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Emergency Food Security Assessment

Tigray Region, Ethiopia

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Executive Summary

The compounded effect of multiple drivers of food insecurity resulted in 83 percent (4.6 million people) of the population surveyed in the Tigray Region being classified as food insecure, of which two million (37 percent of the population) are severely food insecure. The highest prevalence of food insecurity was recorded in the North western, Eastern and Central zones.

More than four in five households consume inadequate diets, and 57 percent of these households consume poor diets. Although the consumption of cereals has remained steady, the consumption of nutritious foods such as meat, vegetables and fruit has declined drastically since October 2020 – on less than one day a week on average.

The number of households depending on regular income fell by 24 percent compared to the pre-crisis period (from 60 to 36 percent). Over 30 percent of households reported gifts or loans to be their primary source of income. Reliance on gifts or loans is a temporary coping mechanism, and households relying on this as a primary source of income are likely extremely poor.

Although 80 percent of respondents reported markets were functional, 66 percent of them reported not being able to access them due to lack of resources to buy items. Purchasing power of households in the Tigray Region has also eroded due to the increased prices of imported and factory-processed food items (such as rice, sugar, and vegetable oil). Prices of vegetables and fruits are also far higher in the conflict-affected markets since the supply routes to the main source markets are cut-off¹.

The majority of households (76 percent) surveyed engaged in high or extremely high levels of consumption-based coping strategies. The percentage of households implementing emergency livelihood coping strategies has more than doubled compared with October 2020 (from 13 percent to 29 percent). Access to basic needs other than food, has dramatically dropped and the proportion of households implementing crisis livelihood coping mechanisms has more than tripled, soaring from 12 percent in October 2020 to 48 percent in November 2021.

Proxy nutrition estimates show that the prevalence of GAM and SAM amongst children aged 6 – 59 months is 13 percent and 4 percent, respectively. Among those children surveyed, only 45 percent were reported to have been consuming nutritional supplements in the 30 days before data collection. Proxy MAM rates among pregnant and breastfeeding women were found to be 61 percent, and only 15 percent reported taking any supplements in the 30 days before data collection.

FOOD SECURITY SITUATION



The food security situation in the Tigray Region is worrisome, with 83 percent of households being food insecure – 4.6 million people. This represents a sharp increase compared with pre-crisis period in October 2020, when 0.4 million people were suffering from food insecurity.

Out of the total population, 47 percent are moderately food insecure (2.6 million people) and 37 percent are severely food insecure (2 million people). The administrative zones recording the highest food insecurity rates are the North western zone (93 percent), Eastern zone (86 percent) and Central zone (83 percent).

More urban households were found to be severely food insecure compared with their rural counterparts (41 vs 35 percent), likely due to a lower reliance on their own production as the main source of income or food. In addition, households in urban areas were found to be highly reliant on community support to make ends meet.

A higher proportion of female-headed households are food insecure compared to household headed by males (89 vs. 81 percent). This is driven by the limited economic capacities and/or opportunities for women to generate income. As a result, households headed by females have poorer diets compared to those headed by males (65 vs 53 percent, respectively).

FOOD CONSUMPTION

More than four in five households consume inadequate diets, 57 percent of which consume poor diets. The North western zone (73 percent), Eastern zone (57 percent) and Central zone (56 percent) recorded the highest prevalence of households consuming poor diets.

COPING STRATEGIES

The majority of households in the Tigray Region (76 percent) are relying on severe consumption-based coping strategies (such as limiting portion sizes, reducing the number of meals per day and reducing portions for adults so that children and/or pregnant women may eat) mainly in the Eastern zone (87 percent), Central zone (84 percent) and Mekelle (79 percent). The fact that more than three-fourths of the population are undertaking such actions to maintain the most basic of food security levels underlines the problems in both food access and food availability across the Tigray Region.

The proportion of households applying emergency livelihood coping strategies (such as begging or selling their last reproductive animals) has more than doubled compared with October 2020, soaring from 13 percent to 29 percent), threatening household's future food security. Zones recording the highest rate of households engaging in such mechanisms are the Eastern, South eastern and Central zones at 41, 38 and 37 percent, respectively.

Access to basic needs, other than food, and the capacity to sustain livelihoods in the medium to long term has dramatically reduced as households relying on crisis livelihood coping mechanisms (such as selling productive assets or reducing health or education-related expenditure) has more than tripled, rising from 12 percent in October 2020 to 48 percent in November 2021. The North western zone recorded an alarming 71 percent of households engaging in such mechanisms, which as followed by Mekelle at 43 percent and the South eastern zone at 41 percent. Households engaging in crisis and emergency coping mechanisms due to lack of food are faced with limited future productivity and hindered ability to overcome future challenges.

The number of households depending on regular income (such as salaries or wages, pension, the sale of farming products or animals and/or savings) fell by 41 percent compared to the pre-crisis period (from 60 to 36 percent). In addition, the number of households depending on assistance or any source of income have almost quadruplicated, rising from 10 to 37 percent. The majority of households reporting no income or assistance are in Mekelle (46 percent) and in the Eastern zone (44 percent).

Over 30 percent of households in the Tigray Region reported gifts or loans as their primary source of income. This is an alarming finding, which underlines the lack of income opportunities. Reliance on gifts or loans is an erratic and unsustainable coping mechanism and households relying on this as a primary source of income are likely extremely poor.

In urban areas there was a stronger reliance on social networks – such as family or community support - to obtain food through credit, begging and the exchange of goods. It is important to note that most of these measures are unsustainable over long periods of time.

Despite the challenges brought by the conflict, 52 percent of respondents reported to be able to sow seeds during the recent planting season, but only 36 percent reported being able to plant on time. The majority of households in the Eastern and North western zones reported that the delays were due to temporary displacement from their land or a lack of agricultural inputs. In terms of access to land, 86 percent of households who were able to plant in 2021 reported having access to the same amount of land as in 2020.

LIVELIHOOD PROFILES

Households depending on regular income (such as salaries or wages, pension, sale of farming products or animals and savings) fell by 24 percent compared to the pre-crisis period (from 60 to 36 percent). In addition, households depending on assistance or any source of income have almost quadruplicated, rising from 10 to 37 percent). The majority of households reporting no income or assistance are in Mekelle (46 percent) and the Eastern zone (44 percent).



