Research Terms of Reference

[Multi-Sectoral Rapid Assessment in Kurwai]
[Research Cycle ID: SSD1906]
[South Sudan]

[March 2019]
[Version 1]

REACH Informing more effective humanitarian action

1 Executive Summary

Country of intervention	South Sudan					
Type of Emergency	□	Natural disaster	X	Conflict		
Type of Crisis	□	Sudden onset	□	Slow onset	X	Protracted
Mandating Body/ Agency	*NAWG*					
Project Code	*32DFL*					
Overall Research Timeframe *(from research design to final outputs / M&E)*	01/03/2019 to 08/04/2019					
Research Timeframe *Add planned deadlines (for first cycle if more than 1)*	1. Start collect data: 06/03/2019		5. Preliminary presentation: 02/04/2019			
	2. Data collected: 20/03/2019		6. Outputs sent for validation: 01/04/2019			
	3. Data analysed: 27/03/2019		7. Outputs published: 08/04/2019			
	4. Data sent for validation: 29/03/2019		8. Final presentation: N/A			
Number of assessments	X	Single assessment (one cycle)				
	□	Multi assessment (more than one cycle) *[Describe here the frequency of the cycle]*				

Humanitarian milestones *Specify **what** will the assessment inform and **when** e.g. The shelter cluster will use this data to draft its Revised Flash Appeal;*	**Milestone**		**Deadline**
	□	Donor plan/strategy	_ _/_ _/_ _ _ _
	X	NAWG Inter-cluster plan/strategy	02/04/2019
	□	Cluster plan/strategy	_ _/_ _/_ _ _ _
	□	NGO platform plan/strategy	_ _/_ _/_ _ _ _
	□	Other (Specify):	_ _/_ _/_ _ _ _

Audience Type & Dissemination *Specify **who** will the assessment inform and **how** you will disseminate to inform the audience*	**Audience type**	**Dissemination**
	□ Strategic **X Programmatic** **X Operational** □ [Other, Specify]	**X General Product Mailing (e.g. mail to NGO consortium; HCT participants; Donors)** □ Cluster Mailing (Education, Shelter and WASH) and presentation of findings at next cluster meeting **X Presentation of findings (e.g. at HCT meeting; Cluster meeting)**

			X Website Dissemination (Relief Web & REACH Resource Centre) □ [Other, Specify]	
Detailed dissemination plan required	□	Yes	X	No
General Objective	To inform the humanitarian response in Kurwai payam, Canal/Piji, by providing an overview of multi-sectoral needs and movement intentions of the affected population in the area.			
Specific Objective(s)	1. To understand the multi-sectoral humanitarian needs of host community and IDP populations in Kurwai payam 2. To understand returnee and IDP movement intentions in Kurwai 3. To determine a proxy rate of Global Acute Malnutrition (GAM)[1] through measuring the mid upper arm circumference (MUAC) of children 6 to 59 months 4. To determine a retrospective Crude Death Rate (CDR)[2] for Kurwai payam			
Research Questions	**RQ1: What are the current humanitarian conditions and multi-sectoral needs in Kurwai payam?** 1.1 Food Security and Livelihoods (FSL) - What is the current availability and accessiblity to adequate food? - What is the current availability and access to livelihood activities? - What is the average Household Hunger Score[3]? 1.2 Shelter & Non-food items (SNFI) - What types of shelter do people live in, and what is the condition of that shelter? - What NFIs are available in the communtiy? 1.3 Health/Nutrition - What health and nutrition services are available in the assessed area? - What is the level (either by incidence or prevalence) and type of morbidities affecting the community in the assessed area? - In what way have child care practices changed in the assessed area due to recent hardships? 1.4 Water, Sanitation & Hygiene (WASH) - What is the current availability and accessiblity of water in the assessed area? - What is the current availability and accessiblility of latrines for the population in the assessed area? 1.5 Humanitarian Assistance - What was the coverage of the last general food distribution in the area? - What are the priority needs for the community? **RQ2: What are the movement intentions of the population?**			

[1] Global Acute Malnutrition (GAM) is the measure of acute malnutrition in the population of 6-59 month old children. Typically determined by weight-for-height measurements, a proxy for GAM can be determined by taking MUAC measurements of children.
[2] Crude Death Rate (CDR) is the rate of deaths in a population over a given period of time. It is typically expressed as deaths per 10,000 population per day. A CDR of greater than 1 is considered an emergency.
[3] Household Hunger Scale (HHS) is a household food deprivation scale often used in development and emergency contexts. This is considered an "experiential" indicator of food insecurity, and is based off the idea that food deprivation causes predictable reactions that can be captured in a survey.

	2.1 What is the composition of the community in the assessed area (host community vs. IDP vs. Returnees)? 2.2 What are the movement intentions for host community and IDPs currently in Kurwai payam? 2.3 What were the push and pull factors for coming to the current location, and what would be push factors for future movements, if any? 2.4 What displacement routes were taken by current IDPs to arrive in the current location? **RQ3: What is the nutritional status of children 6-59 months in Kurwai payam?** 3.1 What is the proxy rate of Global Acute Malnutrition (GAM) by MUAC? **RQ4: What is the severity and causes of mortality experienced in Kurwai payam?** 4.1 What are the practices, beliefs and taboos around death and talking about death in the assessment area? 4.2 What or who are the best data sources on deaths in the assessment area? 4.3 What events have occurred within the last 90 days that most people will be familiar with in the assessment area (recall events[4])? 4.4 What is the crude death rate and under five mortality rate for memorable recall periods in the last 90 days? 4.5 What are the main causes of mortality in the assessment area?
Geographic Coverage	The assessment will focus on Kurwai, the northerwestern most payam of Canal/Piji County, in Jonglei State of South Sudan. This county has been recently flagged as IPC Phase 4 for Acute Food Insecurity in January 2019.
Secondary data sources	1. Food Security and Nutrition Monitoring System - Round 23 Data Collection 2. National Bureau of Statistics, April 2015. Population Projections for South Sudan by County from 2015-2020. 3. National Bureau of Statistics, April 2015. Population Projections for South Sudan by Payam from 2015-2020. 4. WFP IRRM Mission Plan. January 2019. 5. Situation Overview: Upper Nile State, South Sudan. July – September 2018. REACH South Sudan. Published October 2018 6. SMART Survey, Canal/Pigi. Forcier Consulting. August 2015. 7. SMART Survey, Canal/Pigi. NHDF. November 2017. 8. Francesco Checchi and Les Roberts. Humanitarian Practice Network (2005). Interpreting an dusing mortality data in humanitarian emergencies : a primer for non-epidemiologists 9. Francesco Checchi PhD. October 2018. Estimation of population mortality in crisis-affected populations – Guidance for humanitarian coordination mechanisms 10. Francesco Checchi, Peter Nyasulu, Daniel Chandramohan and Bayard Roberts. Rates and causes of death in Chiradzulu District, Malawi, 2008:

[4] Recall events are highly memorable events used in mortality assessments to clearly define the period of time that the mortality estimation is being made for. E.g If there if a national election is your recall event and it occurred 45 days before your data collection, your period of time for calculating your death rate is 45 days.

a key informant study. Tropical Medicine and International Health. Volume 16, No 3, pg 375-378. March 2011.
11. Roberts, B; Morgan, OW; Sultani, MG; Nyasulu, P; Rwebangila, S; Myatt, M; Sondorp, E; Chandramohan, D; Checchi, F (2010) A new method to estimate mortality in crisis-affected and resource-poor settings: validation study. International journal of epidemiology, 39 (6).
12. Sophie Baillargeon, Louis-Paul Rivest. Journal of Statistical Software. Rcapture: Loglinear Models for Capture-Recapture in R.
13. International Working Group for Disease Monitoring and Forecasting. Capture-Recapture and Multiple Systems Estimation I: History and Theoretical Development.
14. International Working Group for Disease Monitoring and Forecasting. Capture-Recapture and Multiple-Record Systems Estimation II: Applications in Human Diseases
15. Karen Fancher. Ritual and Sacrifice Among the Dinka of Southern Sudan: Implications for Christian Evangelism and Discipleship.
16. K4D Helpdesk Report. 2018. Cultural practices on burial and care for the sick in South Sudan.
17. E. E. Evans-Pritchard. Burial and Mortuary Rites of the Nuer. African Affairs, Vol. 48, No. 190 (Jan., 1949), pp. 56-63
18. Distribution of Ethnic Groups in South Sudan. OCHA.
19. Protocols for IPC Acute Malnutrition. Version 3.
20. Record Linkage Package – R Documentation
21. Rcapture Package – R Documentation
22. DGA Package – R Documentation

Population(s) *Select all that apply*	□	IDPs in camp		□	IDPs in informal sites	
	X	**IDPs in host communities**		□	IDPs [Other, Specify]	
	□	Refugees in camp		□	Refugees in informal sites	
	□	Refugees in host communities		□	Refugees [R, Specify]	
	X	**Host communities**		**X**	**Refugee/IDP returnees**	
Stratification *Select type(s) and enter number of strata*	X	Geographical #: 0 Population size per strata is known?[5] □ Yes X No	X	Group #: 3 (IDPs, Host Community, Returnees) Population size per strata is known? □ Yes X No	□	*[Other Specify]* #: _ _ Population size per strata is known? □ Yes □ No
Data collection tool(s)	X	Structured (Quantitative)		**X**	Semi-structured (Qualitative)	
	Sampling method			**Data collection method**		
Semi-structured data collection tool (s) # 1 MULTI-SECTORAL NEEDS FGDs	**X Purposive** □ Snowballing □ [Other, Specify]			**X Key informant interview (Target #):until saturation** □ Individual interview (Target #):_ _ _ _ _		

[5] Population estimates per site were provided by local authorities and partners. Sampling frame figures will be revised based on local information once in the field.

