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Note on Maps

The boundaries and names on the maps and tables in this document were produced by 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.
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LIST OF ACRONYMS

ANLA Annual Needs and Livelihoods Assessment
CFSAM Crop and Food Supply Assessment Mission
CPA Comprehensive Peace Agreement
CRS Catholic Relief Service
CSI Coping Strategies Index
FAO Food and Agriculture Organization of the United Nations
FCS Food Consumption Score
GAM Global Acute Malnutrition
GDP Gross Domestic Product
GoSS Government of Southern Sudan
IDPs Internally Displaced Persons
IOM International Organisation for Migration
MT Metric Tones
NDVI Normalized Difference Vegetation Index
NGOs Non-Governmental Organizations
PHO Polish Humanitarian Organization
SAM Severe Acute Malnutrition
SDG Sudanese Pounds
SMOA State Ministry of Agriculture and Forestry
SMOH State Ministry of Health
SSCCSE South Sudan Commission for Census, Statistics and Evaluation
SSRRC South Sudan Relief and Reconstruction Commission
TOT Training of Trainers
UNHCR United Nations High Commissioner for Refugees
UNMIS United Nations Mission in Sudan
UNRCO United Nations Resident Coordinator’s Office
UNU Upper Nile University
VAM Vulnerability Analysis and Mapping Unit
VSF Veterinaries San Frontiers
WFP World Food Programme
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1 Executive Summary

The purpose of this assessment (and report) is to provide an update on the food security situation in Jonglei state. To this end, it examines the food security situation of households, ascertains the shocks and events affecting communities, and forecasts probable evolution of the food security situation in 2010. The findings (summarized below) are based on 9 bomas purposively selected for inclusion in the sample to represent the four main livelihood zones in which the state’s pastoralist, agro-pastoralist and sedentary agricultural communities live – namely, the Nile Sobat, Eastern Flood Plains, Hills and Mountains, and Pastoral livelihood zones.

Approximately 30% of households (or about 425,000 people) in the state are severely food insecure with the expected arrival over 10,000 returnees in 2010 likely to add to this figure. In addition, some 28% of households are moderately food insecure and, thus, in danger of becoming severely food insecure if the more unfavorable of the two scenarios outlined in section 11 unfolds. In turn, this suggests that nearly 60% of households in the state are vulnerable and may remain or become severely food insecure in the coming year.

The primary causes of these heightened levels of food insecurity were the dry spell in May and June that delayed planting, reduced area under cultivation and hindered yields and insecurity impacting trade, transport and movement. The former directly impacted those who rely on ‘own crop production’ for food and income. It also led to a marked increase in prices for cereals (and other crops) over the previous year due to low supply and, as such, impacted the ability of those reliant on market purchases to access food. Lower than average prices for livestock due to insecurity-hampered trade further exacerbated this problem among those who rely on livestock sales for income by creating significantly unfavorable livestock-to-sorghum terms of trade.

There is suggestive evidence of a relationship between household food security status, livelihood zone and location. However, it also true that significant variation in the prevalence of severely food insecure households exists in different counties within the same livelihood zone, as well as within the same country in different livelihood zones. This is explained by the combined impact of the dry spell and insecurity on agricultural, agro-pastoral and pastoral livelihoods described above.

2 Background / Context

Jonglei state lies in the Southeastern Sudan, bordering Eastern Equatoria and Central Equatoria in the South, Ethiopia in the East, Upper Nile in the North and Lakes and unity states in the East. It is comprised of eleven counties namely: Korfulus, Nyirol, Wuror, Ayod, Fangak, Duk, Twic East, Bor, Pibor, Akobo and Pochalla. The state is made up of a mixture of agro-Pastoralists and sedentary agricultural communities with the western and northern border regions falling within the Nile Sobat river livelihood zone, the central portion of the state lying within Eastern flood plain livelihood zone and southern portion lying within the Pastoral and Hills and Mountains livelihood zones.

The state has experienced an increase in intertribal conflicts, child abduction, and cattle raiding over previous years. The result is both an increased death and displacement of citizens with some 45,000 internal displaced persons (IDPs) reported since March due largely to inter-tribal conflicts and cattle raids in Pibor, Akoba, Nyirol, Duk and other counties. This has significantly and negatively impacted the ability of traders to access markets in Pibor, Akobo and Kankein and, as a result, reduced the availability - and increased the price - of food commodities in these locations. This has been further exacerbated by delayed rains, poor harvests and crop failure.

3 Methodology (and Collaboration)

The assessment was a collaborative, interagency effort by SSRRRC, SMOA, SMOH, CRS, PHO, SC-S UNHCR and WFP. It employed multiple and complementary data collection methods, including a household survey, focus group discussions (FGDs) and key informant interviews. The purpose of this was threefold: to allow for triangulation of findings from different data sources, to allow for more in-depth and meaningful interpretation of quantitative household survey data and to substantiate the qualitative (and anecdotal) findings gleaned from focus groups and key informants.
3.1 Sampling Stage I - Selecting Sites

Two data collection sites/bomas were selected purposively for inclusion in the assessment from each of the state’s 4 livelihood zones based on a combination of accessibility and the extent to which the site ‘represented’ the livelihood zone with both determined via consensus during a consultative meeting with partners on the 16th September, 2009. An additional 2 sites/bomas were selected from the Eastern Flood Plains livelihood zone as it is the largest (and most populous) such zone in the state. One of the selected sites in the Nile Sobat livelihood zone could not be visited due to insecurity. As a result, only 9 of the 10 sites/bomas selected were included in the assessment.

3.1.1 Sampling Stage II – Focus Group Discussions and Key Informant Interviews

Within each of the 9 selected sites visited, focus group discussion participants and key informants were selected purposively – the former as representative of the community and the latter as uniquely positioned to provide insights about the community. Open-ended interview/discussion guides were then used to ensure each of the following topics were covered during these interviews/discussions; demographics, perception of livelihoods, income strategies and social economic groups, agriculture, livestock, hazards and opportunities and their projected potential in 2010, coping strategies, markets, community priorities.

3.1.2 Sampling Stage II – Household Survey

Conversely, the 30 households selected for participation in the household survey within each selected site were chosen randomly in an effort to balance out the risk and potential sources of bias inherent in relying on purposive selection of respondents 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 and described in box 1. A household survey questionnaire was then used to capture information on each selected household’s demographics, income sources, food sources and consumption, expenditure, coping strategies, crop production, household food availability, water sources and sanitation, housing, and food and non-food aid (e.g. external assistance). Thirty households were successfully interviewed in each of the 9 selected sites visited for a total sample size (n) of 270 households.

**Box 1 – Steps Used to Randomly Select Households in Purposively Selected Bomas**

- Use key informants 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 is less than 30, interview all and repeat process to choosing a 2nd direction in order to identify the remaining households for inclusion
3.2 Preparation and team composition

A two day training of the enumerators was conducted on 22nd and 23rd September, 2009. Teams proceeded to the field for data collection from 26th September to 10th October, 2009. Each team was comprised of at least one government staff person, one staff member from an international NGO or (non-WFP) UN agency, and one WFP staff member to ensure transparency.

3.3 Limitations and constraints

The purposive selection of sites is not to say the sites and household included are not representative, but rather that the subjective basis for their representativeness 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). It was however done in the field through a consultative process with agencies who know the areas very well. In previous years attempt to do randomly select locations have been precluded by accessibility, which is a major factor during the time of the ANLA and falls at the end of the rainy season. This year, locations that were known to be inaccessible were not considered for inclusion and thus it is possible that the results are underestimating the extent of food insecurity.

