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The project to end genocide and crimes against humanity



Life under Siege

South Kordofan Needs Assessment

November 2014

An Enough Forum publication



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ACKNOWLEDGEMENT OF THE ANONYMOUS AUTHORS

The authors would like to acknowledge the support and resources that made this report possible. We are especially grateful to everyone involved in designing the humanitarian assessment, collecting the information, and analyzing the data. We are also thankful for the financial support from our partners.

It is our hope that this assessment will be used to alert the world to the unfolding humanitarian disaster in South Kordofan state and inform those involved in the area about how to better meet the critical needs of civilians affected by conflict.

On the cover:

Displaced women and children gather in South Kordofan, Sudan in December 2013.

Editor's note

The following report documents findings from a holistic humanitarian needs assessment conducted in South Kordofan state in August 2014 by an international non-governmental organization (NGO). Due to security concerns, the organization wishes to remain anonymous, but requested that the Enough Project publish the report to make public existing evidence of the humanitarian disaster unfolding today in Sudan. Given the lack of access to these rebel-held areas, there has been little information made public about the situation on the ground. This report strives to fill in some of these gaps.

The international NGO surveyed 808 households using a cluster survey methodology. Researchers also facilitated focus-groups discussions amongst groups disaggregated by sex and age. The two-stage sampling scheme of “30x27” was used with a confidence interval (CI) of five percent. Thirty villages were randomly selected from 20 accessible payams, a local administrative division similar to a county. Then 27 households were interviewed in each of the 30 villages. Although the assessment survey was administered in every second or third house, the surveyors also went to every house between the first and last surveyed to gather nutritional data. Researchers conducted interviews using a structured questionnaire designed to capture key data on demographics, water, sanitation and hygiene (WASH), food security, livelihoods, markets, and health.

The Enough Project was solely responsible for the report's final production and distribution but did not contribute to its findings. Steven Hansch, an expert in health assessments in humanitarian crises at Relief International, vetted the assessment and found its research and methodology to be sound and its findings to be credible.

For an overview of what the international community can do to address the humanitarian crisis in South Kordofan, Blue Nile, and Darfur, see the Enough Project's accompanying policy brief, “Extermination by Design: The Case for Crimes against Humanity in Sudan's Nuba Mountains.”

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2. EXECUTIVE SUMMARY

For more than three years, South Kordofan state in Sudan has been the fighting grounds of an armed conflict between the Sudan Armed Forces (SAF) and the Sudan People's Liberation Army-North (SPLA-N). This conflict has had a heavy cost on civilians living in the region, as they have had to endure heavy aerial bombardments, which have led to mass casualties,¹ and have seriously disrupted farming and food production—the key livelihood activity and means of survival in the area.²

In 2014, the government of Sudan scaled up its military offensive in the region and, beginning in April 2014, the area saw an upsurge of indiscriminate aerial bombardments³ that led to mass casualties and displacement,⁴ with many families fleeing the region into nearby foxholes and caves for shelter. Recently, civilian infrastructure, including farming plots, grain stores, health facilities, and water holes, have become the targets of aerial attacks, further harming the already vulnerable population living in the region.

In August 2014, a needs assessment was undertaken in the Sudan People's Liberation Movement-North (SPLM-N) controlled areas of South Kordofan state to determine the humanitarian situation in the area and the needs of the conflict-affected population.

This assessment provides a picture of the widespread impact of the conflict on a variety of humanitarian indicators, including the nutritional status of children under five years of age. This assessment also compares select statistics to a similar assessment conducted a year ago, and generates relevant information to inform targeted response strategies.

The key assessment findings are as follows:

- **Security** concerns are an increasing threat to the population, demonstrated by 92% of displaced households fleeing due to fighting, up from 66% a year ago; 29% of the population has a family member currently living in a refugee camp and 79% of households state they do not feel safe at home—12% more than last year's findings of 67%. Women and girls in focus group discussions claim sexual violence and rape are now serious concerns in the region, as a result of encroaching frontlines and proximity to enemy soldiers.
- **Displacement** is a major problem with 30% of the total population currently displaced from their homes—9% within the last eight months.
- **Food security** is poor with 80% of non-displaced households and 77% of displaced households showing unacceptable (either poor or borderline) food consumption scores. Seventy percent of displaced households and 64% of non-displaced households are experiencing moderate to severe hunger. To survive the lean season,⁵ families have employed various coping strategies; 65% of households are restricting food consumption of adults to feed children; 81% of households are reducing the number of meals consumed each week; and, 73% of families

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have been limiting their portion size at meals. Food stocks are a problem with 90% of households not having enough food stocks to last one month and 49% not having enough even for one week. Future food shortages are a concern, as cultivated land has declined. This year, households estimated that they cultivated an average of 1.57 feddans⁶ compared to 1.75 feddans a year ago, marking a 10% decrease. Prior to the war, households stated they were cultivating an average of 7.75 feddans.

- **Malnutrition** in the area is very high. Of note, there is a high prevalence of wasting indicated by a severe acute malnutrition (SAM)⁷ rate of 3.6% (2.8 - 4.6 95% confidence interval, *C.I.*), which is above the World Health Organization's critical threshold level of 2%, and a global acute malnutrition (GAM) rate of 10.3% (9.0 – 11.9 95% *C.I.*) in children 6-59 months of age.
- **Food** purchased and produced varied between displaced and non-displaced households. Displaced households spent more on food purchases, and non-displaced households consumed a larger portion of food from home production. While households experiencing longer displacement spent more on farm input and housing, those displaced for less than eight months spent more on fuel, health, and food purchases.
- **Markets** were discussed in focus group discussions (FGD) and it was found that the population has very low purchasing power and only limited access to any markets; 26% of households state they have to walk at least an hour to get to a market.
- **Education** has been seriously impacted by the conflict. Fifty-three percent of households state that their children do not attend school regularly due to lack of money to pay school fees (37%) and insecurity (27%).
- **Water, sanitation and hygiene (WASH)** indicators are very low. Less than half—45%—of households are using an improved water source as their primary source; 25% of households have soap in their home and an overwhelming 86% of households are practicing open defecation.
- **Health** statistics were concerning with 51% of households stating at least one child had diarrhea in the preceding two weeks and 66% stating at least one child had malaria in the preceding four weeks. The majority of households—59%—did not have any mosquito nets for malaria prevention in their home.

Persistent insecurity has taken a heavy toll on the assessed population. Essential interventions are therefore required in food security, livelihoods, protection, health, and WASH. Recommended activities to immediately meet the urgent needs of the people living in the SPLM-N controlled areas of South Kordofan state include:

- General food distributions and a malnutrition intervention;
- Agricultural support;

- Educational support;
- Advocacy to the international community for safety and security dialogue;
- Hand-pump repairs;
- Distribution of soap and jerry cans;
- Latrine construction;
- Provision of mosquito nets; and,
- Non-food items for recently displaced households.

3. INTRODUCTION

Sudan's South Kordofan state has been at the center of armed conflict between the Sudan Armed Forces (SAF) and the Sudan People's Liberation Army-North (SPLA-N) since June 2011. Aerial bombardments and attacks on civilian populations have persisted throughout these years, disrupting life and driving hundreds of thousands from their homes. Most of South Kordofan's rain-fed sorghum belt has historically been self-sufficient in terms of agriculture production.⁸ Since 2011, however, the food security situation in the Sudan People's Liberation Movement-North (SPLM-N)-controlled areas of the state has become increasingly complex and volatile.⁹ The ongoing conflict has interrupted farmers' ability to plant, and what they have planted has frequently been burned up in aerial bombardments at the time of harvest. The communal nature of the people in the region has contributed to their survival in these difficult times; however, these coping mechanisms are gradually eroding in the face of the protracted conflict.

4. METHODOLOGY

This assessment was conducted in August 2014. For the household level assessment, standard questionnaires were administered to heads of households. A two-stage cluster-sampling scheme of 30 geographic clusters were selected with 27 dwellings per cluster, using the 2012 Sudan Relief and Rehabilitation Association (SRRA) population figures—the most recent data available. Probability proportionate to size was used to choose payams (recognized administrative units) based on the availability of payam-level population data. Focus-group discussions (FGD) were conducted with groups of community members, separated by sex and age. The groups included education professionals, adult males, adult females, male youths, and female youths.

Mid upper arm circumference (MUAC) measurements were taken on 1,746 children to measure the rate of global acute malnutrition (GAM) amongst children under five years of age. Of these 1,746 measurements, 1,674 were used in the analysis, as data was cleaned to remove measurements of children outside of the 6-59 month range.

Limitations of the Assessment

Inaccessible payams due to rain/road closures or insecurity were removed from the sampling frame before clusters were selected to reduce the eventuality of replacing selected but inaccessible payams during the assessment. Five out of 25 payams were removed due to known inaccessibility prior to selection.

Given that these payams were removed before commencing the random selection of survey clusters, the assessment findings are not statistically representative of these payams. However, because they have the same social, political, economical, geographic and demographic makeup as the payams that were sampled, the findings can be extrapolated to make inferences about the inaccessible payams and the data can be used to develop effective humanitarian interventions for the entire population.

Village Selection

Stage-One: Selecting the Primary Sampling Unit—Clusters (Villages)

Step 1: The sampling frame was created listing all accessible villages in the payams alphabetically with their corresponding population sizes. A cumulative population total was then calculated from this list.