Select sampling and data collection method and specify target # interviews		**X Focus group discussion (Target #): until saturation** □ [Other, Specify] (Target #):_ _ _ _ _
Semi-structured data collection tool (s) # 2 Key Informant tool (Health/Nutrition)	**X Purposive** □ Snowballing □ [Other, Specify]	**X Key informant interview (Target #): 1** □ Individual interview (Target #):_ _ _ _ _ □ Focus group discussion (Target #): □ [Other, Specify] (Target #):_ _ _ _ _
Semi-structured data collection tool (s) # 3 Key Informant and Observation Tool (Markets)	**X Purposive** □ Snowballing □ [Other, Specify]	**X Key informant interview (Target #): 1** □ Individual interview (Target #):_ _ _ _ _ **X Focus group discussion (Target #): 1** □ [Other, Specify] (Target #):_ _ _ _ _
Structured data collection tool # 4 MUAC SCREENING *Select sampling and data collection method and specify target # interviews*	□ Purposive **X Probability / Simple random (if greater than 200 households in a site)** □ Probability / Stratified simple random □ Probability / Cluster sampling □ Probability / Stratified cluster sampling **X Census (if less than 200 households in a site)**	X Household interview (Target #): 600 (in minimum of 6 sites) X [Individual, Measurement] (Target #): minimum 600 children *Minimum evidence criteria for MUAC screenings to be included for IPC Acute Malnutrition, require at least 3 purposively or randomly selected sites, with a minimum of 200 children measured per site. Six sites will be visited and pairs of sites will be merged together for reporting purposes.
Semi-structured data collection tool (s) # 5 PREPARATORY QUALITATIVE WORK for MORTALITY *Select sampling and data collection method and specify target # interviews*	**X Purposive** **X Snowballing** □ [Other, Specify]	□ **Key informant interview (Target #): 2** □ Individual interview (Target #):_ _ _ _ _ □ **Focus group discussion (Target #): 2** □ [Other, Specify] (Target #):_ _ _ _ _
Structured data collection tool # 6 RAPID MORTALITY ESTIMATION *Select sampling and data collection method and specify target # interviews* .	**X Purposive** □ Probability / Simple random □ Probability / Stratified simple random □ Probability / Cluster sampling □ Probability / Stratified cluster sampling □ [Other, Specify]	**X Key informant interview – Type 1: Household surveys (Target #): Saturation in study sites[6], TBD** **X Key informant interview – Type 2 (Target #) Saturation in study sites, TBD**

[6] Saturation in terms of deaths reported. The aim is for key informants to exhaustively report on all deaths that have occurred in the settlement during a given time period. Household respondents will also be asked about deaths, which will be incorporated into the exhaustive list provided by key informants.

					X Key informant interview – Type 3 (Target #): Saturation in study sites, TBD **X Key informant interview – Type 4 (Target #): Saturation in study sites, TBD**	
Target level of precision if probability sampling	NA % level of confidence				NA +/- % margin of error	
Data management platform(s)	X	IMPACT			□	UNHCR
	□	[Other, Specify]				
Expected ouput type(s)	□	Situation overview #: _ _	□	Report #: _ _	**X**	**Profile #: 1**
	X	**Presentation (Preliminary findings) #: 1**	□	Presentation (Final) #: _ _	□	Factsheet #: _ _
	□	Interactive dashboard #:_	□	Webmap #: _ _	□	Map #: _ _
	□	[Other, Specify] #: _ _				
Access	X	Public (available on REACH resource center and other humanitarian platforms)				
	□	Restricted (bilateral dissemination only upon agreed dissemination list, no publication on REACH or other platforms)				
Visibility *Specify which **logos** should be on outputs*	*OFDA, SDC*					

2 Rationale

In January 2019, Canal/Pigi county was classified as Phase 4 ('Emergency') for IPC Acute Food Insecurity, and Phase 4 for Acute Malnutrition. These locations are both projected to continue experiencing Phase 4 during the coming lean season for both these classifications. Canal/Piji has been affected by conflict-related insecurity in recent years. For this reason, only the northernmost payams of the county are accessible to humanitarian actors. Specifically, the assessment will target Kurwai Payam, located in the north-west corner of Canal/Piji, as this area has been flagged by the Inter-Cluster Working Group (ICWG) for response prioritization based on Needs Analysis Working Group (NAWG) recommendation. This payam has previously acted as a displacement catchment area for neighbouring areas affected by the conflict, so is likely currently housing IDPs from surrounding areas, whilst the proximity with the border to Sudan suggest potential presence of returnees as well.

Despite the poor food security conditions of the county, there is a gap in terms of the lack of necessary information on the current humanitarian situation and needs of the affected population, and the most likely evolution of these conditions in the coming months. Additionally, the movement dynamics for returnees and IDPs is unclear and how they will affect needs in the area. In order to address these information gaps and inform the humanitarian response in this specific context, REACH will conduct a multi-sectoral rapid needs assessment in Kurwai payam in March 2019 aimed at providing an overview of multi-sectoral needs and movement intentions.

3 Methodology

3.1 Methodology overview

A mixed methods approach will be employed to assess the multi-sectoral needs of the population, including estimates of nutrition and mortality outcomes. Several sites (minimum 6)[7] will be purposefully and randomly selected within the target payam with probability proportional to size (PPS) sampling, with sites included in the sampling frame based on accessibility and population presence. For the qualitative multi-sectoral component, one IDP and one host community FGD will be conducted in each site, with questions focusing on current multi-sectoral needs of the community, including Shelter/NFI, Protection, Health, WASH, Food Security and Livelihoods. If the community is homogenous (only IDP or host community), then one male and one female FGD will be conducted instead. Focus groups will utilize group discussion, participatory mapping and ranking tools. Preparatory, formative research via FGDs and KIIs will also take place at the field to identify the community information sources of deaths, and the most appropriate methods to ask about deaths in the community. This information will inform the best way to record deaths in the community. Death lists from several community data sources will be constructed in order to calculate a proxy CDR. CDRs will be calculated through the informant method, a means of listing out all deaths that occurred within a time period in a geographical area, which is then divided by a population estimate. Additionally the sensitivity of the results will be ascertained by estimating a "true" CDR using capture-recapture analysis, a statistical method used often in health systems to estimate the amount of cases or events missed by detection. Within each site, MUAC screening for all children 6-59 months and pregnant and lactating women (PLWs) will be conducted in order to ascertain a "proxy GAM rate", along with basic information on demographics, household hunger score and key WASH indicators.

The overall methodology follows several steps:

Step 1: Formative Field Research
- FGDs and KIIs in Kurwai to inform mortality data collection methods/sources

Step 2: Sampling and Selection of Assessment Sites
- Revise sampling frame on local information (accessibility, population presence)
- PPS Sampling of Sites

Step 3: Primary Data Collection (within sampled sites)
- Multi-sectoral FGDs and KIIs
- Death listings with KIIs or other sources
- MUAC screening

Step 4: Data Cleaning and Analysis

Step 5: Reporting and Dissemination

Please see Annex 2 for technical key definitions and terminology

3.2 Population of interest

Kurwai payam is located in the northwest corner of Canal/Piji county on the southern bank of the Nile, and has been a kind of "haven" during the war, where surrounding communities often could displace into for refuge. Geographically, Kurwai is isolated and is generally accessible through several hours of trekking during the dry season, much of the payam becomes swamp in the rainy season however. There is a host community presence there, and likely the presence of IDPs and Refugee returnees, though the exact locations and numbers is unclear. Nile Hope is the only partner currently with presence in Canal/Piji, currently providing programming in Health, WASH, Nutrition and Protection services.

[7] Two larger sites were purposefully selected for practical purposes, including the need to assess enough children and the need to visit locations potentially with returnees for the qualitative component of the assessment.

This research will focus on host community, IDP and returnee populations in Kurwai payam, due to food security concerns pointed out during the last round of the South Sudan Food Security and Nutrition Monitoring System (FSNMS) and the lack of quality or recent nutrition and mortality data.

3.3 Secondary data review

Current information on Needs and Conditions in Canal/Piji

The Food Security and Nutrition Monitoring System (FSNMS) Round 23 data collection[8] was done in November and December 2018, and will be used to inform information gaps for Kurwai Payam. Based on this data, the January IPC Workshop classified Canal/Piji as Phase 4 for IPC Acute Food Insecurity, indicating a serious food security situation. This food insecurity, high levels of morbidity and low levels of access to improved water sources will likely create an environment propogating higher levels of acute malnutrition. Additionally, there have been reports of returnees from Sudan refugee camps, to several parts of Upper Nile[9]. The condition and needs of returnees, their impact on the needs of the host communities and IDPs as well as the in- or out-migration occurring in Kurwai are all crucial information gaps to understand the current humanitarian situation as well as assess the most likely evolution of the situation in Kurwai.