Introduction

Food Security in Tigray

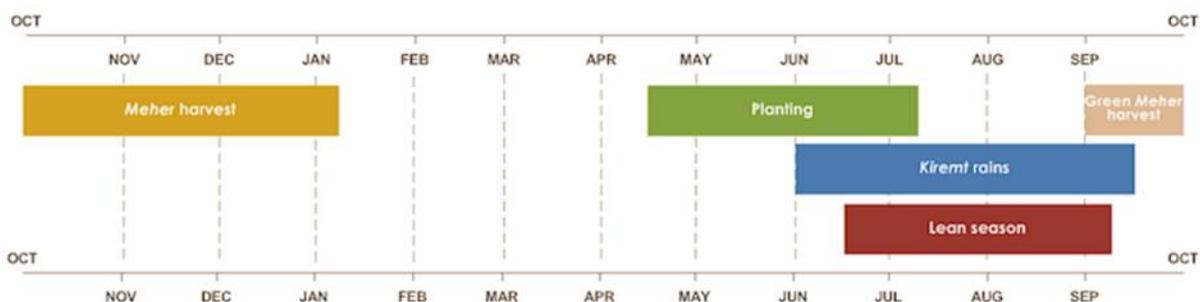
Significant progress had been made towards food security in the Tigray Region in recent years after the region suffered through multiple famines in 1958, 1973, and 1983-85.² The government began ambitious development programmes focused on improving food system sustainability with the support of international donors. Particular focus was placed on supporting communities with sustainable smallholder agriculture to meet their day-to-day food needs and engagement in commercial sesame production for export purposes. Efforts were also made to develop industries in the region, which led to the creation of jobs and increased household purchasing power. Households that did not engage in smallholder farming often relied on seasonal and/or migratory labour which enabled them to earn a living and purchase their food from the vibrant markets in the area. Those labour opportunities, namely sesame production and artisanal mining, contributed heavily to the second and third largest commodity exports by cash value nationally. Prior to the conflict, these two labour sources may have accounted for the primary means of income for up to a third of the total Tigrayan population and around 40 percent of the rural population³. Tigray was also a labour exporting region, with significant seasonal labour moving not only within the region to the Western zone but also to the neighbouring provinces of Wollo and Gondar. Tigray also benefited from Ethiopia's Productive Safety Net Programme (PSNP) which was launched countrywide in 2005 with the aim of reducing food insecurity vulnerability by providing economic opportunities and building resilience to crisis through cash transfers, public works and nutritional feeding programs⁴.

Conflict has severely disrupted and damaged many of these pillars of livelihoods and food security created over



time in the region. According to one of the Integrated Phase Classification (IPC) analyses from October 2020⁵, most of the Tigray Region was considered to be in IPC Phase 2 (Stressed), with the Western zone considered to be food secure to the point where it was excluded from the October 2020 IPC analysis altogether. The onset of the conflict in November 2020⁶ coincided with the 2020 *meher* harvest season in a region where 75 percent of the population actively participate in agricultural activities. The destruction of farmland, compounded with reports of significant looting and destruction of existing food stocks⁷, led to a situation where an estimated 1.3 million hectares of crops were damaged⁸.

Beyond direct disruption and destruction of food systems during intensive periods of active conflict, prolonged restrictive measures have severely disrupted the functionality of basic services for residents in the region. The limited flow of humanitarian and commercial goods has affected the movement of food, nutrition supplies, medicines, shelter and sanitation, and agricultural inputs⁹, and the region-wide shutdown of banking and communication services and the lack of fuel has been an additional barrier to the delivery of key commodities within the region and to maintaining clean water schemes, health services and hospitals, and other basic services¹⁰. Finally, the loss of livelihoods and normal income-generating activity in a region typically highly mobile and dependent on agricultural labour during the *meher* season, has been a particular barrier for a population that has not recovered from large-scale asset depletion¹¹.



Over the past months, field reporting, programmatic screenings and monitoring activities have consistently indicated a significant deterioration of household food security and nutrition outcomes¹². Prior to the crisis, children in Tigray already faced levels of wasting and stunting worse than the national average (9.2 versus 7.2 percent and 30 versus 21 percent, respectively) driven by a myriad of factors including access to improved water and sanitation, infant and young child caring and feeding practices, and lasting chronic hunger effects of the 2015/16 El Niño^{13,14}. The destruction of water points¹⁵ and lack of basic health care services¹⁶ resulting from the conflict would only exacerbate the issue and has already led to emergency -levels of acute malnutrition¹⁷.

One year after the onset of the conflict, a joint household survey was therefore undertaken to understand how volatile conflict dynamics and subsequent shortages of humanitarian and commercial supplies have affected the food security situation for residents in areas of the region that remain accessible.

Methodology

RESEARCH QUESTIONS AND SPECIFIC OBJECTIVES

The primary objective of this thematic monitoring survey was to contribute towards a “baseline” understanding of the household food security situation following the outbreak of conflict in the Tigray Region in November 2020. While the conflict has remained highly dynamic during this 12-month period, few surveys or monitoring activities have captured the effects on households’ ability to cover basic needs across the region. This assessment was therefore intended to complement partner reports and information sources to build towards a more comprehensive updated snapshot of the food security situation, focused on those living in accessible areas of the region.

The secondary objectives for this activity were to inform humanitarian actors about potential areas of elevated need, through an analysis of findings in each administrative zone and along household demographics, as well as to provide a source of information for related thematic sectors such as markets, agriculture, nutrition and household access to water and health services.

