Tali and Tindilo Food Security and Livelihoods and Nutrition Brief

Terekeka County, Central Equatoria State, South Sudan, September 2019

Introduction

Tali and Tindilo Payams have been largely unassessed by humanitarian actors due to access and resource constraints, and as a result, only limited information has been available on the scope and severity of the humanitarian needs within these payams. This information gap became apparent following the large-scale displacement of people from Tali and Tindilo Payams to Dor, Awerial County, Lakes State, at the end of June 2019. This displacement suggested there was an urgent need for an assessment of Tali and Tindilo, to understand the drivers of this displacement and to guide humanitarian intervention in the area.

As part of REACH and the World Food Programme's (WFP's) ongoing support to the Food Security and Livelihoods (FSL) cluster and the Nutrition cluster, REACH/WFP participated in a rapid inter-cluster assessment in Tali and Tindilo Payams in September 2019, in order to assess the FSL and nutrition situation. REACH/WFP used a mixed-methods approach, including a representative mid upper arm circumference (MUAC) screening, and a quantitative survey of 124 households supplemented by 11 qualitative focus group discussions (FGDs) in order to better understand the current humanitarian needs in Tali and Tindilo Payams.

Population and Livelihoods Profile

Tali and Tindilo Payams are located in Terekeka County, Central Equatoria State. Both payams are located in the ironstone plateau agropastoral livelihood zone, which is characterised by rain-fed cereal and legume cultivation, supported by transhumant cattle rearing, small livestock, wild foods, hunting, and fishing.[7] Cattle and other livestock are an important source of food, especially during the rainy season, and crops are mostly grown for consumption and exchange rather than for cash. Typically, annual rains run from April to mid-November, with an average rainfall of 950-1300mm.[8] Cattle migration takes place annually, with cattle migrating to wetter areas of Western Equatoria State and eastern Lakes State between November and April. Planting takes place in April and May, with weeding throughout June and July. Groundnuts, sesame, beans and the first of the green cereal crops are typically harvested in August, with cereals harvested from October to November, including the main staple sorghum.

The Integrated food security Phase Classification (IPC) updates for Terekeka indicate a deteriorating FSL situation since early 2017. Predominantly having been classified as "stressed" (IPC Phase 2) between 2010 and 2016,[9] Terekeka has mostly been categorised as "crisis" (IPC Phase 3) since early 2017.[10,11] In the May 2019 IPC update, Terekeka County was classified as "crisis" (IPC Phase 3) with some populations in "emergency" (IPC phase 4),[12] and the August 2019 analysis placed Terekeka in "emergency" (IPC Phase 4), with predicted Phase 3 and pockets of Phase 4 into 2020.[13]

Key Findings

- There has been below-average and irregular rainfall since 2014 in Terekeka County, with prolonged dry spells during the crucial planting and flowering months of the year, especially in 2015, 2016, and 2018. Irregular rainfall has impacted heavily on agricultural production and livestock rearing, which has led to multiple years of severely reduced cereal yields and decreased access to milk and meat.

- As a result, Tali and Tindilo Payams are currently experiencing a protracted and chronic period of FSL deterioration. Traditional coping mechanisms were reportedly rapidly being exhausted, with households relying on extremely high consumption of wild foods (including less-preferable and high-risk varieties) and market purchases to meet consumption gaps. Limited livelihood opportunities, including casual labour and livestock sales, were used to fund increased market dependence.

- Food consumption indicators were poor in Tali. This is particularly concerning given data was gathered during September, when the quality and quantity of food should be at its peak. Ninety-seven percent (97%) of households had food consumption scores (FCS)[1] of 'poor' with a further 3% 'borderline', indicating little variety in diets, and consumption of nutritionally poor quality foods. Households had a somewhat reduced household hunger scale (HHS),[2] with 95% of households with 'moderate' HHS, and 2% with 'severe', indicating likely low quantity of foods consumed. This finding is supported by the August 2019 Integrated food security Phase Classification (IPC) analysis, which classified Terekeka as Emergency (IPC Phase 4).[3]

- Few cereal crops (sorghum and maize) were planted this year (2019), and most were not weeded; as such, the main annual harvest of cereals (typically between October-November) is expected to be very poor. With access to some legume crops and high reliance on wild foods, households were moderately able to meet their consumption needs at the time of data collection; however, given the predicted poor cereal harvest, once wild foods become less plentiful in the dry season, there is likely to be a severe consumption gap and acute needs in both payams, well ahead of the typical lean season in June/July.

- The consumption gap will likely have a particularly destructive impact in rural areas, where the proxy Global Acute Malnutrition (GAM) rate by mid upper arm circumference (MUAC)[4] was higher than in urban areas (7% in rural areas compared to 3.1% in urban areas). Previous SMART surveys in Terekeka indicate that MUAC tends to underestimate GAM compared to weight for height z score (WHZ), indicating that the true GAM was likely higher.[5]

- Focus group discussion (FGD) data and previous displacement patterns indicate that given the predicted further deterioration in food security, the dry season will likely see the mass displacement of remaining communities from Tali and Tindilo to Amadi (Western Equatoria State), or Dor and Mingkaman (Lakes State).