In addition to indicating poor food security situation across the board for Canal/Piji, FSNSM results also indicated very low access to improved water or sanitation, and several shocks affecting household's ability to access livelihoods (health, insecurity, disease outbreak) [10]. Nutrition results were only indicative due to poor data quality, and no mortality data was captured. As such, information gaps that still exist are:

- Levels of acute malnutrition
- Mortality rates, and causes
- Movement intentions of IDPs and host community, given their poor food security situation
- Perceived needs of affected population

Nutrition and Mortality Data in South Sudan

Two previous SMART surveys have been conducted in Canal/Piji, both during the early harvest or post-harvest season. These surveys can be used for two main purposes:

1) **To help establish a baseline and contextual understanding for malnutrition and mortality in the area. –** As there is a lack of good, historical nutrition and mortality data to compare and assess the validity of our mortality findings, past SMART surveys can help triangulate the results from our MUAC screening and rapid mortality estimation.
2) **To establish a relationship between Weight-for-Height (WHZ) and MUAC measures of acute malnutrition** – These two measures have been observed to provide different estimates of acute malnutrition, however the reason for these differences is not well documented and different relationships have been observed in different contexts. WHZ is considered the more valid measure reflective of acute malnutrition in an area. In the South Sudan context, MUAC tends to produce *lower* estimates of acute malnutrition than WHZ, hence for our study with MUAC as the primary measure, we may believe that the true GAM by WHZ is higher than our finding. This will help determine during the analysis whether the proxy GAM by MUAC results is likely under- or over-estimating the true rate of malnutrition as would be shown with GAM by WHZ.

[8] Food Security and Nutrition Monitoring System – Round 23. Nov/Dec 2018.
[9] Situation Overview: Upper Nile State, South Sudan. July – September 2018. REACH South Sudan. Published October 2018
[10] Food Security and Nutrition Monitoring System, Round 23. Data collected November – December 2018.

Table 3: Summary of Previous SMART Surveys

SMART Survey	Weight for Height		MUAC		Death Rates	
	GAM	SAM	Proxy GAM	Proxy SAM	CDR	U5DR
Forcier Consulting (August 2015)[11]	10.5 (7.3 – 14.9 95% CI)	1.9 (0.8 – 4.2 95% CI)	0.8 (0.8-2.5 95% CI)	0	0.64 (0.36-1.15 95% CI)	0.45 (0.11-1.84 95% CI)
NHDF (November 2017)[12]	10.3 (7.6 – 13.9 95% CI)	1.3 (0.6-2.6 95% CI)	8.6 (6.7-11.1 95% CI)	0.7 (0.4-2.1 95% CI)	0.17 (0.06-0.48 95% CI)	0.18 (0.02-1.32 95% CI)

Estimating Mortality – Indicators and Methods

Crude Death Rates (CDR) and Under-five Death Rates (U5DR) are one standard way of reporting mortality information, typically reported as deaths per 10,000 people per day. Several methods for estimating mortality have been previously documented in other contexts, including mortality from representative surveys like as SMART surveys, informant method, capture-recapture, statistical regression and other methods[13]. Mortality rates are simply calculated as:

Figures 1: Calculation mortality rates[9]

Box 1

Simplified mortality rate expression

$$\text{Mortality rate} = \frac{\text{total deaths during period}}{\text{mid-period population at risk} \times \text{duration of period}}$$

Example:

duration of period: 120 days	births during period: 360
population at end: 18,300	deaths during this period: 445
mid-period population at risk:	18,300 + 0.5(445) – 0.5(360) = 18,343
unit of expression:	per 10,000 people per day

MR = [445/(18,343 x 120 days)] x 10,000 = 2.02 deaths per 10,000 per day

Interpretation

In this population, on average about 2 people out of 10,000 died every day during the 120-day period analysed.

*The mid-period population at risk = population at time of data collection + (0.5 x deaths in recall period) + (0.5 x people left household during recall period) – (0.5 x births during recall period) – (0.5 x people joined household during the recall period)

Several key resources will be used in order to:

1) **Provide guidance on the calculation, presentation and interpretation of the final mortality results –** Mortality has clearly defined thresholds to constitute an emergency (see figure 2 below).

Figures 2: Mortality Benchmarks for Crisis Situations[10]

[11] SMART Survey, Canal/Pigi. Forcier Consulting. August 2015.

[12] SMART Survey, Canal/Pigi. NHDF. November 2017.

[13] Francesco Checchi and Les Roberts. September 2005. Interpreting and using mortality data in humanitarian emergencies: A primer for non-epidemiologists Humanitarian Practice Network (HPN).

Mortality Benchmarks for Defining Crisis Situations (CDR)

Method	Assumed baseline	Emergency thresholds
Standard Thresholds	**0.5/ 10,000 /day**	**≥ 1 per 10,000** per day or
Standard Thresholds (With Levels of Severity)	**0.5/10,000 / day**	**> 1/10,000 / day**: 'very serious' **> 2 /10,000 /day**: 'out of control' **> 5 /10,000 /day**: 'major catastrophe'
Context Specific Thresholds	Sub-Saharan Africa: 0.41/10,000 /day Middle East/ N. Africa: 0.16 /10,000 /day	Sub-Saharan Africa: 0.8 / 10,000 / day M. East & N. Africa: 0.3/ 10,000/ day

Table adapted from Checchi and Roberts, 2005.
Context Specific Thresholds from SPHERE 2011

Mortality Benchmarks for Defining Crisis Situations (U5DR)

Method	Assumed baseline	Emergency thresholds
Standard Thresholds	**1/ 10,000 /day**	**≥ 2 per 10,000** per day or
Standard Thresholds (With Levels of Severity)	**1/10,000 / day**	**> 2/10,000 / day**: 'very serious' **> 4 /10,000 /day**: 'out of control' **> 10 /10,000 /day**: 'major catastrophe'
Context Specific Thresholds	Sub-Saharan Africa: 1.07/10,000 /day Middle East/ N. Africa: 0.27 /10,000 /day	Sub-Saharan Africa: 2.1 / 10,000 / day M. East & N. Africa: 0.5/ 10,000/ day

Table adapted from Checchi and Roberts, 2005.
Context Specific Thresholds from SPHERE 2011

2) **Assess the validity of the results –** Issues of bias, under- or over-estimation of deaths, and attribution of causes of death have been noted, in particular with reporting of under-5 deaths in South Sudan. These resources will be used in the critical evaluation of the validity of the results and determining if they are representative of the population of interest[14].

3) **Provide guidance on the data processing and analytical steps for the informant and capture-recapture analysis**[15, 16, 17, 18, 19] - The informant method involves using several types of key informants or data sources at the community level to make an exhaustive list of deaths that occurred within a geographical area, within a given recall period. This estimate of deaths is used with an estimate of the population denominator to calculate the crude death rate or under five death rate. Capture-recapture is a statistically rigorous analysis which has been documented for use in estimating undercounts in health systems, animal enumeration studies and more recently in mortality estimations, with the aim to estimate the "true" number of deaths that occurred and assess the sensitivity of other mortality estimation techniques. In short, the process involves creating a dataset of "capture histories", which describe for each recorded death which data sources reported it (e.g Death of Jon B. was recorded by Source 1,2 and 4, but not source 3). The capture-recapture code runs several regression models, fitting this data against various log-linear Poisson distributions in order to find the best fitting ones to estimate the total "abundance" or total deaths. After the best models are identified, a process called Bayesian Model Averaging is applied to the subset of selected models in order to find the estimate of total deaths with the highest probability, given the results of these several comparable models. These documented procedures will be used to inform the data processing and analysis portions of this assessment[20].

Burial Practices and Traditions in South Sudan[21, 22, 23]

[14] Francesco Checchi and Les Roberts. September 2005. Interpreting and using mortality data in humanitarian emergencies: A primer for non-epidemiologists Humanitarian Practice Network (HPN).

[15] Francesco Checchi PhD. October 2018. Estimation of population mortality in crisis-affected populations – Guidance for humanitarian coordination mechanisms

[16] Francesco Checchi, Peter Nyasulu, Daniel Chandramohan and Bayard Roberts. Rates and causes of death in Chiradzulu District, Malawi, 2008: a key informant study. Tropical Medicine and International Health. Volume 16, No 3, pg 375-378. March 2011.

[17] Roberts, B; Morgan, OW; Sultani, MG; Nyasulu, P; Rwebangila, S; Myatt, M; Sondorp, E; Chandramohan, D; Checchi, F (2010) A new method to estimate mortality in crisis-affected and resource-poor settings: validation study. International journal of epidemiology, 39 (6).
pp. 1584-96. ISSN 0300-5771 DOI: 10.1093/ije/dyq188

[18] Sophie Baillargeon, Louis-Paul Rivest. Journal of Statistical Software. Rcapture: Loglinear Models for Capture-Recapture in R.

[19] International Working Group for Disease Monitoring and Forecasting. Capture-Recapture and Multiple Systems Estimation I: History and Theoretical Development.

[20] Francseco Checchi, Bayard Roberts, Oliver Morgan. FANTA. March 2009. A new method to Estimate Mortality in Crisis-Affected Populations: Validation and Feasibility Study

[21] Karen Fancher. Ritual and Sacrifice Among the Dinka of Southern Sudan: Implications for Christian Evangelism and Discipleship.

[22] K4D Helpdesk Report. Cultural practices on burial and care for the sick in South Sudan.

[23] E. E. Evans-Pritchard. Burial and Mortuary Rites of the Nuer. African Affairs, Vol. 48, No. 190 (Jan., 1949), pp. 56-63

The Dinka are one of the main ethnic groups in South Sudan, and are the predominant ethnic group found in Kurwai payam[24]. While there has not been substantive, exhaustive research on burial practices in South Sudan, there exists some resources on the Dinka burial practices to shed some light prior to data collection, for which a few key points stand out (below). These points can help initially inform and give context to the most appropriate ways to discuss and research deaths in the community for Kurwai payam. The practices will be further investigated on the ground to in the formative research phase.