Step 2: To select clusters, a sampling interval was calculated by dividing the total population by the number of clusters ($x/30$); Microsoft Excel software was then used to select a random number. Thereafter, the first cluster was selected that corresponded to the sampling interval, or greater than the sampling

interval (#; village). All 30 clusters were selected by adding the sampling interval to the cumulative population of the first cluster.

Stage-Two: Selecting the Secondary Sampling Unit—Households

- 1). The base sample size (n) was calculated using a confidence level (t) of 95%, confidence interval (m) of 5%, and estimated prevalence of malnutrition (p) of 50% (because the actual figures were unknown).
$$n = t^2 \times p(1-p)/m^2; \text{ i.e. } n = 1.96^2 \times 0.5(1-0.05)/0.05^2 = 384 \text{ (base sample size)}$$
- 2). Adjustments were made for design effect (D0, which for cluster and nutritional surveys is 2).
$$2 \times 384 (D \times n) = 768$$
- 3). Make room for contingency for non-responses and wrong data entry by a 5% increase.
$$n + 0.05 \times 768 = 806.4$$

This number was rounded up to the nearest whole number divisible by the number of clusters (30). Final sample N = 810.

With the sample size of 810, a total of 27 households were interviewed in each of the 30 villages randomly selected in step two. To randomly select 27 households, a sampling interval (total households in one line / 27) was calculated and used. For each of the villages, the surveyors randomly selected the first house to be surveyed, using the pencil-spin method, which was popularized by UNICEF and used during their expanded program for immunization (EPI).¹⁰ The next house to be surveyed was determined by the sampling interval, which varied from every other second or third house, until all 27 respondents were surveyed.

Refresher training was provided to surveyors to remind them of MUAC measurement techniques and the need for accuracy in their measurements and data collection. Surveyors used a structured questionnaire for each of the households surveyed, which was designed to capture key data in a variety of sectors, including demographics; water, sanitation and hygiene (WASH); food security and livelihoods; education; security; markets; and health.

Although the assessment survey was administered in specific houses determined by the sampling interval, the surveyors also went to every house between the first surveyed and the 27th in order to gather nutritional data. In each of these houses, the surveyors measured all of the children under five years of age using MUAC and edema screening. For the standard household assessment, 27 heads of household were surveyed in each village. The target was to collect 810 household surveys, but 808 interviews were collected (surveyors reported two absentee households) and 1,746 children had MUAC and edema screening conducted, of which 1,674 measurements were used in the data analysis.

To ease data tracking, the accessible areas were split into five major localities. Surveyors were sent to the localities where they were known and accepted. Surveyors were grouped in teams of three, of whom one person served as team leader. To address issues of language barriers and cultural sensitivity, a resident of each village joined the team during data collection.

Focus group discussions were facilitated for 11 different groups from randomly selected locations. Participants for the discussions were selected purposively amongst representatives in the communities, as well as various sub-groups within it. Participants were organized between young women, young men,

adult women, adult men, and educational personnel in order to ensure the homogeneity of the groups and to capture their respective views. Discussion guides were used to capture information on the communal perceptions of food security, health, education, and water and hygiene conditions. In order to determine the status of community members, the focus-group leaders facilitated a wealth-ranking exercise amongst the participants. This involved the use of proportional piling technique¹¹ by which the groups were able to express their locally defined wealth and status ranking.

Data Analysis

As part of data quality assurance, a survey supervisor and a monitoring and evaluation coordinator worked closely with team leaders and oversaw the entire data collection exercise. At the end of every household assessment, the team leader cross-checked the data collected and validated it. Completed questionnaires were returned to the survey supervisor with a data submission cover sheet detailing the number of data tools submitted. The supervisor in turn reviewed the data sheets before handing them over to the data entry team. At the close of each day, the supervisor and coordinator cross-checked hard copies of data entered into the database against what was in the database. Data collection and entry ran concurrently. Some hard copies were transported to where data analysis took place, and randomly selected entries were cross-checked against the hard copies.

Of the 30 randomly selected clusters, two were inaccessible during the assessment due to excessive rains. The team leader worked quickly with the survey supervisor and the two clusters were replaced. The replacement process took into consideration accessibility, timeliness, available logistics, and representativeness. The original sample frame was used to select two replacement clusters from those next to the inaccessible ones.

The household survey data collected was analyzed using XLSTAT version 2013.4.05. MUAC data was analyzed using Emergency-Nutrition Assessment (ENA) software and significance tests were run using independent-sample t-tests comparing the assessment results from 2013 to the results in 2014 (SPSS Version 22).

5. FINDINGS

5.1 General Findings

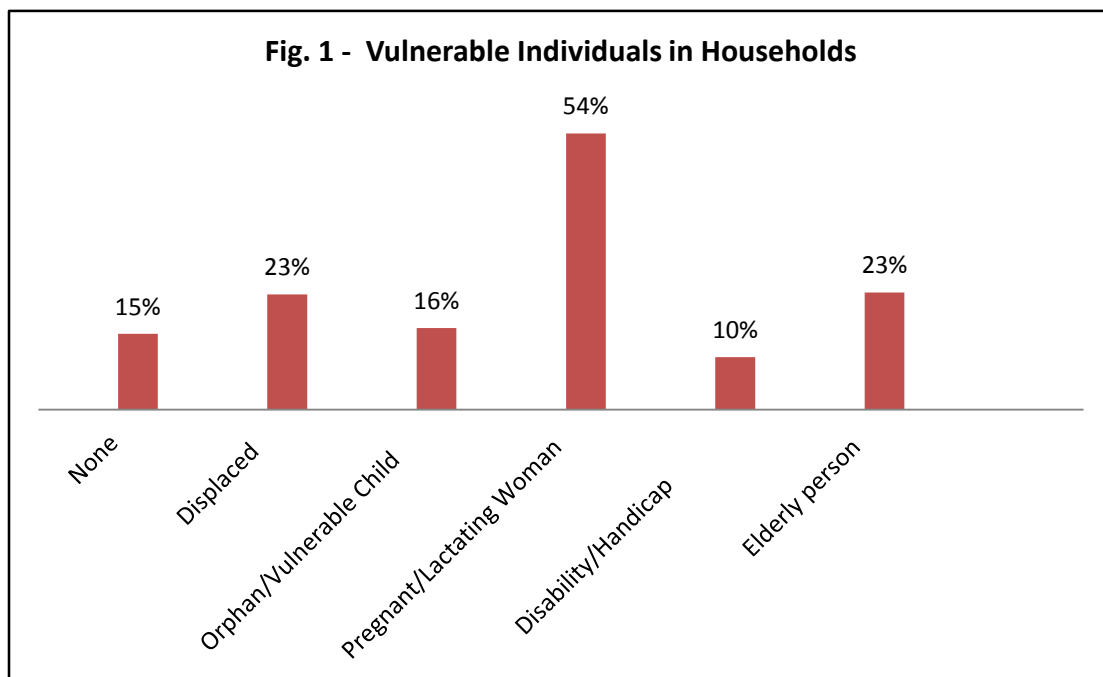
5.1.1 Demographics of the Surveyed Community

Based on assessment findings, the average household size in the region is 7.5 people. Each household includes approximately three adults over the age of 15, between two and three children between the ages of five and 15, and two children under the age of five. The majority of households surveyed—72%—stated that they were male-headed. Roughly 2% stated that they were elderly-headed (70 years or older) and 1% stated their household head was an elderly female.

5.1.2 Vulnerability

Respondents were specifically asked if they had any of the following members in their household: displaced persons; orphaned or vulnerable children; pregnant or lactating women; disabled or handicapped persons; and elderly persons. The majority of families—54%—declared they had a pregnant or lactating woman in their households; 10% had a disabled or handicapped individual; 23% had an elderly person; and, 16% had an orphaned or vulnerable child. Only 15% of households stated they did not have vulnerable people in their households (see Figure 1). When asked whether or not they felt safe at home, 79% stated that they did not feel safe. Moreover, women and girls in focus group discussions claim sexual

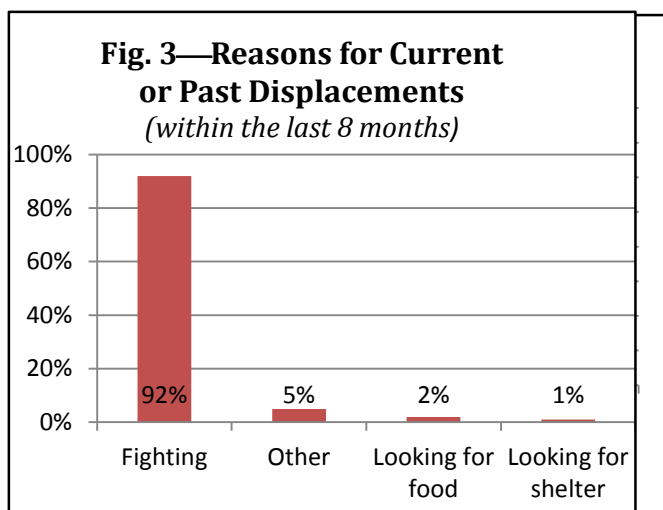
violence and rape are now serious concerns in the region, as a result of encroaching frontlines and proximity to enemy soldiers.