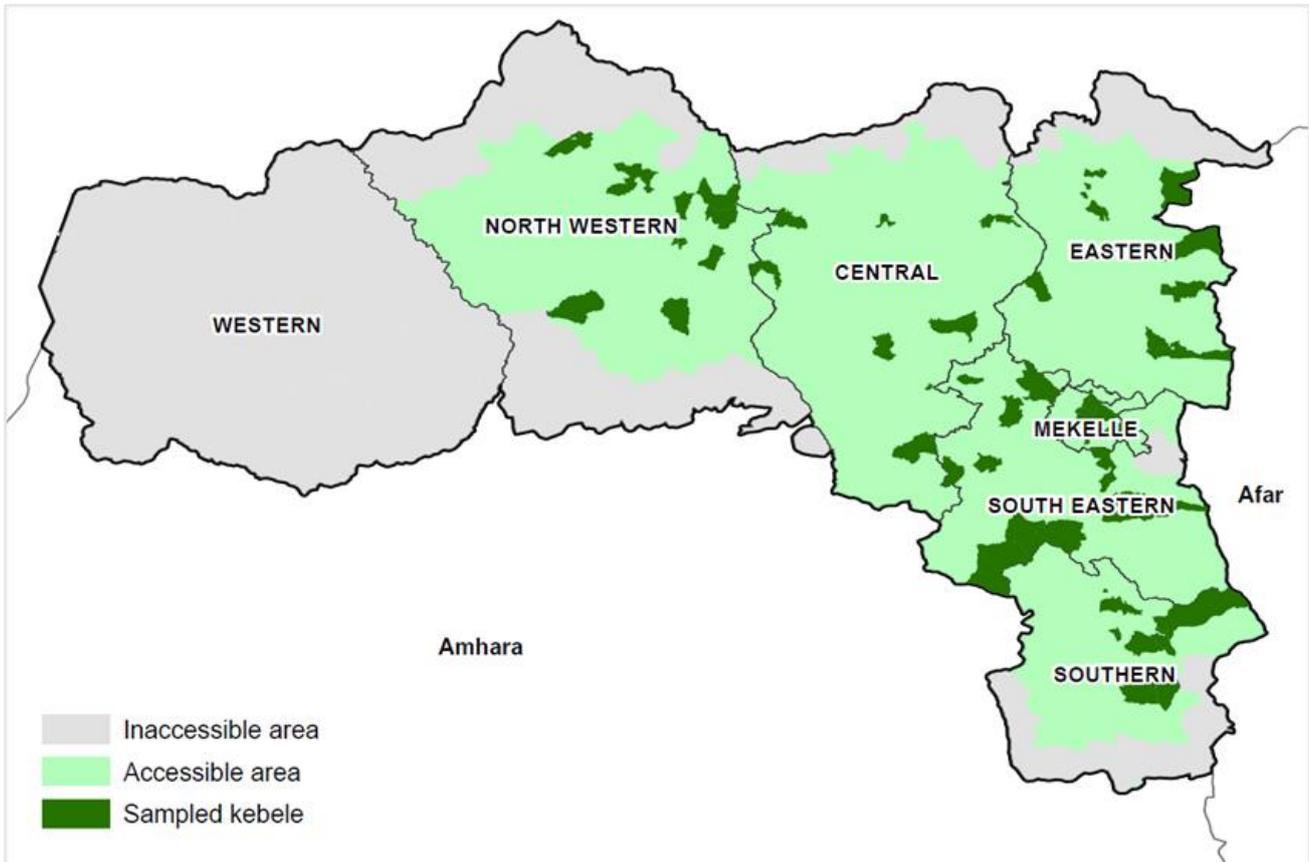


GEOGRAPHICAL COVERAGE & SAMPLING APPROACH

To address this objective, a quantitative household survey was conducted in areas of the region that remained accessible to humanitarian actors. Notably, the Western zone and the northern *kebeles* bordering Eritrea were excluded from the sampling frame, along with southern areas of the North western zone (the Dima and Tselemti *woredas*) as well as border *kebeles* in the Southern zone (the Chercher, Zata, and Raya Alamata *woredas*). An internal composite sampling frame for this activity was established through the integration of Ethiopia Census data from 2007 and projections, WorldPop Ethiopia dataset (2020) and the International Organization for Migration’s Displacement Tracking Matrix Ethiopia Emergency Site Assessment Round 7. The purpose of the internal sampling frame was to establish an estimated relative population distribution, taking into consideration recent movements, as a basis for assessment sampling selection.

A stratified, two-stage cluster sampling strategy was applied, with zones as the survey strata and *kebeles* as the initial cluster unit of sampling. *Kebeles* were selected within each of the six zones with probability proportional to size and with replacement. The cluster size was set at 12, and an estimated design effect of 2.0 was factored into the sampling approach. A conservative 50 percent was factored into sample size calculations as the estimated response prevalence. The total target and achieved sample size is summarised in the below table in order to achieve findings that are generalisable to the population living across these accessible areas at a 90 percent confidence level and 10 percent margin of error at the zone level and at a 95 percent confidence level and 5 percent margin of error at the overall regional level. Findings disaggregated by zones can therefore highlight notable geographic differences if statistically significant or can provide indicative trends.





The second stage of selection was the selection of households upon arrival to the sampled cluster (*kebele / tabia*). During the process of facilitating access and community consultations, field supervisors worked with community representatives to develop a *kebele*-specific sampling frame to facilitate randomised and/or systematic household selection. In areas where local leaders were compiling lists of households who remained, had returned, or had been displaced to the area, household lists were used to randomly select households for inclusion within the survey. Where lists were not available, the estimated number of households in each sub-village or neighbourhood was compiled and used as the basis for systematic sampling to select the target number of surveys assigned to that cluster.

SURVEY IMPLEMENTATION

Prior to data collection, enumerators and field team leaders participated in the survey trainings and pre-tests in both urban and rural areas. These sessions occurred between 11 and 13 November 2021 and were followed by data collection between 15 November and 6 December 2021. Surveys were carried out by a mixed-gender team of 35 enumerators, team leaders and field supervisors.

The training sessions covered the objectives of the study, question-by-question training on the questionnaires and techniques for probing, procedures of managing survey logistics, lines of communication within the research team

during the fieldwork, COVID-19 and do-no-harm best practices and a testing of the survey tools in the areas surrounding Mekelle. Specific sessions were also focused on gathering anthropometric measurements, age estimations, and supervised tests of mid-upper arm circumference (MUAC) measurements of children and pregnant or lactating women.

DATA PROTECTION & QUALITY

Strict data protection measures were taken, with all data anonymized prior to internal sharing within the project team. Once the data had been anonymized, data cleaning protocols were adopted, both through the implementation of a previously coded R script to flag logical and value checks, as well as manual reviews and checks. These issues were reviewed and forwarded to the field team if needed, with their inputs used to decide which course of action would be taken. The necessary changes would then be made, and the survey submitted into the final dataset or deleted if it was decided that issues could not be resolved, or the survey contained too many issues.

Data quality and plausibility checks on the MUAC measurements were performed. Data checks included the exclusion of SMART flags (1), digit preference scores (good), and an evaluation of age and sex ratios as well as the distribution of the data (standard deviation, skewness, kurtosis, Poisson distribution).



DATA ANALYSIS

Statistical analysis was conducted using standard food security and nutrition indicators were analysed using globally-defined thresholds to generate categorical variables that were subsequently reported as percentages. This is inclusive of Household Hunger Scale¹⁸, Food Consumption Score¹⁹, reduced Coping Strategies Index²⁰,²¹; Livelihood Coping Strategies, MUAC cut-offs for children under 5 using Child Growth Standards²² as well as age-sex sensitive thresholds from the WHO Expert Committee^{23, 24}. The conservative threshold of 23 centimetres was used to estimate MAM in PLW²⁵. Threshold cut-offs are specified during the discussion of each indicator's findings. The association between selected variables and child nutrition status was examined by performing bivariate analyses; to measure the strength of association between the ordinal response and independent variables (covariates), a chi-square test is used.