- **Tendencies not to wish to speak of the dead** – People tend not to bring attention to others when someone dies and try not to be around the dead, so burials happen quite quickly. This may make it difficult in getting community members to speak of the dead, or at least the recent dead.
- **The Nuer bury their dead,** as opposed to cremation.
- **Animal sacrifice –** In traditional practice, the Nuer may sacrifice a small goat or cattle in front of the household after person has been buried.
- **Graves may not be marked.** The literature states the Nuer will stamp down the grave and usually not leave a gravestone or other marker, making grave counting unlikely as a means of identifying deaths.
- **Small children may not follow normal burial practices.** The literature observed that small children are not yet considered people, maybe even up to 5 or 6 years of age, when the child is old enough to help tether and tend the livestock. No sacrifices are made, and the burial is performed by old women. This may suggest old women in the community could be a powerful key informant on child deaths.
- **Wocene cuol or cuol woc** is a ceremony held four to six months after the burial, with the intent to "wipe out the debt the Nuer feel is due on account of the death." Knowing if this ceremony has been performed or not may help determine whether a death is within the given recall period.
- **Gwan buthni** is a position in the family of someone who performs rituals on behalf of the family. It is unclear if this is a community position or if every family has one. Other notable position sin the community that may be useful as key informants are "man of the cattle" and "leopard skin chiefs".

3.4 Primary Data Collection

Methodology

Methodology is described below for each of the different components of the primary data collection:

1) Multi-Sectoral Focus Group Discussions
2) MUAC screenings and Household Interviews
3) Rapid Mortality Assessment including preparatory work

Method 1 – Qualitative Multi-Sectoral Data Collection

Information / Data Collected *– As possible, two FGDs will be held per data collection site, one FGD with IDPs (if present) and one FGD with host community, or until saturation over the payam is achieved. Topics will cover displacement and movement intentions, food security and livelihoods, health and nutrition, shelter and non-food items, WASH and humanitarian needs. Multi-sectoral FGD discussions will also be supplemented by key informant interviews with market vendors and NGOs, as well as direct observations by the field teams.*

Sampling *– The community leader will be asked to assist gathering focus group participants, ideally those who can speak to the situation in the community. Key informants will be purposefully selected based on their availability and ability to provide information.*

[24] Distribution of Ethnic Groups in South Sudan. OCHA.

Tools and Quality Control *– A paper FGD tool will be administered, and the results of the discussion typed up for documentation on a nightly basis. Questions or clarifications will be discussed with the translator the following day as needed.*

Ethical Considerations *– Participation is voluntary and confidential. Any participant can choose to leave at anytime and there is no consequences for an individual choosing not to participate in terms of accessing humanitarian assistance or services.*

Method 2 –Household Interview and MUAC Screenings

Information Collected / Measurements – Mid-upper arm circumference (MUAC), presence of oedema and height as proxy for age will be the anthropometric pieces of information captured. A handful of additional questions will be asked to gauge the Household Hunger Score (HHS), water sources, structure type, residency status and other basic demographic information.

Mid-upper arm circumference (MUAC) – Standardized MUAC tapes will be used to measure. Cut-offs for severe acute malnutrition is <11.5cm, for moderate acute malnutrition (MAM) >=11.5cm and <12.5cm. Measurement technique for MUAC has been described elsewhere[25].

Bilateral pitting oedema – Kwashiorkor is a type of malnutrition typified by the irregular accumulation of fluid in the body. Oedema in general can be caused by several medical reasons, but typically oedema due to acute malnutrition is noted to progress first through swelling BOTH feet and legs[26]. Standard method for assessing bilateral pitting oedema has been described elsewhere[27].

Height as proxy for age – In situations where many children need to be screened or age determination is difficult, height can be used as a proxy for the age of a child for analysis purposes.

Residency status – The household will be asked if they are host community, IDP, refugee returnee or IDP returnee.

Movement intentions – The household will be asked when they arrived in current location, and what are their plans for movement within the coming months, and what pull and push factors are driving them.

HHS – The HHS is unique in having been internationally developed and validated for cross-cultural use. The HHS consists of three questions and three frequencies that, when administered in a population-based household survey, allows for estimating the percent of households affected by three different severities of household hunger. This is the only indicator currently used in IPC classification for distinguishing an area between Phase 3, 4 and 5.

Sampling – A minimum of 6 sites will be selected within Kurwai payam using Probability Proportional to Size (PPS) sampling. The most up-to-date list of accessible settlements will be attained at the field level. Sampling for children will depend on an assessment of the size of the settlement when the field team arrives:

- Scenario 1: If the settlement is <=200 households, all households will be visited and all children between 67cm to 110cm will be measured for MUAC and oedema.
- Scenario 2: If there are greater than 200 households, the Field Supervisor and Assessment Officer will discuss on the most appropriate household sampling method given the site (whether systematic random sampling, or simple random sampling from a household list). All children in those randomly selected households will be measured.

[25] The Harmonized Training Package Version 2. Module 6, Part 2: Technical Notes – Measuring malnutrition, individual assessment
[26] The Harmonized Training Package Version 2. Module 3, Part 2: Technical Notes – Understanding malnutrition
[27] The Harmonized Training Package Version 2. Module 6, Part 2: Technical Notes – Measuring malnutrition, individual assessment

Assuming a sample size of 200 within a given site, we expect then findings will be representative with 95% level of confidence and roughly 7% margin of error.

Tools – A quantitative tool will be used using the ODK application with smartphones. Questions on the tool will be limited to household size, HHS, MUAC measurements for children and women of reproductive age, and movement intentions. Each screener will be provided with a child MUAC tape, an adult MUAC tape and a height stick marked with cut-offs.

Data Quality Control – Quality of household and child MUAC measurements will be ensured through the following:

a. Training – All enumerators will be given a two-day training on taking child and adult MUAC measurements, use of ODK applications, mortality listing.

b. Standardization Test – All enumerators will be subject to a standardization test prior to data collection. A standardization test entails each screener taking two MUAC measurements on 10 children each (so 20 measurements total). The results are analysed in ENA software to assess the **accuracy** and **precision** of the measurements using the following indicators[28]:
   I. Technical Error of Measurement (TEM) - a measure of the average measurement error in mm. (measurement of precision)
   II. Team TEM – The technical error of measurement in mm, for the team of measurers as a whole.
   III. R coefficient - ranges from 0-100, it is the proportion of measurement variation attributable to real differences in the child, as opposed to measurement technique. An R coefficient of 97.6 means that 97.6% of the variation is from real differences, while 2.4% of the variation is from measurement error. (measurement of precision)
   IV. Bias - the average difference between the enumerator value and the assumed "true" value provided by the enumerator. (a measurement of accuracy/validity)

   For each of the above indicators, each participant is graded as either good, acceptable, poor, or reject. The cutoffs in Table 1 below are used for this classification.

Table 1: Cut-Offs for Evaluating Standardization Test Results for MUAC[29]

Parameter		MUAC mm
Individual TEM (intra)	good	<1.0
	acceptable	<1.3
	poor	<2.1
	reject	>=2.1
Team TEM (intra+inter) and Total	good	<1.3
	acceptable	<2.1
	poor	<3.0
	reject	>=3.0
R value	good	>99
	acceptable	>95
	poor	>90
	reject	<90
BIAS From sup if good outcome, otherwise from median	good	<1
	acceptable	<2
	poor	<3
	reject	>=3

[28] SMART Methodology Manual 2.0. 2017.
[29] SMART Methodology Manual 2.0. 2017.

c. *Daily Data Checks / Digit Preference Checks – As possible, ODK data will be uploaded at the end of each day. MUAC measurements will be analysed with ENA to check for digit preference, age and sex ratios, and feedback will be given to teams the following morning.*
d. *Field Observations – Field Supervisors and Assessment Officer will make efforts to observe screeners work to ensure quality measurements are being taken.*

Ethical Considerations – all children found to be severely acutely malnourished will be referred to the nearest Outpatient Therapeutic Feeding Program site (OTP site) for admission and treatment. A referral slip will be provided with the referral information recorded. Referral criteria will be:

- MUAC <11.5 cm
- Presence of bilateral pitting oedema

Method 3 – Rapid Mortality Assessment

Preparatory Qualitative Data – Prior to the start of data collection, teams will conduct formative focus group discussions and key informant interviews to answer the following preparatory questions, which will enable to contextualize research findings but also allow for potential adjustments to research methodology given sensitivities surrounding data collection on mortality:

- Which key informants or data sources at the community level can report on deaths?
- What are memorable recall events that can be used to clearly define recall periods of approximately 30, 60 and 90 days ago?
- What taboos or beliefs exist around deaths and talking about deaths at the community level?
- What are traditional burial practices in the community?
- What sites in the target payam are accessible and have people currently?
- What uniquely identifiable information can be used to distinguish deaths from one another?
- What data for population figures exist for the area of interest?

Death Listing – From the preparatory field work, ideally 2-4 types of key informants or data sources will be identified to inform on deaths occurring at the community level. A separate list of deaths will be created for each key informant type identified. For each death, additional information will be gathered including the name, age, sex, nicknames, place of origin, place of death, cause of death, or other uniquely identifiable information determined from preparatory field work.