The purposive selection of sites based on accessibility and a subjective determination of livelihood zone representativeness 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, this necessity and pragmatism does impose a number of analytic limitations and constraints on the household survey data. These are outline below.

A final limitation is the fact that only one site/boma was visited in the Nile Sobat livelihood zone due to insecurity in the second site/boma selected. In turn, this suggests that, while it is reasonable to assume the extent of selection bias noted above had a fairly uniform impact on (under)estimates of food insecurity across other livelihood zones in the state, (under)estimates of food insecurity in the Nile Sobat zone are likely to be more pronounced. In turn, this suggests the need for caution in comparing even the relative food security status of households in the Nile Sobat zone to those in other zones.

3.4 Livelihood Zones

3.4.1 Nile Sobat Livelihood zone

This livelihood zone stretches along the Nile and Sobat Rivers and includes Fangak and Piggi (Korflus) counties, Western parts of Ayod, Duk, Twic East and Bor County close to River Nile. It is characterized by clay soils, swampy vegetation owing to its proximity to the Nile and Sobat Rivers. The zone is a dry season grazing area with the main crops grown being sorghum and maize. In addition, wild foods and fish are abundant and contribute significantly to consumption.

3.4.2 Eastern Flood Plains livelihood zone

This livelihood zone encompasses the central, northern and northeastern parts of the state. It is characterized by black cotton soil with normal rains beginning in May and lasting through September. The zone experiences floods during normal rainy seasons due to flat terrain. The vegetation is open wooded grassland and subjected to annual bush burning during the dry seasons. Livestock keeping and crops (mainly sorghum, maize, and vegetables) are the main activities. Cattle raids and inter-clan conflicts are commonplace.
3.4.3 Pastoral livelihood zone

This livelihood zone covers Pibor County with the exception of Boma Payam. The zone has clay soils and vast grassland with scattered trees. Some rivers help to support the grassland. However, these rivers are seasonal and dry up during the dry seasons. The exception to this is the swamp areas that act as the dry season grazing areas. There is some farming in permanent villages. However, the predominant source of livelihoods is livestock keeping, primarily cattle and goats.

3.4.4 Hills and Mountains livelihood zone

This livelihood zone is found in the south-eastern part of the state bordering Ethiopia (Boma Payam of Pibor county). It is hilly and mountainous with some of the highlands covered with rich and diverse vegetation, including numerous and diverse species of trees. The primary livelihood source is agriculture/farming of maize, cassava, vegetables, sorghum, and fruits. There are typically two growing seasons - one from April to August and a second from August to November.

4 Demographics

The proportion of male-headed households (48%) to female-headed households (52%) in Jonglei only slightly favors the latter. Nevertheless, it is notable given that it is relatively rare (globally) for female-headed households to be in the majority. The relatively large average households size of 10 persons is also of note, as is the fact that nearly a third (31%) of households surveyed indicated that at least one household member was chronically ill.

Some 93% of households surveyed were residents with the reminder being returnees (4%) and IDPs (3%). Somewhat incongruous with this nearly one out of five households indicated that they were hosting returnees (12%), IDPs (6%) or both (1%). The sizable returnee population suggested by both sets of figures includes those that have returned in the last 12 months, primarily through spontaneously (unorganized) returns from Northern Sudan, other parts of Sudan and other countries in East Africa.

The majority of the smaller - but still substantial - IDP population was displaced as a result of a continuous cycle of inter-tribal conflict and cattle raiding as occurred in Akobo, Pibor, Nyirol Wuror Duk, Twic East in 2009. In addition, it is estimated that the livelihoods of some 115,000 people were disrupted as a result of displacement, creating a burden for the communities that accommodated IDPs by further stretching their already over-stretched resources.

5 Food Availability

5.1 Rainfall Patterns

In 2009, rains began as normal in April and first week of May. However, an atypical dry spell began in the second week of May and lasted through late June. Rainfall returned again towards the end of June and continued into July and August as is typically the case. Nevertheless, the atypical dry spell resulted in rainfall totals by August of between 60%-80% of average in much of the state and between 40%-60% of average in parts of the Eastern Flood Plains zone. The only area of the state that experienced normal (and even excess) amounts rainfall by August was the Hills and Mountains livelihood zone (Sudan Seasonal Monitor). Nevertheless, this zone also experienced the atypical dry spell in May/June. By July, rainfall resumed throughout the state. However, cumulative rainfall totals are purported to have remained below normal for the remainder of the year.
5.2 Agriculture

The atypical dry spell in May/June resulted in delayed planting and reduced areas under cultivation for all crops throughout the state (figure 2). Insecurity is also purported to have been an exacerbating factor in this regard. Poor yields are also purported to have occurred throughout the Nile Sobat, Eastern Flood Plains and Hills and Mountains livelihood zones as a result of the dry spell and delayed planting. Expectations for crops that will be harvested in November and December are the same.

Seventeen percent of the households in the state reported harvesting food stock and 52% expect to store stocks from crops not yet harvested. Expectations are that this is likely to last for only two to three months due to the reduced areas under cultivation and poor yields noted above.
Main opportunities to improve crop production

1. Provision of seeds and tools by FAO through partners
2. Larger pieces of land cleared than before due to the dry spell
3. Eastern Flood Plains and the Nile Sobat livelihood zones remain flood free

Main constraints on successful crop production

1. Delayed and reduced rainfall/dry spells
2. Lack of seeds due to replanting and consumption.
3. Human disease that can lead to lack of labor
4. Pests and crop diseases

5.3 Livestock

The dry spell in May and June also negatively impacted vegetation and pasture conditions in the state. Figure 3 – depicting variation from average vegetation in the state in August 2009 – provides a clear indication of this with yellows and reds representing below average vegetation development, greens and blues representing above average vegetation development. In terms of impact on livelihoods this translated into poor pasture and water resources for the pastoralists and agro pastoralists in the state. As a result, livestock were kept in dry seasonal grazing areas longer than usual. Significant rainfall in August and September significantly improved vegetation and pasture conditions by September/October.

Figure 3 – NDVI Difference from Average, 10 August 2009 (Sudan Seasonal Monitor)

Livestock condition was described as average despite the dry spell due to the availability of permanent swamps in dry season grazing areas and the resilience of the grass vegetation in wet season grazing areas once rain came. Nevertheless, diseases were purported higher than normal which some respondents attributed to their having kept livestock in dry season grazing areas longer than usual. The most common cattle diseases in Eastern Flood Plains and the Nile Sobat were Trypanosomiasis, Haemorrhagic Septicaemia, and Contagious Bovine Pleuropnuemonia or CBPP. East Coast Fever was also reported in Bor and is believed to have been introduced from Uganda.

There were also notable increases in the incidence of cattle raids in 2009 in comparison to previous years. The most affected counties in this regard were Pibor, Akobo, Wuror, and Nyirol. The number of livestock on sale at
Markets was reported to have been above normal in 2009 despite prices having been significantly lower (20% to 40%) in all livelihood zones in comparison to last year. Some attribute this, in part, to low demand stemming from insecurity as it creates disincentives for traders to engage in livestock trade. Poor livestock-to-sorghum terms of trade (see section 6) may also help to explain excess market supply and, in turn, reduced prices.

