South Sudan Annual Needs and Livelihoods Assessment, 2009/2010

Unity State Summary Report

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Care International (South Sudan)
World Vision International (WVI)
Southern Sudan Relief and Rehabilitation Commission (SSRRC)

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Note on Maps

The boundaries and names shown on the maps and tables and which appear in the narrative of this document are approximate and do not imply official endorsement or acceptance by the United Nations. The Vulnerability Analysis and Mapping (VAM) Unit of WFP South Sudan have produced the maps.
ACKNOWLEDGEMENTS

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Special appreciation the ministry of Agriculture, Southern Sudan Relief and Rehabilitation Commission (SSRRC), World Vision International (WVI), Care International Sudan Program and not to forget FAO, for all the support (logistical, staff etc) they provided to ensure that the assessment was conducted within the planned time frame.
LIST OF ACRONYMS

ANLA  Annual Needs and Livelihoods Assessment
CFSAM  Crop and Food Supply Assessment Mission
CSI  Coping Strategy Index
EPI  Expanded Program on Immunization
FFE  Food for Education
FGD  Focus Group Discussion
FSMS  Food Security Monitoring System
FO  Field Office
GFD  General Food Distribution
IDPs  Internally displaced Persons
IFP  Institutional Feeding Program
MSF-H  medicines Sans Frontiers Holland
NDVI  Normalized Difference Vegetation Index
NGOs  Non-Governmental Organizations
RRR  Return, Reintegration and Recovery
SDG  Sudanese Pounds
SFP  Supplementary Feeding Program
SMoA  State Ministry of Agriculture
SPLA  Sudan People’s Liberation Army
SSRRC  South Sudan Relief and Reconstruction Commission
TFP  Therapeutic Feeding Program
UNICEF  United Nations Children’s Fund
UNMIS  United Nations Mission in Sudan
WFP  World Food Programme
WVI  World Vision International
Table of Contents

1 EXECUTIVE SUMMARY ........................................................................................................... 1

2 BACKGROUND AND CONTEXT .............................................................................................. 1

3 METHODOLOGY ..................................................................................................................... 2

3.1 SAMPLING STAGE I – SELECTING SITES ......................................................................... 2

3.2 PARTNERSHIPS, CONSULTATIONS AND THE ANALYTIC PROCESS .................................. 3

3.3 LIVELIHOOD ZONES ........................................................................................................ 3

4 DEMOGRAPHICS ................................................................................................................... 5

5 FOOD AVAILABILITY .............................................................................................................. 5

5.1 RAINFALL PATTERNS ........................................................................................................ 5

5.2 AGRICULTURE .................................................................................................................. 6

5.3 LIVESTOCK PRODUCTION ............................................................................................... 7

5.4 FISHING .................................................................................................................................. 7

6 MARKETS AND PRICES ......................................................................................................... 7

7 HOUSEHOLD FOOD SECURITY SITUATION .......................................................................... 8

7.1 FOOD CONSUMPTION ...................................................................................................... 8

7.2 FOOD ACCESS ................................................................................................................... 9

7.3 COPING MECHANISMS ..................................................................................................... 11

7.4 FOOD SECURITY GROUPS ................................................................................................ 11

8 MAIN SHOCKS, HAZARDS, OPPORTUNITIES AND PRIORITIES ........................................... 15

9 HEALTH AND NUTRITION ..................................................................................................... 16

10 CONCLUSION ON THE FOOD SECURITY SITUATION .......................................................... 16

11 FUTURE DEVELOPMENTS AND SCENARIOS ................................................................... 17

12 RESPONSE OPTIONS AND RECOMMENDATIONS ................................................................ 17

13 ANNEXES ............................................................................................................................. 19

13.1 LIST OF TEAM MEMBERS ............................................................................................. 19

13.2 ASSESSMENT SCHEDULE ............................................................................................... 20

13.3 SEASONALITY CALENDAR FOR UNITY STATE ................................................................ 21

14 HAZARDS AND OPPORTUNITIES: ....................................................................................... 22

14.1 LAST 3 MONTHS BY LIVELIHOOD ZONE ........................................................................ 22

14.2 LOCAL NAMES FOR SEASONS ..................................................................................... 22

14.3 EXPECTATIONS FOR 2010 ............................................................................................. 23

15 LIST OF REFERENCE DOCUMENTS ..................................................................................... 24
1 Executive Summary

The 2009 ANLA State Level Report is based on the data collected in November and December 2009 through a collaborative exercise with Ministry of Agriculture (MoA), South Sudan Relief and Rehabilitation Commission (SSRRC), Care International, World Vision International (WVI), UNMIS/RRR and World Food Programme (WFP). The assessment employed a household survey, focus group discussions and key informant interviews in 10 locations purposively selected on the basis of that they collectively represented the food security status of various livelihood zones and counties in the state. The main objective of the assessment was to provide an update on the food security situation, establish the likely impact and extent of different shocks, and identify vulnerable sub-groups in order to inform stakeholders and decision makers on assistance needs, response options, and targeting.

The findings suggest that approximately 18% of households (or nearly 120,000 people) in the state are severely food insecure with an additional 35% of households (or approximately 220,000 people) moderately food insecure. The primary proximate cause of such widespread food insecurity – as well as the early and extended hunger season behind it - is poor crop performance and poor harvests stemming from erratic rains in May and a prolonged dry spell in June, July and August. This directly impacted the ability of households to meet their food needs through own production as evidenced by the fact that 3 out of every 4 households interviewed indicated that they had no food stocks available, as well as the greater reliance on market purchases as food source vis-à-vis own production in comparison to normal years.

Poor crop performance and harvests in 2009 also indirectly impacted the ability of households to access food through market purchases. Put simply, low supply and increased demand in the market resulted in inflated cereal prices and decreased purchasing power – both in absolute terms and the livestock-to-cereal terms of trade. The fact nearly a third of households interviewed were spending in excess of 65% of their total expenditure on food provides compelling evidence in this regard. Fortunately, livestock prices remained steady despite a purported increase in distress sales and a potential crisis in the terms of trade was averted.