- Tindilo was inaccessible during the assessment, however data from Tali FGDs and remotely conducted Tindilo FGDs indicated that Tindilo likely had higher needs, due to poorer access to markets and wild foods. This correlates with FGDs conducted in Dor Payam in late June 2019, which indicated that the majority of IDPs came from Tindilo.[6]

Methodology

REACH/WFP conducted a mixed-methods assessment in Tali Payam, Terekeka County, between the 11th and 20th of September 2019. The assessment consisted of a MUAC screening to estimate nutritional status via proxy GAM, and assess the estimated Outpatient Therapeutic Programme (OTP) and Targeted Supplementary Feeding Programme (TSFP) coverage, as well as a quantitative household survey supplemented by FGDs, to assess the FSL situation. Tindilo Payam was found to be inaccessible, and sampling therefore took place in Tali Payam only. Two different samples were drawn for the MUAC screening and the household survey.[14] The full Terms of Reference (ToR) is available here.

The sampling strategy for the quantitative survey took a two-stage cluster sampling approach, with settlements (clusters) selected using probability-proportional to size (PPS) sampling.[15] Ten clusters were assessed in Tali, and households within each cluster were selected using simple random sampling. For full sampling details, see endnote.[16] The target sample size was 108 households across nine clusters. In total, 124 households were assessed across ten clusters, a sample that is representative of the population at a 95% confidence level with a +/- 10% margin of error. In addition, nine FGDs were conducted in Tali Payam, and two FGDs were conducted in Tali with community members who had recently arrived from, or received regular information from, a settlement in Tindilo Payam. Mapping was conducted in all FGDs, to locate the worst-affected areas, and to gauge how far findings reliably described the situation in Tindilo.

For the MUAC assessment, settlements in Tali were classified as urban or rural. Six clusters were selected using PPS sampling from each of the rural and urban samples in Tali Payam,[17] and four urban and six rural clusters were assessed.[18] Within clusters, households were exhaustively assessed, and all pregnant and lactating women (PLW) and children between 67cm to 110cm were measured for MUAC and oedema. The final results captured 942 children and 345 PLW. Anthropometric results were analysed using Emergency Nutrition Assessment (ENA) for SMART software, and the results were weighted to account for the proportion of children under 2 years of age.

Nutrition

Proxy GAM by MUAC

A proxy GAM by MUAC of 5% was measured for children 6-59 months, with a proxy moderate acute malnutrition (MAM) rate of 4.7% and a severe acute malnutrition (SAM) rate of 0.3%. For pregnant and lactating women (PLW), a proxy GAM of 24% was recorded, with a MAM rate of 22% and a SAM rate of 2%. Only 15% of malnourished children were reportedly in either an OTP or TSFP; this is far below the Sphere Minimum Standards for food security and nutrition, which recommends that 70% of MAM cases in rural areas should have access to treatment services.[19] The current proxy GAM indicates a nutrition situation which is strained, but not currently the worst it could be. However, by urban and rural stratified sample, the proxy GAM by MUAC rose to 7% in rural areas, compared to 3.1% in urban areas within and nearby Tali Centre, indicating reduced access to resources and services in areas further from Tali Centre.

Previous SMART surveys in Terekeka indicate MUAC tends to underestimate GAM compared to weight-for-height z-score (WHZ).[20] In rural areas of Tali, a proxy GAM by MUAC of 7% could therefore be similar to a GAM by WHZ of between 10-15%.[21] In addition, the MUAC assessment was conducted during the rainy season, when access to food was reportedly better than at any other time in 2019; GAM rates are therefore likely to be much higher during the dry season. Given the past relationship between these measures of acute malnutrition in Terekeka County, and the time of year at which the sample was taken, the proxy GAM for children 6-59 months indicates a relatively pressing malnutrition situation in Tali Payam which will likely deteriorate in the dry season. Closely monitoring these areas will be critical to mitigate against the future deterioration of the nutrition situation.

Figure 1: Geographic distribution of GAM by MUAC

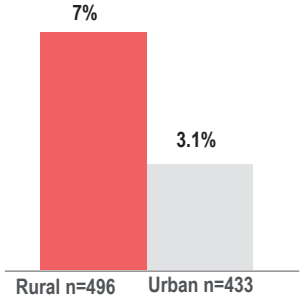


Table 1: Summary Population Demographics (n = 124 HH)

Household Composition	
Average Age of Head of Household	40
Average Household Size	11
Average % of household under 5 years old	31%
Residency Status	
Host Community	72%
IDP	15%
IDP returnee	7%
Refugee returnee	6%

Household Perceived Malnutrition

Twenty-four percent (24%) of households reported serious illness or accident for a member of the household as the primary shock that had affected their household in the 6 months prior to data collection, and illness was also the main reported second and third shock (38% and 26% of households respectively). FGD participants reported widespread sickness and a small numbers of deaths in Tali, which they attributed to malnutrition, especially amongst young children and the elderly. FGD participants also reported populations were more susceptible to malaria, and skin and eye infections due a lack of good nutrition, whilst high levels of wild food consumption was reportedly causing diarrhoea amongst young children, possibly further contributing to malnutrition.

Food Security

Food Consumption Score (FCS) and Household Hunger Scale (HHS)

At the end of the lean season, legumes and the first green crops are usually harvested, and livestock return to home areas; September is therefore usually the time where quality and quantity of food consumption is at its peak in Terekeka County. However, food security indicators gathered through the household survey in Tali indicated households had nutritionally very poor diets, even though they were reportedly consuming moderate quantities of food.

The diversity and nutritional value of household food consumption was assessed using a Food Consumption Score (FCS). Findings suggest an extremely low quality of food being consumed, with 97% of households found to have a 'poor' FCS, and the remaining 3%

'borderline'. Wild foods were included in the FCS analysis, since both representative quantitative and FGD data indicated households were predominantly relying on wild leaves and plants.[22] For example, quantitative data indicates that 96% of households reported eating wild foods in the previous seven days, and 55% of households reported eating mostly or only wild foods on three or more days in the same time period.

