the market. Pulses were also mostly bought from the market (64%) while 17% used own produce and same percentage relied on food aid.

Coping strategies:

53% of the households in the state have adopted coping mechanisms to secure food. The most often adopted strategies were reduction in meal serving size and number of meals (42% both), consumption of cheaper, less preferred food (35%), borrowing/relying on kinship support (29%), and

consuming unusual wild foods as well as skipping days without eating (28% both).

Food security:

15% of the households were severely food insecure down from 30% of the 2009 ANLA. 24% were moderately food insecure and 61% were food secure.

Shocks experienced:

The main shocks reported were human sickness (59%), expensive food (52%), insecurity (51%), weeds/pests (50%), and floods (31%).

Community priorities:

Community priorities identified in Jonglei state include: fishing equipment, tools, security and peace, food aid, education services, and health assistance.

Lakes

Overview

There are three livelihood zones in the state: Ironstone Plateau, Western Flood Plains, and Nile-Sobat Rivers. The western flood plain consists mainly of agro pastoralists who are farmers and also keep livestock, mainly cattle and goats. The main crops grown are sorghum, ground nuts, maize, pumpkin, beans and other legumes. They also use varieties of wild foods including Shea butter, nuts, and seeds of water lily etc. For Ironstone, the main livelihood activity is agriculture and the main crops grown are sorghum and some maize varieties. On Nile Sobat Rivers the main livelihood activities are fishing, cattle keeping, and agriculture.

Security situation:

No major insecurity incident reported recently.

Rainfall:

Rainfall was good in the state although in some areas rains started later than usually. However, the intensity, distribution and average rainfall are normal to above normal.

Main findings of the FSMS and CFSAM:

Demographics:

The average household size was 8.8 members (3-24). 79% were male-headed households. Majority of the households were residents (97%) while 2% were returnees and less than 1% IDPs. 23% of the households were hosting IDP and/or returnee.

Food production:

92% of the households cultivated in 2010 and the average area for those households who cultivated was 1.6 feddans for sorghum, 0.1 feddans for maize and 1 feddan for groundnut.

Based on CFSAM 2010, the estimated cereal area cultivated was 76,402 ha with 1.08 t/ha yield (range 0.90-1.20 t/ha). The estimated net cereal production was 66,275 tonnes.

Livestock:

Based on FSMS 66% of households own livestock and FAO estimates that there are 1,320 cows in the state. CFSAM 2010 reported decreasing cattle numbers due to insecurity and cattle raiding resulting in limited access to pasture and water. Livestock body conditions for most animals were poorer than expected due to insecurity related to cattle raiding that limited livestock movement and access to water and pasture.

Fishing:

About 13% of the households were involved fishing activity out of which some 40% sell at least part of their landings. Fish was consumed 0.8 days per week by the whole sample while fishing households consumed fish 2.1 days per week.

Main income sources:

The main income sources include agriculture (39%), livestock (18%), and casual labour (13%).

Income reliability and sustainability:

11% of the households rely on poor income sources, such as sale of natural resources. The medium and good reliable income sources account for 17% and 72% respectively.

Expenditure on food:

42% of the households allocate more than 65% of their expenditures on food which is an increase from 2009 (29%). 43% spend <50% and 15% 50-65% on food.

Food access:

12% of the households had poor food access, down from 54% of ANLA 2009. 38% had medium and 50% had good food access. Food access is a combination of income reliability and food expenditure indicators.

Food consumption:

31% of the households had poor and 36% borderline consumption which indicate worsening consumption trend compared to the 2009 ANLA findings (28% and 25%, respectively). The remaining 34% of the households had acceptable food consumption.

Cereals were consumed on average 4.5 days per week while the average protein (meat, fish, eggs, pulses) consumption was 4 days per week. Adults had 1.5 and children 2 meals per day.

Main food sources:

The main food sources for sorghum were market (51%) and own production (45%) while the maize was mostly bought from the market (68%). Some 21% used own produced maize. Pulses were however from own stocks (85%) with only 10% market purchases.

Coping strategies:

50% of the households have adopted coping mechanisms to secure food. The most often adopted strategies were consumption of cheaper, less preferred food (42%), reducing meal serving size (38%), reducing the number of meals and reducing adults' consumption (31% both). Some 28% reported skipping days without eating while 25% borrowed or relied on kinship support.