**Main opportunities to improve livestock production**

1. Vast grazing areas that allow migration during dry spells including permanent swamps
2. Quick regeneration of grass with less rains

**Main constraints on livestock production**

1. Delayed and reduced rainfall that made livestock stay longer in the dry season grazing areas.
2. Poor pasture due to the dry spell
3. Diseases and lack of veterinary services and treatment
4. Continuous cattle raids and intertribal conflicts.

**5.4 Fishing**

Fish are important seasonal source of food in the state, particularly for those living alongside the Nile. For some, it is a regular source of food and income. For others, it offers an important coping strategy to offset shortfalls from other sources. This year (2009) is purported to have been an exceptionally good year for fishing in parts of Jonglei such as Bor. However, poorer than normal catches have been reported from some upstream tributaries where water levels were low following this year’s relatively poor and delayed poor rains. Fish species commonly caught include Tilapia, Nile perch, Mud fish, Cat fish and Silverside (Kawara).

**6 Markets and Prices**

**6.1 Market Structures and Supplies**

Markets in Jonglei state operate on a daily basis. Retailers are the main traders. Commodities are mostly outsourced from Malakal in Upper Nile, Uganda through Juba, Ethiopia and Kenya for those markets close to the international border. During the rainy season, deliveries to markets in the state are hampered in all markets with the exception of Bor. Additional constraints faced by traders in the state include poor road infrastructure and insecurity and the high operation costs resulting from the combination of the two.

Demand for commodities increased significantly in the latter half of the year due primarily to supply shortfalls stemming from the failed harvest noted previously. The impact of this on sorghum prices is indicative of the impact on cereal prices more generally and discussed below. In some areas, already high prices have been exacerbated by disruptions to commercial trade due to insecurity. The Sobat area is particularly noteworthy in this regard.

**6.2 Sorghum Prices**

Typically, cereal prices drop during the harvest period (October to December) and increase during the lean or hunger season (March to June). However, this year seasonal price increases occurred much earlier and exceeded price levels of the previous year. This is evident in the monthly sorghum price fluctuations in the state capital Bor in 2008-2009 depicted in figure 4 below. Indeed, cereal prices during the October, 2009 assessment Jonglei were higher than any other state in the region with the price of a malwa (3.5 kilograms) of sorghum ranging from 10 SDG to 20 SDG in comparison to 4 SDG to 10 SDG elsewhere. The expectation is that prices will remain high until the harvest in August 2010, after which the price is likely to gradually trend downward if rains come as expected and insecurity declines. The atypical increase in prices beginning in September 2009 help to underscore the extent to which demand continues to outstrip supply in line with the predicted huge cereal deficits for the state, particularly as prices began to decline in September of the previous year.
Within the state, prices in the Nile Sobat livelihood zone - and in Bor, Fangak and Khorflus in particular - are lower than in the Eastern Flood Plains, Pastoral and the Mountains and Hills livelihood zones. This is attributable primarily to the comparative ease of access enabled by the Nile and Sobat rivers. Counties close to international borders such as Akobo, Pochalla and Boma also exhibited comparatively low prices as traders are able to acquire some commodities from Ethiopia.

6.3 Livestock Prices and Terms of Trade

In contrast to cereal prices, livestock prices are down significantly from last year. This is attributable to the lack of transport to the state’s major livestock markets in Malakal, Bor or Juba. At the time of the survey, the average price of medium size adult bull ranged from 200 to 400 SDG throughout the state. By comparison, prices last year during the same period were nearly double, ranging between 500 to 1000 SDG. As depicted in figure 5, the combination of declining livestock prices and heightened sorghum prices has had a deleterious impact on the terms of trade between sorghum and cattle, particularly in the latter half of the year.

7 Household Food Security Situation

7.1 Food Consumption

The average consumption of individual food items by households in Jongeli is depicted in figure 6 below. Based on food consumption scores derived from these data and previously established thresholds, an estimated 34% of household in the region exhibited poor food consumption with an additional 24% classified as borderline (figure 7). Although food consumption data based on a 7 day recall only offers a snapshot of the current situation and is heavily influenced by seasonality, this substantiate perceptions of sub-standard consumption throughout the state.
Of the four livelihood zones found in the state, the bomas selected from the Hills and Mountains zone had the lowest food consumption scores and, consequently, the highest proportion of households classified as having poor consumption at around 80% in both bomas surveyed. Within the Eastern Flood Plains livelihood zone, the
proportion of households with poor food consumption varied widely between counties at around 30% in Nyirol and 3% or less in Pochalla. The same holds true of the two locations selected from the Pastoral livelihood zone despite the fact that they are in the same country (Pibor) with 60% and 3% of households classified as having poor consumption in Nayayapuru and Khor Adep respectively. Importantly, this underscores the fact that significant variation in consumption exists within the state, within livelihood zones and even within counties.

7.2 Food Access

7.2.1 Food Sources

On average, households in the state acquired 44% of their food from own production - including both livestock products and crops – 26% from markets, 11% from gathering, 6% from fishing, 5% from food-for-work, 3% from hunting and the remaining 4% from other sources. Unsurprisingly the importance of each source varies by livelihood zone. Nevertheless, own production – be it crops or livestock – was the primary food source across all zones.

In both the Eastern Flood Plains and Nile Sobat regions, livestock production was the main sources of food with the exception of Pochalla (Eastern Flood Plains) where crop production was the main source. Crop production also figured more importantly as a secondary food source in elsewhere in Eastern Flood Plains than it did in the Nile Sobat zone where fishing and market purchases figure more importantly as food sources than own crops. In the Hills and Mountains livelihood zone, crop production was the main food source, followed by wild plants, game, market purchases, and own livestock production. As expected, livestock production is the main source of food in the Pastoral livelihood zone, followed by wild plants and game, crop production and market purchases. It appears likely that household reliance on natural resources (wild plants and game) will increase in the coming months, particularly among those who typically rely heavily on crop production as a primary or secondary source of food.

![Figure 8 – Food Sources: Average % by Source](image)

7.2.2 Income Sources

On average, households in the state acquired income 24% of their income from the sale of livestock and livestock products, about 20% of their income from the sale of crops and charcoal respectively and the remainder of their income from a combination of salaried employment and the sale of alcoholic beverages, grass, fish and other sources (figure 9).
Using expenditure data (see next section) as a proxy for income, it is estimated that approximately 83% of the households in the state are incapable of purchasing more than half or less of a minimum food basket per month (figure 10). This is higher than any other state in the region and suggests an acute and grave food security situation, particularly given the huge cereal deficit and the likely impact of this on cereal prices in the short to medium term.

The one livelihood group that appears to be an exception in this regard is the Nile Sobat where 37% of the households surveyed appear capable of purchasing more than half of the minimum food basket with an additional 17% appearing capable of purchasing the full minimum food basket or more. However, as noted earlier, caution is warranted here as only one boma in this livelihood zone was included in the assessment due to insecurity.

7.2.3 Expenditure patterns

Approximately 63% of households in Jonglei allocated 65% or more of their total expenditure to food with an additional 13% spending between 50% and 65% (figure 11). In turn, this suggests that the majority of the households in the state have inadequate income to invest in health, education, tools and other productive assets. As noted above in relation to the use of expenditure per person per day as a proxy for income, absolute expenditure was lower among households surveyed in Jonglei than in any other states in the region.