The data demonstrated very low access to cereals, with 56% of households reporting eating no grains or cereals in the seven days prior to data collection, and a further 31% reporting doing so only on one day in the previous seven. Findings also indicated households in Tali have very low access to animal products; 94% of households reported that they were currently unable to access milk products, and 92% reported they had not consumed milk or other dairy products in the seven days prior to data collection. This is unusual for September, when cattle have typically returned to settlements from cattle camps, indicating low access to cattle within Tali Payam; both because surplus cattle had already been sold or slaughtered as a coping mechanism, and because changes to cattle migration patterns meant fewer animals were seasonally returning to settlements within Tali itself (see Contributing Factors). Prolonged lack of access to cereals and milk can lead to a rapidly deteriorating nutritional situation, especially for young children and the elderly, indicating a likely deterioration in nutrition outcomes during the dry season.

Household experienced hunger was assessed via HHS, used to indicate the quantity of food consumed by a household. The quantity of food consumed was relatively low, with nearly all households reporting a 'moderate' HHS (95%), indicative of Phase 3 food consumption, and a further 2% reporting 'severe'. This moderate HHS was maintained largely through the high consumption of wild foods, which will not be abundantly available during the dry season.

Figure 2: % of households by Household Hunger Scale

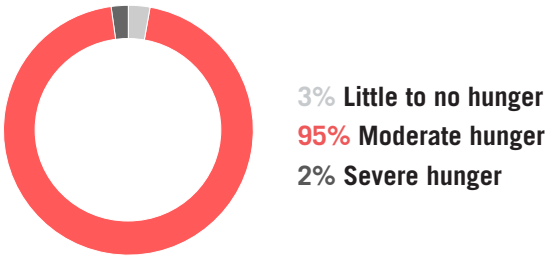
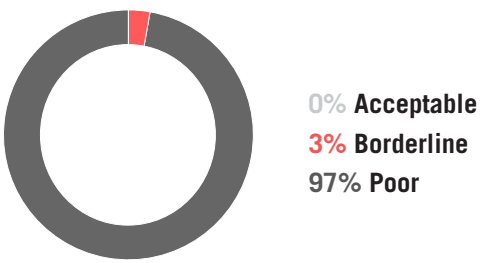


Figure 3: % of households by Food Consumption Score



Contributing Factors

Atypical Rainfall

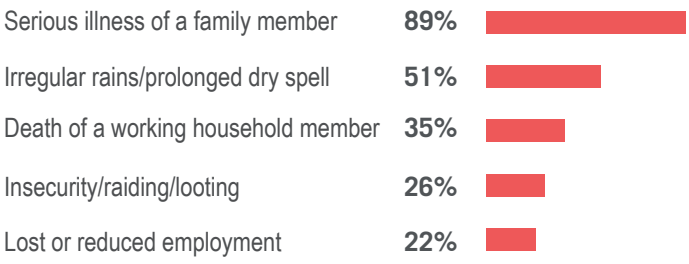
Current and future food availability depends heavily on agricultural production and livestock rearing in Tali and Tindilo Payams. Household data from Tali Payam indicated that most households rely on agriculture and livestock for income and consumption, with the majority of households (54%) reporting agriculture as their most important activity for generating income and accessing food, and a further 24% reporting livestock and the sale of livestock or livestock products. FGD participants reported that Tindilo Payam also relies on agriculture and livestock production as their main source of food.

The most commonly reported primary shock that affected households in the six months prior to September data collection was irregular rains or prolonged dry spells, reported by 37% of households.[23] FGD participants reported that reduced and irregular rainfall over multiple years severely affected agricultural production and livestock rearing. Triangulation of data between multiple FGDs and secondary data sources[24] indicates that there has been below-average and erratic rainfall in Terekeka County since 2014, with prolonged dry spells during the crucial planting and flowering months of the year, especially in 2015, 2016, and 2018.[25] In years with atypical rainfall, FGD participants reported that rains started later than usual, in June, and stopped earlier than usual, in August, just as the cereals were starting to flower, limiting crop growth. Lack of rain also reportedly forced changes in cattle migration patterns, with cattle migrating earlier in the year, and staying away from their home settlements into the rainy season, or not returning at all, reducing access to milk and meat.

Food Availability and Crop Yields

Since 2014, rainfall has been reduced and irregular, leading to a drop in the total area planted for cereals in Terekeka County.[26] Rainfall in 2015 began early, but reduced in April and May, with very limited rainfall throughout late July and August continuing into late September,[27] which meant the Normalized Difference Vegetation Index (NVDI),[28] which is used to indicate the impact of drought on vegetation, did not properly restore to average levels until November.[29] In 2016, there was reduced rainfall in May and to a greater extent in August and September.[30,31] In 2018, Terekeka experienced delayed onset of rains, and dry spells throughout the planting season, which necessitated replanting of crops, followed by dry spells throughout July and August, which had a severe impact on maize and sorghum crops at the flowering and maturing stage.[32,33]

Figure 4: % of households reporting experiencing shocks in the 6 months prior to data collection[34]



Although rains reportedly improved this year (2019), households in Tali and Tindilo were unable to take advantage of improved conditions for growing. Secondary data indicates above average and better distributed rainfall from June, and an associated improved potential crop output in Greater Equatoria for 2019 compared to 2018.[35] However, in Tali, very few households had reportedly planted crops; whilst the majority of households (81%) reported access to land, only 40% of all households reported that they had planted crops this season. For the 60% of households that had not planted this year, lack of seeds was the most commonly reported reason (52%), followed by lack of tools (20%), and lack of people for labour (13%) due to migration. FGD participants reported that multiple years of dry spells during critical maturation months meant crops had repeatedly failed to germinate, depleting seed stocks in previous years, including fast-growing seed varieties, which were no longer available to most communities by September 2019.