The most probable scenario in terms of how the food security situation will unfold in the coming months is that most households will experience a modest - but still below average - second harvest in November and December 2009 that, at best, provides enough food stocks to last for 3 to 4 months. Still, this implies that most severely and moderately food insecure households in the state will experience significant food short-falls during the height of the lean period between May and July 2010. As such, a combination of food and non-food based responses are recommended. These include general food distribution, food-for-recovery and training activities, and food-for-education, as well as peace-building initiatives addressing both specific conflicts and the need for more generalized stability in order to create a development-enabling environment.

2 Background and Context

Unity State is divided administratively into nine counties - Ruweng, Mayom, Abiemhnom, Rubkona, Guit, Koch, Mayendit, Leer and Panyijiar. It is bordered by Abyei and South Kordofan to the north, Upper Nile and Jonglei to the east, Lakes State to the south and Warrap to the west. There are two main seasons in the state- the dry season from October to April and the rainy season from May to September.
Climatically, the region is categorized as sub-tropical with its western portions falling within Western Flood Plains livelihood zone and eastern portions falling with the Eastern Flood Plains and Nile-Sobat river zone. Livelihood activities include agro-pastoralism, fishing and some sedentary agriculture in the southern parts of the state around Nyal and Ganyiel. The main crops are sorghum, maize, groundnuts and simsim (or sesame).

The findings from the previous (2008/2009) ANLA indicated that the state was generally food secure. As outlined in this report, the food security situation deteriorated in 2009 owing to unreliable rainfall in May, June and July which seriously impacted crop performance and the first and second harvests. In terms of general security situation, the state has been relatively stable in 2009, save for isolated and localized cases of cattle rustling and a confrontation between Misserya and the SPLA over a breach of the agreement not to enter the state with fire arms. A clash among SPLA forces in Bentiu was also purported to have occurred in early October 2009.

3 Methodology

The principal aim of the data collection exercise was to assess the food security situation in Unity state, establish the likely impact and extent of different shocks on food security, and identify vulnerable sub-groups within the state in order to inform stakeholders and decision makers on assistance needs, response options, and targeting. To this end, multiple and complementary data collection methods were employed, including a household survey, focus group discussions and key informant interviews.

The household survey was used to ascertain the food security status of the selected household with key focus on the Income and food options, food consumption, expenditure, coping strategies, crop production and shocks. Conversely, the focus group discussions were used to ascertain the food security status of the selected socio-economic groups and the general population with key focus on livelihoods and income strategies, as well as to discuss hazards and opportunities in the past three months and probable events in the next nine months. Finally, the key informant interviews were used to establish current market prices and trends and, map the assessment location.

Importantly, this mixed methods approach also allowed for triangulation of the findings from each sources. In so doing, it enabled a more in-depth and meaningful interpretation of quantitative household survey data, as well as a means of quantitatively substantiating (or refuting) qualitative data gleaned from focus groups and key informants. These data sources were supplemented by secondary data sources, particularly for data on IDPs and markets.

3.1 Sampling Stage I – Selecting Sites

At the first stage of sample selection, 10 sites (villages and their surrounds) were purposively selected for inclusion in the assessment based on a combination of a) accessibility and b) the extent to which they collectively ‘represented’ the food security situation in the various livelihood zones and counties found in the state. These sites include Bilyang, Nhiladiu, Pakur, Ngap Mayom, Panyang in Abienmnohm, Panyang in Ruweng, Wathyone, Rubkuay, Pilieng and Wangbur.

3.1.1 Sampling Stage II – Selecting Key Informants and Focus Group Participants

Within each of these locations, focus group discussion participants and key informants were selected purposively – the former as representative of the community and various socio-economic sub-groups within in it and the latter as uniquely positioned to provide insights about the community, particular in regard to markets and market prices.
3.1.2 Sampling Stage II – Selecting Households

Within each selected location, 30 households were selected for participation in a household survey for a total sample size of 300 households overall in the state. The selection of households was done randomly in an effort to balance out the risk and potential sources of bias inherent in relying on purposive selection of households through community leaders. This was achieved using a variation of the pencil spin method popularized by UNICEF for use with the Expanded Program for Immunization (EPI) surveys (box 1).

A structured questionnaire was then used to capture information on various aspects of food security. The primary aim of the survey and questionnaire was to generate an estimate of the proportion of households whose lives and livelihoods are at risk by categorizing each household as severely food insecure, moderately food insecure or food secure. A secondary aim was to identify the characteristics of households in each of these groups in order to inform targeting.

**Box 1 – Steps Used to Randomly Select Households for Inclusion in Survey**

- Use community members to locate the approximate center of each selected site/boma
- Spin a pencil to identify the direction to walk to select sample households
- Count and number all households encountering from the center to the perimeter of the site/boma walking in the identified direction
- Divide this number (X) by the number of households desired (n=30) in order to determine the sampling interval (X/30=SI)
- Select a random starting household between 1 and the SI
- Add the SI to the starting household to select the 2nd household, the SI to the 2nd household to select the 3rd household and so on until 30 households are interviewed
- If number of households in that direction < 30, interview all and repeat process to choosing a 2nd direction in order to identify the remaining households for inclusion

3.2 Partnerships, Consultations and the Analytic Process

The assessment and this report were a collaborative effort conducted in partnership and consultation with the government, as well as various international agencies and international and local NGOs. Each assessment team was composed of members from the Ministry of Agriculture (MOA), South Sudan Relief and Rehabilitation Commission (SSRRC), World Vision International (WVI), CARE International, UNMIS RRR and the World Food Programme (WFP). Overall, four teams were formed and dispatched to the nine counties selected for inclusion in the sample. The analysis of qualitative data collected from focus groups and key informants was done at the team level and later compiled at state-level in a preliminary qualitative report. Quantitative data captured during the household survey was analyzed in Khartoum and then synthesized with the preliminary qualitative findings to product this summative report.

3.3 Livelihood Zones

The Nile-Sobat is by far the largest livelihood zone in the state. Accordingly, 7 of the 10 locations selected for inclusion in the sample come from this zone. These include, Bilyang and Nhiliadiu in Rubkona County, Pakur in Koch County, Pilieng in Leer County, Rubkuay in Mayendit County, Wathyone in Guit County, and Ngap Mayom in Panyijiar County.