There is some variation in the percentage of total expenditure spent on food both between and within livelihood zones. For example, nearly 80% of those in the Eastern Flood Plains in Nyirol country spent in excess of 65% of
their total expenditure on food, whereas about half as many (in percentage terms) did so in the same livelihood zone in Pochalla. Similar – but less pronounced – differences were found between the bomas visited in the Hills and Mountains livelihood zone where 52% and 71% of households indicated spending 65% or more of their total expenditure on food in Jongeli and Bayin respectively. The Nile Sobat appears to compare favorable in this regard in that the percentage of households spending 65% or more of their total expenditure on food was roughly equivalent to the percentage found in Pochalla. Again, caution in interpretation is warranted here as only one site in the Nile Sobat zone was visited due to insecurity. Finally, households in the Pastoral livelihood zones were among the worst off in this regard, with some 77% indicating that they spent 65% or more of their total expenditure on food.

7.3 Coping Strategies

The vast majority of households in state experienced food shortages over the 7 days preceding the assessment. The most common coping mechanisms or strategies used to manage this were relying on less preferred foods, limiting portion size, restricting consumption by adults in order for small children to eat, and reducing number of meals eaten in a day.

The bomas that employed what are perceived to be more severe strategies and/or employed these and other coping strategies most often (as reflected in their average CSI scores) are those in the Eastern Flood Plains in Niyrol, those in the Hills and Mountains livelihood zone (Pibor) and Nayawapu in the Pastoral livelihood zone in Pibor. These findings corroborate the findings about food consumption (7.1) in terms of which locations and zones appear to have a comparatively high prevalence of severe to moderate food insecurity and once again underscore the fact that significant variation in exists within the state, within livelihood zones and even within counties in this regard.

7.4 Food Security Groups

The preceding sections have examined food security in Jonglei along various dimensions – namely, food consumption, food access (income and expenditure), and how households manage or cope with food shortfalls. In this section, these dimensions are combined a single categorical variable to yield three food security groups – severely food insecure, moderately food insecure, and food secure - each of which is comprised of households with similar outcomes along these dimensions (see box 2). The percentage of households following into each of these categories is depicted in figure 12.
Box 2 – Defining Food Security Groups

The food security groups presented in this 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>Poor</th>
<th>Borderline</th>
<th>Acceptable</th>
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<td>8%</td>
</tr>
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<td>0%</td>
<td>0%</td>
<td>1%</td>
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<td>1%</td>
<td>1%</td>
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<td>High</td>
<td>0%</td>
<td>0%</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td>1%</td>
<td>2%</td>
<td>4%</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>5%</td>
<td>10%</td>
<td>31%</td>
</tr>
</tbody>
</table>

7.4.1 Food Security Groups by Gender of Head of Household

The proportion of female-headed households that are severely food insecure is approximately 10% higher than for male headed households at 35% and 25% respectively. This adheres to expectations given the strong correlation between the two found elsewhere. It also noteworthy that the percentage of moderately food insecure households is roughly equal between male and female headed households at 29% and 27% respectively as this means that about 8% more male headed households are food secure than female households. In turn, this suggests that the disparity is driven by real differences in food security status between these two groups, rather than merely by the thresholds used to define food security groups.
7.4.2 Food Security Groups by Livelihood Zone

Because the latter is a composite of the former, the variation and patterns in food security between livelihood zones outlined in the sections on food consumption, food access (income and expenditure) and coping strategies is reflected in the differences found in the percentage of household severely food insecure according to food security group classification. Nevertheless, it still provides a useful summative variable of the differences in overall food security status (defined by all three dimensions) between livelihood groups and surveyed sites.

In line with earlier findings suggested by looking at each of these dimensions independently, the bomas visited in the Hills and Mountains livelihood zone in Pibor country exhibited the highest percentage of severely food insecure households with an average of about 70% between them. By comparison, an average of 35% of households in bomas from the Pastoral livelihoods zone in the same country were classified as severely food insecure. The bomas also exhibited a greater degree of variation in this variable (20% and 50%) that the bomas from the Hills and Mountains zone in the same county.

The average percentage of households classified as severely food insecure in the bomas included from the Easter Flood Plains zone in Niyrol country was similar to the Pastoral livelihoods zone in Pibor country at about 30%. However, there was less variation – 27% and 31% - between sites. Moreover, no households in the bomas included from the Easter Flood Plains zone in Pochalla country were classified as severely food insecure. This merely serves to reiterate the earlier finding that food security status does appear to have some relationship with livelihood zone and location, but that it also varies within livelihood groups in different counties and within counties between different livelihood groups.

Finally, less than 5% of the households surveyed in the boma included from the Nile Sobat zone were classified as severely food insecure, suggesting that they – like those in Pochalla – are comparatively better off. However, as noted (and re-noted) earlier, caution must be taken in interpreting these findings due to the fact that only one boma was included from this livelihood zone. Moreover (and as also noted earlier) the second boma selected could not be visited due to insecurity – a factor that undoubtedly (and negatively) impacts the food security status of households there.

7.4.3 Food Consumption by Food Security Groups

Understanding the differences in the frequency of particular foods consumed by households in various food security groups (figure 13) helps to clarify what poor consumption among the severely food insecure truly means. The most prominent difference is an expected one – that is, that those that are food secure (and to a lesser extent those that are only moderately food insecure) eat meat and poultry, eggs, fish, dairy products, sugar and oils/fats far more frequently than those that are severely food insecure. Expectations are also confirmed in the lack of dietary diversity and comparatively low calorie diet among the severely food insecure who consume sorghum, vegetable and – to a lesser extent – maize far more frequently than other foods.
7.4.4 Food Sources by Food Security Group

Food sources were generally similar across food security groups. However, the share of the food from various sources did differ in meaningful ways that - despite partially defining the food security groups themselves - help clarify what it means to have poor access to food (figure 14). The one exception to this is that 'own production' was the most prominent food source for all three groups.

The most prominent difference between groups is the comparatively heavy reliance of severely food insecure households on working for food, hunting and gathering – again partly a reflection of the fact that this food security groups is, in part, defined by the reliability of food (and income) sources. Conversely, food secure households - and to a lesser extent moderately food insecure household – rely more heavy on markets and fishing.
7.4.5 Income Sources by Food Security Group

As with food sources, income sources are fairly uniform across food security groups. However, as with food, the share of the income from various sources differs in meaningful ways that - despite partially defining the food security groups themselves - help further clarify what it means to have poor access to food (figure 15). The most notable of these differences is the reliance of severely food insecure households and (to a lesser extent) moderately food insecure households on the collection and sale of natural resources such as charcoal and grass. These income sources are both less lucrative and less reliable than income sources such as the sale of cereals, the sale of livestock, the sale of fish, salaried work and gifts/remittances that figure more prominently among the food secure and (to a lesser extent) the moderately food insecure.

7.4.6 Coping Mechanisms/Strategies

The vast majority of households in all three food security groups experienced food shortages in the past seven days (figure 16). The most commonly employed strategies to cope with this were also fairly uniform across groups and includes relying on less preferred and less expensive foods, limiting portion size at meals, restricting adult consumption so that children can eat, and reducing the number of meals consumed per day.
By definition – and as exhibited in figure 17 - households in the severely food insecure group employed what are perceived to be more severe strategies and/or employed these and other coping strategies most often (as determined by their Coping Strategies Index or CSI scores). An example of the former is their comparatively higher frequency with which they relied on wild foods or food scraps also figured prominently among the severely food insecure groups. It is expected that this will become an even more frequently employed strategy in the months prior to the next harvest.
8 Main Hazards, Shocks and Community Priorities

8.1 Hazards and Shocks

The most notable shocks (figure 18) identified by households included in the survey were the delayed rains that extended the hunger gap through October as described earlier in this report and heightened food prices as a result of the poor/failed crops resulting from this and the impact of this had on food availability (e.g. supply), market prices and the livestock-to-cereal terms of trade.