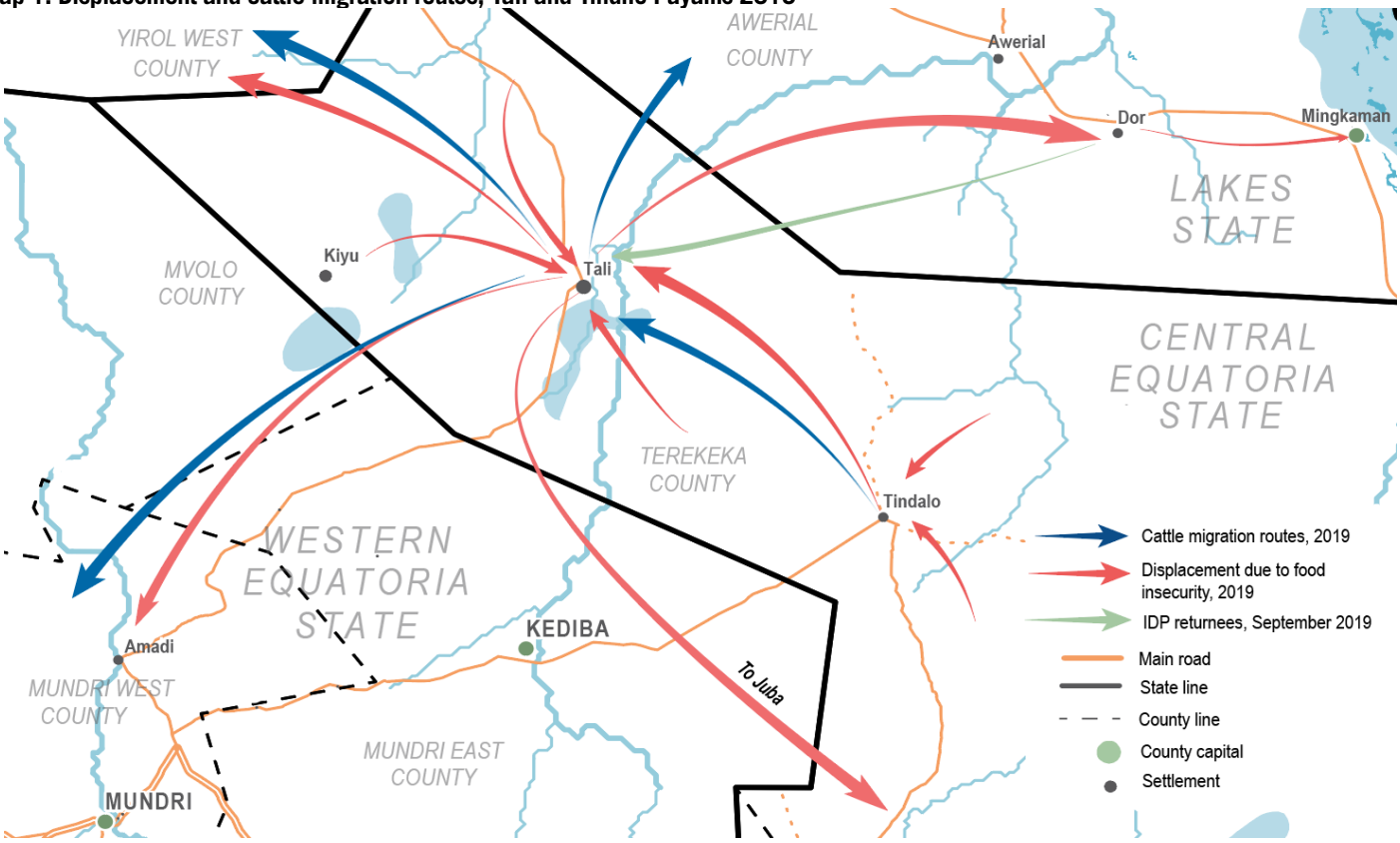
Those who did plant in 2019 still faced challenges. FGD participants reported that low calorie intake throughout the cultivation period meant people were too tired to plant and weed effectively. This was compounded by low access to agricultural equipment, since most households reportedly used hand-held hoes and had no access to ox-ploughs (*malbots*), making planting a more labour intensive activity. FGD participants reported those households that did plant in 2019 planted less than one *fedan* each.[36]

As a result, the 2019 harvest yields are expected to be insufficient. The 2018 Crop and Food Security Assessment Mission (CFSAM) report predicted that the 2019 harvest would leave Terekeka with a 12,262 tonne deficit of cereals for households, 61% less cereal than required to feed all agriculturally-dependent households in the region.[37] FGD participants from both Tali and Tindilo predicted that harvest yields from this year (2019) would be consumed by January/ February next year (2020), far ahead of the start of the typical lean season in June/July.[38] This will likely require households to employ more extreme negative coping strategies to preserve food stocks as long as possible.