Food security:

13% of the households were severely food insecure which is practically unchanged from 2009 ANLA (12%). 28% were moderately food insecure and 59% were food secure.

Shocks experienced:

The main shocks reported were insecurity (76%), human sickness (63%), expensive food (43%), and floods (26%).

Community priorities:

Community priorities identified in Lakes state include: tools, drinking water, health assistance, food aid and road repairs.

Northern Bahr el Ghazal

Overview

The two livelihood zones in the State are Western Flood Plain and Ironstone Plateau. Western Flood Plain population is mainly agro pastoralists who practice both farming and keeping livestock. They grow sorghum, ground nuts, maize, pumpkin, beans and other legumes. The main livestock reared are cattle and goats. They also use varieties of wild foods including Shea butter, nut, and seeds of water Lilly etc. population in the state also practice fishing as livelihood means. For Ironstone, the main livelihood activity is agriculture producing mainly sorghum and some maize varieties. Other income activities in the state include fishing and keeping of livestock.

Security situation:

Notable troop buildup between The SPLA forces and Sudan Armed Forces has increased tensions along the border areas. Intermittent clashes and aerial bombings also occurred along the border in November.

Rainfall:

From July to October 2010, Northern Bahr el Ghazal experienced heavy rains which resulted to flooding in Aweil South, Aweil Town, Aweil West and Aweil Centre. The low-lying areas were also inundated from the state rivers due to the flow from the Central African Republic through Western Bahr el Ghazal. The flood was estimated by group discussions during CFSAM data collection, to have affected between 5-10 percent of the state population

Main findings of the FSMS:

Demographics:

The average household size was 6.9 members (2-21). 54% were male-headed households. Most of the households were residents (93%) and 4.5% were returnees. 13% of the households reported hosting IDP and/or returnee.

Food production:

87% of the households cultivated in 2010. The average area for those households who cultivated was 3.4 feddans for sorghum, and 0.2 feddans for maize.

Based on CFSAM 2010, the estimated cereal area cultivated was 79,355 ha with 1.01 t/ha yield (range 1.00-1.10 t/ha). The estimated net cereal production was 60,379 tonnes.

Livestock:

Based on FSMS 43% of households own livestock and FAO estimates that there are 1,590 cows in the

state. In general livestock body conditions are good due to above average availability of water and pasture.

Fishing:

About 7% of the households were involved fishing activity out of which some 25% sell at least part of their landings. Fish was consumed 4.3 days per week by the whole sample while fishing households consumed fish 2.5 days per week.

Main income sources:

The main income sources include sale of natural resources (29%), casual labour (28%), agriculture (13%), and skilled/salaried work (8%).

Income reliability and sustainability:

55% of the households rely on poor income sources such as sale of natural resources. The medium and good reliable income sources each account for 36% and 9% respectively.

Expenditure on food:

31% of the households allocate more 65% of its monthly expenditure on food down from 52% of 2009 ANLA while 46% and 24% spend <50% and 50-65% on food respectively.

Food access:

38% of the households had poor food access, down from 54% of ANLA 2009. 40% had medium and 22% had good food access. Food access is a combination of income reliability and food expenditure indicators.

Food consumption:

8% of the households had poor and 18% borderline consumption which is an improvement compared to the 2009 ANLA findings (15% and 32%, respectively). The remaining 74% of the households had acceptable food consumption.

Cereals were consumed on average 6.8 days per week while the average protein (meat, fish, eggs, pulses) consumption was 5 days per week. Adults had 1.8 and children 2.2 meals per day.

Main food sources:

The main food source for sorghum was own production (78%), followed by market (20%). Maize was consumed only by very few households and own production was slightly more frequent source than market (58 vs 42%). Pulses were obtained from own production (55%) and market (37%).

Coping strategies:

11% of the households in the state have adopted coping mechanisms to secure food. The most often adopted strategy was consumption of cheaper, less preferred food (8%).

Food security:

7% of the households were severely food insecure down from 19% of the 2009 ANLA. 36% were moderately food insecure and 57% food secure.

Shocks experienced:

The main shocks reported were human sickness (77%), expensive food (59%), weeds/pests (35%), floods (30%), and livestock disease (22%).

Community priorities:

The main community priorities identified in Northern Bahr El Ghazal state include: Food aid, Health assistance, drinking water, education services, and flood control structure.

Western Bahr el Ghazal

Overview

The State has two livelihood zones; Ironstone Plateau and Greenbelt. They both depend on agriculture. The main crops produced include sorghum, some varieties of maize and some assorted crops.