Sampling *– An initial key informant from each type will be initially identified through preparatory field work, or when the team arrives at the field. Snowball sampling will be used to identify additional key informants for reporting deaths. New informants will be identified and interviewed until exhaustion, or until time in the field runs out for that site.*

Tools *– A paper questionnaire will be provided for the initial preparatory field work, and paper death listing forms will be used during data collection.*

Quality Control

- ***Training*** *– enumerators specific for death listing will be subject to a two-day training along with the rest of the team. This will cover data collection forms, and expected conduct when asking about deaths.*
- ***Debriefing –*** *Daily debriefs will be conducted with the death listing enumerators to identify issues and check the quality of data collection.*

Ethical Considerations – *The following will be considered for data collection and reporting:*

- ***Anonymized -*** *Data will be anonymized in the final data-set. The mortality dataset will not be shared publicly.*

- ***Community Informed Consent –*** *Permission will be sought from the community leaders to collect mortality data in the settlement.*
- ***Individual Informed Consent –*** *Participants will be informed on what information will be collected and how it will be used prior to seeking their consent. The participant can choose not to participate in the interview, choose to stop the interview at any point and there will be no consequences in terms of aid reception for the participant if they choose not to participate.*
- ***Sensitivities surrounding mortality data collection –*** *given previous research in South Sudan has demonstrated that mortality can be a sensitive topic when interviewing HH members, guidance will be sought from community leaders prior to the start of data collection on how this is best approached and explained in the local language to ensure research is sensitive to the issues surrounding this topic.*

Team Composition

Data collection team will consist of:

- 6 MUAC screeners / household enumerators
- 2 Mortality enumerators
- 1 Field Supervisor
- 1 Focus Group facilitator / translator
- 1 Assessment Officer

The field supervisor will coordinate the household, nutrition and mortality data collection while the Assessment Officer and translator conduct the focus group discussions.

3.5 Data Processing & Analysis

Nutrition and Household Data

Data Checks and Processing – The following data quality checks will be used for the nutrition and household data:

1. GPS points will be mapped and visually checked for quality of enumerator work (ie many records in one location, overlapping of data collection by multiple teams, etc.)
2. The ODK form will constrain biologically implausible or extreme MUAC measurements (e.g <50mm).
3. Checking standard deviation of MUAC measurements, (ideally less than 15mm).
4. Review of photos of oedema/kwashiorkor cases.

Backup Data Entry – In the event enumerators are not skilled enough for smartphone data collection, paper forms will be provided. Double data entry will then be performed using EpiData v.3.1 to check and limit errors.

Data Analysis *– Nutrition data will be summarized and analysed with the CDC validated MUAC Screening Report Template, approved by the South Sudan Nutrition Information Working Group (NIWG). This CDC worksheet weights the results based on the proportion of the sample in different age groups (6-29 months vs. 30-59 months). MUAC measurements are more likely to assess younger children as acutely malnourished than older children, which is why this weighting is important if there is an uneven age distribution of the sample. Please find the analysis sheet attached. Other questions/variables will be analysed in R version 3.5.2.*

Mortality Data

Data Entry and Storage *– Data entry will be done with EpiData v3.1. Double data entry will be used to check and limit errors. Duplicates within an individual list will be identified and removed. Hard copies of the death listings will be kept for one*

month after data collection for reference during data cleaning/analysis, then destroyed. Only an anonymized dataset with capture histories will be stored for long-term use.

Data Cleaning and Processing Steps - The aim of the data processing steps will be to "match" death records and summarize the "capture history" of each record in a format applicable for analysis with the "Rcapture" package in R. Steps are as follows:

1) For each death list, remove any special characters and spaces from all string variables, and convert all characters to lowercase. Deaths that occurred outside the payam or outside the recall period of interest will be excluded.
2) Use the compare.dedup function in "RecordLinkage" package to check for duplicates within each list. Weights are calculated to evaluate the strength of a match, however no set threshold will be used to determine whether a match is true or not. Remove confirmed duplicates and record in cleaning log.
3) Use compare.linkage function in "RecordLinkage" package to generate record pairs between lists. This comparison will be performed iteratively between each list collected. Matched pairs and possible pairs will be visually checked for confirmation.
4) A column will be created on each list to represent the other lists, and will be used to record captures on other lists (e.g List1_Match, List2_Match, etc.) and if there is a match that record will be given a value of 1, for no-match a value of 0. These columns will be considered as the "capture histories" for each death record.
5) Death records from all lists will be appended into one master list, dropping now duplicate records. A unique ID will be generated for each record.
    a. Choose List #1 as the master list. Remove records from all other lists that have a match with List 1.
    b. Look at List #2. Remove matches all other lists that have a match with List 2. Append List 2 onto the master list, List 1.
    c. Repeat step b for any remaining lists.
6) All columns will be dropped keeping the "list match" columns and dropping everything else. These "list match" columns are defined as the "capture histories" for these deaths.

Data Analysis *– CDR results will be calculated for each specific information source, as well as by two methods to aggregate the lists: (1) the Informant Method, and (2) Capture-Recapture analysis.*

For the ***Informant Method****, the total number of uniquely identified deaths are identified by all key informants or sources is merged together and treated as the total number of deaths, used for the CDR calculation in combination with the estimate of the mid-period population. Bootstrapping techniques will be used to calculate the CDR and corresponding confidence intervals, with the total unique captured deaths by all informant sources used as the numerator and bootstrap sampling of the population parameters below for the denominator.*

$$CDR = \frac{captured\ deaths}{(Mean\ household\ size * num.households) - 0.5num.inmigrants - 0.5num.births + 0.5num.outmigrants + 0.5num.deaths}$$

For ***capture-recapture analysis****, the "true" total number of deaths is estimated based upon the overlap of reporting same deaths between different key informants or mortality sources. There are two main approaches to this analysis, the "model-selection" approach, where a single model is fit to estimate the uncaptured deaths, or* ***Bayesian Model Averaging***[30, 31]***,*** *where the highest probability estimate of the number of uncaptured deaths is attained by averaging the probability across several models. There are noted limitations in choosing and selecting any single model for the total estimation of deaths, as there is still a given amount of certainty in the results, hence Bayesian Model Averaging can help improve the reliability of*

[30] Jennifer A. Hoeting, David Madigan, Adrian E. Raftery and Chris T. Volinsky. Bayeesian Model Averaging: A Tutorial. 1999 Statistical Science. Vol. 14. No. 4

[31] International Working Group for Disease Monitoring and Forecasting. Capture-Recapture and Multiple-Systems Estimation I: History and Theoretical Development. 1995. American Journal of Epidemiology.

the estimation. Several packages exist to help facilitate these calculations, however we will be using R version 3.5.2 with the "DGA" package. The CDR will be similarly calculated as with the key informant method, however an additional parameter of "uncaptured deaths" will added to the numerator and be bootstrapped from the weighted sum likelihood profiles given by the DGA package.

For either of the above methods for determining the total deaths, the ***population denominator*** *is needed to calculate the CDR and U5DR. Several options are available for estimating this, though which option is best will be determined during field work when on the ground information can be used for triangulation:*

1) *Population from exhaustive MUAC screening and household survey: The household size, sex and age composition, will be determined for each household visited for the screening. (To be collected)*
2) *Structure count: from the household survey we will be able to get a simple count of different structure types in the community, which can be used with average demographics per structure to estimate the population. (to be collected)*
3) *Figures reported by local authorities: (TBD)*
4) *Figures reported by WFP headcount (10,912 as of January 2019)*
5) *Satellite imagery – A previously used method is determining an average household size for a given shelter type in the settlements of interest, and then using satellite imagery to estimate the number of those shelters in a given area. This requires additional key informant interviews in the field, counting structures and ability to request satellite imagery for an area.*

Focus Group Discussion, Key Informant and Field Observation Data

Data Analysis – FGD notes, and notes from KII and field observations will be typed up for documentation. Results will be analysed thematically, looking for differences reported by site, gender and residency status (host community vs. IDP). A saturation grid will be used for organization of ideas as they are identified in the FGDs, and to track when sufficient number of FGDs have been conducted.

4 Roles and responsibilities

Table 2: Description of roles and responsibilities

Task Description	*Responsible*	*Accountable*	*Consulted*	*Informed*
Research design	Nut. Assessment Officer	Assessment Manager	*Geneva Research Unit*	*Country Coordinator*
Supervising data collection	Nut. Assessment Officer	Assessment Manager	Field Coordinator	Country Coordinator
Data processing (checking, cleaning)	Nut. Assessment Officer	Assessment Manager	GIS Officer	Country Coordinator
Data analysis	Nut. Assessment Officer	Assessment Manager	Geneva Data Unit	Country Coordinator
Output production	Nut. Assessment Officer	Assessment Manager	Geneva Reporting Unit	Country Coordinator
Dissemination	Communications Officer	Nut. Assessment Officer	Assessment Manager	Country Coordinator
Monitoring & Evaluation	Assessment Manager	Country Coordinator	Nut. Assessment Officer	Country Coordinator

Lessons learned	Nut. Assessment Officer	Assessment Manager	*Geneva Research Unit*	Country Coordinator

Responsible: *the person(s) who executes the task*

Accountable: *the person who validates the completion of the task and is accountable of the final output or milestone*

Consulted: *the person(s) who must be consulted when the task is implemented*

Informed: *the person(s) who need to be informed when the task is completed*

NB: Only one person can be Accountable; the only scenario when the same person is listed twice for a task is when the same person is both Responsible and Accountable.