The remote CARI (r-CARI) approach was applied to this dataset²⁶, adopting an analytical framework considering the current status of household food consumption and current levels of reduced capacities or negative coping behaviours that may make households more vulnerable to food insecurity. Despite having conducted a face-to-face assessment, the r-CARI approach is used instead of CARI, as household expenditure-related information was not collected during the data collection exercise²⁷. Household economic capacity was therefore calculated by combining current economic activities with either crop failure or loss/reduction of income (reported as main shock experienced by the household in the last three months) (see Annex 1 for more details).

Wherever possible, findings are contextualised and analysed against data sources from previous surveys. Notably this includes two previous rounds of the FSMS from October 2020 and May 2021. Both rounds focused on

similar geographic areas in order to support IPC Acute Food Insecurity Analyses, which excluded the Western zone of Tigray from acute food insecurity analysis. These FSMS activities were conducted exclusively via computer-assisted telephone interviewing (CATI) methodologies. Findings from the May 2021 FSMS are highly indicative in nature and to be triangulated with other information sources during that time, due to the low sample size and near-total shutdown of the phone network in early 2021, which means the profile of respondents was likely biased towards those living in or traveling to larger towns where phone network was available for intermittent and brief periods, or respondents traveling to the border areas of the region where phone network was slightly more accessible, although additional face-to-face interviews with newly displaced individuals were conducted during that same period to account for challenges related to remote data collection. Wherever possible or relevant, those findings are incorporated within this report.

For analysis disaggregated by urban and rural typology, multiple open-source datasets were compiled at the *kebele* level. The first is Worldpop, which provides open spatial demographic data and has several algorithms to detect building footprints in order to estimate population figures. One algorithm detects the differences between urban and rural building configurations through density, proximity, and other factors. Secondly, built-up areas from GRID3 (Geo-Referenced Infrastructure and Demographic Data for Development) data sources were factored in and compared against any available satellite imagery.

CHALLENGES

Preparations for this face-to-face survey required careful planning to factor in the considerable operational challenges related to field data collection and the ability to make on-the-ground adjustments, primarily related to the lack of communication, limited amount of humanitarian fuel, and limited contingency plans in case of emergencies. Therefore, the following limitations must be factored in when interpreting survey findings:

- *Geographic/accessibility bias*: In light of the operational constraints, certain areas were removed from the sampling frame prior to drawing the randomised sample. In addition to the areas outlined above, in one sampled cluster (Lemlem *kebele* in the South eastern zone), teams were denied access upon arrival to the area and a replacement *kebele* was included instead.
- *Comparability*: Whenever possible, current survey findings are triangulated, contextualized, and compared with available reference points from pre- or early conflict periods. However, survey methodologies varied greatly between different datasets and may introduce selection biases related to variations in target survey populations and/or selection methodologies.

- ... (cont.) food security indicators from October 2020 are drawn from the Food Security Monitoring Survey using CATI methodology, while nutrition reference points range from historical academic and/or SMART surveys.
- *Proxy reporting:* Questions on individual household members, particularly related to children under five, was reported by proxy by one respondent per household, rather than by the particular individual household members themselves, and therefore might not accurately reflect lived experiences of individual household members. Wherever possible, the pregnant and/or lactating woman was asked directly regarding her consumption of supplements, and in the case of children under the age of five, wherever possible, their direct caretaker was asked regarding their consumption of supplements.
- *Subset indicators:* Findings related to a subset of the overall population may have a wider margin of error and should therefore be considered as indicative only.
- *Respondent bias:* Certain indicators may be under or over-reported due to the subjectivity and perceptions of respondents. For instance, respondents might have the tendency to provide what they perceive to be the “right” answers to certain questions (i.e. social desirability bias). Notably, the proportion of households who identified as currently displaced or returning households captured through the random methodology was lower than expected, despite accommodating for the phenomenon of fragmented displacement and mixed households during questionnaire design. Field teams observed that respondents often were reluctant to discuss displacement from the previous few months and strongly identified as “part of the local community” if even one household member remained in the community during the past year. This is a limitation in the current survey and hinders the ability to analyse food security conditions according to household displacement status but is interpreted to be driven by household self-identification (for participation in a survey that had no bearing on their status as beneficiary or non-beneficiary), instead of a methodological concern regarding the distribution of household selection. This series of questions will be addressed in any future iterations of the assessment.



households’ are the unit of analysis, intra-household dynamics (including for instance intra-household power relations across gender, age, disability) cannot be captured. In particular for the context in the Tigray Region, the dynamic of separated and/or fragmented families due to recent displacement or movements may not have been well-captured during this initial rapid assessment. Users are reminded to supplement and triangulate household-level findings with other data sources.

LIMITATIONS

While household-level quantitative surveys seek to provide quantifiable information that can be generalised to represent the populations of interest, the methodology is not suited to provide in-depth explanations of complex issues. Thus, questions on ‘how’ or ‘why’ are best suited to be explored through qualitative research methods. Since ‘



Findings

Description of Population Sample

HEAD OF HOUSEHOLD PROFILE

The survey found that 61 percent of the households were male-headed and 39 percent were female-headed. The proportion of female-headed households is nearly double the national average from 2019 (22 percent, Mini Demographic and Health Survey²⁸). In urban areas, the proportion of male to female-headed households was nearly equal, with 52 percent male-headed households and 48 percent female-headed households. The average age of the head of household in the region was 47, with little variance across geographic areas or urban / rural areas. Overall, 14 percent of the households were reportedly headed by either children (<18) or elderly persons (65+). The existence of child headed households corroborates partner reports of increased separated minors as a direct result of active conflict. 22 percent of the households in the Eastern zone were headed by children or the elderly, the highest in the Tigray Region.

HOUSEHOLD COMPOSITION

The average household size across accessible areas of the Tigray Region was found to be 5.4 individuals. This may suggest a slight increase from the 2019 national average of 4.7. Almost a quarter (24 percent) of households reported having at least one member living with a disability, such as difficulty seeing even with glasses, difficulty walking or climbing steps, difficulty remembering or concentrating, self-care difficulties or problems understanding or being understood. Roughly 30 percent of households reported at least one pregnant and/or lactating woman.