Security situation:

The security situation all over the State is calm and stable except limited insecurity caused by LRA in some areas of Raja County. Incidents of cattle raiding have been reported in Mapel Panama.

Anticipation of referendum outcome has accelerated increase of market prices of some commodities in the state.

Rainfall:

The agricultural seasons in 2010 in two counties have received with adequate rainfall, though some dry spell periods were experienced in April and May.

Main findings of the FSMS:

Demographics:

The average household size was 6.5 members (1-21) and 62% were male-headed households. Majority were residents (95%) while the rest were returnees. 6% of the households were hosting IDP and/or returnee.

Food production:

85% of the households cultivated in 2010. The average area for those households who cultivated was 1.8 feddans for sorghum, and 0.3 feddans for maize.

Based on CFSAM 2010, the estimated cereal area cultivated was 37,495 ha with 1.13 t/ha yield (range 1.10-1.25 t/ha). The estimated net cereal production was 33,765 tonnes.

Livestock:

Based on FSMS 24% of households own livestock and FAO estimates that there are 1,256 cows in the state. In general livestock body conditions are good due to above average availability of pasture and water. However, there were high incidence of disease on sheep and goat.

Fishing:

About 11% of the households were involved fishing activity out of which some 44% sell at least part of their landings. Fish was consumed 0.6 days per week for the whole sample while fishing households consumed fish 1.8 days per week.

Main income sources:

The main income sources include agriculture (43%), sale of natural resources (14%), casual labour (12%), and skilled/salaried work.

Income reliability and sustainability:

23% of the households rely on poor income sources such as sale of natural resources. The medium and good reliable income sources each account for 35% and 42% respectively.

Expenditure on food:

19% of the households allocate more 65% of its monthly expenditure on food down from 25% of 2009 ANLA while 63% and 19% spend <50% and 50-65% on food respectively.

Food access:

15% of the households had poor food access, down from 23% of ANLA 2009. 29% had medium and 57% had good food access. Food access is a combination of income reliability and food expenditure indicators.

Food consumption:

13% of the households had poor and 33% borderline consumption which translates into an improvement for poor consumption and slight increase for borderline consumption compared to the 2009 ANLA findings (23% and 29%, respectively). The remaining 54% of the households had acceptable food consumption.

Cereals were consumed on average 5.8 days per week while the average protein (meat, fish, eggs, pulses) consumption was 5 days per week. Adults had 1.7 and children 2 meals per day.

Main food sources:

The main food source for sorghum was market (59%), followed by own production (26%) and food aid (14%). 65% of the maize was own produce while 15% was bought from the market and 10% relied on food aid. Pulses were mostly from own production (82%).

Coping strategies:

50% of the households have adopted coping mechanisms to secure food. The most often adopted strategies were reduction in meal serving size (33%), consumption of cheaper, less preferred food (28%), reducing the number of meals (26%) and borrowing/kinship support (22%).

Food security:

7% of the households were severely food insecure which is a decrease from 2009 (18%). 20% were moderately food insecure while 74% were food secure.

Shocks experienced:

The main shocks reported were human sickness (80%), expensive food (59%), weeds/pests (40%), and delay of rains (33%).

Community priorities:

Community priorities identified in the Western Bahr El Ghazal state include education services, drinking water, health assistance, seeds, security and peace, and food aid.

Eastern Equatoria

Overview

The state has five livelihood zones; Pastoral, Hills and Mountains, Greenbelt, Eastern Flood Plains and Ironstone Plateau. The eastern portion of the state is semi arid and inhabited by pastorals that predominantly depend on livestock rearing for food and income generation. The western part receives enough rainfall to support agricultural production and the inhabitants rely mostly on crop production. Eastern Equatoria is gradually recovering from the effects of last year's drought that caused complete or partial crop failure.

Security situation:

Poor road conditions and insecurity due to cattle raiding and banditry impede trade and access in the eastern part of the state. These factors altogether contribute to the food insecurity in the state.

Rainfall:

Unlike 2009, this year rainfall has significantly improved. Start of rainfall was on time in most areas, while slightly late in others. The amount received in August in many locations was above normal which generally resulted in as increased cultivated areas.

Main findings of the FSMS:

Demographics:

The average household size was 7.7 members (1-47). 97% were residents, 2% returnees and 1% had other status. About 46 percent of the assessed households are headed by females. 12% of the households host IDP/returnee.