5 Data Analysis Plan

TOOL 1: MULTI-SECTORAL FOCUS GROUP DISCUSSIONS

Research questions	SUBQ#	Sub-question	Questionnaire QUESTION	Probes	Data collection method	Key disaggregations (Group types)
What are the movement intentions of the population?	2.1	What is the composition of the community in the assessed area (host community vs. IDP vs. Returnees)?	What groups of people are currently living in this community?	**Probing:** Host community, IDPs, IDP returnees, Refugees, Refugee returnees? **Probing:** What proportion of the community is made up of each group? (e.g half idp, half host community)	FGD	IDP vs. HC Male vs. Female
	2.1	What is the composition of the community in the assessed area (host community vs. IDP vs. Returnees)?	Are there tensions between host community and IDP/returnee populations? If so, why?		FGD	IDP vs. HC Male vs. Female
	2.1	What is the composition of the community in the assessed area (host community vs. IDP vs. Returnees)?	Where are you all originally from? Why did you leave?	**Probing:** Since leaving your village of origin, have you been displaced to any other place? **Probing:** What other places were people from your community displaced to? Are they still there?	FGD	IDP vs. HC Male vs. Female

	2.3	What were the push and pull factors for coming to the current location, and what would be push factors for future movements, if any?	What were the main reasons you all chose to leave your last place of residence?		FGD	IDP vs. HC Male vs. Female
	2.4	What displacement routes were taken by current IDPs to arrive in the current location?	Can you describe to us on this map the routes you took to get here? **Show displacement map.**		FGD	IDP vs. HC Male vs. Female
What are the movement intentions of the population?	2.2	What are the movement intentions for host community and IDPs currently in Kurwai payam?	Do you have any plans to leave this location in the next three months?	**Probing:** Where? When? **Probing:** What would be the main reasons you would leave? **Probing:** What would be the main reasons you chose your destination?	FGD	IDP vs. HC Male vs. Female
What are the current conditions and multi-sectoral needs of Kurwai payam?	FSL 1.1	What is the current availability and access to livelihood activities?	What are the traditional livelihoods for people in this area?	**Probing:** Market? Livestock and milk? Cultivation? Wild foods? Casual or salaried labor? **Probing:** What level of access do you have to these livelihoods now? Is that normal for this time of year? **Probing:** What else are people doing now?	FGD	IDP vs. HC Male vs. Female
What are the current conditions and multi-sectoral needs of Kurwai payam?	FSL 1.1	What is the current availability, accessiblity and stability to adequate food?	What is the level of access to food now compared to previous years?	**Probing:** If worse, what are the driving factors? Probe: insecurity, lack of access to markets, poor crop production, livestock. **Probing:** Is food available? Accessible?	FGD	IDP vs. HC Male vs. Female

What are the current conditions and multi-sectoral needs of Kurwai payam?	FSL 1.1	What is the current availability, accessiblity and stability to adequate food?	How do you expect access to food to change in the coming months?	**Probing:** What are the main factors that will determine access to food in the coming months? **Probing:** If worsen, how do HHs adjust for lower access to food? What strategies are used?	FGD	IDP vs. HC Male vs. Female
What are the current conditions and multi-sectoral needs of Kurwai payam?	FSL 1.1	What is the current availability, accessiblity and stability to adequate food?	What measures have people in your community taken to cope with shortage of food in previous years?	**Probing:** Migration? Wild foods? Is this normal? Are there adverse effects? **Probing:** How are people coping now? Similar strategies or different? **Probing:** Have people exhausted these strategies? How long will they last?	FGD	IDP vs. HC Male vs. Female
What are the current conditions and multi-sectoral needs of Kurwai payam?	FSL 1.1	What is the current availability and access to livelihood activities?	What ways have people in your community coped with lack of income in previous years?	**Probing:** Selling or killing more livestock than normal? Migration? Other livelihoods activities? **Probing:** How are people coping now? Similar strategies or different? **Probing:** Have people exhausted these strategies?	FGD	IDP vs. HC Male vs. Female
What are the current conditions and multi-sectoral needs of Kurwai payam?	Health/Nutrition 1.3	In what way have child care practices changed in the assessed area due to recent hardships?	*Have mothers and caretakers in your community changed how they are breastfeeding or feeding their children due to recent hardships?*		FGD	IDP vs. HC Male vs. Female
What are the current conditions and multi-sectoral needs of Kurwai payam?	Shelter/NFI 1.2	What types of shelter do people live in, and what is the condition of that shelter?	*What are the main forms of shelter in the community?*	***Probing question:*** *Do the shelter types/ quality of shelter differ much within or between sub-clans or different groups in the community?*	FGD	IDP vs. HC Male vs. Female

What are the current conditions and multi-sectoral needs of Kurwai payam?	Shelter/NFI 1.2	What types of shelter do people live in, and what is the condition of that shelter?	*In what condition are these shelters?*	***Probing question:*** *In general is household's shelter suitable for the wet season? If not, why not?* ***Probing question:*** *If damaged, what was the source of the damage? What proportion are damaged?*	FGD	IDP vs. HC Male vs. Female
What are the current conditions and multi-sectoral needs of Kurwai payam?	Shelter/NFI 3.4	What NFIs are available in the communtiy?	*Are the following NFIs available for most people in your community?*	***Probing:*** *Water containers (at least 2 per HH)? Cooking supplies (pots, utensils)? Plastic sheeting?* ***Probing:*** *Blankets, sleeping mats, mosquito nets, soap, shelter frame materials?* ***Probing:*** *If NFIs have been lost recently, what caused the loss?*	FGD	IDP vs. HC Male vs. Female
What are the current conditions and multi-sectoral needs of Kurwai payam?	WASH 3.8	What is the current availability and accessiblity of water for the community?	What are the main sources of drinking water used by the community?	***Probing:*** *If borehole, is if functional? How is the water quality?* ***Probing****: Is there enough water from these sources to meet the community's need?* ***Probing:*** *What is the quality of the drinking water from that source?*	FGD	IDP vs. HC Male vs. Female
What are the current conditions and multi-sectoral needs of Kurwai payam?	WASH 3.8	What is the current availability and accessiblity of water for the community?	*How do people collect and store water in your community?*	***Probing:*** *How long does it take to fetch water and return home?* ***Probing:*** *What barriers are there to collecting and storing water?*	FGD	IDP vs. HC Male vs. Female
What are the current conditions and multi-sectoral needs of Kurwai payam?	WASH 3.9	What is the current availability and accessiblility of latrines for the community?	Where do people defecate?	***Probing:*** *Is this the same for everyone? Men? Women? Children? Adults?*	FGD	IDP vs. HC Male vs. Female

What are the current conditions and multi-sectoral needs of Kurwai payam?	WASH 3.9	What is the current availability and accessiblility of latrines for the community?	If there are latrines, can you describe them? What is their condition?		FGD	IDP vs. HC Male vs. Female
What are the current conditions and multi-sectoral needs of Kurwai payam?	Humanitarian Assistance 3.10		*What level of access does your community have to the following services (food distribution, health/nutrition, education)?*	***Probing:*** *What barriers are there to accessing these services?* ***Probing:*** *Are there any groups of people that don't have access? Who? Why?*	FGD	IDP vs. HC Male vs. Female
What are the current conditions and multi-sectoral needs of Kurwai payam?	Humanitarian Assistance 3.11	What are the priority needs in the community?	Are there any other humanitarian needs in your community?	*Can you please rank the 4 most important needs, and discuss your reasons why (use Grid 1)*	FGD	IDP vs. HC Male vs. Female
What are the current conditions and multi-sectoral needs of Kurwai payam?	Humanitarian Assistance 3.11	What are the priority needs in the community?	*Is there any information about your community that we did not ask and that we should know?*		FGD	IDP vs. HC Male vs. Female

TOOL 2: KEY INFORMANT TOOL HEALTH/NUTRITION

Research questions	SUBQ#	Sub-question	Questionnaire QUESTION	Probes	Data collection method	Key disaggregations (Group types)
What are the current conditions and multi-sectoral needs of Kurwai payam?	Health/Nutrition 1.3	What health and nutrition services are available in the communtiy?	What health and nutrition services are available? What program challenges do you have with implementing them?	**Probing:** Consultations and drugs, routine immunization, reproductive health, inpatient care, psychosocial services, outreach services, referral to secondary services, OTP, SC, TSFP for <5 and PLW, BSFP for <5 and PLW, IYCF counselling, Micronutrients	KII	NA

	Health/Nutrition 1.3	Have child care practices changed recently in the community? What is the level and type of illnesses affecting the community?	Have you observed any changes in the reasons people are accessing health or nutrition services?	**Probing:** Changes in breastfeeding or complementary feeding practices? **Probing:** Disease outbreak? Injury/conflict related? **Probing:** Any changes in overall trends (sudden spikes or drops in admissions?	KII	NA
	Health/Nutrition 1.3	What is the level and type of illnesses affecting the community?	What are the most common diseases affecting the community?	**Probing:** Do you know which communities are the most heavily affected? **Probing:** Would you be willing to share the following program surveillance data/results? (# cases per illness for last 3 months, # deaths per illness last 3 months) **Probing:** What do you think is driving this pattern of morbidity?	KII	NA
	Health/Nutrition 1.3	What health and nutrition services are available in the communtiy?	What barriers do you observe the community faces in accessing health and nutrition services?	**Probing:** Barriers to other services like GFD, water, education? **Probing:** Do any specific groups of people have greater barriers to access to health and nutrition services than others?	KII	NA
What are the current conditions and multi-sectoral needs of Kurwai payam?	Health/Nutrition 1.3	Have child care practices changed recently in the community?	Has there been any distribution of infant formula, powdered milk for infants to consume in the last three months?	**Probing:** When? Where? By whom? To whom?	KII	NA

TOOL 3: KEY INFORMANT AND OBSERVATION TOOL (MARKETS)

Research questions	SUBQ#	Sub-question	Questionnaire QUESTION	Probes	Data collection method	Key disaggregations (Group types)