URBAN VS RURAL

A consideration of urban or rural typologies for each *kebele* was conducted via an analysis of updated 2020 data sources from WorldPop classifications and GRID3 built-up areas. In this assessment, 65 percent of households were living in rural areas while 35 percent were living in urban areas.

PREVIOUS LIVELIHOOD PROFILE

As this assessment aimed to provide an updated food security snapshot for all types of households, a variety of livelihood patterns were reported for the period immediately prior to the conflict, one year prior to data collection. Overall, 38 percent of the sample reported the direct sales of agricultural products or livestock as their main pre-conflict livelihood, 26 percent reported seasonal and/or casual labour (including agricultural labour), 20 percent reported professional salary or pension and 14 percent reported other income sources including remittances, traditional artisanal mining, income from property management or other professions.

DISPLACEMENT STATUS

As alluded to in the limitations section of the report, survey findings captured a large proportion of households who self-identified as being part of the non-displaced host community. Across the region, 86 percent of the assessed households identified themselves as host community, 4 percent identified that they were currently displaced, 4 percent identified as returnees and a final 5 percent identified as being of mixed displacement status.

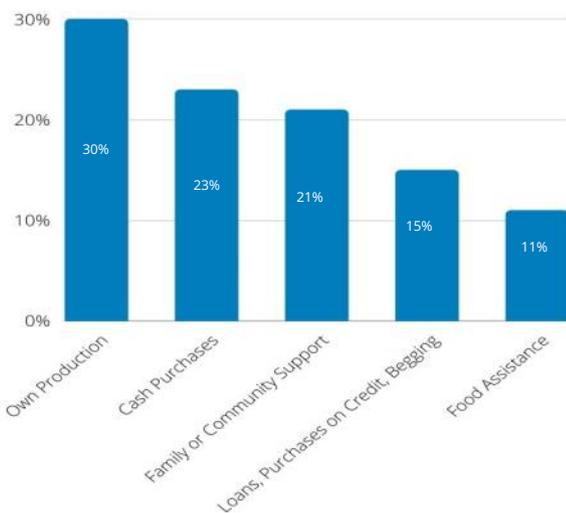


Household Food & Livelihood Dynamics

PRIMARY FOOD & INCOME SOURCES

The data collection period of November 2021 coincided with the 2021 *meher* harvest. In the accessible areas of the region covered by this survey, 52 percent of the assessed population reported planting during the recent *meher* planting season leading up to the data collection period. The immediate effects of the harvest can be seen through the findings of primary food sources for households across the region²⁹, with 30 percent of households reportedly relying on products from their own production and an additional 60 percent reportedly relying on market purchases, family or community support, or loans and/or begging (23 percent, 21 percent and 15 percent, respectively), a substantial portion of which was qualitatively reported as stemming from the ongoing harvest.

PRIMARY SOURCE OF FOOD DURING THE 30 DAYS PRIOR TO DATA COLLECTION

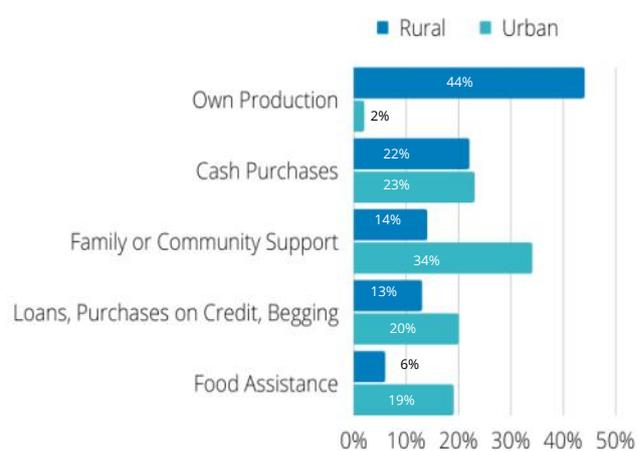


Reliance on food assistance as the household's primary food source was reported by 11 percent of households across accessible areas of the region. With extraordinary operational challenges facing humanitarian partners in the region with regards to air and road access to the region and access to resources and fuel within the region, the relatively low reliance on food assistance by the October-November period is largely in line with the vast reductions in assistance that partners have been able to distribute during those months showing 0.4 million of 5.2 million people in need reached in each of those two months.

An exploration of food sources by urban or rural typology highlights a few expected trends showing higher

dependency on own production in rural areas, but notably, also highlights the importance of functional and accessible markets for households regardless of whether they live in urban or rural areas (23 and 22 percent in urban and rural areas, respectively, reportedly relying on market / cash purchases as their primary food source). This disaggregation also shows strong reliance on social networks particularly in urban areas, where direct family or community in-kind support as well as obtaining food through credit, begging, and exchanging goods was particularly pronounced (34 and 20 percent of urban households as compared to 21 and 15 percent of households overall, respectively). The importance of community support has been consistently highlighted through partner reporting, beneficiary consultations, and indicative survey processes over the past months.

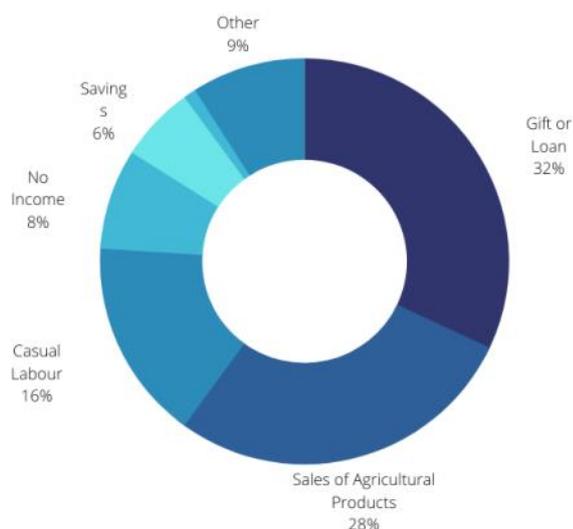
PRIMARY SOURCE OF FOOD DURING THE 30 DAYS PRIOR TO DATA COLLECTION (RURAL VS URBAN)



A notable practice that was not captured quantitatively through this rapid assessment but was instead often shared qualitatively with assessment teams was that households would often discuss the need to use their newly harvested items to pay off financial or social debts incurred over the past months. This practice echoed anecdotes from data collection activities in September 2021 where households mentioned not only the practice of sharing food assistance to help their community members, but also the need to share assistance as in-kind payments to pay off debts or rent for accommodation.