5.1.3 Displacements

Approximately 30% of respondents are currently displaced with 9% being displaced within the last eight months and 21% being displaced for more than eight months. Among those respondents who said they were currently or recently displaced, the majority—92%—stated displacement was due to fighting (see Figures 2 and 3). This represents a 10% increase from the number of people that stated they were displaced due to fighting last year.

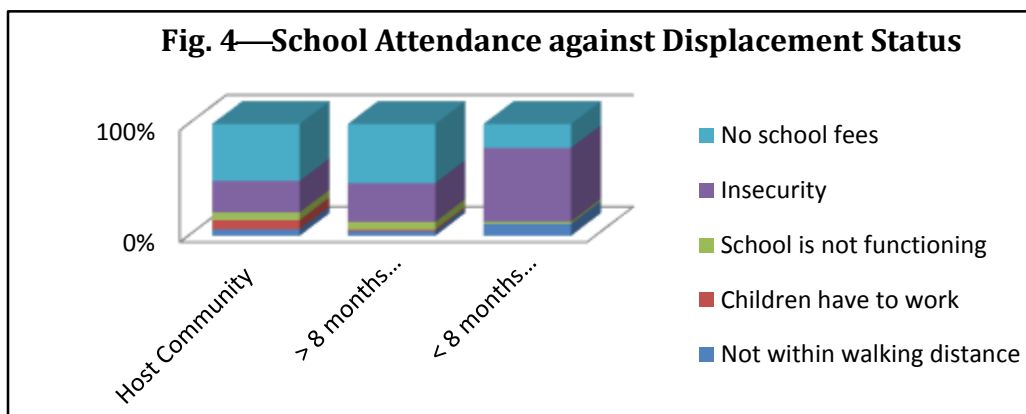
When asked about displacements of family members, 29% of respondents stated that they had family members currently living in refugee camps. Respondents were also asked if they had family members who returned from refugee camps and, if so, what were the reasons for returning. Four percent stated that they had returned because they believe there were better prospects of getting food back home, and 3% stated they did not feel safe in the refugee camps.



5.1.4 Education

Fifty-three percent of households stated that the children in their home were not attending school regularly. The inability to pay for school fees was given as the predominant reason (37% of respondents). This was followed by insecurity (27%); schools not functioning (5%), schools being too far beyond walking distance (5%); and children needing to stay at home to assist with household chores (4%). Insecurity was cited as the main reason amongst newly displaced households. Apart from this trend, however there were no other significant links between the reason children were not attending school and the displacement

status of the family (see Figure 4).



5.2 Water, Sanitation, and Hygiene (WASH)

5.2.1 Water

Less than half the population—45%—is currently using an improved water source as their primary source and 54% claim that their primary source dries up at some point during the year. When their primary source dries up, 35% of households use an unimproved water source as their secondary source. In total, only 43% of the population is currently using an improved water source consistently during the rainy and dry seasons; 57% are using an unimproved source at some point during the year. The main improved water sources reported are boreholes and collected rainwater. Surface water and unprotected dug wells are the main unimproved water sources used. In FGDs, participants stated that there were numerous boreholes in communities with broken hand pumps, but that there were no parts available for their repair.

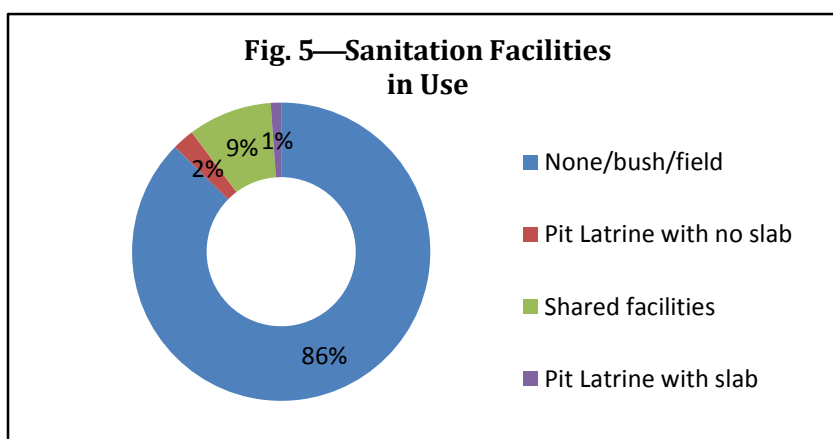
On average, daily water use for drinking, cooking, and personal hygiene is 117 liters (30.9 gallons) per household, or approximately 15.6 liters (4.1 gallons) per person per day. When asked about safe water handling practices, 81% used containers with a narrow mouth, spout, and/or tap; however, 53% of respondents' water containers had observable mold or dirt. Sixty-nine percent of respondents have to

walk 30 minutes or less, while 25% walk more than 30 minutes to collect water from their primary water sources.

Ninety percent of all respondents said they do not treat their water to make it safer for drinking, while 5% made their water safer by boiling it and 5% strained their water through a cloth. During focus group discussions, it was evident that some communities lacked awareness on the importance of making water safer for drinking. Some respondents pointed to the lack of chemicals to make their water safer while others stated they lacked time to treat their water.

5.2.2 Sanitation

Only one percent of households currently have access to improved sanitation (pit latrine with slab), 2% are using unimproved pit latrine, 9% are using a shared facility, and an overwhelming 86% are practicing open defecation (see Figure 5).¹²



5.2.3 Hygiene

During the household survey, researchers asked respondents at which times they washed their hands. These responses were compared against a list of five appropriate hand-washing times: after defecation, after cleaning babies' bottoms, before food preparation, before eating, and before feeding children. Within the surveyed area, 62% of households claimed to wash their hands at three or more of the five appropriate times.

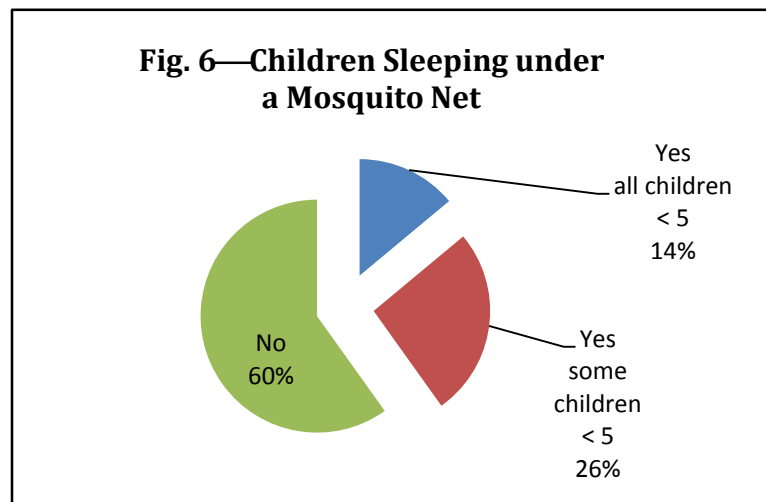
Surveyors also requested that households show the soap they had in their home; only 25% of households could produce soap within two minutes of being asked. During focus group discussions, participants stated that ash is used to wash hands in the absence of soap. This is a good indication that the population appreciates the importance of hand washing but lack the resources to buy soap.

When asked about the frequency of diarrhea among children under age five living in their homes, the majority of the households surveyed (51%) stated that at least one child in their household had experienced an episode of diarrhea in the preceding two weeks.

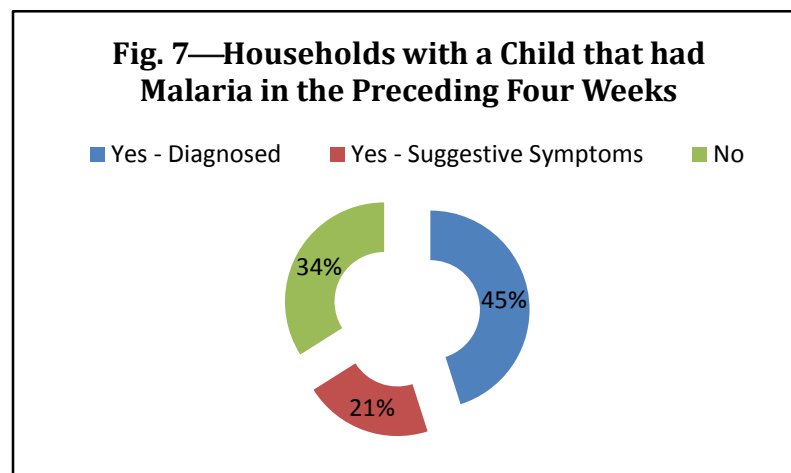
5.3 Healthcare

Eighty-two percent of respondents stated that they had accessed treatment in the previous three months from a health facility. Forty-eight percent claim they have to walk 1-5 km to reach the nearest health facility while 47% have to walk more than 5 km.

For malaria prevention, 59% of households stated that they did not have any mosquito nets; 24% stated that they had one net; and, 17% stated that they had two or more nets. Of those households that had children under the age of five, 60% stated that none of their children slept under a net, 26% stated that some of their children slept under a net, and 14% stated that all of their children slept under a net (see Figure 6).



The lack of mosquito nets is consistent with the high incidence of malaria among children under five years of age. When surveyed, approximately 66% of households stated that their child had malaria in the preceding four weeks (45% diagnosed and 21% determined through suggestive symptoms) (see Figure 7). Focus group discussions revealed that people in the communities use smoke to drive out mosquitoes from their houses, but the high incidence of malaria would suggest this traditional method is not highly effective.