The Nile-Sobat is characterized by very gentle landscapes towards the rivers with green vegetation, black cotton soils and swampy/wetland (Toic) characteristics. The main livelihood activities include fishing, crop production and livestock rearing. However, small businesses have also flourished along the main highways. The roads are largely accessible throughout the year due to presence of oil companies who repair and maintain them. The one exception is the road in Panyijiar County which is typically only
accessible during the dry season. Due to atypically low rainfall amounts and absence of seasonal flooding, it remained passable for most of 2009.

The second livelihood zone is the Western Flood Plains. This zone is characterised by short vegetation, black clay soils and is prone to flooding during the rainy season when it takes on swampy/wetlands (Toic) characteristics. Topographically, the zone is largely flat. The main livelihood activities found there are small-scale farming, livestock keeping, fishing and gathering of wild plants. Owing to its comparatively small size vis-à-vis the Nile-Sobat – only two locations from this zone were selected for inclusion in the sample – namely Wangur in Mayom County and Panyang in Abiemnhom County.

The third and final livelihood zone found in the state is the Eastern Flood Plains zone. It is characterised by flat gentle plains, seasonal flooding, and semi-arid vegetation sparsely scattered. The primary livelihood activity found there is crop production. However, livestock rearing, trade and game hunting also make significant contributions to the livelihoods of households in the state. This is the smallest livelihood zone in the state and is found primarily in Ruweng County. As such, only one site - Panyang - was selected for inclusion in the assessment.

Table 1 – Livelihood Zones: Characteristics and Sample Size

<table>
<thead>
<tr>
<th>Livelihood Zones (Counties)</th>
<th>Characteristics</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nile Sobat Rivers { Rubkona, Koch, Guit, Panyijiar, Leer and Mayendit}</td>
<td>Wild foods and fish significant in addition to crops and livestock</td>
<td>7 locations, 210 households</td>
</tr>
<tr>
<td>Western Flood Plains {Abiemnhom and Mayom}</td>
<td>Livestock and agriculture supplemented by fish and wild foods</td>
<td>2 locations, 60 households</td>
</tr>
<tr>
<td>Eastern Flood Plains {Ruweng}</td>
<td>Similar to the Western Flood plains but with additional option of game hunting</td>
<td>1 location, 30 households</td>
</tr>
</tbody>
</table>

3.4 Limitations and Constraints

The purposive selection of sites based on accessibility and a subjective determination of livelihood zone representative-ness was a pragmatic necessity and was informed by the costly, time-consuming and difficult experience of attempting to reach and locate randomly selected sites during last year’s food security assessment. Nevertheless - and as noted earlier - this does impose a number of analytic limitations and constraints on the household survey data.

First, it precludes the possibility of being able to statistically infer something about the food security status of households in the state based on households included in the household survey. This is not to say the sites and household included are not representative, but rather that the partially subjective basis for their representative-ness does not adhere to the strictures required to employ statistical/probability theory as a basis for extrapolating findings from the sample (n) to the population (N). In turn, this limits the ability to make statistically-supported estimates and comparisons, as well as the comparability of findings from this year’s ANLA with those from the assessment conducted last year.

A second (and related) limitation is the very small sample size per county and livelihood zone. This - and the sampling approach - not only precludes the use of statistical inference when making comparisons between counties/livelhood zones, but limits the ability to make even non-statistically supported comparisons. This is particularly true of comparisons between the 3 livelihood zones as only 2 sites (60 households) were surveyed in the Western Flood Plains and one site (30 households) in the Eastern Flood Plains. As such, comparisons made in this report should be considered suggestive and worthy of further investigation, rather than representative or conclusive evidence that some counties/livelhood zones are better or worse off than others.

Finally - and perhaps even more problematically – the use of accessibility as part of the criteria in selected the locations to be assessed is likely to have introduced selection bias into the sample owing to the
relationship between a location's accessibility (or inaccessibility) and the food security status of households within it. It is impossible to quantify the extent of this bias. However, it is clear from the findings of the assessments in this and neighbouring states that inaccessibility due to insecurity (and other factors) impacts food security at the community and household levels. As such, the use of accessibility as part of the selection criteria may well have produced findings that underestimate the true extent of food insecurity in the state.

4 Demographics

The vast majority (88%) of household surveyed identified as residents. The next largest group (9%) identified as returnees, meaning they had returned to the state in the last 12 months. Very few households identified as IDPs (3%) and only one household (<1%) as refugees. However, nearly a quarter (23%) of households indicating that they were hosting returnees and a further 11% IDPs, suggesting that the returnee and IDP population - and the burden of returnees and IDPs on host communities and households - is significantly larger than it first appears.

5 Food Availability

5.1 Rainfall Patterns

In a typical year, the rainy season spans from May to October as depicted in the average rainfall (light blue bar) and vegetation (light green line) in figure 4 below. In 2009, rainfall began as normal in late April/early May, but was followed by an atypical dry spell in during the remainder of May and erratic and significantly below average rainfall in June. There was a brief respite in July when rainfall returned to near normal levels in much of the state. However, August, September and October exhibited the same erratic and below average rainfall that characterized the first half of the 2009 rainy season. Although this atypical rainfall pattern impacted the entire state, the southern counties of Panyijiar, Leer (except Rubkona), Mayendit and Koch were particularly hard hit in terms of agricultural activities being disrupted.
5.2 Agriculture

Agriculture constitutes an important livelihood source for the majority households in Unity state, be it as a primary or sole livelihood activity or supplement to livestock rearing among agro-pastoralists. As such, the atypical rainfall pattern described above had a profound impact on livelihoods and food security. Where rainfall was below average - but still substantial - households were able to achieve reasonable yields during the first harvest of short-term varieties in August/September. In areas where the erratic rainfall patterns and the May-June dry spell were more pronounced many households lost their first harvest crops and were forced to re-plant and re-cultivate in the hope that the resumption of rains in July would result in a reasonable second harvest of long-term sorghum varieties in November/December. However, the return of erratic and below average rainfalls in the latter half of the rainy season resulted in below average second harvest yields and an early start to the current hunger season which typically begins in May and lasts through July. As evidence of this, only 25% of households indicated that they currently held stocks at the time of the assessment with far fewer (16%) expecting to store stocks from second harvest crops (figure 3).
The poor agricultural season this year notwithstanding, participants in focus group discussions throughout the state highlighted a number of opportunities for improving agricultural production. These include the availability and easy access to agricultural land, timely and reliable rainfall in normal years, and access to major markets. A number of constraints were also identified, including limited access to tools and seeds, delayed and unreliable rainfall this year and diseases and pests (including birds).