A secondary set of shocks identified include human sickness - including malaria, diarrhea and respiratory infections - and insecurity in the form of cattle raiding, child abduction and inter-clan fighting. A noteworthy aspect of the latter is that it not only threatens well being and causes displacement, but has a direct impact on food security. It does so, in part, through its deleterious impact on markets, trade and livestock movement and - through this - food availability transport/operation costs, and market prices for all. It also constrains the ability of households to employ mobility-dependent coping mechanisms such as fishing, hunting and gathering of wild foods.
8.2 Community priorities

The main priorities identified by the communities included in the survey include a) the provision of alternative water sources (e.g. ‘hafirs’) for livestock during the dry season in order to quell clashes over water and reduce insecurity, b) the construction of roads to improve communication and market access, c) improved security more generally and d) improved access to health services.

9 Health and Nutrition

A review of available secondary data suggests seasonally stable health and nutrition conditions in the state. Nevertheless, a worsening nutritional situation was noted in select locations - Pibor and Akobo – in 2009 and merits ongoing monitoring. This is evidenced by the increase in admissions to the Ambulatory Therapeutic Feeding Program (ATFC) in Pibor that was observed from March 2009 onward resulting in admission levels being higher than in the last 2 years. Sanitation and hygiene remain major challenges as most households do not have latrines and lack basic hygiene/sanitation.

10 Conclusions on the Food Security Situation

The findings outlined in previous sections of this report suggest that approximately 30% of households (or about 425,000 people) in Jonglei are severely food insecure with the expected arrival over 10,000 returnees in 2010 likely to add to this figure. In addition, some 28% of households are moderately food insecure and, thus, in danger of becoming severely food insecure if the more unfavorable of the two scenarios outlined in section 11 unfolds. In turn, this suggests that nearly 60% of households are vulnerable and may remain or become severely food insecure in the coming year.

The primary causes of these heightened levels of food insecurity were the dry spell in May and June that delayed planting, reduced area under cultivation and hindered yields and insecurity impacting trade, transport and movement. The former directly impacted those who rely on ‘own crop production’ for food and income. It also led to a marked increase in prices for cereals (and other crops) over the previous year due to low supply and, as such, impacted the ability of those reliant on market purchases to access food. Lower than average prices for livestock due to insecurity-hampered trade further exacerbated this problem among those who rely on livestock sales for income by creating significantly unfavorable livestock-to-sorghum terms of trade.
There is suggestive evidence of a relationship between household food security status, livelihood zone and location. However, it is also true that significant variation in the prevalence of severely food insecure households exists in different counties within the same livelihood zone, as well as within the same country in different livelihood zones. This is explained by the combined impact of the dry spell and insecurity on agricultural, agro-pastoral and pastoral livelihoods described above.

11 Future Developments: Scenarios and Recommended Actions

11.1 Scenarios

Under the best case scenario, rainfall will have continued through the end of October 2009, allowing for an average or better harvest of short-term and mid-term sorghum for at least half the population in November and December and insecurity due to inter-tribal conflict and cattle raids will subside. If this occurs, the annual hunger gap is likely to start in February/March and end in August under the assumption of normal rainfall levels. IDPs, returnees and refugees will remain highly vulnerable.

Under the worst case scenario, insecurity due to inter-tribal conflicts and cattle raids will not remain a problem, but increase causing the number of IDPs to swell and putting an additional burden on already burdened host communities. This coupled with a poor or failed harvest due to a repeat delay in rains may well result in a situation in which communities (in the extreme) unaccustomed to relying solely on livestock for food are forced to do so. Coping strategies such as relying natural resources would increase dramatically under this scenario and – in the late stages – out migration is likely to occur. The Eastern Flood Plains - mainly Akobo, Nyirol, Walgak - and the Pastoral zones in Pibor are the most vulnerable under this scenario.

11.2 Response Options

To address immediate risk to lives

- General food distribution to severely food insecure
- Provision of health services to address priority diseases (malaria, diarrhea, and upper respiratory)
- Targeting introduction of SFP for malnourished children

To address protect livelihoods

- General distribution to moderately food insecure during lean season
- Distribution of agricultural tools and seeds
- Distribution of fishing implements
- Provision of food through food-for-recovery projects

11.3 Recommended Actions

- Early planning of relief assistance to ensure timely intervention
- General food distribution to vulnerable residents starting beginning in February and ending in July (assuming predicted hunger gap) and to IDPs and returnees based on recommendations stemming from assessment and verification exercises
- Implementation of food-for-recovery projects to improve infrastructure and road network
- Timely provision of seeds and tools
- Crop diversification promotion, including drought-resistant crops (sweet potatoes, cassava)
- Support improvements to animal health and veterinary services
- Enhance awareness of the GOSS plan aimed at disarming the civilians in 2010
- Support peace initiative among the communities
- Ensure interagency coordination/intervention at state and county level

IDPs, returnees and refugees will remain highly vulnerable.
Annex A: Seasonal calendar Jonglei

- **Rains and planting of early and Mid term sorghum and Maize in all zones**
- **Harvest of the late planted crops for all Zones Below average harvest in all zones to last 1 or 2 months**
- **Cattle taken and stay in the wet season grazing area**
- **Anticipate conflicts due to cattle raids and rights over grazing areas in the toic**
- **Increased Fishing due to, streams and rivers have high water levels with water**
- **Beginning of the rains Nile sobat ans eastern flood plains**
- **1st cropping in the Hills and Mountains, harvest in July/August**
- **2nd cropping season in the Hills and mountains Harvest Nov/Dec**
- **Cropping Season in the Nile Sobat/Eastern flood plains**
- **Reduced fish catch**
- **Harvest of wild fruits/ lalop/ leaves**
- **Flooding in the Eastern flood plains/Nile sobat if rains above normal**
- **Hunger gap**