5.4 Nutrition

A high severe acute malnutrition (SAM)¹³ rate is closely linked with the risk of death in children under five year of age and is used to draw conclusions about the situation of the health status for the population as

a whole. Children aged 6-59 months are more vulnerable than other age groups due to external factors (such as food shortage or illness) and their nutritional status is more sensitive to change than that of adults in most populations.

In order to determine the nutritional status of the population, mid upper arm circumference (MUAC) data was analysed from 1,674 children 6-59 months of age. The assessment showed the global acute malnutrition (GAM) rate, based on MUAC measurements, was 10.3 % (9.0 – 11.9 95% C.I.) with a SAM rate of 3.6 % (2.8 - 4.6 95% C.I.).¹⁴ None of the sample children were found to have bilateral pitting edema.¹⁵

Table 1—Prevalence of acute malnutrition based on MUAC measurements (and/or edema), by sex

	All n = 1,674	Boys n = 850	Girls n = 824
Prevalence of global malnutrition (< 125 mm and/or oedema)	(173) 10.3 % (9.0 - 11.9 95% C.I.)	(93) 10.9 % (9.0 - 13.2 95% C.I.)	(80) 9.7 % (7.9 - 11.9 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(113) 6.8 % (5.6 - 8.1 95% C.I.)	(62) 7.3 % (5.7 - 9.2 95% C.I.)	(51) 6.2 % (4.7 - 8.0 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(60) 3.6 % (2.8 - 4.6 95% C.I.)	(31) 3.6 % (2.6 - 5.1 95% C.I.)	(29) 3.5 % (2.5 - 5.0 95% C.I.)

The GAM in the surveyed area falls in the serious category while the SAM falls in the critical category according to WHO standards. The prevalence of wasting was higher in boys (2.5%) than girls (2.3%), though the difference was not statistically significant.

5.5 Food Security and Livelihood

The sustained armed conflict in the SPLM-N controlled areas of South Kordofan state has led to continuous internal displacement. Both displaced and non-displaced households have reduced agricultural production, and household food security is of serious concern. Many households have resorted to regularly using coping strategies, including the sale of household assets like cattle, to meet the food gap. Further challenges include unpredictable climatic conditions, localized droughts, and lack of access to agricultural support. With these complex conditions in mind, the assessment evaluated multiple dimensions of food security and household livelihoods with the dual objectives of:

1. Establishing the current food-security conditions, and
2. Identifying the major barriers to attaining food security.

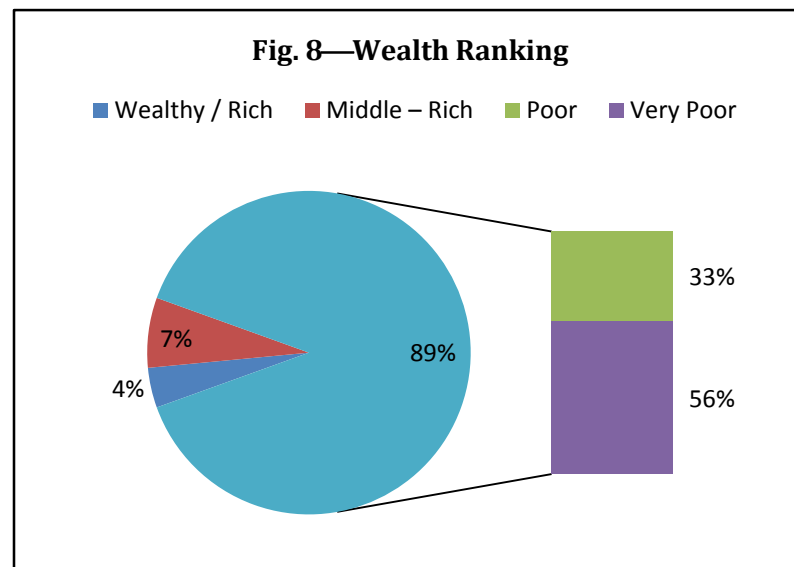
Using both qualitative and quantitative data (including several standardized indicators) allowed for a comprehensive analysis of how various factors are interacting to influence household food security. Due to the presence of internally displaced persons (IDP) in these communities, much of the data below was disaggregated to help identify whether certain groups were experiencing unique challenges as a result of their vulnerability status.

5.5.1 General

Utilizing focus-group discussions (FGD), proportional piling¹⁶ was carried out to ascertain how the community was divided economically (wealth ranking). During this exercise participants were asked to make piles of the proportion of households in each wealth quintile. Rich households were understood to

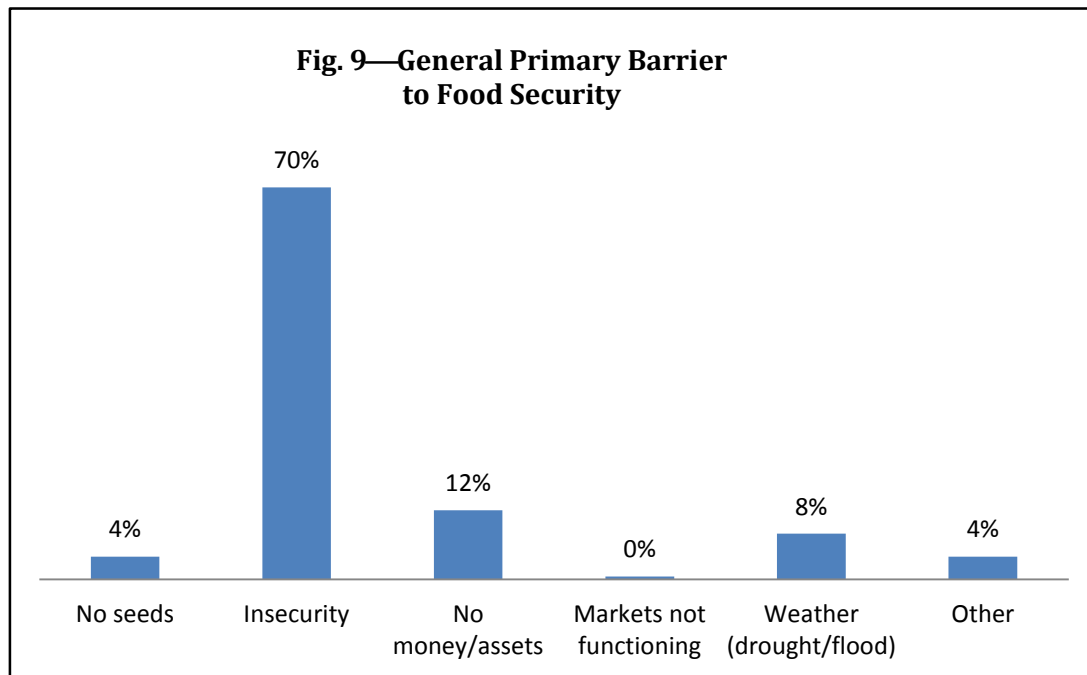
be those with cows, goats, and chickens; those with a large supply of food stock (10 bags or more); those with big farms and a harvest of at least 9 bags; and/or, those with many wives, children and houses in the same compound.

The middle rich households had the same characteristics as the rich households with the difference being a lesser number of assets owned. The poor households were understood to be those with a small number of livestock; those that had to work on other people's farms instead of owning farms; and/or, those that had only small amount of food in stock. The very poor households were those with no livestock, no food in stock, and no fixed means of earning a living. This exercise revealed that roughly 4% of households in the area are considered rich, 7% middle rich, 33% poor, and 56% very poor (see Figure 8).

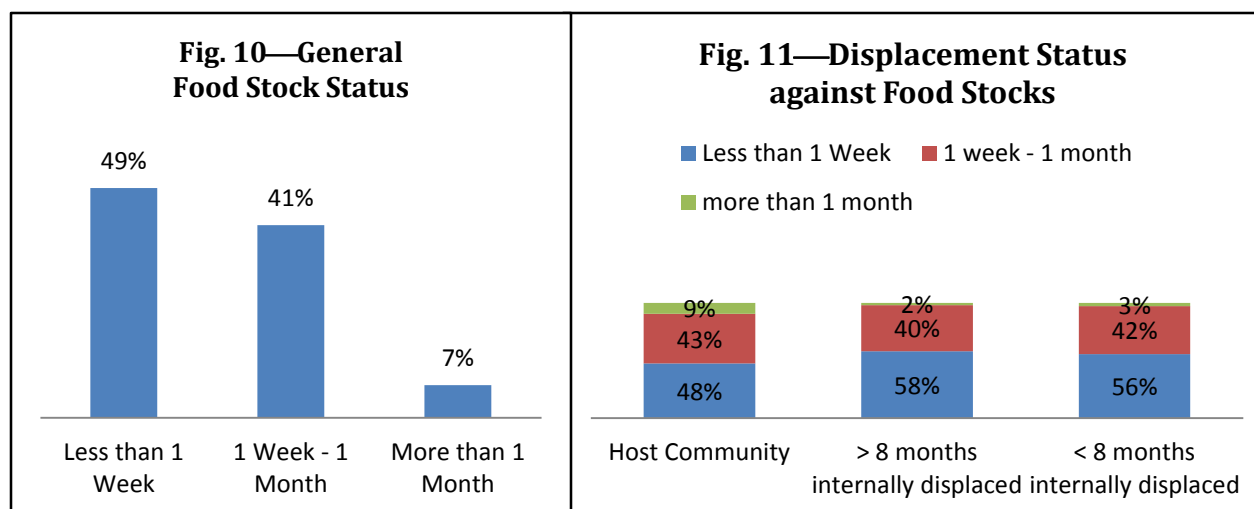


5.5.2 Food security

To identify barriers to food security, households were asked to determine their “primary barrier to achieving food security.” As can be seen in Figure 9, 70% of households stated that their primary barrier to food security was insecurity, followed by a lack of money and assets. There were no notable variations between displaced and non-displaced households.