Food production:

86% of the households cultivated in 2010. Average area cultivated for those households who cultivated were 2.2 feddans for sorghum, 0.2 feddans for maize and 0.5 feddans for groundnuts.

Based on CFSAM 2010, the estimated cereal area cultivated was 103,362 ha with 0.96 t/ha yield (range 0.80-1.05 t/ha). The estimated net cereal production was 79,381 tonnes.

Livestock:

Based on FSMS 62% of households own livestock and FAO estimates that there are 895 cows in the state. Almost half (49%) of the respondents described the pasture condition as average and 29% as good. 58% reported increase in livestock number, 6 percent said the number remained the same, meanwhile 36 percent reported decrease. The decrease was mainly due to livestock diseases (41%), theft/raiding (33%) and sale (22%).

Fishing:

About 6% of the households were involved fishing activity out of which some 22% sell at least part of their landings. Fish was consumed 0.3 days per week for the whole sample while fishing households consumed fish 1.3 days per week.

Main income sources:

The main income sources include livestock (29%), sale of natural resources (24%), sale of alcohol (17%), agriculture (10%), casual labour (7%), and skilled/salaried labour (6%).

Income reliability and sustainability:

31% of the households rely on poor income sources such as sale of natural resources. The medium and good reliable income sources each account for 53% and 16% respectively.

Expenditure on food:

39% of the households allocate more 65% of its monthly expenditure on food while 39% and 22% spend <50% and 50-65% on food respectively. More than half (57%) of the expenditure on food is actually spent on cereals alone.

Food access:

42% of the households had poor food access while 23% had medium and 35% had good food access. Food access is a combination of income reliability and food expenditure indicators.

Food consumption:

15% of the households had poor and 29% borderline consumption which is a significant improvement compared to the 2009 ANLA findings (40% and 37%, respectively). The remaining 56% of the households had acceptable food consumption.

Cereals were consumed on average 6.8 days per week while the average protein (meat, fish, eggs,

pulses) consumption was 3.3 days per week. Adults had 1.9 and children 2.4 meals per day.

Main food sources:

The main food source in the state was market. Most of the sorghum was purchased from the market (59%), followed by own production (37%). The main source for maize was also market (76%) while 22% utilized own produce. 75% of pulses were from market and 21% used own produce.

Coping strategies:

31% of the households have adopted coping mechanisms to secure food. The most often adopted strategies were consumption of cheaper, less preferred food (28%), borrowing/relying on kinship support (12%), reducing the meal serving size (11%) and reducing the number of meals (10%).

Food security:

15% of the households were severely food insecure, down from 30% (ANLA 2009). 34% were moderately food insecure and 51% were food secure.

Shocks experienced:

The main shocks reported were human sickness (63%), expensive food (55%), insecurity (43%), and livestock disease (29%).

Community priorities:

Community priorities identified in Eastern Equatoria include: food aid, health services, drinking water and veterinary services. Other priorities mentioned by the communities include road construction, seeds and tools, education services and fishing gears.

Upper Nile

Background

The state has two livelihood zones; Eastern Flood Plain and Nile Sobat River. Endowed with dense network of rivers, the state enjoys fishing opportunities which contribute substantially to the households' food and income sources. At times of food shortage, fish is also used as a coping strategy as increased number of households resort to fishing as food source.

Security situation

Upper Nile is one of the states that suffered series of insecurity since the north-south conflict ended in 2005. The state has witnessed two major security incidences when the Sudan Armed Forces (SAF) clashed with the Sudan People Liberation Army (SPLA). The insecurity disrupted livelihoods and undermined agricultural activities in most parts of the state. There have been minor incidences of recent.

Rainfall

In 2010, rainfall started on time or earlier than usual and was above normal throughout the season. This consequently resulted in an increased vegetation growth and abundant water availability which in turn impacted positively on livestock conditions. Agricultural performance was also excellent in most areas. Eastern part of the state experience some flood but the effect is negligible on crop yields.

Main findings of the FSMS:

Demographics:

Average household size was 8.4 members (2-19). 88% of the households were residents, 11% returnees and 2% IDPs. 46% of the sampled households were headed by female. 25% of the households were hosting IDPs and /or returnees.