What are the current conditions and multi-sectoral needs of Kurwai payam?	FSL 1.1 Shelter and Non-Food Items 1.2	What is the current availability and accessiblity to adequate food? What NFIs are available in the communtiy?	What food and non-food items are available in the market and what are their prices for each?	**Probing:** Sorghum, rice, beans, lentils, goat meat, chicken, bread, sugar, tea, oil **Probing:** Plastic sheets, blankets, mosquito nets, buckets, construction tools, jerry cans, soap **Probing:** Infant formula, powdered milk	KII market vendors, observation	NA
	Health/Nutrition 1.3	What is the current availability and accessiblity to adequate food?	What are the trade routes that supply the market?	NA	KII market vendors,	NA
	FSL 1.1 Shelter/NFI 1.2	What is the current availability and accessiblity to adequate food? What NFIs are available in the communtiy?	Is this a secondary or primary market? (meaning does this market supply other markets, or is supplied by a larger market?)	NA	KII market vendors,	NA
	FSL 3.13 Shelter/NFI 3.17	What is the current availability, accessiblity and stability to adequate food? What NFIs are available in the communtiy?	Is supply of goods able to meet demand of buyers?	**Probing:** Enough stock of items? **Probing:** Ability to restock within a given time period?	KII market vendors,	NA
	FSL 3.13 Shelter/NFI 3.17	What is the current availability, accessiblity and stability to adequate food? What NFIs are available in the communtiy?	What constraints are there for people being able to purchase goods in the market? Is there enough demand from HHs to meet supply increases?	**Probing:** Casual labour jobs to buy goods, grain/livestock to trade, credit, etc? **Probing:** Physical access to markets?	KII market vendors,	NA

TOOL 4: MULTI-SECTORAL HOUSEHOLD SURVEY AND MUAC SCREENING

Research questions	IN #	Data collection method	Indicator / Variable	Questionnaire Question	Questionnaire Responses	Data collection level

General Demographics	**0.1**	Household survey	Residency status	What is your household status?	1. Host community 2. IDP 3. IDP returnee 4. Refugee returnee	Household
	0.2	Household survey	Sex of head of household	What is the gender of the head of household?	1. Male 2. Female	Household
R4: What is the severity and causes of mortality experienced in Kurwai payam?	**3.1**	Household survey	Sex and Age Demographics of the Household	What is the number of males in your household aged **0-5 years?**	Integer	Household
	3.2	Household survey	Sex and Age Demographics of the Household	What is the number of males in your household **older than 5 years?**	Integer	Household
	3.5	Household survey	Sex and Age Demographics of the Household	What is the number of females in your household aged **0-5 years?**	Integer	Household
	3.6	Household survey	Sex and Age Demographics of the Household	What is the number of females in your household **older than 5 years?**	Integer	Household
	3.9	Household survey	People joined in recall period	Since (**RECALL EVENT),** how many of your household members have joined your household in this location?	Integer	Household
	3.10	Household survey	People left in recall period	Since (**RECALL EVENT)** how many of your household members had left your household in this location?	Integer	Household
	3.11	Household survey	Births in recall period	Have you had any births in your household since (**RECALL EVENT)**?	Integer	Household
	3.12	Household survey	Deaths in recall period	Have you had any deaths in your household since (**RECALL EVENT)**?	Integer	Household
	1.1	Household survey	Shelter type	What is the structure type?	1. Tukul 2. Rakooba 3. Communal shelter 4. Living in the open 5. Other 6. Don't know 7. No response	Household
	1.2	Household survey	Number and type of households sharing a shelter	Are there multiple households sharing this structure? - Host community - IDP	Integers	Household

				- Refugee returnees - IDP returnees		
	1.3	Household survey	Household Hunger Score (HHS)	In the past 4 weeks (30 days), was there ever no food to eat of any kind in your house because of lack of resources to get food?	1. Yes 2. No	Household
	1.4	Household survey	Household Hunger Score (HHS)	How often did this happen in the past [4 weeks/30 days]?	1. Rarely (1-2 times) 2. Sometimes (3-10 times) 3. Often (more than 10 times)	Household
	1.5	Household survey	Household Hunger Score (HHS)	In the past 4 weeks (30 days), did you or any household member go to sleep at night hungry because there was not enough food?	1. Yes 2. No	Household
	1.6	Household survey	Household Hunger Score (HHS)	How often did this happen in the past [4 weeks/30 days]?	1. Rarely (1-2 times) 2. Sometimes (3-10 times) 3. Often (more than 10 times)	Household
	1,7	Household survey	Household Hunger Score (HHS)	In the past 4 weeks (30 days), did you or any household member go a whole day and night without eating anything at all because there was not enough food?	1. Yes 2. No	Household
RQ1: What are the current humanitarian conditions and multi-sectoral needs of Kurwai payam?	**1.8**	Household survey	Household Hunger Score (HHS)	How often did this happen in the past [4 weeks/30 days]?	1. Rarely (1-2 times) 2. Sometimes (3-10 times) 3. Often (more than 10 times)	Household
	1.9	Household survey	Main drinking water source	What is your household's main source of drinking water?	1. Borehole 2. Tapstand 3. River/stream 4. Unprotected well 5. Swamp 6. Puddle/stagnant water 7. Hand dug well 8. I don't know 9. I don't want to answer 10. Other (specify)	Household
	1.10	Household survey	Household illness last 2 weeks	Has anyone in your household been sick in the past two weeks?	1. Yes – children under 5 2. Yes – children under 5 and adults 3. Yes – only adults 4. No 5. I don't know or don't want to answer	Household
	1.11	Household survey	Child illness	What sickness did children have?	1. Malaria 2. Acute watery diarrhoea 3. Cholera 4. Skin infection 5. Eye infection 6. Flu 7. Fever 8. Typhoid 9. Stomach pain 10. Skin disease 11. None 12. I don't know or don't want to answer 13. Other (specify)	Household

	1.12	Household survey	Adult illness	What sickness did the adults have?	1. Malaria 2. Acute watery diarrhoea 3. Cholera 4. Skin infection 5. Eye infection 6. Flu 7. Fever 8. Typhoid 9. Stomach pain 10. Skin disease 11. None 12. I don't know or don't want to answer 13. Other (specify)	Household
RQ4: What is the nutritional status of the population?	**4.1**	Household survey	Child present	Is the child present?	1. Yes 2. No 3. Don't know 4. No response	Individual
	4.2	Household survey	Sex of child	What is the sex of the child?	3. Male 4. Female	Individual
	4.3		Proxy age of child	What is the height of the child?	1. <67cm 2. >=67 and <87cm 3. >=87 and <110cm 4. >=110cm	Individual
	4.4	Household survey	Mid-upper arm circumference (MUAC) in mm	What is the MUAC measurement for this child?	Integer	Individual
	4.5	Household survey	% children with nutritional oedema	Does this child have oedema?	1. Yes 2. No 3. Don't know No response	Individual
	4.6	Household survey	Malnourished child enrolled in program	Is this child enrolled in a nutrition program?	1. Yes 2. No 3. Don't know 4. No response	Individual
	4.7	Household survey	# pregnant women	How many pregnant women are in the household?	Integer	Household
	4.8	Household survey	# breastfeeding women	How many breastfeeding women are in the household?	Integer	Household
	4.9	Household survey	# pregnant and breastfeeding women present	How many of these pregnant and/or (?) breastfeeding women are present?	Integer	Household
	4.10	Household survey	Pregnant or breastfeeding status	What is the status of this woman?	14. Pregnant 15. Breastfeeding 16. Pregnant and breastfeeding 17. Not pregnant or breastfeeding	Individual
	4.11	Household survey	Mid-upper arm circumference (MUAC) in mm	What is the MUAC for this woman?	Integer	Individual

TOOL 5: FORMATIVE FIELD RESEARCH FOR RAPID MORTALITY ASSESSMENT

Research questions	SUBQ#	Sub-question	Questionnaire QUESTION	Probes	Data collection method	Key disaggregations (Group types)
RQ3: What is the severity and causes of mortality experienced in Kurwai payam?	2.3	What are the practices, beliefs and taboos around death and talking about death in the assessment area?	What happens in a person's household when someone dies?	**Probing:** Is it the same for men and women? **Probing:** Adults and children? **Probing:** What happens with the body / burial practices?	Key informant interview or FGD	N/A
			What taboos or beliefs exist around talking about death?	**Probing:** What language/words are used for death or burial in the community? **Probing:** Would households be willing to share information about deaths in their own or other households? Does the community talk about death publically? Why? **Probing:** What challenges would exist in trying to collect information on recent deaths from community members? **Probing:** What would be a respectful way to ask about, or discuss about deaths?	Key informant interview or FGD	N/A
	2.4	What or who are the best data sources on deaths in the assessment area?	Who is involved in the process or ceremonies when someone dies?	**Probing:** Why are these people involved? **Probing:** Who else would be informed about who has died in the community? **Probing:** Are there any written record when someone dies? **Probing:** What about health facilities?	Key informant interview or FGD	N/A

			If someone from this Payam had left for 6 months, then returned and wanted to learn what had happened in the Payam, such as births, deaths or other events while he was gone…where would he/she obtain this information?	**Probing:** What are specifically the best ways to learn about deaths? **Probing:** Community leaders? Religious leaders? Health workers? Traditional birth attendants? Traditional medicine practitioners? **Probing:** Why are these the best sources about deaths? For adults? For children?	Key informant interview or FGD	N/A
	2.5	What events have occurred within the last 90 days that most people will be familiar with in the assessment area (recall events)?	What major events have occurred in the last three months, that the majority of people in Kurwai payam would remember well?	**Probing:** Community events? National holidays? Religious festivals? Distributions? **Probing:** In the last two months? One month?	Key informant interview or FGD	N/A

TOOL 6: DEATH LISTING FORM

Research questions	IN #	Data collection method	Indicator / Variable	Questionnaire Question	Questionnaire Responses	Data collection level
RQ2: What is the severity and causes of mortality experienced in Kurwai payam?	**2.13**	Key informant or data source (TBD)	Family name	What was the deceased family name?	Text	Individual
	2.14	Key informant or data source (TBD)	First name	What was the deceased first name?	Text	Individual
	2.15	Key informant or data source (TBD)	Other name	TBD	Text	Individual
	2.16	Key informant or data source (TBD)	Sex	What was the sex of the deceased?	1. Male 2. Female 3. DK 4. NR	Individual
	2.17	Key informant or data source (TBD)	Age of death known	Do you know the age of the person when they died?	1. Yes 2. No	Individual
	2.18	Key informant or data source (TBD)	Age at Death	How old was the deceased when he or she died?	Integer	Individual