The sharing of resources extends to monetary support as well, with roughly one-third of households in accessible areas reporting that their primary source of income or money in the 30 days prior to survey data collection were gifts, donations, or loans from their wider community (inclusive of family, churches, community groups and other donations). In this assessment, 'other' income sources included activities such as traditional artisanal mining - typically concentrated in the Central and North western zones - as well as sales of *sewa* or *chat* (local alcohol and stimulants).

PRIMARY SOURCE OF HOUSEHOLD INCOME



Findings suggest that female-headed households were slightly more likely to rely on community support as their primary food source (29 percent as compared to 17 percent of their male-headed counterparts) as well as their primary income source (40 percent as compared to 28 percent of their male-headed counterparts). On the other hand, 23 percent of male-headed households reported selling their own produce as their main source of income compared to 12 percent of female-headed households, suggesting female-headed households may be prone to economic vulnerability due to a higher dependency on less reliable food and income sources.

Reflecting similar trends between household food and income sources, the significance of community gifts, donations or loans as a key source of income for households was particularly elevated for households in urban areas (46 percent reporting it as their primary income source), as well as in the Eastern zone and Mekelle (51 and 41 percent respectively). However, casual labour, including petty trade, working at hair salons or other forms of daily labour, was reported as the primary income source equally across urban and rural households, particularly so in the North western zone.

Baseline studies on livelihood patterns show that during a typical year, a sizeable portion of the rural Tigray population would typically rely on migratory agricultural labour during this season towards the Western sesame-producing area, which is no longer accessible to the majority of residents. The sudden loss of typical livelihood opportunities would primarily impact those who were most reliant on this practice – the lower wealth quintiles of Central Zones and adjacent areas of Eastern and North Western Zones, with areas where cash income from migratory labour represent one-third to one-half of their cash income in a typical year. Finally, the lack of PSNP as a reported primary food or cash income source is notable

and may be a driver towards reliance on casual or informal labour in both urban and rural areas, especially during the agricultural period when particularly vulnerable households would typically rely on cash and/or food transfers.

Baseline studies on livelihood patterns show that during a typical year, a sizeable portion of the rural Tigrayan population would typically rely on migratory agricultural labour during this season towards the sesame-producing area in the Western zone, which is no longer accessible to the majority of residents. The sudden loss of typical livelihood opportunities would primarily impact those who were most reliant on this practice – the lower wealth quintiles of the Central zone and adjacent areas of Eastern and North western zones, with areas where cash income from migratory labour represent one-third to one-half of their cash income in a typical year³⁰. Finally, the lack of PSNP as a reported primary food or cash income source is notable and may be a driver towards reliance on casual or informal labour in both urban and rural areas, especially during the agricultural period when particularly vulnerable households would typically rely on cash and/or food transfers³¹.

An exploration of the changes between household-

PRIMARY SOURCE OF HOUSEHOLD INCOME BY ZONE

ZONE	GIFT OR LOAN	SALES	CASUAL LABOUR	NO INCOME	SAVINGS	OTHER
North Western	27%	25%	27%	11%	1%	10%
Central	30%	28%	13%	7%	12%	10%
Eastern	51%	30%	10%	2%	3%	4%
Mekelle	41%	6%	12%	12%	15%	11%
South Eastern	18%	46%	14%	9%	1%	10%
Southern	23%	40%	17%	7%	4%	8%

reported income sources one year prior to data collection (pre-conflict during the same season) and current income sources corroborates some ways in which households have needed to adapt to rely on new or different streams of income.

CURRENT SOURCE OF HOUSEHOLD INCOME, AS A PERCENTAGE OF PRE-CONFLICT SOURCE OF INCOME

	SALES	CASUAL LABOUR	PENSION OR SAVINGS	SALARY	OTHER	NONE	GIFT OR LOAN
SALES	55%	9%	3%	0%	5%	7%	20%
CASUAL LABOUR	12%	39%	2%	0%	5%	7%	35%
PENSION OR SAVINGS	9%	3%	23%	0%	7%	4%	55%
SALARY	5%	12%	10%	7%	10%	12%	43%
OTHER	9%	6%	12%	1%	37%	9%	29%

In the above table, households engaging in each pre-conflict income source (each row) are disaggregated against current income sources. Each row adds up to 100 percent; for example, among households previously relying on agricultural or livestock sales, 55 percent continue to rely on that income source while 9 percent are now reportedly relying on casual labour and 20 percent are relying on gifts or loans. Grey cells represent households who have maintained same general categories of livelihood sources, while darker shades of orange represent more significant changes between pre-conflict and current income sources. Furthermore, 'gift or loan' or 'no income source at all' were frequently reported in November 2021 but were not reported as primary sources of income during this same season in 2020.

The need for all types of households to adapt over the past year is clear, as can be seen through the distribution of households who are now relying on sales of agricultural products, casual labour or savings regardless of their pre-conflict source of income. Households reporting no income at all during the 30 days prior to data collection seem to cut across all types of households regardless of their prior profession or livelihood source. Notably, a significant share of households assumed to have had relatively stable sources of income prior to the conflict (i.e. salary, pension or savings) were reportedly primarily reliant on community donations, gifts, or loans during October and November 2021. With the shutdown of financial services and disruption of industry, those households seemingly faced the largest shock to their livelihoods and are now reportedly heavily dependent on support from their social and community networks.

HOUSEHOLD MARKET ACCESS

With pockets of the Tigray Region purchasing over 50 percent of their annual caloric needs from the market during a typical year - a practice even more pronounced for 'very poor' and 'poor' households - the significance of the market system within the region is integral to any understanding of household food security. During this assessment, households alluded to the tenuous nature of market access, with only 25 percent of households³² reporting no issues accessing markets in the 30 days prior

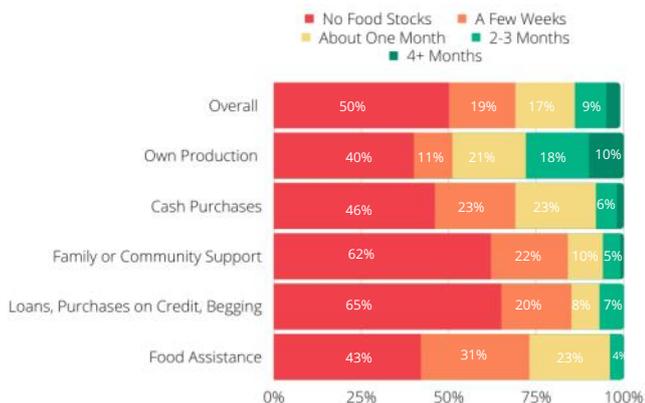
to data collection. This level of market access was consistently reported by households across urban and rural areas of the region. Across all assessed zones of the region, a majority of respondents who reported challenges accessing markets mentioned that although the market may be minimally 'functional', the household either lacked money to purchase goods or the market itself lacked goods even if household members tried to access the market (83 percent, as a subset of those reporting challenges accessing markets, n = 516). However, in a few key zones (Mekelle, the South eastern zone and the Southern zone), insecurity and fear of public areas such as markets was reported by 23 to 30 percent of households as the key reason why they were not able to access markets within the last 30 days. Reports of airstrikes killing and wounding civilians in market areas, which has been increasingly reported since late June³³ through to the weeks leading up to data collection,^{34, 35} are reportedly affecting households' feelings of safety, particularly as it relates to accessing market areas.