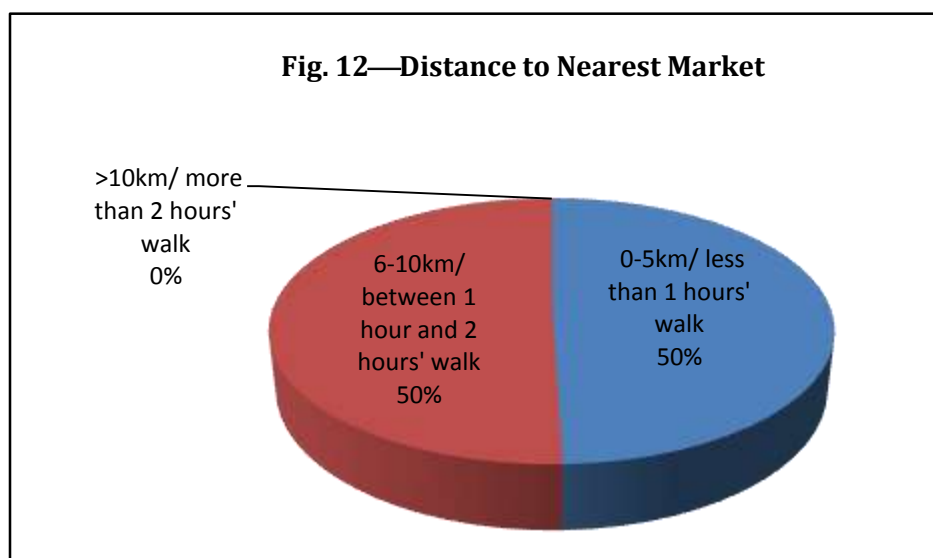


Current household food stocks were found to be extremely low for both displaced and non-displaced households. Forty-one percent of households reported having enough food stocks to last one month or less, and approximately 49% of households stated they did not have enough food to last even a week (see Figures 10 and 11).



5.5.3 Market Access

The assessment contained a brief section related to markets in order to examine market accessibility and commodity availability. Markets were also addressed during the focus-group discussions. The majority of focus group discussions noted that markets have a wide availability of goods; however prices are extremely inflated compared to pre-conflict prices. Focus group participants further note that cash or barter trade is acceptable at most markets. The household survey revealed that 50% of households travel at least one hour to access a functional market (see Figure 12).



The FGDs further revealed varying accounts of food availability in the markets. Sorghum and oil were the most widely reported commodities available in all of the markets. Where commodities were available, information on their prices was collected in South Sudanese Pounds (SSP). These are reported in the table below.

Table 2—Commodities and Prices in Local Markets

Food Commodity in Local Market	Availability		Average Price (SSP)	Max. Price (SSP)
	YES	NO		
Sorghum/Dura (1 melwa ¹⁷)	81%	18%*	8.4	40
Cooking Oil (1 liter)	79%	19%*	34.3	65

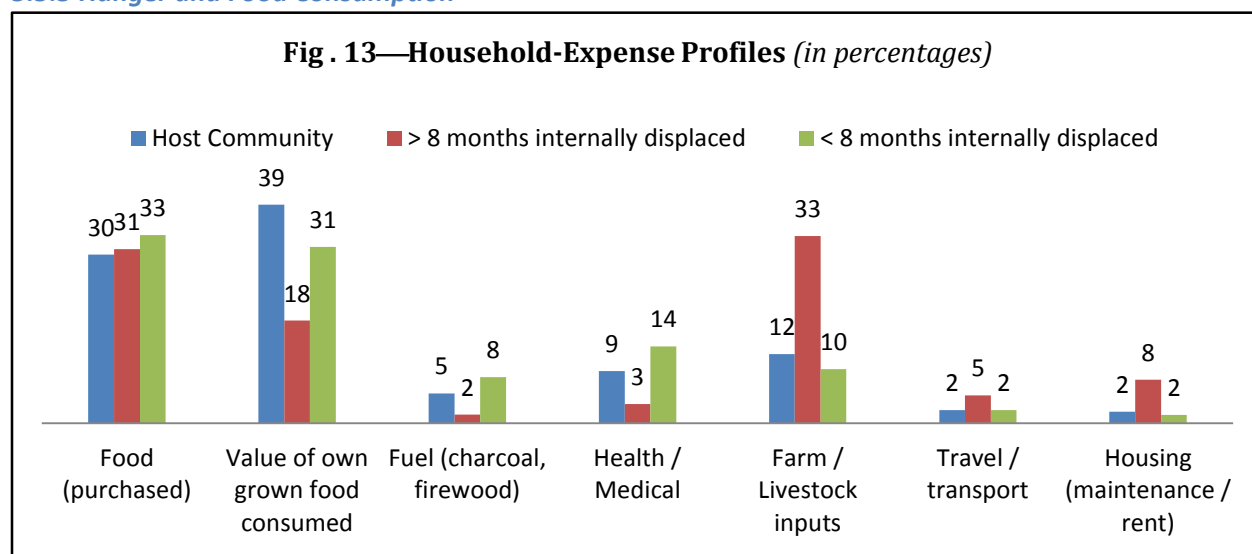
* Vendors that did not respond are not included in the table

5.5.4 Household Expenditures and Income

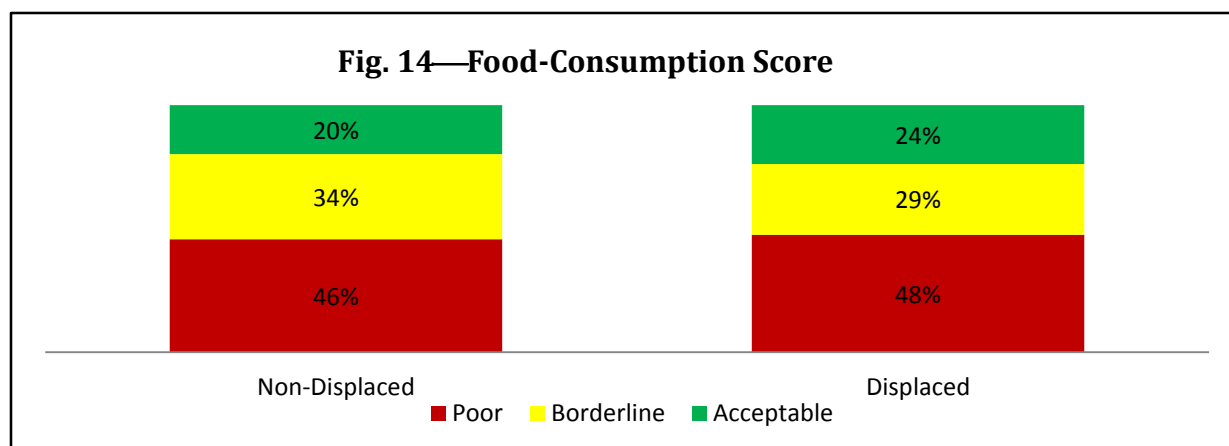
In terms of household income, it was found that, on average, displaced households received a larger portion of their income from the sale of assets (including livestock) than non-displaced households, who are more reliant on their own food production.

There were several differences between displaced and non-displaced households. Displaced households spent more on food purchases, and non-displaced households consumed a larger portion of food from home production. While households experiencing longer displacement spent more on farm input and housing, those displaced for less than eight months spent more on fuel, health, and food purchases (see Figure 13).