Food Availability and Access to Livestock

Irregular rainfall has also disrupted access to livestock. FGD participants from both Tali and Tindilo reported atypical cattle migration as a result of low water access within normal cattle collection areas in home settlements. This caused the migration of cattle earlier than usual, from Tindilo to Kiyu, on the Tali/Mvolo border, and from Tali into areas near Amadi Town (Western Equatoria), and throughout Yirol West and Awerial counties (Lakes State). FGD participants reported that cattle-keepers increasingly had to move cattle to areas near towns, to access boreholes during the dry season. Earlier migration to more populated areas had a detrimental impact on cattle health and milk production, as there was insufficient salty pasture for grazing. As a result, cattle stocks were reportedly depleted, with 81% of households reporting no access to livestock in Tali. FGD participants reported that low access to the salty pasture needed to keep cattle healthy throughout the dry season caused widespread deaths amongst cattle stocks, whilst other households sold their cattle to obtain money to purchase staples from the market, or slaughtered them for food (see Food and Livelihood Coping Mechanisms). In addition, delayed rains meant far

Map 1: Displacement and cattle migration routes, Tali and Tindilo Payams 2019[39]



fewer cattle were reportedly returning to Tali and Tindilo seasonally, leaving vulnerable household members without access to meat and milk during the lean season, and reducing the workforce available to assist with cultivation activities (see Food Security Indicators).

These changes reportedly also increased protection concerns for communities in Tali and Tindilo, which had additional impacts on food security. Atypical migration increased the risk of opportunistic cattle raiding between neighbouring Amadi, Yirol East, and Awerial counties, which caused losses to cattle, and reduced household access to land for cultivation areas; of the 19% of households which reported no access to land, 83% reported this was due to safety concerns, with FGD participants reporting fear of raiding parties in areas far from their settlements. Cattle migration to areas close to towns also led to worsening community relationships between migrating cattle-keepers and host communities due to greater competition over scarce resources. In addition, due to the higher risk of cattle raiding, more youth had reportedly travelled to cattle camps to protect cattle, leaving fewer young people in settlements to assist with planting and weeding, which has long-term negative impacts on the entire population's access to food.

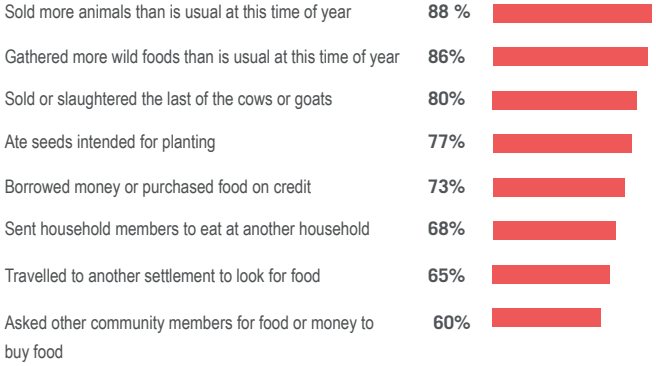
Food and Livelihood Coping Mechanisms

Reduced rainfall and poor harvests necessitated the use of a variety of coping strategies to mitigate food consumption gaps, which negatively impacted household ability to cope with subsequent years of bad harvests, eroding household resilience in the long-term. Increased livestock sales and increased consumption of wild foods are typical coping strategies in this livelihood zone during the lean season, however the extent to which these strategies were being adopted in September is indicative of severe food insecurity that will likely worsen during the dry season.

Wild Food Consumption

Eighty-six percent (86%) of households reported eating more wild foods at this time of year than normally, and FGD participants reported widespread consumption of less-preferred and higher-risk wild foods, including reliance on a bitter root that is poisonous if not cooked correctly. Reduced rainfall reportedly also caused reduced availability of wild foods; foods usually available include honey, shea, tamarind, mushroom, rubber vine and black plum,[40] but few FGD participants mentioned consuming anything other than wild leaves and roots, with some limited shea consumption. Wild foods were also reportedly making people sick, as indicated by FGD participants in Dor Payam in July 2019 who reported that there were fewer wild foods available due to increased demand and low rainfall, meaning people had to resort to less favourable foods.[41]

Figure 5: % of households reporting adopting coping strategies



Livestock Sales

Eighty-eight percent (88%) of households reported selling more animals than is usual for this time of year in order to buy food, and 80% reported selling or slaughtering their last cows or goats in the 30 days prior to September data collection due to a lack of food or money to buy food. In addition, 78% of households reported that the number of livestock owned had decreased over the 12 months prior to September data collection; of these, 83% reported this was due to sale and slaughter. In the agropastoral livelihood zone of Western Terekeka, this is a coping strategy likely to severely impact food access in the dry season. Not only did this likely negatively impact food security, but reduced access to cattle also reportedly prompted a rise in opportunistic cattle raiding (see Contributing Factors).

Market Dependency

FGD participants reported increased market dependence to meet the consumption gap caused by poor harvests, however accessing markets remained difficult for many households. Tali market was functioning at the time of data collection, but had low supplies and a reduced number of traders owing to poor road access and insecurity, which restricted trade flow between Juba and Tali. The Juba to Mundri road, crucial for bringing market supplies into Tali and Tindilo Payams, is largely inaccessible for traders during the rainy season; the FEWS NET market and trade functioning map indicates 'minimal or no activity' along this road in June 2019.[42]

Market access was reportedly low for most households, with 77% of households reporting travelling to the market took longer than one hour, indicating vulnerable populations likely had very reduced access to markets, as demonstrated by poorer nutrition outcomes in rural areas. Long walking times also reportedly reduced the time available for other livelihood activities, especially cultivation, which has a long-term impact on household access to food. Market prices had increased from the average, with a reported rapid rise in prices from March 2019, as the majority of households became market dependent due to depletion of household food stocks. Tindilo was reportedly facing greater challenges than Tali, because the market relied on Tali for supplies.