Despite these challenges, 27 percent of households across accessible areas of the Tigray Region reported relying on market purchases (either via cash or credit) as their household's primary food source, and as the full *meher* harvest draws to a close, the importance of formal or informal markets will only increase as farmers look to bring their produce to market and market-dependent households look to maintain or improve access to basic food items.

HOUSEHOLD REPORTED FOOD STOCKS

At the time of data collection, households were asked to report on the level of food stocks remaining and the estimated duration as to how long these stocks would last. Half of all respondents reported having no food stocks at all, while only 13 percent estimated having more than one month of stock at the time of data collection. Findings on this indicator varied depending on the households' reported food sources, with those reportedly relying on their own production in the 30 days prior to data collection more likely to report longer durations for their household food stocks, while those relying on support, gifts and loans

HOUSEHOLDS LEVELS OF FOOD STOCKS LEFT, OVERALL & BY FOOD SOURCE



Household Food Security Outcome Indicators

The following sections of this report provides an overview of region-wide household outcome indicators (Household Hunger Scale, Food Consumption Score, reduced Coping Strategies Index), prior to delving into an analysis of summary household food insecurity metrics and demographic and geographic trends for those indicators. Subsequent findings should therefore be interpreted as a snapshot of household-level consumption patterns at the beginning of the 2021 *meher* harvest, among a population reportedly maintaining their food access through the erosion of household and community coping capacities.

FOOD CONSUMPTION SCORE³⁶

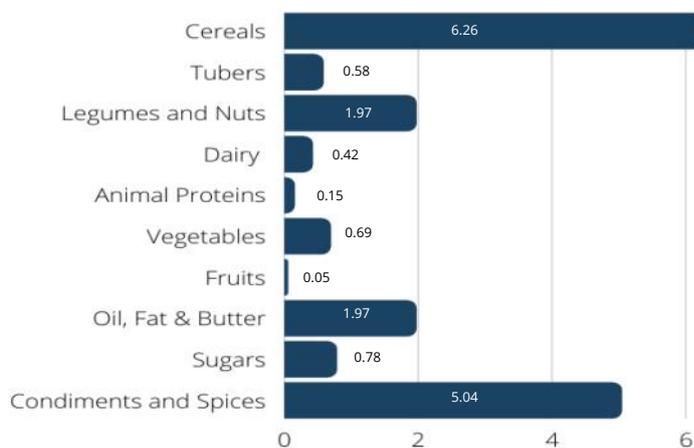
With the onset of the 2021 *meher* harvest, seasonal improvements in short-term food consumption would be expected during a typical year. Reported food consumption patterns in November 2021 show that the majority of households in accessible areas had poor food consumption levels (57 percent), whereas 25 percent of households had borderline consumption and only 18 percent had an acceptable food consumption score. A comparison of pre-crisis food consumption score during the same season shows a clear deterioration, with less than two percent of households consuming poor diets in September 2020 compared to 57 percent in November 2021³⁷.

Notably, given the seven-day recall period of this indicator, FCS findings would be expected to reflect seasonal improvements in food consumption, and responses to the module are likely strongly influenced by the stage of the *meher* harvest and households' level of access to newly harvested goods.

As can be seen in the figure below, respondents reported to mostly be consuming cereals accompanied by condiments and spices, while nutritious foods such as meat, vegetables, or fruits were not even consumed once a week, on average. While 45 percent of households were reportedly facing little to no hunger through the household hunger scale module, the finding that 82 percent of households were facing poor or borderline consumption levels suggest that although the availability of cereals may have prevented many households from going to sleep hungry or from going full days and nights without food (as explored during the Household Survey module), the overall consumption levels and dietary diversity still remain significantly below acceptable levels.

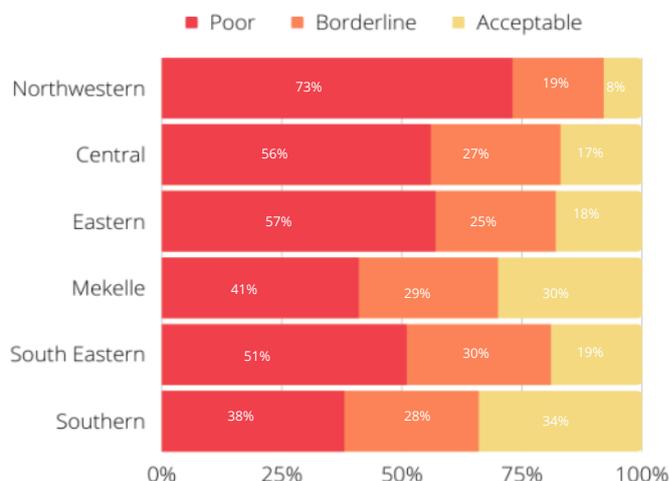
As compared to rates observed during the same season in 2020, the average consumption of cereals has largely

AVERAGE NUMBER OF DAYS CONSUMING EACH FOOD GROUP (7-DAY RECALL PERIOD)