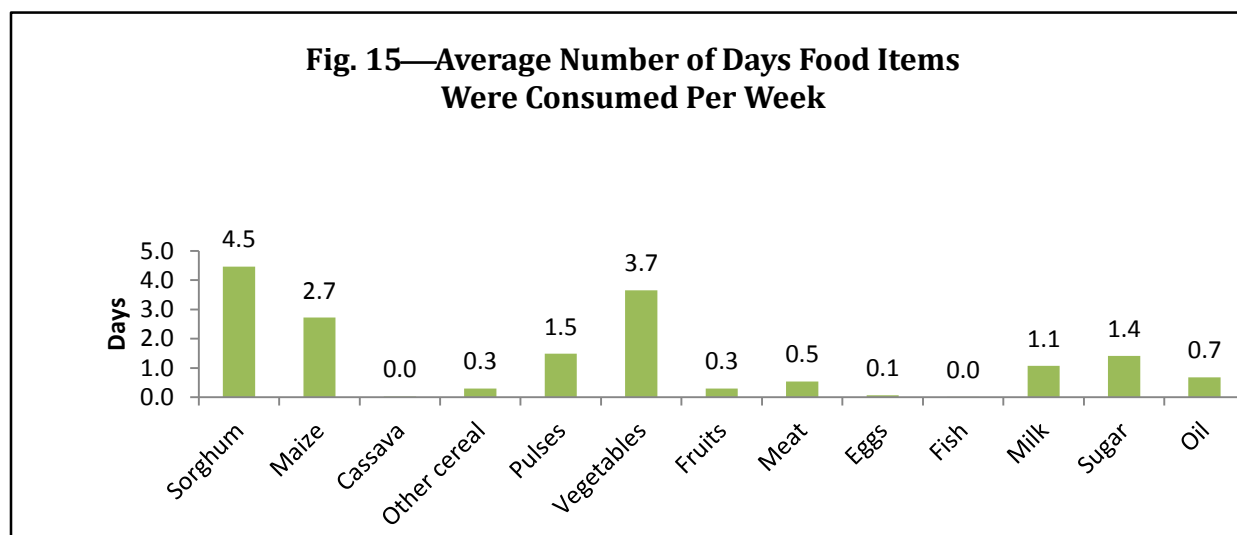
5.5.5 Hunger and Food Consumption



The food consumption score (FCS)¹⁸ was used to gauge both diversity and frequency of food consumption in surveyed areas of South Kordofan state. The FCS thresholds and weights used were borrowed directly from World Food Programme South Sudan. Results reveal that 80% of non-displaced households and 77% of displaced households have unacceptable (poor + borderline) consumption levels (see Figure 14).¹⁹



Diversity is especially concerning, as only primary cereals are being consumed regularly throughout the week. The most frequently consumed food items were sorghum, at 4.5 days per week; vegetables, at 3.7



days per week; and maize, at 2.7 days per week. Consumption of proteins and oils or fats was generally poor (see Figure 15).

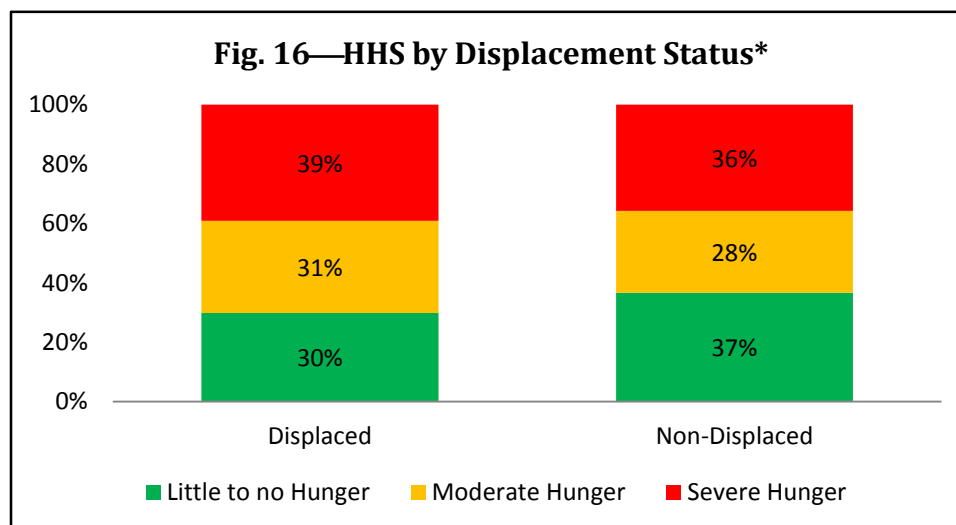
The meals-per-day data displayed below (see Table 3) is very worrying when viewed in light of the FCS data, which shows very little diversity in diet. Households are consuming food infrequently and with poor diversification. Non-displaced households are consuming marginally more meals than displaced households. Children are also receiving marginally more meals across both displaced and non-displaced households.

Table 3—Meals per day

Displacement Status			
Average # of Meals Eaten	Host Community	> 8 Months Internally Displaced	< 8 Months Internally Displaced
Adults	1.5	1.5	1.3
Children under 5	1.9	1.8	1.4

5.5.6 Household Hunger Scale

Household hunger scale (HHS)²⁰ results indicate that 70% of displaced households and 64% of non-displaced households are experiencing moderate to severe hunger (see Figure 16). HHS results mirror FCS results regarding households not consuming an adequate variety or frequency of food (80% and 77%, respectively, with moderate to poor consumption).



*Excludes households that did not specify displacement status.

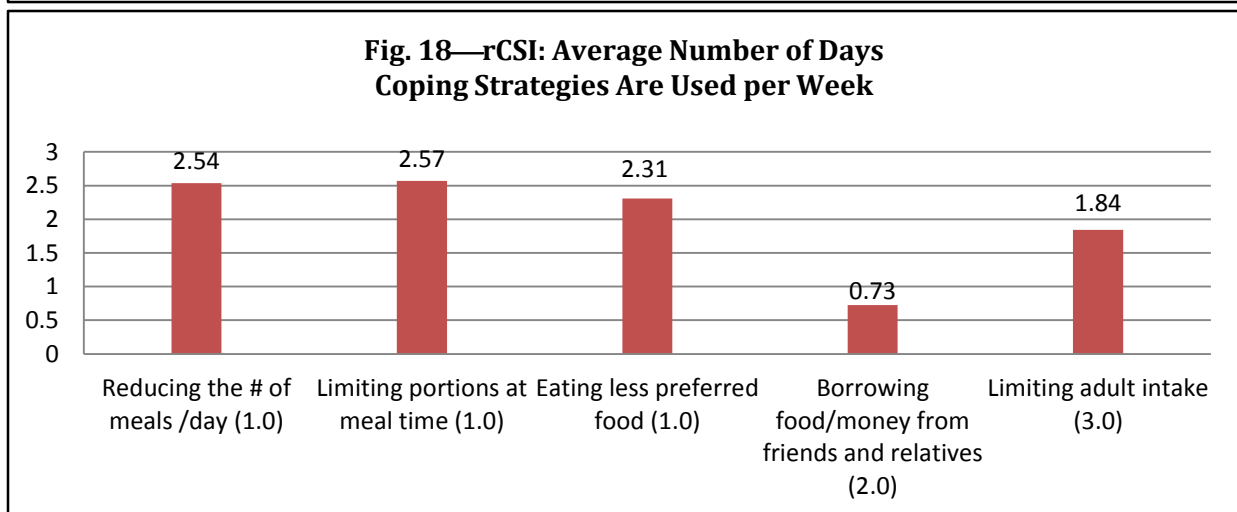
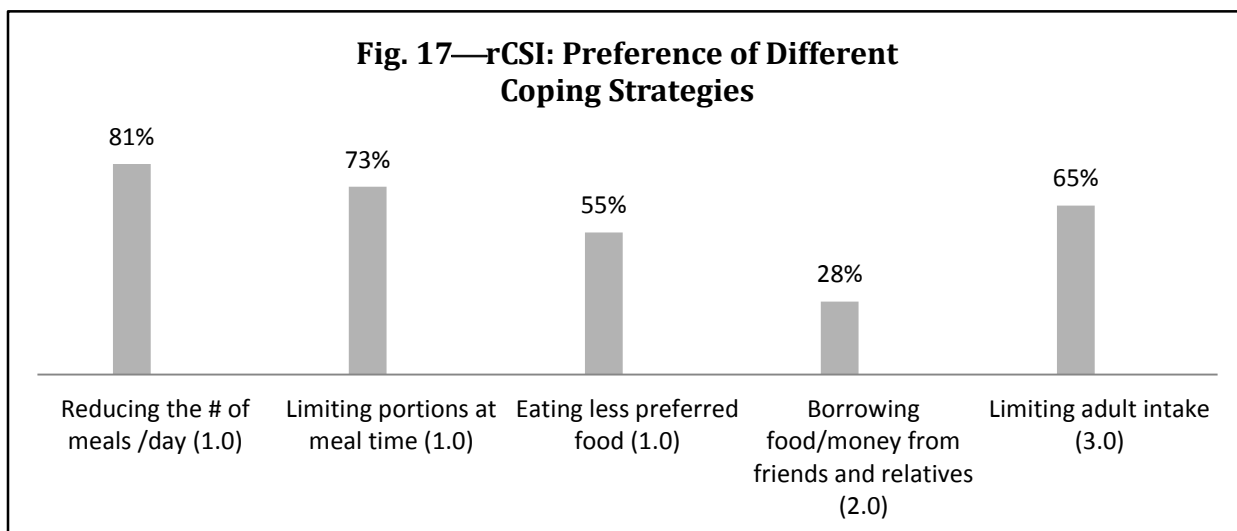
5.5.7 Coping strategies

Surveyors also asked about the population's strategies for coping with food insecurity using the reduced coping-strategies index, (rCSI).²¹ The most widely and frequently used coping strategies included (see Table 4 and Figures 17 and 18²²):

1. Reducing the number of meals eaten in a day—81% of households used this strategy an average of 2.54 days per week;
2. Limiting portion sizes at meals—73% of households used this strategy an average of 2.57 days per week;
3. Limiting adult intake—65% of households used this strategy an average of 1.84 days per week;
4. Eating less preferred food—55% of households used this strategy an average of 2.31 days per week; and
5. Borrowing food from friends/relatives—28% of households used this strategy an average of 0.73 days per week.