FGD participants reported that in typical years it was unusual for people to engage in casual labour. However, households had reportedly increasingly shifted from traditional agricultural and livestock rearing livelihood activities to casual labour to support increased market dependence, including charcoal burning, pole-cutting, agricultural work, bricklaying, and selling firewood, especially during the dry season.

Migration and Displacement

Seventy-five percent (75%) of households reported that some members of the household had migrated from Tali in the 12 months

prior to data collection; of these, 90% had migrated to a town or city in South Sudan, and 92% reported migration had taken place due to lack of food. This correlates with the widely-reported displacement of approximately 7,000 people from Tali and Tindilo into Dor Payam, Awerial County, in late June 2019.[43] This was at least the second lean season consecutively in which people from Tali and Tindilo had moved to Awerial; REACH AoK data indicated that a smaller displacement due to food insecurity similarly occurred in September 2018.[44] The fact that the 2019 displacement was larger and occurred earlier in the year is indicative of lower harvest stocks from the previous year, and less ability to rely on traditional coping mechanisms, such as livestock sales.

According to FGDs conducted with Internally Displaced Persons (IDPs) in Dor in 2019, persistent food insecurity caused by low rainfall had forced them to sell cattle in previous years, depletion of which meant they had no access to this coping mechanism this year.[45] This was corroborated by FGDs in Tali in September, in which participants reported that those displaced to Dor in June had no cattle, whilst those with livestock had stayed. However, FGD participants also reported that in the interim months, many of those who had remained had been forced to sell or slaughter their remaining cattle. Given generally low access to livestock, and the expected poor harvests this year, FGD participants predicted many more people would leave for Dor in the coming months.

Whilst displacement to Dor was the largest movement in the 12 months prior to September data collection, FGD participants also reported smaller migrations to Amadi, Yirol, and Juba, whilst those from outlying settlements in Tali and Tindilo have moved into Tali Centre in pursuit of casual labour opportunities (see Map 1). In September, there was reportedly a movement of returnees to Tali and Tindilo from Dor, due to fears of violence, after rumours circulated that local cattle keepers were planning to forcibly displace IDPs from the area. An FGD conducted with returnees in Tali Centre in September indicated those who had returned did not intend to stay in Tali and Tindilo as the FSL situation had not improved, and planned to return to Dor once the perceived threat had reduced.

Conclusion

Reduced and irregular rainfall over multiple years has impacted the FSL and nutrition situation in Tali and Tindilo Payams, and reduced households' ability to cope using traditional livelihoods, forcing them to adopt consumption coping mechanisms. Whilst the situation was relatively stable at the time of September data collection, nutrition and food security indicators and qualitative data indicates there will likely be a severe consumption gap and acute needs in the dry season in both payams, well ahead of the typical lean season in June/July. This is likely to lead to a large-scale movement of the remaining people from Tali and Tindilo Payams to other locations in search of humanitarian food distributions and livelihood opportunities, as well as leading to an increase in inter-communal tensions and cattle raiding across the borders into Western Equatoria and Lakes State.

Recommendations

Recommendations have been discussed with and are fully endorsed by the FSL cluster.

- Targeted general food distributions (GFD) for the most vulnerable households;
- Seasonal scale up of GFD during the dry season;
- Distribution of tools and short-season and drought resistance seed varieties;
- Conditional food assistance (cash for work) to enable communities to meet their food needs while supporting food security in the longer term;
- Support food diversification through assistance for small scale irrigation and fishing.

Endnotes

1 The food consumption score (FCS) is an indicator of the quantity and quality of foods being consumed in a household, based on how many days any household members have consumed 9 distinct food groups within a 7-day recall period. Households are categorized into categories of severity based on their responses. FCS is a proxy indicator for the nutritional quality of food consumed. Standard FCS thresholds are <21 for 'poor', 21-<=35 for 'borderline' and 35+ for 'acceptable'.

2 The household hunger scale (HHS) measures household perceived hunger by asking the frequency a household has experienced three common experiences associated with hunger in the past 30 days (no food in the house, slept hungry, gone whole day and night without food). HHS is often used as a proxy for quantity of food consumed. Thresholds and categories used for analysis are those used for IPC Acute Food Insecurity (AFI) in South Sudan.

3 IPC Snapshot, South Sudan, August 2019 - April 2020, Integrated Food Security Phase Classification, 11th September 2019

4 Mid-upper arm circumference (MUAC) is one anthropometric measure used to determine the nutritional status of a child, where the circumference around the mid-point of the left arm is measured. If MUAC is <11.5cm, the child is classified with severe acute malnutrition (SAM), and if it is between 11.5 - <12.5cm then the child is classified with moderate acute malnutrition (MAM).

5 International Medical Corps, Report for Nutrition and Mortality SMART Survey Conducted in Former Terekeka County of Former Central Equatoria State, South Sudan, 5th to 11th October 2018; IPC Global Partners, 2019, Integrated Food Security Phase Classification Technical Manual Version 3.0. Evidence and Standards for Better Food Security and Nutrition Decisions. Rome.