	2.19	Key informant or data source (TBD)	Died between recall periods	Did THIS PERSON die after these recall events?	1. Recall event 1 2. Recall event 2 3. Recall event 3 4. Recall event 4	Individual
	2.20	Key informant or data source (TBD)	Date of death known	Do you know the date the person died?	1. Yes 2. No	Individual
	2.21	Key informant or data source (TBD)	Date of death	What was the date of death?	Date	Individual
	2.22	Key informant or data source (TBD)	Place of death	Where did the person die?	1. Current location 2. During migration 3. In place of last residence 4. Other	Individual
	2.23	Key informant or data source (TBD)	Cause of death	What was the cause of death?	1. Illness 2. Trauma/Injury 3. Violence/conflict 4. Other	Individual
	2.24	Key informant or data source (TBD)	Other indicator (TBD)	TBD*	TBD	Individual
		Key informant or data source (TBD)	Other indicator (TBD)	TBD*	TBD	Individual

**Additional acceptable matching characteristics between deaths will be identified at the field level.*

6 Data Management Plan

- *Please complete the Data Management Plan below*
- *See the Data Protection Memo for guidance when completing the Kobo Access Rights, Raw Data Access Rights and Indicator Risk Assessment sections.*

Administrative Data				
Research Cycle name	*Kurwai Rapid Assessment*			
Project Code	*32DLF*			
Donor	*OFDA*			
Project partners	*[Specify project partner(s) here]*			
Research Contacts	*Saeed Rahman, saeed.rahman@reach-initiative.org*			
Data Management Plan Version	*Date: 18/02/2019*		*Date: 18/02/2019*	
Related Policies	IMPACT Data Management SOPs for Personally Identifiable Information			
Documentation and Metadata				
What documentation and metadata will accompany the data? *Select all that apply*	X	Data analysis plan	X	Data Cleaning Log, including: □ Deletion Log □ Value Change Log
	□	Code book	□	Data Dictionary
	□	Metadata based on HDX Standards	□	[Other, Specify]
Ethics and Legal Compliance				
Which ethical and legal measures will be taken?	X	Consent of participants to participate	□	Consent of participants to share personal information with other agencies
	□	No collection of personally identifiable data will take place	X	Gender, child protection and other protection issues are taken into account
	X	All participants reached age of majority		[Other, Specify]
Who will own the	*[Specify]*			

copyright and Intellectual Property Rights for the data that is collected?				
Storage and Backup				
Where will data be stored and backed up during the research?	X	IMPACT/REACH Kobo Server	□	Other Kobo Server: *[specify]*
	□	IMPACT Global Physical / Cloud Server	□	Country/Internal Server
	□	On devices held by REACH staff	X	Physical location *[REACH Juba Office, locked in secure location]*
	X	[Paper forms with identifiable information will be destroyed after 1 month, after no longer needed for data analysis.]		
Which data access and security measures have been taken?	□	Password protection on devices/servers	X	Data access is limited to *[Limited to REACH staff]*
	□	Form and data encryption on data collection server	□	Partners signed an MoU if accessing raw data
	□	[Other, Specify]		

Kobo Access Rights

Kobo Access	Person	Account Name
View Form	*REACH South Sudan Team*	**reach_initiative_download**
View and Edit Form	*REACH South Sudan Team*	reach_initiative
View Form and Submit Data	*REACH South Sudan Team*	reach_initiative
Download Data	*REACH South Sudan Team*	reach_initiative_download

Raw Data Access Rights

Raw Data Access	Reason	Person
Accountable	Accountable	*REACH South Sudan Team*
Access	*Analysis Purposes*	*Saeed Rahman*

Preservation				
Where will data be stored for long-term preservation?	□	IMPACT / REACH Global Cloud / Physical Server	□	OCHA HDX
	X	REACH Country Server	□	[Other, Specify]
Data Sharing				
Will the data be shared publically?	□	Yes	X	No, only with mandating agency / body
Will all data be shared?	□	Yes	X	No, only anonymized/ cleaned/ consolidated *[delete what does not apply]* data will be shared
	□	No, [Other, Specify]		
Where will you share the data?	□	REACH Resource Centre	□	OCHA HDX
	□	HumanitarianResponse	X	On request from the NAWG or ICWG, otherwise data will not be publically

			available

Data protection risk assessment

Have you completed the Indicators Risk Assessment table below?	X	Yes	□ No, no information that potentially allows identification of individuals is to be collected.

[Please complete the first 4 columns in the Indicators Risk Assessment table below]

Risk indicator	Type of identification risk	Disclosure implications	Benefits	**Class**	**Required mitigation**
Surname	Identification of KI reporting on deaths, including violence or conflict related deaths	Backlash from specific individuals or groups that may not want deaths reported	Deduplication of deaths, and matching of death records in the capture-recapture analysis	B1	Deleted immediately after data cleaning completed.
First name	Identification of KI reporting on deaths, including violence or conflict related deaths	Backlash from specific individuals or groups that may not want deaths reported	Deduplication of deaths, and matching of death records in the capture-recapture analysis	B1	Deleted immediately after data cleaning completed.
Any other identifying variable in the death listing (location of death, cause of death, age and sex of deceased, date of death, other identifying variables to be identified.)	Identification of KI reporting on deaths, including violence or conflict related deaths	Backlash from specific individuals or groups that may not want deaths reported	Deduplication of deaths, and matching of death records in the capture-recapture analysis	B1	Deleted immediately after data cleaning completed.
GPS coordinates	Identification of KI reporting on deaths, including violence or conflict related deaths	Backlash from specific individuals or groups that may not want deaths reported	Quality checks on data collection	B1	Deleted immediately after data cleaning completed.

Responsibilities

Data collection	*Saeed Rahman, Nutrition Assessment Officer, saeed.rahman@reach-initiative.org*
Data cleaning	*Saeed Rahman, Nutrition Assessment Officer, saeed.rahman@reach-initiative.org*
Data analysis	*Saeed Rahman, Nutrition Assessment Officer, saeed.rahman@reach-initiative.org*
Data sharing/uploading	*Saeed Rahman, Nutrition Assessment Officer, saeed.rahman@reach-initiative.org*

7 Monitoring & Evaluation Plan

- *Please complete the M&E Plan column in the table and use the corresponding Tools in the Monitoring & Evaluation matrix to implement the plan during the research cycle.*

IMPACT Objective	External M&E Indicator	Internal M&E Indicator	Focal point	Tool	Will indicator be tracked?
Humanitarian stakeholders are accessing IMPACT products	Number of humanitarian organisations accessing IMPACT services/products Number of individuals accessing IMPACT services/products	# of downloads of x product from Resource Center	Country request to HQ	User_log	X Yes
		# of downloads of x product from Relief Web	Country request to HQ		X Yes
		# of downloads of x product from Country level platforms	Country team		X Yes
		# of page clicks on x product from REACH global newsletter	Country request to HQ		□ Yes
		# of page clicks on x product from country newsletter, sendingBlue, bit.ly	Country team		□ Yes
		# of visits to x webmap/x dashboard	Country request to HQ		□ Yes
IMPACT activities contribute to better program implementation and coordination of the humanitarian response	Number of humanitarian organisations utilizing IMPACT services/products	# references in HPC documents (HNO, SRP, Flash appeals, Cluster/sector strategies)	Country team	Reference_log	
		# references in single agency documents			
Humanitarian stakeholders are using IMPACT products	Humanitarian actors use IMPACT evidence/products as a basis for decision making, aid planning and delivery Number of humanitarian documents (HNO, HRP,	Perceived relevance of IMPACT country-programs	Country team	Usage_Feedback *and* Usage_Survey template	Survey monkey: As part of regular dissemination email, survey monkey sent every six months to assess usage of REACH products.
		Perceived usefulness and influence of IMPACT outputs			
		Recommendations to strengthen IMPACT programs			

	cluster/agency strategic plans, etc.) directly informed by IMPACT products	Perceived capacity of IMPACT staff Perceived quality of outputs/programs Recommendations to strengthen IMPACT programs			Survey monkey: As part of regular dissemination email, survey monkey sent every six months to assess usage of REACH products.
Humanitarian stakeholders are engaged in IMPACT programs throughout the research cycle	Number and/or percentage of humanitarian organizations directly contributing to IMPACT programs *(providing resources, participating to presentations, etc.)*	# of organisations providing resources (i.e.staff, vehicles, meeting space, budget, etc.) for activity implementation # of organisations/clusters inputting in research design and joint analysis # of organisations/clusters attending briefings on findings;	Country team	Engagement _log	X Yes □ Yes X Yes

ANNEX 1: [NUTRITION TERMINOLOGY AND ABBREVIATIONS]

BSFP	Blanket Supplementary Feeding Program
GAM	Global Acute Malnutrition
MAM	Moderate Acute Malnutrition
MUAC	Mid-Upper Arm Circumference
OTP	Outpatient Therapeutic Program (for acute malnutrition)
SAM	Severe Acute Malnutrition
SC	Stabilization Center (inpatient treatment for acute malnutrition)
TSFP	Targeted supplementary feeding program
OEDEMA	Bilateral pitting oedema, or swelling of both feet, otherwise identified as a sign of oedema caused by malnutrition

ANNEX 2: [CDC MUAC ANALYSIS TEMPLATE]

MUACAssessmentTemplate_Updated.xlsx