Food production:

52% of the assessed households cultivated in 2010. The average area for those households who cultivated for sorghum and maize were 2.7 feddans each and 0.4 feddans for groundnuts. Based on CFSAM 2010, the estimated cereal area cultivated was 77,790 ha with 0.79 t/ha yield (range 0.60-0.85 t/ha). The estimated net cereal production was 48,985 tonnes.

Livestock:

Based on FSMS 56% of households own livestock and FAO estimates that there are 990 cows in the state.

Generally, livestock conditions have improved owing to the improved pasture conditions following above normal rainfall.

Fishing:

About 37% of the households were involved fishing activity out of which some 56% sell at least part of their landings. Fish was consumed 1.9 days per week for the whole sample while fishing households consumed fish 3.1 days per week.

Main income sources:

The main sources of income are agriculture (40%), skilled/salaried work (37 percent), and casual labour (10%).

Income reliability and sustainability:

8% of the households rely on poor income sources such as sale of natural resources. The medium and good reliable income sources each account for 14% and 78% respectively.

Expenditure on food:

7% of the households allocate more 65% of its monthly expenditure on food while 79% and 14% spend <50% and 50-65% on food respectively.

Food access:

5% of the households had poor food access while 11% had medium and 84% had good food access. Food access is a combination of income reliability and food expenditure indicators.

Main food sources:

The state relies mostly on markets as a food source. 64% of sorghum, 41% of maize and 93% of pulses were purchased from the markets. Own production was the main source for sorghum and maize for 26% and 53% of the households.

Food consumption:

26% of the households had poor and 7% borderline consumption which indicate worsening trend compared to the 2009 ANLA findings (15% and 19%, respectively). The remaining 67% of the households had acceptable food consumption.

Cereals were consumed on average 6.5 days per week while the average protein (meat, fish, eggs, pulses) consumption was 3.5 days per week. Adults had 2.1 and children 2.8 meals per day.

Coping strategies:

46% of the households have adopted coping mechanisms to secure food. The most often adopted strategies were borrowing/relying on kinship support (38%), consumption of cheaper, less preferred food (37%), reducing number of meals (27%) and reducing meal serving size (25%).

Food security:

7% of the households were severely food insecure, down from 19% from ANLA 2009. 31% were moderately food insecure and 62% were food secure. These numbers were adjusted by WFP VAM team from the FSMS October round data to account for the sampling bias due to inaccessibility of some locations during data collection.

Shocks experienced:

The main shocks reported were expensive food (83%), human sickness (48%), floods (34%), lack of free access (29%), and livestock disease (29%).

Community priorities:

The main community priorities identified in Upper Nile State include: food aid, education and health services. Other needs which were also mentioned during focus discussion include road repairs, agricultural tools, veterinary services and flood control structures (dykes).

Unity

Overview

The state has three livelihood zones; Nile and Sobat Rivers, Western Flood Plains and Eastern Flood Plains. Livelihoods in the region have traditionally been based on agro-pastoralism and fishing. The state is rich in oil and the land is fertile. However, large portion of the population are still poor and vulnerable to food insecurity as insecurity due to cattle raiding, banditry and local politics continue to undermine livelihoods of the people.

Security situation:

Security situation is relatively stable. However, there are some sporadic attacks carried out by bandits. A number of banditry cases have recently been reported in the state. This creates fear among the community and traders, hence affecting livelihood activities and limiting commodity inflow.

Rainfall:

Rainfall started on time in early May across the state and was generally above normal resulting in overall good crop conditions. The dry spell affected Rubkona, Abiemnhom, Mayom as well as parts of Koch and Leer Counties. There was also localized flash floods experienced in few locations.

Main findings of the FSMS

Demographics:

Average household size was 8.3 members (2-18). 94 percent were residents, 3.5% returnees and 2.5% IDPs. The state has the highest prevalence of households who were hosting IDP and/or returnee: 42%. More returnees were reported after the assessment hence the percentage can increase over the months.

Food production:

73% of the assessed households cultivated in 2010 with an average area for those households who cultivated was 2.4 feddans for sorghum, 2.2 feddans for maize and 0.3 feddans for groundnuts. Based on CFSAM 2010, the estimated cereal area cultivated was 39,702 ha with 0.75 t/ha yield (range 0.60-0.90 t/ha). The estimated net cereal production was 23,717 tonnes.

Livestock:

Based on FSMS 73% of households own livestock and FAO estimates that there are 1,189 cows in the state.