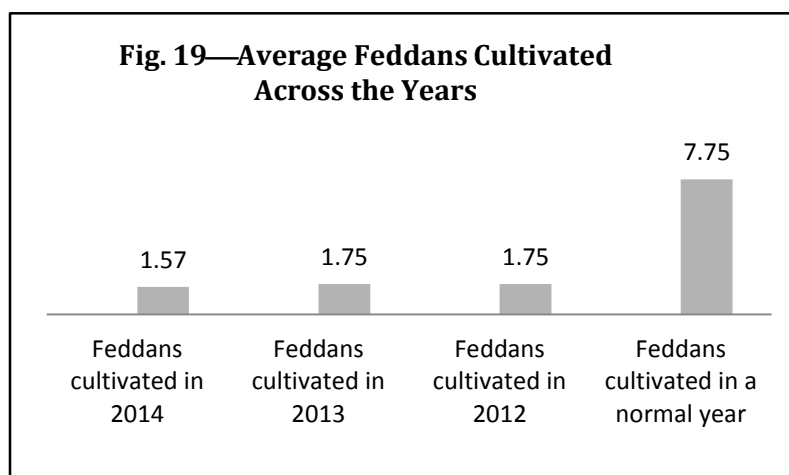
Table 4: Coping strategies used

Coping Strategy	Households (%)	Frequency (times/week)
Reducing the number of meals eaten per day	81%	2.54
Limiting portion sizes at meals	73%	2.57
Limiting adult intake	65%	1.84
Eating less preferred food	55%	2.31
Borrowing food from friends/relatives	28%	0.73



5.5.8 Agricultural Support and Farming

Household land cultivation on average decreased significantly when the conflict broke out (see Figure 19).



The FGDs provided more insights into the agricultural challenges faced by the communities. Generally, preparations for the farming season start in the months of March and April, with planting done in June and July. This year, starting in April, the government of Sudan increased its attack on the region, which led to fear of going into fields to cultivate as a result of aerial attacks and massive displacement of families.

In addition to insecurity the following reasons were cited for low crop harvests in descending order of importance:

- Locusts and caterpillars destroying crops, especially during germination phase.
- Lack of farming tools and machines to assist with clearing and plowing.
- Lack of rain, resulting in drought.
- Lack of sufficient seed for planting.
- Weevils and termites that destroy seeds stored for planting.
- Lack of money and assets.
- Hunger, wild weeds, poor storage, and no manpower to look after crops.
- Insufficient land available to farm; displaced families lacking access to land for cultivation, and land becoming infertile due to overuse.

Most of the factors listed above are a result of lack of assets and money to buy the farm inputs needed to improve agriculture.

5.5.9 Livestock

FGDs noted that the majority of respondents were farming communities and a few pastoralists. Both pastoral and farming households kept some type of livestock. While the wealth-ranking exercise showed that the rich keep livestock to pay for health treatment and pay dowries, the poor kept livestock for food. The pastoral communities stated that during the rainy season their nutrition is markedly improved because they eat a variety of dairy products like cheese and milk from the livestock they keep. However, households have lost most of their livestock to disease, and many have destocked as a coping mechanism. Those who have lost livestock during fighting and cattle raids lack resources to buy more livestock.

Overall data from the assessment reveal a very bleak food security situation. The majority of households have inadequate food consumption, both in terms of variety and frequency. Households have adopted an array of coping mechanisms, from reducing portions and meals to borrowing food and money from friends or relatives. The outlook also remains poor due to reduced land under cultivation, poor market accessibility, reduced purchasing power, and destocking of household assets.

6. CONCLUSION

Triangulated data from household surveys, focus-group discussions, and data from a similar assessment last year provide undisputed evidence that there is a need for humanitarian interventions for the surveyed population. There is a significant increase in insecurity in the surveyed area, as shown by the increased number of displaced people and people reporting not feeling safe in their homes. Respondents described the worsening security situation and cited insecurity as the leading barrier to food security, the main reason for displacement, and the second most cited reason that children are not in school.

The food security outlook is equally disturbing, as families continue to use drastic coping strategies to fill the food gap. Families largely limit meal portions and reduce the number of meals eaten per day, with children eating as little as 1.4 meals per day. The fact that the majority of the population is poor further

compounds the poor food-security situation because purchasing power is very low even where markets are functioning.

The above-mentioned points, coupled with inadequate variety of foods consumed, have resulted in severe wasting in children, as evidenced by the high SAM rate of 3.6% and GAM rate of 10.3%.

The water situation is equally bad, with significantly more households (57%) using an unimproved source of water at some point during the year, and fewer households knowing the five appropriate hand-washing times.

7. RECOMMENDATIONS

The humanitarian conditions in SPLM-N-controlled areas of South Kordofan state are troubling. Expanding on a similar assessment conducted in 2013, the report demonstrates a continued need in the area as the security and humanitarian situation degrades.

Concrete steps need to be taken in order to address the daily insecurity threats, alleviate the immediate food insecurity, and assist these communities in becoming self-sufficient again.

Recommendations include:

1. Immediate food aid is needed to assist the 90% of households who lack sufficient food stocks to last more than one month.
2. In order to build longer-term, sustainable food security that will reduce dependence on humanitarian assistance, households should be assisted with reaching pre-war levels of agricultural productivity. Assistance would include distribution of seeds and farming tools. The condition of storage of harvest and seeds for planting should also be addressed.
3. Women should be educated on proper Infant and Young Child Feeding (IYCF) practices and resources for the treatment of SAM should be provided.
4. A blanket supplementary feeding program (BSFP) should be distributed to all children 6-59 months, and General Food Distributions (GFD) of culturally appropriate staple foods should be distributed to the communities in order to support the population through the lean season. School feeding programs should be part of any education intervention. To address the low purchasing power of the communities, cash and voucher interventions could also be considered in areas where markets are functioning and accessible.
5. Distributing mosquito nets and providing public information about their use, particularly for households with young children, should be prioritized. According to the World Health Organization, mosquito nets reduce overall child mortality by an average of 18% and malaria infection by at least 50%.²³
6. The sale of livestock is the first source of income for most families, and livestock also serve as a source of food. Interventions supporting livestock rearing are needed.
7. With more than half of the surveyed children not attending school, there is a generation of illiteracy developing that needs to be addressed. School interventions to support existing schools

and establish schools where none are present should be considered and could include school feeding and subsidized education.

8. Providing training, spare parts, and assistance with hand-pump repairs is essential to ensuring access to clean water. Providing boreholes near families with vulnerable members should be prioritized where possible.
9. Expanding the number of latrines and distributing soap could improve public health and stem the spread of disease. Communities should be trained on acceptable hygiene practices, such as hand washing and treating water from unimproved sources.
10. Political advocacy and intervention from the international community will be essential in addressing the root causes of insecurity in South Kordofan state before a long-term humanitarian solution can be realized.

8. APPENDIX 1: MUAC DATA SHEET

Location Code/Locality:									
Cluster No:									
Date of Interview:									
SN	Age of Child (mth)	Sex (M/F)	MUAC (cm)	edema (Y/N)	SN	Age of Child (mth)	Sex (M/F)	MUAC (cm)	edema (Y/N)
1					22				
2					23				
3					24				
4					25				
5					26				
6					27				
7					28				
8					29				
9					30				
10					31				
11					32				
12					33				
13					34				
14					35				
15					36				
16					37				
17					38				
18					39				
19					40				
20					41				
21					42				

9. APPENDIX 2: WEALTH RANKING SHEET

End-Line Assessment Survey: Focus-Group Discussion (FGD)			ID#:
GEOGRAPHIC LOCATION			
Group Type:	Village:	Cluster No:	
PERSONNEL AND TIMING OF SURVEY			
Date of Discussion:	Season (circle current season):	Dry Season	1
Moderator:		Rainy Season	2
Supervisor:			
INTRODUCTION AND CONSENT			
<p>GREETINGS/INTRODUCTION: Good morning/afternoon, my name is----- . We are conducting a survey and we would like you all to participate. We want to discuss wealth ranking in your community. The project teams will take into consideration the results of the surveys for the design, planning, and implementation of our activities in this area.</p>			

Tool 1: Wealth Ranking (Community-Status Divisions)

- Community's definition of rich and poor
- Factors or criteria that differentiates economic class
- Different wealth divisions in the community

Class	CRITERIA												
	Cattle #	Goats #	Chicken #	Uses of livestock (Food, sell, bride)	Farm size (fed)	Harvest (90 kg bag)	Farm hands	Housing (#, roof, wall type)	Wives #	Children #	Income Source	Business Size	Amount of Food in Stock (90 kg bag)
Rich													
Middle Rich													
Poor													
Very Poor													

Status	Proportion			
	General Population	Host Community	Refugees	Returnees
Wealthy/Rich				
Middle–Rich				
Poor				
Very Poor				
TOTAL				
Defining Wealth Indicator				