**Dry Season**

- **No Harvest or poor harvest**
### Consolidation of all Livelihood Zones

<table>
<thead>
<tr>
<th>Date</th>
<th>Event / Shock</th>
<th>Effect</th>
<th>Response by the community</th>
<th>Who affected? ¹</th>
<th>Humanitarian intervention Implemented by UN/NGO or GOSS</th>
<th>Indicate Livelihood Zones that mentioned this Hazard or Opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td>July-August 2009</td>
<td>Fighting between Wechden &amp; Borduot Bomas [HAZARD]</td>
<td>Lives lost &amp; agric farms deserted</td>
<td>IDPs &amp; restricted movement</td>
<td>Residents from the two bomas &amp; IDPs from Borduot</td>
<td>July-August food aid intervention by WFP</td>
<td>Eastern flood plains</td>
</tr>
<tr>
<td>July-August 2009</td>
<td>Continued dry spells [HAZARD]</td>
<td>No agricultural activities; livestock starved, crops dried up</td>
<td>Increased consumption of livestock/produce; wild crops &amp; reliance on purchases</td>
<td>Residents of Lankien/Waat (Nyirol County in general)</td>
<td>NIL</td>
<td>Eastern flood plains</td>
</tr>
<tr>
<td>July-August 2009</td>
<td>Attack at Mareng in Akobo East [HAZARD]</td>
<td>Many lives lost causing displacement</td>
<td>IDPs from Akobo arrive Nyirol County; food supply stretched</td>
<td>IDPs from Akobo &amp; Residents of Waat, Lankien &amp; Tut</td>
<td>July-August food aid intervention by WFP</td>
<td>Eastern flood plains</td>
</tr>
<tr>
<td>July-August 2009</td>
<td>Imminent Draught [HAZARD]</td>
<td>Increased food insecurity close to starvation</td>
<td>Movement to toich with livestock; reliance on market for food</td>
<td>The Residents of Nyirol in general, Waat &amp; Lankien (assessment areas in particular)</td>
<td>NIL</td>
<td>Eastern flood plains</td>
</tr>
<tr>
<td>July 2009</td>
<td>Police &amp; SPLA sources clash in Lankien [HAZARD]</td>
<td>Level of insecurity increased</td>
<td>Small scale exodus from the outskirts; conditional reliance on market &amp; wild crops</td>
<td>Residents from three Payams: Puirtruk, Keth, Pading</td>
<td>NIL</td>
<td>Eastern flood plains</td>
</tr>
<tr>
<td>August 2009</td>
<td>Murlei attacked 3 villages [HAZARD]</td>
<td>Cattle raided; lives lost, children abducted</td>
<td>Walking to Malakal to get food; eat more wild leaves than before</td>
<td>The three villages of: Bau, Puluth &amp; Thol</td>
<td>NIL</td>
<td>Eastern Flood plains</td>
</tr>
</tbody>
</table>

¹The participants in focus group discussion did not specify a socio-economic group within the resident community.
<table>
<thead>
<tr>
<th>Date</th>
<th>Event / Shock</th>
<th>Effect</th>
<th>Response by the community</th>
<th>Who affected?</th>
<th>Humanitarian intervention Implemented by UN/NGO or GOSS</th>
<th>Indicate Livelihood Zones that mentioned this Hazard or Opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug-Sept</td>
<td>Lack of access to free movement - roads closed by water &amp; insecurity [HAZARD]</td>
<td>No commercial goods coming into the markets</td>
<td>Reliance on more livestock &amp; wild crops; increase expenditure for food items</td>
<td>The residents of Nyirol County/ Pochalla, Boma</td>
<td>NIL</td>
<td>Eastern Flood plains, Pastoral livelihood zone</td>
</tr>
<tr>
<td>July- Aug</td>
<td>Extend hunger and Season as planting (replanting of crop started in July [HAZARD])</td>
<td>All the community HHs have no harvest in August</td>
<td>The young men and women moved out of the village to cattle camps</td>
<td>Most people in community affected</td>
<td>NIL</td>
<td>Pastoral zone</td>
</tr>
<tr>
<td>July – Septembe r’09</td>
<td>Minimal less rain than normal Poor harvest of crops [HAZARD]</td>
<td>Poor harvest, resulted in hunger, many people especially the old and children were more affected</td>
<td>H/H responded by depending more on wild plants and move out of village for work. More hunting though risky</td>
<td>Entire community but old people who do not move out of the village were affected more</td>
<td>NIL</td>
<td>Hills and Mountains</td>
</tr>
<tr>
<td>Septembe r 2009</td>
<td>Severe food shortage due to lack of harvest &amp; mobility for people &amp; goods [HAZARD]</td>
<td>Agriculture activities produced no outcome; increased levels of expenditure</td>
<td>Depending on leaves, mostly wild foods Movement to Malakal in search of food. Movement to AL Ain Wildlife Company in Marou Payam for employment</td>
<td>Residents of Nyirol county, Pochalla, Kazigor Payam</td>
<td>NIL</td>
<td>Eastern Flood plains, Pastoral livelihood zone</td>
</tr>
<tr>
<td>Septembe r’09</td>
<td>Harvesting of crops [Opportunity]</td>
<td>Availability of food for consumptions</td>
<td>Many people even cattle camps moved back home.</td>
<td>Most Residents within the Nile Sobat.</td>
<td>N / A</td>
<td>Nile Sobat - opportunity</td>
</tr>
</tbody>
</table>
October 2009 to December 2010 – **Potential Hazards and Opportunities by Livelihood Zone**

(Identified through Focus Group and Key Informant Discussions)

<table>
<thead>
<tr>
<th>Eastern Flood Plains Livelihood Zone</th>
<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>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Jan-March 2010</strong>&lt;br&gt;[Local Name of Season: Oro]&lt;br&gt;<strong>[Mix of Hazards and Opportunities]</strong></td>
<td>If drought persist from 2009 into 2010:&lt;br&gt;• Crops planted in August and September and should be harvested in November and December may be reduced.&lt;br&gt;• Water level will decrease fish will be scarce&lt;br&gt;• Wild food will be in abundant&lt;br&gt;• Insecurity, child abduction and cattle raiding&lt;br&gt;• Markets in Ethiopia will be accessible</td>
<td>There may be hunger and food scarcity,&lt;br&gt;Loss of life and child abduction linked to insecurity</td>
<td>The community will their concerns to Government.</td>
<td>Women and Children</td>
<td></td>
</tr>
<tr>
<td><strong>April-June 2010</strong>&lt;br&gt;[Local Name of Season: Dikoth]&lt;br&gt;<strong>Hazard</strong></td>
<td>Carryover stocks (2009) are no longer available.&lt;br&gt;Lean Season will start earlier as compared to a normal year.</td>
<td></td>
<td>The community may collect more wild foods and some may immigrate to Ethiopia to sell labour in order to acquire food</td>
<td>Poor and the Middle socio-economic groups</td>
<td></td>
</tr>
<tr>
<td><strong>May October</strong>&lt;br&gt;(Local Name of Season: Tot)&lt;br&gt;<strong>Worse Case</strong> Current lack of harvest means no food stock over TOT&lt;br&gt;<strong>Best Case</strong> Expect to receive short term crops, and to increase farm sizes if climates change favorably&lt;br&gt;<strong>Normal Activity</strong>&lt;br&gt;[Hazard – in case of abnormally high Floods]</td>
<td>Floods may occur this seasons&lt;br&gt;Normal Activity&lt;br&gt;[Hazard – in case of abnormally high Floods]</td>
<td>Hunger Malnutrition Conflicts over cattle Short &amp; Medium term crops will close the hunger gap; relief aid will rescue lives</td>
<td>Seek alternative places with food&lt;br&gt;Increase consumption of wild foods (Lalob, Tamarene, green leaves, palm)&lt;br&gt;cultivate larger pieces of field; they will have the assurance to live in their current residential areas</td>
<td>Poor and the Middle socio-economic groups (residents) of Nyirol county (the Chan, Riang &amp; Tiel) Poor and the Middle socio-economic groups (residents) of Nyirol County (the Chan, Riang &amp; Tiel)</td>
<td></td>
</tr>
<tr>
<td><strong>July-Sept 2010</strong>&lt;br&gt;[Local Name of Season: Chwir]&lt;br&gt;<strong>Normal Activity</strong>&lt;br&gt;[Hazard – in case of abnormally high Floods]</td>
<td>The lean season may extend to September.</td>
<td>The community will opt to increase fishing and while food collection</td>
<td>All socio economic groups</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Oct –Dec 2010</strong>&lt;br&gt;[Local Name of Season: Aria]&lt;br&gt;<strong>Normal Activity</strong>&lt;br&gt;[Hazard – in case of abnormally high Floods]</td>
<td>Livestock disease may increase</td>
<td>Reduced production of milk and other livestock products</td>
<td>This could result in increased cases of malnutrition</td>
<td>Children under five, lactating and pregnant mothers</td>
<td></td>
</tr>
</tbody>
</table>