### 5.3 Livestock Production

Livestock rearing is also an important livelihood activity in the state, both as a primary and supplemental source of income and food. The practice is characterized by transhumant movement – cattle being moved to the Toic (lowlands) and cattle camps in the dry season months of December, January, February and March and returning to the highlands as the rainy season approaches in April and May.

In 2009, pasture conditions were below normal, but generally improved from September onward. Nevertheless, livestock condition was purported to be normal. Livestock sales were above average with this purportedly attributable to distress sales stemming from the extended hunger season. This was particularly true during the last 3 to 4 months of 2009 in the Mayendit, Leer, and Rubkona markets as evidenced by trucks loaded with cattle heading northward.

The main opportunities for improving livestock production (and marketing) were the availability of water, pasture and markets for livestock and livestock products – the first and second being particularly true of areas along swamps and rivers. Constraints include livestock pests and diseases, limited pasture in years (such as 2009) when rainfall is below average, and cattle raiding from within and outside the state.

### 5.4 Fishing

Fishing constitutes an important supplementary livelihood activity in much of the state both as a source of food and a source of income. In the early dry season, the practice is concentrated along the Nile and Sobat rivers. However, fishing is also practiced in swampy areas during the flood season in July, August and September.

### 6 Markets and Prices

The main markets in Unity State are found in Bentiu and Rubkona which serve as the main supply centers for goods and services to other markets. High transportation costs and taxes greatly influence the
market prices for food items with trade dominated by those from the north. The uniformity of prices at various markets visited during the assessment suggests that markets are very highly integrated across the state.

From April 2009 onward, prices for cereals were notably higher than last year during the same period. Moreover, they continued to increase in the latter half of the year – both in absolute terms and in comparison to the same period last year. The one exception to this was the brief period immediately following the first harvest when the retail price for sorghum at the Rubkona market dipped from 9-10 SDG per malwa (3.5 kg) in the previous month to 6-7 SDG per malwa (3.5 kg). Nevertheless, this and other cereal prices remained notably higher than prices during the pre and post harvest periods in 2008.

Other commodity prices at the time of the assessment are as follows: 5 SDG for a 3.5 kg of maize grain, 2 SDG per liter of milk, and 7-8 SDG per kg of cow/sheep meat. Somewhat surprisingly given the increase in distress sales and thus supply in the marketplace, monthly whole animal prices for in 2009 were roughly the same as they were in 2008 with current prices (at the time of the assessment) being between 300-500 SDG for a medium sized bull and 60-120 SDG for sheep and goats. The price of dry fish was between 3-6 SDG per kilo. Maize, ground nuts, fruits, and were not readily available with supply purported to be unreliable due to transport constraints. More generally, it was observed that fresh food stuffs are not available in most of the markets.

7 Household Food Security Situation

In this section of the report three indicators capturing different aspects food (in)security are examined - namely food consumption, food access (income and expenditure) and coping strategies. These indicators are then combined to produce a composite food security indicator that defines households as severely food insecure, moderately food insecure and food section (see box 6, section 7.4).

7.1 Food Consumption

Household food consumption data were collected using a 7 day recall period. Based on the frequency and dietary value of individual food items consumed, a Food Consumption Score (FCS) was calculated for each household. Using established thresholds, these scores were then used to classify each household as having poor, borderline or acceptable consumption. The results of this analysis suggest that approximately 21% of households in Unity state have poor consumption, 22% borderline consumption and the remaining 57% adequate consumption (figure 4). In turn, this suggests that some 43% of households in the state are vulnerable in this regard. Figure 5 displays the average frequency of consumption for individual food items over the 7 days preceding the assessment and confirms the heavy dietary reliance on sorghum – the state’s staple food. These data also highlight how the comparatively infrequent consumption of calorie and nutritionally dense foods such as meats, poultry and eggs. The one exception to this is dairy products – highlighting the importance of livestock rearing as a food source.
7.2 Food Access

In this section, a series of indicators of food access are examined, including food sources, income and income sources, and food and non-food expenditure patterns. These indicators are then combined to derive a composite indicator of food access that classifies households as poor, average and good in this regard.

7.2.1 Food Sources

As depicted in figure 6, market purchases and own production were the most commonly cited source of staple foods consumed over the 7 days preceding the assessment, accounting for 54% and 31% respectively and 85% combined. Other sources do make a significant combined contribution of 15%, but individually do not in terms of the state-wide average.
This highlights the vulnerability of households in the state to poor crop performance as occurred in 2009 as it impacts their ability to access food through both own production and market purchases due the impact of reduced market supply and increased market demand on food prices (see section 6). Focus group discussion participants also noted that there was a significant shift between 2008 and 2009 from relying more own production than markets to relying more on markets than own production owing to poor crop performance.

As further evidence of the impact of poor crop performance on the ability of households to meet their food needs through own production, only 25% of households surveyed currently held food stocks and only 16% expected to store stocks from crops not yet harvested. Moreover, of those with stocks, 34% indicated that it would last 1 month or less with an additional 38% indicating that it would not last beyond two months. This reinforces the point made earlier in the section on agriculture – that is, that many households will experience an early and extended (4 to 5 months) hunger season that is likely to begin in February/March and last until the first harvest in August.

7.2.2 Income and Income Sources

The main income sources identified by households included in the survey were the sale of cereals (37%), the sale of other crops (25%) and the sale of livestock (38%). On the basis of a subjective judgment of this and supplementary sources of household income, 26% of households were classified as having unreliable and/or unsustainable income sources and an additional 33% as having incomes sources that were only moderately reliable and sustainable. In turn, this suggests that nearly 60% of households are vulnerable in this regard.

As further evidence of this, 28% of households included in the survey had income levels that would only allow them to purchase ½ of a minimum food basket or less with an additional 22% only capable of purchasing ½ to 1 minimum food basket. These alarming purchasing power indicators are made all the more alarming by the fact that households in the state relied so heavily on market purchases as a food source and, indeed, did more in 2009 than in normal years.

7.2.3 Expenditure patterns

Expenditure patterns largely confirm the purchasing power indicators in the previous section. For example, just as the purchasing power of approximately half of households (50%) would only allow them to buy one minimum food basket or less, approximately half (51%) of households spent 1.6 SDG or less per person per day. Moreover, approximately half (49%) of households spent half or more of their total expenditure on food with a third (32%) spending in excess of 65% of their total expenditure on food (figure 7).