Remark: _____

Endnotes

- ¹ The Sudan Relief and Rehabilitation Agency (SSRA), the humanitarian wing of the Sudan People's Liberation Movement/Army-North (SPLM/A-N) that addresses humanitarian outreach in areas held by the SPLM/A-N, has documented aerial and ground attacks and provides details on the casualties and humanitarian tolls. In its most recent report covering the first half of 2014, the SSRA finds a million people need immediate assistance in parts of South Kordofan held by the SPLM/A, with 400,000 people displaced by recent violence and 1,335 aerial bombardments resulting in 67 people killed and 76 injured. See Sudan Relief and Rehabilitation Agency, "SRRA Report: Humanitarian and Human Rights Situation in SPLM-N Controlled Areas," January - July 2014, available at <http://www.scribd.com/doc/233160045/SRRA-Report-Humanitarian-and-Human-Rights-Situation-in-SPLM-N-Controlled-Areas>. In September 2014, South Kordofan-based Nuba Reports said it had verified 1,929 Sudan Armed Forces (SAF) bombs dropped since April 2012, including 756 bombs dropped since September 2013. Nuba Reports, "Khartoum's War On Sudan: When Civilians Are the Enemy," September 16, 2014, available at <http://nubareports.org/khartoums-war-on-sudan-when-civilians-are-the-enemy/>. An October 11, 2014 Sudan Tribune news article cites remarks made by Maj.-Gen. Abdel-Hadi Abdallah, a Sudanese commander based in South Kordofan, to Ashorooq TV, that Sudanese forces were prepared to carry out a "strong and fierce attack against those who reject peace" and "end the rebellion in the state." Sudan Tribune, "Sudanese army vows to crush rebellion in South Kordofan," October 11, 2014, available at <http://www.sudantribune.com/spip.php?article52691>. For recent reports of aerial bombardment in South Kordofan state see Radio Tamazuj, "SPLA-N accuses Khartoum of bombing civilians in Um Dorain," October 29, 2014, available at <https://radiotamazuj.org/en/article/spla-n-accuses-khartoum-bombing-civilians-um-dorain>; Nuba Reports, "6 Children Killed in Market Bombing," October 16, 2014, available at <http://nubareports.org/five-children-killed-as-fighting-season-starts-in-the-nuba-mountains/>.
- ² For an analysis of the strategy and patterns of aerial bombardments of agricultural areas in South Kordofan see Eric Reeves, "Aerial Attacks on Civilian Agriculture and Food Supplies: 'Starving' the Nuba," September 27, 2014, available at <http://sudanreeves.org/2014/09/27/aerial-attacks-on-civilian-agriculture-and-food-supplies-starving-the-nuba-part-two-of-looking-directly-into-the-heart-of-darkness-27-september-2014/>.
- ³ Sudan Relief and Rehabilitation Agency, "SRRA Report," table 1, figure 1.
- ⁴ For an infographic depicting numbers and movements of displaced people and refugees in South Kordofan state see Sudan Democracy First Group, "South Kordofan: Displaced People and Refugees: Total Numbers Since the Start of the Conflict in 2011," available at <http://democracyfirstgroup.org/News/SK%20Infographic%20Sept%202014.pdf>.
- ⁵ Though it can begin earlier or later, the lean season in this area typically extends from May to October. Famine Early Warning Systems Network (FEWSNet) Sudan page, available at <http://www.fews.net/east-africa/sudan> (last accessed November 2014).
- ⁶ A feddan is an Egyptian unit of measurement corresponding to slightly more than an acre.

⁷ The World Health Organization and the UNICEF classify malnutrition as follows: Moderate Acute Malnutrition (MAM), measured in individuals, is a Weight-for-Height Z-score between -2 and -3. Severe Acute Malnutrition (SAM), also measured in individuals, is a mid-upper arm circumference of less than 11.5 centimeters, a Weight-for-Height Z-score of less than -3, bilateral pitting edema, and marasmic-kwashiorkor (both wasting and edema). Global Acute Malnutrition (GAM), is “the sum of the prevalence of SAM plus MAM at a population level.” UNICEF, “Acute Malnutrition: Classification,” available at <http://www.unicef.org/nutrition/training/2.3/13.html> (last accessed November 2014).

⁸ Famine Early Warning Systems Network, “Livelihoods Zoning ‘Plus’ Activity in Sudan” (2011), p. 9, available at <http://documents.wfp.org/stellent/groups/public/documents/ena/wfp239943.pdf>.

⁹ For a look at the seasonal and planting calendar and additional information on Sudan’s immediate food security outlook, see Famine Early Warning Systems Network, “Sudan,” available at <http://www.fews.net/east-africa/sudan> (last accessed November 2014). For accounts of flooding in 2013 that compounded food insecurity, see U.S. Agency for International Development, National Oceanic and Atmospheric Administration, and Famine Early Warning Systems Network, “Climate Prediction Center’s Africa Hazards Outlook For USAID/FEWS-NET August 8 – August 14, 2013” (2013), available at http://www.fews.net/sites/default/files/documents/reports/afr_Aug08_2013.pdf; International Federation of Red Cross and Red Crescent, “Sudan: Floods” (2013), available at <http://www.ifrc.org/docs/Appeals/12/MDRSD014FR.pdf>. For accounts of drought in 2012 that compounded food insecurity, see U.S. Agency for International Development, National Oceanic and Atmospheric Administration, and Famine Early Warning Systems Network, “Climate Prediction Center’s Africa Hazards Outlook For USAID/FEWS-NET July 25 – July 31, 2013” (2013), available at http://www.fews.net/sites/default/files/documents/reports/afr_Jul25_2013.pdf. For previous assessments of humanitarian conditions in South Kordofan state published by Enough see “Life in the Nuba Mountains: Humanitarian Needs Assessment in Sudan’s South Kordofan State,” (Washington: October 2013), available at <http://www.enoughproject.org/files/NubaMtns-report.pdf>; “Rapid Food Security and Nutrition Assessment: South Kordofan,” (Washington: October 2012), available at <http://www.enoughproject.org/files/SK%20Rapid%20Assessment%20Report.pdf>.

¹⁰ For an explanation of UNICEF’s Expanded Program on Immunization (EPI) assessment method, see UNICEF, “Rapid Assessment Sampling in Emergency Situations,” pp. 24-25, (2010), available at http://www.unicef.org/eapro/Rapid_assessment_sampling_booklet.pdf.

¹¹ Proportional piling is a data collection method involving tangible objects, such as stones or beans, used to quantify or express the importance of issues to a specific household or community. For further explanation on the technique see, for example, Yazan Ahmed Mohamed Elhadi, “Proportional Piling,” University of Nairobi Department of Land Resource Management and Agricultural Technology, May 2011, available at https://www.academia.edu/3368026/PROPORTIONAL_PILING.

¹² Figures 5, 9, and 10 add up to less than 100% because a small percentage of those surveyed did not respond to these questions. The “markets not functioning” option and rounding issues account for part of the discrepancy in Figure 9.

¹³ See endnote 7 for definitions by the World Health Organization and the UNICEF for different forms of malnutrition.

¹⁴ For more explanation and metrics on these international measures for nutrition see The Sphere Handbook, Humanitarian Charter and Minimum Standards in Humanitarian Response, p. 221, 2011, available at

<http://www.sphereproject.org/resources/download-publications/?search=1&keywords=&language=English&category=22>.

¹⁵ Edema is swelling, caused by a buildup of fluid in the tissues, and pitting edema briefly leaves a temporary dent in the skin after pressed.

¹⁶ For this assessment, 100 stones were arranged on the floor representing the total number of people in the community. To determine the wealth ranking, participants were asked to divide the stones according to how the community is divided economically.

¹⁷ The melwa is a unit of measure for cereals and pulses. One melwa has a liquid volume of approximately four liters, or 135 fluid ounces.

¹⁸ The Food Consumption Score (FCS) is an indicator developed by the World Food Programme and used to measure food consumption and food security. It is a composite figure based on frequency, diversity, and nutritional value of food consumed. For calculation and rationale in the use of this figure and for parameters for “poor,” “borderline,” and “acceptable” food consumption scores, see World Food Programme, “Food Consumption Analysis” (2008), pp. 8–9, 13–14, available at http://documents.wfp.org/stellent/groups/public/documents/manual_guide_proced/wfp197216.pdf.

¹⁹ For calculations and metrics for Food Consumption Score thresholds, see World Food Programme, “Food Consumption Analysis.” pp. 8–9.

²⁰ The Household Hunger Scale (HHS) is an indicator used to measure household hunger in areas experiencing food insecurity. It has been formulated to allow for cross-cultural comparison between different populations. For an introduction to the indicator and its use, see Megan Deitchler and others, “Introducing a Simple Measure of Household Hunger for Cross-Cultural Use” (Washington: Food and Nutrition Technical Assistance Project, 2011), available at <http://www.fantaproject.org/research/validation-hhs>. For additional materials on the validation and measurement guide to HHS, see Food and Nutrition Technical Assistance, “Validation of a Measure of Household Hunger for Cross-Cultural Use,” available at <http://www.fantaproject.org/research/validation-hhs> (last accessed November 2014).

²¹ For more on the ways to measure and understand the Coping Strategies Index (CSI), see Daniel Maxwell and Richard Caldwell, “The Coping Strategies Index: Field Methods Manual” (Rome: World Food Programme, 2008), available at http://home.wfp.org/stellent/groups/public/documents/manual_guide_proced/wfp211058.pdf.

²² The numbers listed on the end of the coping strategies labels in Figures 17 and 18 are the different weights associated with each coping strategy to capture their severity. These weights are multiplied by the frequency in that category in order to derive the Coping Strategy Index. This measurement approach is consistent with the Coping Strategies Index field methods manual, available at http://home.wfp.org/stellent/groups/public/documents/manual_guide_proced/wfp211058.pdf.

²³ World Health Organization, “Insecticide-Treated Mosquito Nets: A WHO Position Statement” (2008), available at <http://www.who.int/malaria/publications/atoz/itnspopaperfinal.pdf>.