^2 Tot is the local name for the cultivation season covering planting to harvest.
<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>Additional Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>October-Dec [Local Name of Season: Ruol]</td>
<td>Movement of cattle to torch [Normal Activities / Opportunity]</td>
<td>Lack of milk supply to villagers</td>
<td>Many children will be moved to cattle camps</td>
<td>Children and elderly people</td>
<td>Water born diseases are always common near Toch areas.</td>
</tr>
<tr>
<td>January- March [Local Name of Season Mei]</td>
<td>gathering wild fruits, collecting grasses. [Normal Activities] Quality Pasture for grazing are not available [Opportunity]</td>
<td>Have balance diet, Many tukuls renovated Low milk production, death of many cattle</td>
<td>Expansion of village, if there is no insecurity. Sale many cattle to buy food as supplementary Many people move from cattle camps to towns &amp; villages in search of food.</td>
<td>Adult men &amp; women Cattle keepers [pastoralists]</td>
<td>Grass is at far distance, so it is possible if security allows Asks gov't/NGOs to avail drugs for the cattles</td>
</tr>
<tr>
<td>April –June [Local Name of Season Keer]</td>
<td>Insecurity [Hazard] Interruption of cultivation, Cattle raiding</td>
<td>Homes at outmost sketch evacuate, Youth prepares for depends</td>
<td>Whole community</td>
<td>There is need for uniform disarmament</td>
<td></td>
</tr>
<tr>
<td>July [Local Name of Season Ruel]</td>
<td>Hunger Floods [Hazard]</td>
<td>Increase disease outbreak &amp; sometimes deaths People move in search of food Displacement Dig dykes/trenches</td>
<td>Whole community</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Projected Time Frame (Season)</td>
<td>Events (Hazards and opportunities)</td>
<td>Effect</td>
<td>How will the community respond?</td>
<td>Who will be affected?</td>
<td>Additional Comments</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------------------------------------</td>
<td>--------</td>
<td>---------------------------------</td>
<td>----------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Jan-May [Local Name of Season: Logomo]</td>
<td>Cattle in the wet season grazing area, very dry period, scarcity of water [Normal Activity] Poor pasture conditions [Hazard]</td>
<td>Lack of milk supply in the settlement camps where old and children are left Low milk production</td>
<td>Many children will be moved to cattle camps</td>
<td>Children and elderly people</td>
<td>Services like schools, clean water and health become very far to access</td>
</tr>
<tr>
<td>May, June and July [Local Name of Season: Lukang]</td>
<td>Cultivation period, expects normal rains [Normal Activity]</td>
<td>Community will be involved in cultivation of sorghum maize</td>
<td>Expansion of the gardens, repairing the common village fence</td>
<td>Adult men &amp; women those with not many cattle</td>
<td>The Jie community usually cultivate communal farms. These appear as one large field.</td>
</tr>
<tr>
<td>August - October (2009) [Local Name of Season: Alingakuna]</td>
<td>Late rains [Hazard]</td>
<td>Delayed harvest</td>
<td>More dependence on livestock and natural resources (Honey, shear butter oil)</td>
<td>All farming households</td>
<td></td>
</tr>
</tbody>
</table>
### Hills and Mountains Livelihood Zone

<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>Additional Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>August- December</td>
<td>Second planting season. Mainly maize and sorghum are planted in August and Harvested around November to December [Normal Activity / Opportunity]</td>
<td>Good yield expected if the rain continues as it has started</td>
<td>Community expect harvests to last for 2-4 months.</td>
<td>All the households</td>
<td>The expect harvests in November/December</td>
</tr>
<tr>
<td>January-March</td>
<td>Hunting and fishing [Normal Activity / Opportunity]</td>
<td>Young men move out of the village to fish and hunt</td>
<td>Elderly members of the community are left behind together with women and children. Hooks and fishing nets will be looked for by the fishermen</td>
<td>Some young men/boys</td>
<td>Hunting is restricted and community members may be apprehended by wildlife authority upon found hunting</td>
</tr>
<tr>
<td>March- May</td>
<td>Land clearance, planting of the first cropping season (maize, medium term sorghum) [Normal Activity]</td>
<td>Maize sorghum planted in March/ April to be harvested in July and August and breaks hunger gap</td>
<td>Community expects normal yield should rains not fail</td>
<td>Whole community</td>
<td></td>
</tr>
</tbody>
</table>

**Hills and Mountains**
### Annex C

**Summary of Community Perception of Agricultural Production and Priorities**

* (Reported by Focus Group Discussions)

#### Eastern Flood Plains Livelihood Zone

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPA distributed seeds &amp; tools</td>
<td>Dry spell destroyed seeds</td>
</tr>
<tr>
<td>Irrigation of vegetable fields</td>
<td>Late cultivation, late rains, poor harvest</td>
</tr>
<tr>
<td>Cultivation near the Nyirol River</td>
<td>Pests (birds) destroy sorghum</td>
</tr>
<tr>
<td>Larger pieces of land cleared than before</td>
<td>Poor cultivation</td>
</tr>
<tr>
<td>Discovery of more nutritious wild plants</td>
<td>Agric sites abandoned due to insecurity</td>
</tr>
<tr>
<td>Food aid intervention by WFP</td>
<td>pests destroy lately cultivated crops</td>
</tr>
<tr>
<td>NPA/SC-UK crop management training</td>
<td>Extended dry spell</td>
</tr>
<tr>
<td>Various crop types introduced in Waat</td>
<td>Late/uneven rains failed planted crops</td>
</tr>
<tr>
<td>MOA extension worker deployed</td>
<td>First rains in July flooded some areas</td>
</tr>
<tr>
<td>Introduction of other crops e.g ground nuts</td>
<td></td>
</tr>
</tbody>
</table>

#### Priorities

- Increase area of cultivation
- Plant short term & medium term sorghum (hope for NGOs provision of the right seed varieties)
- Open roads to within the County to connect it to other regions
- Expand garden sizes (hoping climate will change favorably) & cultivate a lot to curb hunger gap
- Seek peace with neighbouring clans/bomas to allow movement of people & goods
- Seek alternative water sources/clear ‘hafirs’ for livestock during the dry season in order to avoid clashes over water.
- Clear roads within region for easy communication
- Work towards improvement of security & health services
- Barter more animals for food with neighboring regions
### Pastoral Livelihood Zone

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>All people of the village placed their Farms in same location and cows and goats were kept away.</td>
<td>Extended dry spell. First crop planted this year in July</td>
</tr>
<tr>
<td>Cultivation is communal and large fields realized</td>
<td>Lack of tools and seeds.</td>
</tr>
</tbody>
</table>

**Community Priorities**

- Need of health service
- Schools with teachers
- Seeds, tools
- Medicine for cattle
- Food assistance

### Hills and Mountains Livelihood Zone

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fertile and large land, plant a variety of crops</td>
<td>Dry spell affected maize, sorghum(short term and mid-term sorghum, mango fruits are falling off prematurely)</td>
</tr>
<tr>
<td>SPI provide seeds of maize and vegetables</td>
<td>Lack of seed and tools for planting/replanting,</td>
</tr>
<tr>
<td></td>
<td>Insect pest (termites) affecting mainly sorghum and maize</td>
</tr>
</tbody>
</table>