The last of these statistics is quite telling in that it illustrates the (in)capacity of many households in the state to cope with price increases, as well as their (in)ability to remain productive by investing in health services, education, tools and other productive assets. Put simply, households that spend most of their income on food are often forced to make choices between essential food and non-food expenses and/or reduce expenditure on one or both.

\[\text{Figure 7 - Percentage of HH by 'Food Expenditure as % of Total Expenditure'}\]
7.2.4 Food Access Groups

A composite indicator of food access was derived by combining the categorical variable for ‘expenditure on food as a percentage of total expenditure’ and the subjective valuation of the reliability and sustainability of income sources noted earlier. On the basis of this, approximately 29% of households had poor food access with an additional 22% having average food access (figure 8). Taken together, this suggests that just over half - or one of every two households in the state – are vulnerable in terms of their ability to access food.

7.3 Coping Mechanisms

Many of the households included in the survey indicated that they had employed consumption coping strategies to manage food short-falls in the 7 days preceding the assessment. The three most common strategies employed were reducing the number of meals eaten, restriction of food consumption by adults so that children could eat and limiting the portion size of meals with mean frequencies of 4.2, 3.5 and 3.5 days respectively. Other strategies with a mean frequency of 3 days or more included eating less expensive and less preferred food at a mean, borrowing food, and eating wild food more than usual.

The frequency with which individual households employed these strategies and the perceived severity of each were combined to derive a Coping Strategies Index (CSI) score for each household. Households that employed consumption coping strategies perceived to be severe and/or employed these and other consumption coping strategies frequently have higher CSI scores than those who employ less severe consumption coping strategies and/or employed these and other consumption coping strategies infrequently. As such, CSI is a measure of food insecurity – the higher the CSI for a household, the more food insecure.

On the basis of these CSI scores and locally developed thresholds, approximately 13% of households exhibited frequent and/or severe consumption coping during the 7 day recall period. An additional 21% exhibited moderately frequent and/or moderately severe coping. Such behaviors themselves are not atypical and, in fact, are usually engaged each year. However, the timing (after the first harvest) highlights the degree to which the poor crop performance has forced households to adopt ways of coping that - despite being reversible - could undermine nutritional status if frequently employed over an extended period of time.

7.3 Food Security Groups

As described in box 2 and alluded to earlier, this section of the report brings together categorical indicators of food consumption, access and coping outlined in the preceding sections (7.1 to 7.3) within a single composite food security indicator – namely, food security groups. On this basis, the ANLA household survey data suggests that approximately one fifth (20%) of households in the state are severely food insecure with an additional 31% moderately food insecure as depicted in figure 9. In turn, this
suggests that approximately half (49%) of households in the state are food insecure.

Box 2 – Defining Food Security Groups

The food security groups presented in this section of the report were created by combining household measures of food consumption, food access (income and expenditure) and coping strategies. For food consumption, households were categorized as having poor (0 to 21), borderline (21.5 to 35) or acceptable (>35) consumption on the basis of their Food Consumption Scores – a weighted index that takes account of both frequency of consumption and various foods contribution to dietary adequacy. For food access, a combination of the reliability of income sources (good = 4, medium = 2, poor =1) and poor (>65%), medium (50%-65%) and good (<50%) percentage of total expenditure spent on food were used and then cross-tabulated to define poor medium, and good food access groups. For coping strategies, Coping Strategies Index (CSI) scores that capture both the frequency and severity of coping were used to define high, medium and low coping based on locally-established thresholds. All three of these categorical variables were then combined to define food security groups as depicted in the example below:

<table>
<thead>
<tr>
<th>Ability to access food</th>
<th>Coping Strategies Index</th>
<th>Food Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor</td>
<td>High</td>
<td>Poor 0%</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>4%</td>
</tr>
<tr>
<td>Medium</td>
<td>High</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>3%</td>
</tr>
<tr>
<td>Good</td>
<td>High</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>5%</td>
</tr>
</tbody>
</table>

7.3.1 Livelihood Sources by Food Security Group

In the absence of an adequate sample from each livelihood zone, a comparison of the self-identified main livelihood sources of households each food security group provides insight into the distinctive characteristics of each. As depicted in figure 11, the percentage of severely food insecure households identifying casual labor as a main livelihood source (44%) is more than double that of moderately food
insecure (21%) and food secure (17%) groups. Conversely, a far greater percentage of moderately food insecure (36%) and food secure (45%) households identified mixed farming and livestock rearing as their main livelihood source than severely food insecure (14%). The percentage of households that identified crop production (e.g., farming) as their main livelihood source is approximately equal among the three food security groups.

This analysis does carry a caveat as food security groups were partially defined by the reliability and sustainability of household income sources as part of the food access contribution to the composite food security group indicator. Nevertheless, understanding the variable degree to which households in different food security groups engage in different livelihood activities is descriptively useful, particularly in regard to identifying the shared livelihood characteristics found amongst the severely food insecure.

7.3.2 Food Sources by Food Security Group

An analysis of staple food sources by food security groups reveals that severely food insecure households acquired far less of the food they consume over the 7 days preceding the assessment from own production than both moderately food insecure and food secure households. At the same time, they depended more heavily on market purchases – making them extremely vulnerable to changes in food prices (figure 12). They are also the only group in which food aid (3.1%) and borrowing (3.6%) made a meaningful contribution the staple foods they consumed during the 7-day recall period.
7.3.3 Expenditure Patterns by Food Security Group

As with the analysis of livelihood sources, the analysis of relative expenditure on food by food security groups presented here carries the caveat that these groups were partially defined by relative expenditure on food as part of the food access contribution to the composite food security group indicator. Nevertheless, the fact that 77% of severely food insecure households spend greater than 65% on food (figure 13) serves to re-iterate the comparatively vulnerability of these households to cereal price inflation. This is particularly true given the degree to which severely food insecure households rely on markets (see above).