6 REACH Situation Overview, CES and EES, April-June 2019

7 FEWS NET Livelihood Zone mapping, August 2018

8 Ibid

9 South Sudan IPC Trends - 2008 to 2016, Integrated Food Security Phase Classification, 7th January 2016

10 Key IPC Findings, January- July 2017, Integrated Food Security Phase Classification, 20th February 2017; Key IPC Findings, September 2017- March 2018, Integrated Food Security Phase Classification, 6th November 2017; Key IPC Findings, January- July 2018, Integrated Food Security Phase Classification, 26th February 2018.

11 For the September 2018- March 2019 update, no data was reportedly available on Terekeka, and it therefore received no classification.

12 IPC Acute Food Insecurity and Acute Malnutrition analysis, May 2019. 14th June 2019

13 IPC Snapshot, South Sudan, August 2019 - April 2020, Integrated Food Security Phase Classification, 11th September 2019

14 Two different samples were drawn for the MUAC and household assessments due to ongoing nutrition distributions as part of the inter-cluster assessment. Two samples gave the assessment team flexibility in which randomly selected cluster to assess each day to avoid distributions and potential bias in the data.

15 Probability Proportional to Size (PPS) Sampling is where a cluster/data collection site is randomly sampled from a list, where the probability of selection is related to the population size.

16 The original sample included settlements from both Tali and Tindilo, selected according to PPS; 7 settlements in Tali and 3 settlements in Tindilo. Heavy rainfall grew the river which bisects the Tali/Tindilo road, and halfway through data collection, the 3 clusters in Tindilo Payam were found to be inaccessible, along with 1 settlement from Tali; 4 settlements of the sample were therefore inaccessible. For this reason, the decision was taken to conduct a sample which was representative of Tali Payam only. The reserve cluster in Tali was assessed, and an additional 4 clusters were selected in Tali Payam, using PPS sampling, and assessed alongside the 6 already randomly selected in the original sample. The full sampling framework for both these samples is available in annex 2.

17 See annex 1 for the full sampling frame

18 The assessment team originally planned to assess five clusters from each of the rural and urban samples, however, due to ongoing food distributions it was only possible to assess 4 of the urban sites. The reserve cluster in the rural sample was used instead.

19 The Sphere Handbook: Humanitarian Charter and Minimum Standards in Humanitarian Response, 2018, (Fourth Edition)

20 International Medical Corps, Report for Nutrition and Mortality SMART Survey Conducted in Former Terekeka County of Former Central Equatoria State, South Sudan, 5th to 11th October 2018

21 IPC Global Partners, 2019, Integrated Food Security Phase Classification Technical Manual Version 3.0. Evidence and Standards for Better Food Security and Nutrition Decisions. Rome.

22 Wild foods were added as 'dark green vegetables' to the FCS analysis in SPSS. FGDs were used to assess the types of wild foods people were currently consuming, with participants indicating that these were almost exclusively plants and leaves, rather than fruits, roots, or tubers.

23 This figure is likely not a true representation of the shocks faced by people in Tali Payam, since the question specifies shocks in the previous 6 months. As noted, rainfall has improved in 2019, and this question is therefore unlikely to capture the true, long-term impact of irregular and reduced rainfall for households in Tali Payam.

24 Data sources used to triangulate assessment data include FAO/WFP Crop and Food Security Assessment Mission (CFSAM) annual reports (2014-2018), WFP-VAM Seasonal Explorer, FAO Agricultural Stress Index (ASI), and Crop and Livestock Market Information System (CLIMIS) (including Normalized Difference Vegetation Index (NVDI)).

25 Rainfall and other climate data is produced for Terekeka County as a whole, and therefore, whilst rainfall data is indicative of the situation in Tali and Tindilo, it is not specific to those payams.

26 FAO/WFP Crop and Food Security Assessment Mission to South Sudan, 2018, 2017, 2016, 2015 and 2014

27 WFP-VAM, CHIRPS/UCSB, Terekeka average compared to 2015 rainfall. Available at: https://dataviz.vam.wfp.org/seasonal_explorer

28 NDVI uses remote-sensing (satellite) data to determine the density of green vegetation on areas of land. This data is then used to monitor drought and forecast agricultural production.

29 FAO/WFP Crop and Food Security Assessment Mission to South Sudan, 2015, 5th April 2016

30 FAO/WFP Crop and Food Security Assessment Mission to South Sudan, 2016, 6th May 2017

31 WFP-VAM, CHIRPS/UCSB. Terekeka average compared to 2016 rainfall. Available at: https://dataviz.vam.wfp.org/seasonal_explorer

32 FAO/WFP Crop and Food Security Assessment Mission to South Sudan, 2018, 15th March 2019

33 FAO South Sudan Crop Watch: Updates from 1st Dekad of March to 3rd Dekad of July 2018

34 Households were asked to report the primary, secondary and tertiary shock that had affected their household in the 6 months prior to data collection. Figure 3 collates the proportion of households reporting these shocks, whether the shock was reported 1st, 2nd or 3rd.

35 FAO South Sudan Crop Watch: Updates from 1st Dekad of March to 3rd Dekad of July 2019

36 A fedan is a measurement of land used in South Sudan. One fedan is about 4200 square meters, slightly more than an English acre.

37 FAO/WFP Crop and Food Security Assessment Mission to South Sudan, 2018, 15th March 2019

38 FEWS NET Livelihood Zone Mapping, 2018

39 Arrow size is proportional to the size of the reported displacement

40 FEWS NET Livelihood Zone Mapping, 2018

41 REACH Situation Overview, CES and EES, April-June 2019

42 FEWS NET South Sudan Food Security Outlook, June 2019 to January 2020,

43 UNICEF RRM Mission, 25th August 2019

44 REACH Situation Overview, Greater Equatoria, September-December 2018

45 FGD Dor, Awerial County, July 2019

About REACH

REACH is a leading humanitarian information provider that uses primary data collection and in-depth analysis as tools to enhance the capacity of aid actors to make evidence-based decisions in emergency, recovery and development settings.