**Community Priorities**

- Tools and seeds
- Health service
- Improving the road from Boma lower to the upper Boma
- Food assistance
### Nile Sobat Livelihood Zone

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>No pests or lot of weeds this year</td>
<td>Delay of rains</td>
</tr>
<tr>
<td>No flood</td>
<td>Drought</td>
</tr>
<tr>
<td>Cereals prey[birds] did not destroy crops this year</td>
<td>Insecurity</td>
</tr>
<tr>
<td>No flood</td>
<td>Insecurity &amp; hunger hindered cultivation</td>
</tr>
<tr>
<td></td>
<td>Gaps of long dry spell [drought]</td>
</tr>
<tr>
<td></td>
<td>Delay of rains</td>
</tr>
</tbody>
</table>

**Nile Sobat Zone (Livestock Owners)**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>There have been good pastures this year.</td>
<td>Cattle raiding</td>
</tr>
<tr>
<td>Increase of milk production as a result of good pastures</td>
<td>Diseases out break and no animal drugs available</td>
</tr>
<tr>
<td>Increase in animals production</td>
<td></td>
</tr>
</tbody>
</table>

**Nile Sobat Priorities**

- Cultivation of more land if security and weather next year permit
- Provision of peaceful environment by the Government.
- We expect more supply of medicines to our PHCU and also more Boreholes for safe drinking water.
- We want improve road link to have goods supply in all weather conditions
- Hope for better raining season next year so as we expand our farms
- Expect Gov’t/NGOs to provide drugs for livestock
### Field Data Collection

<table>
<thead>
<tr>
<th>Team</th>
<th>Name of participant</th>
<th>Agency acronym</th>
<th>Full agency name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SIMON AKOI ATEM</td>
<td>SMOA</td>
<td>State Mininstry of Agriculture</td>
</tr>
<tr>
<td>1</td>
<td>MADOL MACHAR NHIAL</td>
<td>SSRRC</td>
<td>South Sudan Relief and Rehabilitaion Comission</td>
</tr>
<tr>
<td>1</td>
<td>GABRIEL KUERENG MAREET</td>
<td>CRS</td>
<td>Catholic Relief Services</td>
</tr>
<tr>
<td>1</td>
<td>GABRIEL MATIOP</td>
<td>WFP</td>
<td>World Food Programme</td>
</tr>
<tr>
<td>2</td>
<td>MAYEN ATEM JOK</td>
<td>SMOA</td>
<td>State Mininstry of Agriculture</td>
</tr>
<tr>
<td>2</td>
<td>CLEMENT K BENSON</td>
<td>SC-S</td>
<td>Save the Children Sweden</td>
</tr>
<tr>
<td>2</td>
<td>SALAH JACKSON SADOKA</td>
<td>CRS</td>
<td>Catholic Relief Services</td>
</tr>
<tr>
<td>2</td>
<td>ALIGO MINAS KHAMIS</td>
<td>WFP</td>
<td>World Food Programme</td>
</tr>
<tr>
<td>3</td>
<td>SIMON GARANG MANYOK</td>
<td>SMOA</td>
<td>State Mininstry of Agriculture</td>
</tr>
<tr>
<td>3</td>
<td>JOHN MALUAL MAGOT</td>
<td>SMOH</td>
<td>State Mininstry of Health</td>
</tr>
<tr>
<td>3</td>
<td>ADAM YASIN</td>
<td>UNHCR</td>
<td>United Nations High Commission for Refugees</td>
</tr>
<tr>
<td>3</td>
<td>EUNICE JOSHUA</td>
<td>WFP</td>
<td>World Food Programme</td>
</tr>
<tr>
<td>4</td>
<td>SOLOMON KUOL DENG</td>
<td>SMOA</td>
<td>State ministry of Agriculture</td>
</tr>
<tr>
<td>4</td>
<td>TABISA NYAKIIR DEU</td>
<td>SMOH</td>
<td>State Mininstry of Health</td>
</tr>
<tr>
<td>4</td>
<td>REBECCA AMER ATEM</td>
<td>SMOH</td>
<td>State Mininstry of Health</td>
</tr>
<tr>
<td>4</td>
<td>DENG JAMES MAGAAR</td>
<td>PHO</td>
<td>Polish Humanitarian Organization</td>
</tr>
<tr>
<td>4</td>
<td>SANTino Pigga</td>
<td>WFP</td>
<td>World Food Programme</td>
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</tbody>
</table>

### Interpretation and Response Option

<table>
<thead>
<tr>
<th>Name of participant</th>
<th>Agency acronym</th>
<th>Full agency name</th>
<th>Interpretation</th>
<th>Response options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gummat Abdallatif</td>
<td>WFP</td>
<td>World Food Programme</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Lucy Mukami</td>
<td>WFP</td>
<td>World Food Programme</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Eunice Joshua</td>
<td>WFP</td>
<td>World Food Programme</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Aligo Minas</td>
<td>WFP</td>
<td>World Food Programme</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>CLEMENT K BENSON</td>
<td>SC-S</td>
<td>Save the Children Sweden</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>YOAL YOL</td>
<td>FAO</td>
<td>Food and Agriculture Organization of the United Nations</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Duot Chol</td>
<td>SSRRC</td>
<td>South Sudan Relief and Rehabilitation Commission</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>William Arop</td>
<td>ADRA</td>
<td>Adventist Development and Relief Agency</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Mayem Atem Jok</td>
<td>SMOA</td>
<td>State Ministry of Agriculture</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>John Malual Magot</td>
<td>SMOH</td>
<td>State Ministry of Health</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Daniel Nai Agut</td>
<td>ADRA</td>
<td>Adventist Development and Relief Agency</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Organization</td>
<td>Position</td>
<td>Response</td>
<td></td>
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<tr>
<td>-------------------</td>
<td>--------------</td>
<td>------------------------------------------</td>
<td>----------</td>
<td></td>
</tr>
<tr>
<td>Willam Bol</td>
<td>SMOA</td>
<td>State Mindstry of Agriculture</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Amer Atem</td>
<td>SMOH</td>
<td>State Mindstry of Health</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Peter Gatkooth</td>
<td>RCSO</td>
<td>Residence Coordination Support office</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Hussein Mar</td>
<td>Deputy Governor Jonglei State</td>
<td>Deputy Governor Jonglei State</td>
<td>Yes</td>
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</tr>
<tr>
<td>Dagnara Manka</td>
<td>PHO</td>
<td>Polish Humanitarian Organisation</td>
<td>Yes</td>
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<tr>
<td>John Bol Bul</td>
<td>SMOH</td>
<td>State Mindstry of Health</td>
<td>Yes</td>
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<tr>
<td>Khor Makuach</td>
<td>SMOH</td>
<td>State Mindstry of Health</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>
Annex 2: List of Reference documents:

1. Inter-agency Assessment Mission Report for Wanding IDPs in Deng Jock Payam, Akobo County, Jonglei State 10th February 2009
2. Interagency Emergency Food Security Assessment in Walgak, Akobo County, Jonglei State, June 2009
3. Rapid Food Security Assessment, Lankien, Nyirol County Jonglei State, June 2009 (WFP)
4. Rapid Food Security Assessment of IDPs in Pibor County Jonglei, May 2009 (WFP)
5. Findings of a nutrition survey, Jonglei state Three counties (Nyirol, Akobo West, and Wuror) Save the Children UK. December 2008
7. MSF Belgium Monthly CP reports to WFP (2009)