7.3.4 Coping by Food Security Group

An analysis of coping strategies carries the same caveat as relative expenditure in that food security groups were part derived on the basis of coping strategies index scores. However, the comparison is worth making if only to highlight the extent to which all food security groups engage in consumption coping strategies during the week prior to the assessment. Indeed, there is somewhat surprising uniformity in terms of the percentage of households that indicated that they had engage in various strategies at least one day during the last week (figure 14). Although it may also appear somewhat surprising that a lower percentage of severely food insecure households consumed seed stock as a means of coping with food shortfalls, this can be explained by the fact that many of the most food insecure simply did not have seed stock to consume. Unsurprisingly, severely food insecure households engaged all other consumption coping strategies more often than other groups.
8 Main Shocks, Hazards, Opportunities and Priorities

Two of the three mostly commonly cited main shocks which affected the ability of households in the state to sustain normal livelihoods in 2009 were high food prices and the late rains – the latter being the primary culprit behind poor crop performance and the former resulting from it via decreased purchasing power, low supply and high demand. The third was human sickness with about 50% of households indicating that one or more members were chronically ill. In turn, this has a significant and negative impact on livelihoods due to lost labor and the burden of care.

The main hazards identified during focus group discussions were inter-tribal and inter-clan conflict, particularly related to the cycle of violence and insecurity associated with Dinka-Nuer cattle rustling. The consequences of this were displacement and disruption of livelihoods in the form of delayed or abandoned land preparation. The counties affected most in this regard are Mayom, Panyijiar and Abiemnhom.

As noted above, food prices are clearly a burden, shock and hazard for many households in the state. However, communities also recognize that this presents an opportunity for those able to produce more than they consume. Moreover, good roads and accessibility constitute an opportunity for improved market integration and access, both of which have begun to bear fruit. Security – though a concern – is also good in most parts of the state, particularly when compared to neighboring states and the past, and provides a ripe operating environment for production and trade. Finally, the presence of the oil companies has provided income generating activities for some in the form of casual labor and small businesses along major transport routes.

Community priorities were also assessed in each location through focus group discussions and then synthesized for each livelihood zone. The results are depicted in table 4 in rank order. Cross-cutting priorities include agricultural inputs and food aid. Health care and clean and safe water were also identified as priorities in 2 out of 3 livelihood zones.

Table 4 – Community Priorities in Rank Order by Livelihood zone
9 Health and Nutrition

As noted in the previous section, over 50% of households indicated that at least one member was chronically-ill. Nevertheless, the health and nutritional situation does not appear to have changed significantly in 2009. The most common sicknesses identified by communities and households continue to be malaria and diarrhea. Water and sanitation also remain major health-related concerns for most communities.

10 Conclusion on the Food Security Situation

Based on an average of averages from the 2009 ANLA and FSMS, it estimated that approximately 18% of households in the state are severely food insecure, 35% moderately food insecure and the remaining 47% food secure. Table 5 uses these figures and the 2008 census figures to translate these proportional estimates into population estimates for each food security group. The same approach was used to derive the county level food security group population estimates in the table.

Table 5 – Unity State: Estimated Population by Food Security Groups and County*

<table>
<thead>
<tr>
<th>COUNTY</th>
<th>POPULATION (2008 census)</th>
<th>POPULATION BY FOOD SECURITY GROUPS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Severe food insecure (18%)</td>
</tr>
<tr>
<td>Ruweng</td>
<td>92,365</td>
<td>16,996</td>
</tr>
<tr>
<td>Abiemnohm</td>
<td>18,324</td>
<td>3,372</td>
</tr>
<tr>
<td>Mayom</td>
<td>126,604</td>
<td>23,296</td>
</tr>
<tr>
<td>Rubkona</td>
<td>110,660</td>
<td>20,362</td>
</tr>
<tr>
<td>Guit</td>
<td>35,373</td>
<td>6,509</td>
</tr>
<tr>
<td>Koch</td>
<td>83,571</td>
<td>15,377</td>
</tr>
<tr>
<td>Leer</td>
<td>58,073</td>
<td>10,686</td>
</tr>
<tr>
<td>Mayendit</td>
<td>57,045</td>
<td>10,994</td>
</tr>
<tr>
<td>Panyijiar</td>
<td>59,751</td>
<td>10,994</td>
</tr>
<tr>
<td>TOTAL</td>
<td>641,766</td>
<td>118,088</td>
</tr>
</tbody>
</table>

*county-level estimates for the population in group utilize state-level percentages

By comparison, the 2008 ANLA estimated that only 4% of households in the state were severely food insecure. The primary (proximate) explanation for the deteriorating food security situation in the state in 2009 was the erratic and below average rainfall described in section 5.1 and the poor harvest and early/extended hunger season resulting from it. Insecurity and conflict associated with cyclical cattle-raiding between the Dinka and Nuer was a secondary - and aggravating - factor.
11 Future Developments and Scenarios

Under the worst case scenario the majority of farming households will have a poor second harvest in November/December just as they did for the first harvest, triggering (once again) an early and extended hunger season. Even for those able to harvest some crops, food stocks are likely to be depleted within 2 to 3 months. In turn, households will be forced to deplete assets and engage more frequently in increasingly severe coping strategies, including those that entail reducing consumption. If left unchecked, this could well result in an upsurge of acute malnutrition, particularly among those who are already severely food insecure.

Under the best case scenario, crop performance for the second harvest exceeds expectations and provides ample foods stocks that will carry households through the hunger seasons. However, the probability of this scenario is extremely unlikely due to reduced area under cultivation and continued below average rainfall in the second half of the year. This is particularly true for households that are already severely or moderately food insecure, but also many who are food secure as only a handful of households reported ample stocks to last them through the hunger season.

The most probable scenario is a modest – but still below average - second harvest that provides enough food stocks for the most households to last 3 to 4 months. Still, this implies that most severely and moderately food insecure households will experience significant food short-falls during the height of the lean period between May and July 2010.

12 Response Options and Recommendations

Table 6 outlined the food-based response options that were identified during the state-level food security technical working group’s response options analysis based on the findings of the 2009 ANLA.