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Annex 1: MUAC Sampling Framework

Rural Stratified Sample			
Geographical unit	**Payam**	**Population size (household)**	**Cluster**
Abimbim	Tali	50	
Akenwell	Tali	30	
Awoloken	Tali	20	
Bari	Tali	60	6
Bedkwesi	Tali	15	
Bonagok	Tali	20	
Dayangapure	Tali	20	
Denget	Tali	40	
Dorri	Tali	30	
Gama	Tali	20	
Gokiyo	Tali	20	
Gunya	Tali	15	
Jaming	Tali	30	
Kirotnyumbo	Tali	10	
Kojubu	Tali	10	
Kolo	Tali	10	4
Kosupi	Tali	20	
Lokule	Tali	15	
Maburukoto	Tali	20	
Makido	Tali	30	
Mejiki	Tali	35	
Mina	Tali	30	5
Mogiri	Tali	20	
Mukadin	Tali	70	
Nyitet	Tali	15	
Pagara	Tali	25	1
Ruminyang	Tali	10	
Sukuriawir	Tali	15	
Temsar	Tali	30	2
Tokokoyiga	Tali	20	
Tormalot	Tali	10	3
Wayat	Tali	10	

Urban Stratified Sample			
Geographical unit	**Payam**	**Population size (household)**	**Cluster**
Bukon	Tali	40	3
Hai Comboni	Tali	150	1
Hai Police	Tali	150	2
New Site	Tali	20	
NPA Settlement	Tali	60	4
Tali Centre	Tali	100	

Annex 2: Quantitative Sampling Framework

First Sample			
Geographical unit	**Payam**	**Population size (household)**	**Cluster**
Abimbim	Tali	50	
Akenwell	Tali	30	
Awoloken	Tali	20	
Bari	Tali	60	1
Bedkwesi	Tali	15	
Bonagok	Tali	20	
Bukon	Tali	40	6
Dayangapure	Tali	20	
Denget	Tali	40	
Dorri	Tali	30	2
Gama	Tali	20	
Gokiyo	Tali	20	
Gunya	Tali	15	
Hai Comboni	Tali	150	3
Hai Police	Tali	150	
Jaming	Tali	30	4
Kirotnyumbo	Tali	10	
Kojubu	Tali	10	
Kolo	Tali	10	
Kosupi	Tali	20	
Lokule	Tali	15	
Maburukoto	Tali	20	
Makido	Tali	30	
Mejiki	Tali	35	5
Mina	Tali	30	
Mogiri	Tali	20	
Mukadin	Tali	70	
New Site	Tali	20	
NPA Settlement	Tali	60	

Nyitet	Tali	15	
Pagara	Tali	25	
Ruminyang	Tali	10	
Sukuriawir	Tali	15	
Tali Centre	Tali	100	
Temsar	Tali	30	RC
Tokokoyiga	Tali	20	
Tormalot	Tali	10	
Wayat	Tali	10	
Akwatch	Tindilo	20	
Bureny	Tindilo	20	
Chito	Tindilo	20	
Dubula	Tindilo	20	
Gobo	Tindilo	10	
Gora	Tindilo	20	
Jerbar	Tindilo	10	
Kulwo	Tindilo	10	
Kunyere	Tindilo	10	
Lomurut	Tindilo	20	9
Malari	Tindilo	10	
Moggi	Tindilo	15	7
Mundaribra	Tindilo	30	
Ngalek	Tindilo	20	
Nyale	Tindilo	20	
Nyanga 1	Tindilo	30	
Nyosukuruk	Tindilo	10	
Parili	Tindilo	20	
Rejaf	Tindilo	40	
Rumih	Tindilo	30	
Swo Lopuro	Tindilo	20	
Tindilo Centre	Tindilo	40	8
Wongo	Tindilo	20	

Following the start of data collection, rising water level in a river that bisects the Tali to Tindilo road meant four selected clusters were inaccessible; 3 in Tindilo (Moggi, Tindilo, and Lomurut) and 1 in Tali (Mejiki). The Reserve Cluster (Temsar) was used, and then a sample was drawn of 4 additional clusters from accessible settlements in Tali, using PPS sampling.

Second Sample

Geographical unit	Payam	Population size (household)	Cluster
Abimbim	Tali	50	
Awoloken	Tali	20	
Bari	Tali	60	
Bedkwesi	Tali	15	
Bonagok	Tali	20	
Bukon	Tali	40	
Dayangapure	Tali	20	
Dorri	Tali	30	
Gokiyo	Tali	20	
Gunya	Tali	15	
Hai Comboni	Tali	150	
Hai Police	Tali	150	
Jaming	Tali	30	
Kirotnyumbo	Tali	10	
Kojubu	Tali	10	
Kolo	Tali	10	
Kosupi	Tali	20	
Lokule	Tali	15	
Maburukoto	Tali	20	
Makido	Tali	30	
Mina	Tali	30	4
Mogiri	Tali	20	
New Site	Tali	20	
NPA Settlement	Tali	60	2
Nyitet	Tali	15	
Pagara	Tali	25	3
Sukuriawir	Tali	15	
Tali Centre	Tali	100	
Temsar	Tali	30	
Tokokoyiga	Tali	29	1
Tormalot	Tali	10	
Wayak	Tali	10	