Fishing:

About 28% of the households were involved fishing activity out of which some 69% sell at least part of their landings. Fish was consumed 2.4 days per week for the whole sample while fishing households consumed fish 3.3 days per week.

Main income sources:

Main income sources include sale of natural resources (28%), agriculture (17%), casual labour (14%), livestock (11%), fishing (11%), and sale of alcohol (9%).

Income reliability and sustainability:

14% of the households rely on poor income sources such as sale of natural resources. The medium and good reliable income sources each account for 49% and 37% respectively.

Expenditure on food:

12% of the households allocate more 65% of its monthly expenditure on food while 73% and 15% spend <50% and 50-65% on food respectively.

Food access:

13% of the households had poor food access while 18% had medium and 69% had good food access. Food access is a combination of income reliability and food expenditure indicators.

Food consumption:

9% of the households had poor and 11% borderline consumption which is an improvement compared to the 2009 ANLA findings (21% and 22%, respectively). The remaining 81% of the households had acceptable food consumption. Cereals were consumed on average 6.5 days per week while the average protein (meat, fish, eggs, pulses) consumption was 3.8 days per week. Adults had 1.9 and children 2.3 meals per day.

Main food sources:

The households share somewhat equal proportions for own production and market for sorghum (48 and 48%) and pulses' (52 and 43%) food source. 95% of pulses were from own production.

Shocks experienced:

The main shocks reported were human sickness (84%), expensive food (69%), floods (30%), insecurity (26%), and lack of free access (25%).

Coping strategies:

51% of the households have adopted coping mechanisms to secure food. The most often adopted strategies were borrowing/relying on kinship support (41%), reducing adults' consumption (32%),

reducing meal serving size (31%), consumption of cheaper, less preferred food (27%) and reducing the number of meals (25%).

Food security:

6% of the households were severely food insecure. 15% were moderately food insecure and 79% were food secure. These numbers were adjusted by WFP VAM team from the FSMS October round data to account for the sampling bias due to inaccessibility of some locations during data collection.

Community priorities:

The main community priorities identified in Unity include: food aid, health services and drinking water. Others include education, seeds and security.

Warrap

Overview

The state has two livelihood zones; Western Flood Plains and Ironstone Plateau. Warrap state is bordering Abyei and still host the IDPs from the oil rich region. Although cattle rearing remain an important source of livelihood, the state has a huge potential for agricultural productivity. The state also has a large opportunity for fishing which contributes to households' food and income sources. Rainfall have been above average in Warrap leading to improved crop production, better pasture conditions and increased water availability.

Security situation:

Recently the security situation in Warrap state has been relatively stable although cattle raiding remain a major threat. The forthcoming referendum is likely to cause social unrest as tensions are mounting along the north-south border.

Rainfall:

Rainfall improved from 2009 levels. The rain started on time in most parts of Warrap state and continued throughout the cultivation season except for few locations bordering Unity state that experienced floods while there were also areas affected by dry spells, insignificant to impact crops yields (Gogrial West and East and Tonj North).

Main findings of the FSMS

Demographics:

Average household size was 6.8 people. 93% were residents, 4% returnees and 3% IDPs. 61% of the households were female-headed. 10% of the households were hosting a returnee or IDP.

Food production:

91% of the assessed households cultivated in 2010, mostly sorghum. The average area for those households who cultivated was 3.4 feddans for sorghum, and 0.2 feddans for maize.

Based on CFSAM 2010, the estimated cereal area cultivated was 125,612 ha with 0.94 t/ha yield (range 0.60-1.10 t/ha). The estimated net cereal production was 93,998 tonnes.

Livestock:

Based on FSMS 60% of households own livestock and FAO estimates that there are 1,539 cows in the state.

Fishing:

About 8% of the households were involved fishing activity out of which some 33% sell at least part of

their landings. Fish was consumed 0.6 days per week for the whole sample while fishing households consumed fish 1.3 days per week.

Main income sources:

The main income sources were agriculture (21%) and livestock (20%) followed by sale of alcohol (18%), skilled/salaried work (13%), sale of natural resources (8%), and casual labour (7%).

Income reliability and sustainability:

34% of the households rely on poor income sources such as sale of natural resources. The medium and good reliable income sources each account for 31% and 35% respectively.

Expenditure on food:

27% of the households allocate more 65% of its monthly expenditure on food while 56% and 17% spend <50% and 50-65% on food respectively.