Table 6 – Recommended Food-Based Responses

<table>
<thead>
<tr>
<th>Response</th>
<th>Target Group(s)</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Food Distribution (GFD)</td>
<td>Severely food Insecure, IDPs, returnees and refugees</td>
<td>Protecting lives (morbidity/mortality)</td>
</tr>
<tr>
<td>Food-for-Training (FFT) and Food-for-Recovery (FFR)</td>
<td>Moderately food insecure</td>
<td>Building human capital and protecting livelihoods</td>
</tr>
<tr>
<td>Food-for-Education (FFE)</td>
<td>Children of school age</td>
<td>Enrollment, retention and nutritional support</td>
</tr>
<tr>
<td>TFP, SFP, IFP</td>
<td>Sick and malnourished</td>
<td>Nutritional support</td>
</tr>
</tbody>
</table>

A number of non-food based responses were also identified as priorities and merit particular attention by the humanitarian community. These include:

Peace-building programs that address the root causes of conflict and insecurity in the state and promote the stability necessary for development-enabling environment

Peace building and conflict resolution programs designed specifically to address (and temper) ongoing inter-tribal and inter-clan conflicts

- Advocacy for health and nutritional interventions to address dearth of activity in these sectors (one International NGO - MSF-H – currently handles the state’s entire caseload)
- Includes education to build awareness of non-food causes of malnutrition
  - Includes advocacy for water and sanitation programs
Finally, this assessment and the poor crop performance and meager harvests predicted by the 2009 CFSAM suggest that there is a critical need to continuously monitor the food security situation in the state. This includes monitoring changes in food availability, access and utilization, as well as other (and underlying) factors that directly and indirectly impact on food security in the state. A reassessment mission for the most vulnerable populations is also recommended in order to determine whether or not their food security status has improved.
13 Annexes

13.1 List of team members

<table>
<thead>
<tr>
<th>Team</th>
<th>First name</th>
<th>Second name</th>
<th>Third Name</th>
<th>Locations</th>
<th>Agency</th>
<th>Dates of Field Work</th>
<th>Livelihood Zones</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Makuey</td>
<td>Gai</td>
<td>Tudeal</td>
<td>LEER</td>
<td>WFP</td>
<td>23-Nov 29-Nov</td>
<td>Nile Sobat Rivers</td>
</tr>
<tr>
<td></td>
<td>John</td>
<td>Makol</td>
<td>Thonlek</td>
<td>KOCH</td>
<td>S S R C</td>
<td>23-Nov 29-Nov</td>
<td>Nile Sobat Rivers</td>
</tr>
<tr>
<td></td>
<td>Gabriel</td>
<td>Galiuak</td>
<td>Bol</td>
<td></td>
<td>MOA</td>
<td>23-Nov 29-Nov</td>
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<tr>
<td></td>
<td>Luka</td>
<td>Buom</td>
<td>Gai</td>
<td></td>
<td>WWI</td>
<td>23-Nov 29-Nov</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Team</th>
<th>First name</th>
<th>Second name</th>
<th>Third Name</th>
<th>Locations</th>
<th>Agency</th>
<th>Dates of Field Work</th>
<th>Livelihood Zones</th>
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<tbody>
<tr>
<td>2</td>
<td>John</td>
<td>Gatkouth</td>
<td></td>
<td>RUWENG</td>
<td>WFP</td>
<td>23-Nov 2-Dec</td>
<td>Eastern Flood Plains</td>
</tr>
<tr>
<td></td>
<td>James</td>
<td>Gai</td>
<td>Wuor</td>
<td>MAYOM</td>
<td>S S R C</td>
<td>23-Nov 2-Dec</td>
<td>Western Flood Plains</td>
</tr>
<tr>
<td></td>
<td>Joseph</td>
<td>Kur</td>
<td>Mathiang</td>
<td>ABIE MNOM</td>
<td>MOA</td>
<td>23-Nov 2-Dec</td>
<td>Western Flood Plains</td>
</tr>
<tr>
<td></td>
<td>James</td>
<td>Bol</td>
<td>Deng</td>
<td></td>
<td>CARE</td>
<td>23-Nov 2-Dec</td>
<td></td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Team</th>
<th>First name</th>
<th>Second name</th>
<th>Third Name</th>
<th>Locations</th>
<th>Agency</th>
<th>Dates of Field Work</th>
<th>Livelihood Zones</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Lazarus</td>
<td>Nhial</td>
<td>Puol</td>
<td>MAYENDIT</td>
<td>WFP</td>
<td>23-Nov 29-Nov</td>
<td>Nile Sobat Rivers</td>
</tr>
<tr>
<td></td>
<td>John</td>
<td>Nhial</td>
<td>Chath</td>
<td>PANYIJAR</td>
<td>S S R C</td>
<td>23-Nov 29-Nov</td>
<td>Nile Sobat Rivers</td>
</tr>
<tr>
<td></td>
<td>Fanum</td>
<td>Bol</td>
<td>Juaj</td>
<td>Ngap Mayom</td>
<td>MOA</td>
<td>23-Nov 29-Nov</td>
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<td>Michael</td>
<td>Agiel</td>
<td>Choul</td>
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<td>CARE</td>
<td>23-Nov 29-Nov</td>
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<table>
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<th>Team</th>
<th>First name</th>
<th>Second name</th>
<th>Third Name</th>
<th>Locations</th>
<th>Agency</th>
<th>Dates of Field Work</th>
<th>Livelihood Zones</th>
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</thead>
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<td>Lawrence</td>
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<td>23-Nov 2-Dec</td>
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<tr>
<td></td>
<td>David</td>
<td>Majang</td>
<td>Badeng</td>
<td>RUBKONA</td>
<td>S S R C</td>
<td>23-Nov 2-Dec</td>
<td>Nile Sobat Rivers</td>
</tr>
<tr>
<td></td>
<td>Stephen</td>
<td>Peter</td>
<td>Gai</td>
<td>GUIT</td>
<td>MOA</td>
<td>23-Nov 2-Dec</td>
<td>Nile Sobat Rivers</td>
</tr>
<tr>
<td></td>
<td>Willy</td>
<td>William</td>
<td>Marial</td>
<td>WWI</td>
<td></td>
<td>23-Nov 2-Dec</td>
<td></td>
</tr>
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</table>
13.2 Assessment Schedule

**TRAVEL PLAN: TRAVEL TO ALL LOCATIONS IS BY ROAD**

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td></td>
<td>Mon</td>
<td>Tue</td>
<td>Wed</td>
<td>Thur</td>
<td>Fri</td>
<td>Sat</td>
<td>Sun</td>
<td>Mon</td>
<td>Thur</td>
<td>Fri</td>
</tr>
<tr>
<td>1</td>
<td>LEER-</td>
<td>KOCH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Back to Base</td>
<td></td>
<td></td>
<td>Field Vehicles</td>
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<tr>
<td></td>
<td>(Pilieng)</td>
<td>(Pakur)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 WFP</td>
</tr>
<tr>
<td>2</td>
<td>RUMENG</td>
<td>MAYOM</td>
<td></td>
<td></td>
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<td>Departure of El Obeid Drivers</td>
<td>2 WFP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Panyang)</td>
<td>(Wangam)</td>
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<td>PANTIJAR</td>
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<td>1 WFP, 1 FAO</td>
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<tr>
<td></td>
<td>(Rubkuay)</td>
<td>(Mayom)</td>
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<td></td>
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<td></td>
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<td>RUBKONA</td>
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<td>GUIT</td>
<td></td>
<td>Departure of El Obeid Drivers</td>
<td>1 WFP, 1 MOA</td>
</tr>
<tr>
<td></td>
<td>(Khudri)</td>
<td>(Bilyang)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(Wathnyone)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
13.3 Seasonality calendar for Unity State

**UNITY STATE SEASONALITY CALENDAR-DECEMBER 2009**

- **Typical hunger season** for all livelihood zones, Nile Sobat, Western & Eastern flood plains
- **Typical flood season**; a lot of fishing activities
- **Livelihood & crop assessments** (CFSAM, ANLA)
- **Continuation of the 1st cropping season** with very little cultivation
- **Main harvest season 2009**; No/very little harvest from the cropping season; Nile Sobat, Western & Eastern Flood Plains
- **Minor harvest season 2009**
- **Early dry season**; cattle move to Toic-low lands and cattle camps
- **Late dry season**; cattle move back to highlands
- **Flood recede season**, fishing activities along the Nile & rivers
- **1st cropping season starts** at all zones; cropping season starts in May-Oct
### 14 Hazards and opportunities:

#### 14.1 Last 3 months by Livelihood Zone

**Livelihood zone: Nile Sobat**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event / Shocks</th>
<th>Effect</th>
<th>Response by the community</th>
<th>Who affected</th>
<th>% hh affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>July-2009</td>
<td>Conflict resulting fighting within SPLA</td>
<td>Delay in preparing Agricultural lands</td>
<td>Sale of livestock - Reliance on wild foods</td>
<td>All</td>
<td>62%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>July 2009</td>
<td>Unreliable rainfall</td>
<td>Destruction of crops - Destruction of pasture</td>
<td>People resorted to wild foods -</td>
<td>Poor and Middle Socio-economic groups</td>
<td>74%</td>
</tr>
<tr>
<td>Aug-2009</td>
<td>High food prices due to food shortage</td>
<td>Poor feeding habits - Increased Human sickness due to imbalanced diet</td>
<td>Relying on fishing, wild foods - Alternative food reserve</td>
<td>All</td>
<td>77%</td>
</tr>
</tbody>
</table>

#### 14.2 Local Names for Seasons

**Livelihood zone: Nile Sobat.**

<table>
<thead>
<tr>
<th>Season</th>
<th>Months</th>
<th>Local Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>October-December</td>
<td>Jiom</td>
</tr>
<tr>
<td>2</td>
<td>Jan-March</td>
<td>Mie</td>
</tr>
<tr>
<td>3</td>
<td>April-June</td>
<td>Ruel</td>
</tr>
<tr>
<td>4</td>
<td>July-September</td>
<td>Tuot</td>
</tr>
</tbody>
</table>
### 14.3 Expectations for 2010

**Livelihood zone:** Nile Sobat, Western Flood Plains and Eastern Flood Plains

<table>
<thead>
<tr>
<th>Projected time frame (Season)</th>
<th>Events (Hazards and opportunities)</th>
<th>Effect</th>
<th>How will the community respond?</th>
<th>Who will be affected?</th>
<th>% hh maybe affected</th>
<th>Additional Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>October-December</strong>&lt;br&gt;<strong>Local Name:</strong> Jiom</td>
<td><strong>Opportunity</strong>&lt;br&gt;Small harvest</td>
<td>-food available at market</td>
<td>-reduced sale of HH assets</td>
<td>Poor social economic groups</td>
<td>65%</td>
<td>-</td>
</tr>
<tr>
<td><strong>Jan-March</strong>&lt;br&gt;<strong>Local Name:</strong> Mei</td>
<td><strong>Hazards</strong>&lt;br&gt;Food shortage&lt;br&gt;Conflict (Cattle raiding)</td>
<td>-Inter clan fighting&lt;br&gt;-Cattle raiding</td>
<td>-Migration&lt;br&gt;-Increased sale of natural resources</td>
<td>-All</td>
<td>80%</td>
<td>The community needs assistance with Agricultural inputs</td>
</tr>
<tr>
<td><strong>April-June</strong>&lt;br&gt;<strong>Local Name:</strong> Ruel</td>
<td><strong>Hazards</strong>&lt;br&gt;Floods&lt;br&gt;Human diseases</td>
<td>-Destroy crop&lt;br&gt;-Affects pasture&lt;br&gt;-Increased fishing</td>
<td>-Migrate to highland&lt;br&gt;-Fishing</td>
<td>-Vulnerable people e.g. Orphans, women elderly</td>
<td>70%</td>
<td>-</td>
</tr>
<tr>
<td><strong>July-September</strong>&lt;br&gt;<strong>Local Name:</strong> Tuot</td>
<td><strong>Hazards</strong>&lt;br&gt;Floods&lt;br&gt;Human diseases</td>
<td>-Destroy crop&lt;br&gt;-Affects pasture&lt;br&gt;-Increased fishing</td>
<td>-Migrate to highland&lt;br&gt;-Fishing</td>
<td>-Vulnerable people e.g. Orphans, women elderly</td>
<td>35%</td>
<td>-</td>
</tr>
</tbody>
</table>
15 List of reference documents

1. South Sudan Annual Needs and Livelihood Assessment Report, 2008/09, Compiled by WFP VAM Unit, March 2009,


3. SPECIAL REPORT- FAO/WFP MID-SEASON CROP AND FOOD SECURITY ASSESSMENT MISSION Southern Sudan September 2009; FAO of the United Nations Rome, World Food Programme (WFP) Rome