Food access:

23% of the households had poor food access while 33% had medium and 44% had good food access. Food access is a combination of income reliability and food expenditure indicators.

Food consumption:

32% of the households had poor and 28% borderline consumption which indicate slightly worsening trend compared to the 2009 ANLA findings (24% and 23%, respectively). The remaining 40% of the households had acceptable food consumption.

Cereals were consumed on average 6 days per week while the average protein (meat, fish, eggs, pulses) consumption was 3.2 days per week. Adults had 1.8 and children 2.1 meals per day.

Main food sources:

Own production was the main source of food in the state; 78% of sorghum, 74% of maize and 59% of

pulses were from own stocks. Food aid was sorghum source for 16% of the households while 10% bought maize and 21% pulses from the market. Some 13% of pulses were obtained through food aid.

Shocks:

The main shocks reported were insecurity (46%), expensive food (45%), human sickness (43%), lack of free access (31%), late food aid distribution (29%), and livestock disease (28%).

Coping strategies:

36% of the households have adopted coping mechanisms to secure food. The most often adopted strategies were consumption of cheaper, less

preferred food (35%), reducing meal serving size (22%), limiting adults' consumption (20%), and reducing the number of meals (19%).

Food security:

14% of the households were severely food insecure, down from 20% compared to ANLA 2009. 34% were moderately food insecure and 51% were food secure.

Community priorities:

The main community priorities identified in Warrap include: food aid, security and health services. Others include: seeds, fishing gears and agricultural extension training.

Central Equatoria

Overview

The state has 3 livelihood zones; ironstone plateau, hills and mountains, and greenbelt. The state borders Western Equatoria State to the west, Lakes and Jonglei to the North, Eastern Equatoria to the East and shares international borders with Uganda and Democratic Republic of Congo to the south. The borders create opportunities for cross border trade which has been significant in provision of food and non-food items to the state.

Rainfall:

The normal rainy season is between March and April through to October and November with some reduction between June and July for a period not exceeding one month. The highlands of the Hills and Mountains livelihood zone receive normally more rainfall than the greenbelt zone. Ironstone plateau receives the least rain.

Main findings of the 2010 ANLA (Based on March FSMS)

Demographics:

The average household size was 7.5 members (1-31). 83% were residents, 14% were IDPs and 2% returnees. 46% of the households were female-headed. 20% of the households host IDP and/or returnee and also 20% have a chronically ill member.

Food production:

The state has two cropping seasons however the pastoral areas and the lowlands of the Hills and Mountains zone have normally one season. Land preparations start in January-February, seeds are planted in April and harvest is expected in July/September. The second season starts in August and is harvested in November/December.

Based on CFSAM 2010, the estimated cereal area cultivated was 126,706 ha with 0.92 t/ha yield (range 0.85-1.00 t/ha). The estimated net cereal production was 92,775 tonnes.

Livestock:

FAO estimates that the state has 880 cows. Based on 2010 CFSAM livestock body conditions are good due to above average availability of pasture and water. No disease outbreaks are reported but for Terekeke county (East Coast Fever).

Fishing

Fishing takes place throughout the year with peak from April to July. Fish is mostly used for own consumption.

Main income sources:

The main income sources are sale of natural resources (22%), sale of crops (18%), and agricultural daily labour (10%).

Income reliability and sustainability:

59% of the households rely on poor income sources such as sale of natural resources. The medium and good reliable income sources each account for 29% and 13% respectively.

Expenditure on food:

42% of the households in the state allocate more 65% of its expenditure on food while 40% and 18% spend <50% and 50-65% on food respectively.

Food access:

49% of the households had poor food access while 31% had medium and 20% had good food access. Food access is a combination of income reliability and food expenditure indicators.

Food consumption:

Some 22% of the households have poor and 47% borderline food consumption. Some kind of cereal was consumed daily while protein sources were consumed less than 4 times per week.

Main food sources:

The main food source in the state was market; 83% of the households purchased at least one of the food items from markets.

Shocks:

The main shocks reported were high food prices (86%) and human sickness (52%).

Coping strategies:

92% of the households have adopted coping mechanisms to secure food. The most often adopted strategies were consumption of cheaper, less preferred food (72%), reduction of meal serving size (60%), reducing the number of meals (57%) and collection of unusual wild food (51%).

Food security:

Based on preliminary findings of the 2010 National Health Survey and field visits, some 4% were severely and 17% moderately food insecure. 79% were food secure.



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