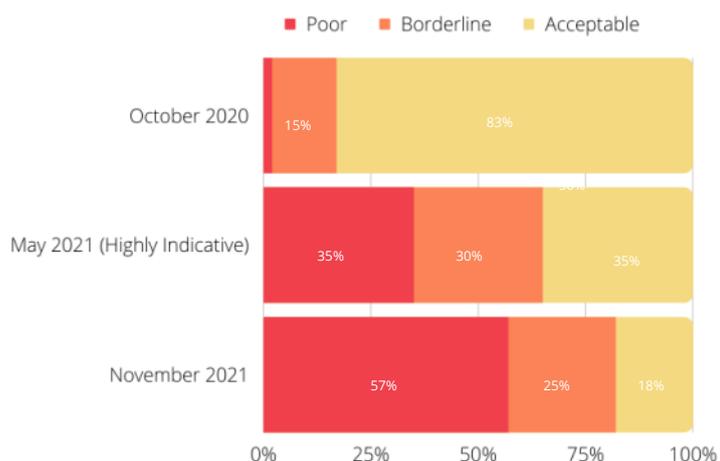


remained steady, however the consumption of almost all other food items, particularly the consumption of fats, sugars and vegetables, declined drastically. In particular, cooking oil and sugar are goods that are often purchased through the market and whose availability has been

HOUSEHOLD FOOD CONSUMPTION PATTERNS BY ZONE



HOUSEHOLD FOOD CONSUMPTION BETWEEN OCTOBER 2020 & NOVEMBER 2021



steadily decreasing in recent months while prices have been steadily increasing, in part due to the reliance on imported oil. Nationwide prices in October were twice the price as they were in 2020³⁸, but further to nationwide food inflation, the prices of basic food commodities such as edible oil, rice and pasta, onions, and bananas across five market areas in the Tigray Region specifically were consistently higher as compared to the Addis Ababa market.

Findings indicate a slightly higher poor FCS in the North western zone (73 percent), Eastern zone (57 percent), Central zone (56 percent) and South eastern zone (51 percent). A slightly lower proportion of households in the Southern zone and Mekelle were categorised as having poor diets at 38 percent and 41 percent, respectively.

Trends in food consumption score were largely not statistically significant when considering household income sources. However, findings may suggest lower levels of acceptable food consumption for those relying on community support as their primary food source (between 7 and 14 percent with acceptable diets) as compared to those primarily relying on cash purchases at the market to cover their food needs (between 16 and 34 percent with acceptable diets).

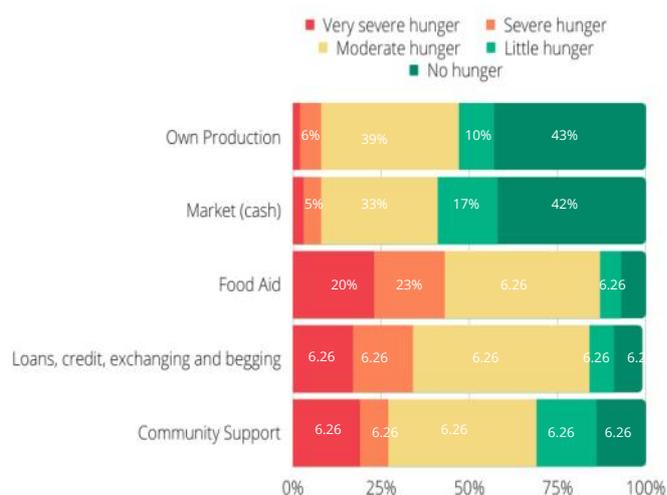
The trends in reported consumption patterns based on household food and income sources are also reflected in the level of food stocks reportedly remaining in the household, with the majority of those reliant on community support or loans for food and income, as well as households whose primary income source was on casual labour, reporting zero food stocks remaining in their household. This may suggest no clear relief in the immediate term for those households already facing the worst-off consumption gaps in November 2021, as these

households are likely to continue to be market dependent and/or reliant on community support to cover their food needs.

HOUSEHOLD HUNGER SCALE

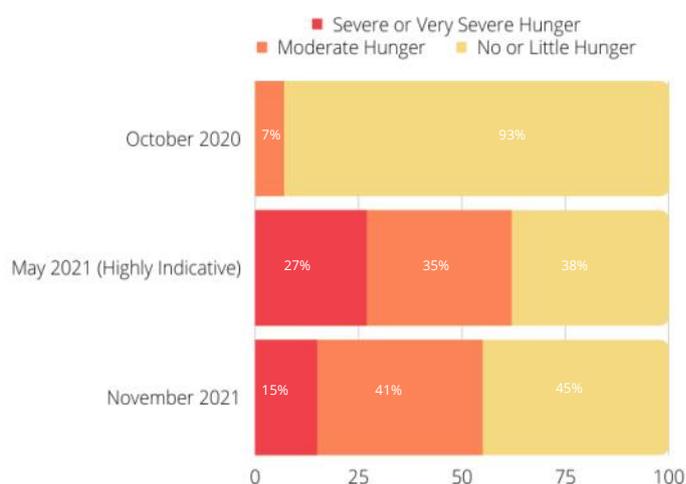
Food consumption indicators suggest that households continued to experience serious food insecurity during the early period of the harvest. When looking at the outcomes of the Household Hunger Scale (HHS), 45 percent of surveyed households were categorised as experiencing little to no hunger, whereas 40 percent of surveyed households were categorised as experiencing moderate hunger, and 15 percent of households categorised as

HOUSEHOLD HUNGER BY FOOD SOURCE

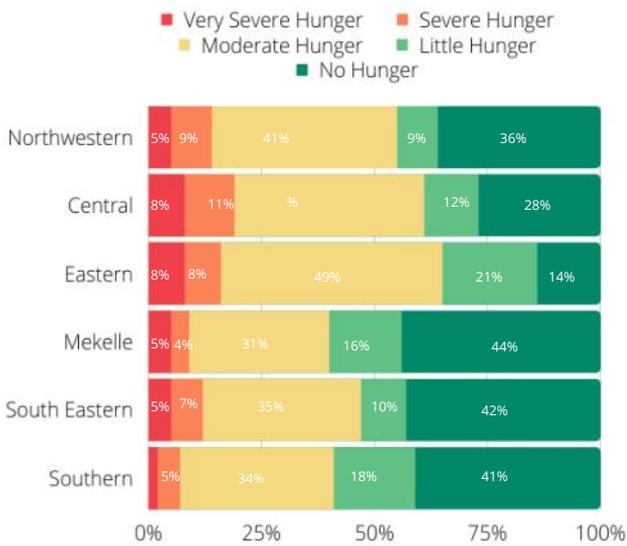


experiencing severe or very severe hunger. When comparing current rates of hunger to those observed during the same seasonal period before the crisis when 93 percent of households were found to experience no to little hunger, a serious deterioration is observed. In October 2020, less than 1 percent of households in the

HOUSEHOLD HUNGER BETWEEN OCTOBER 2020 & NOVEMBER 2021



HOUSEHOLD HUNGER BY ZONE

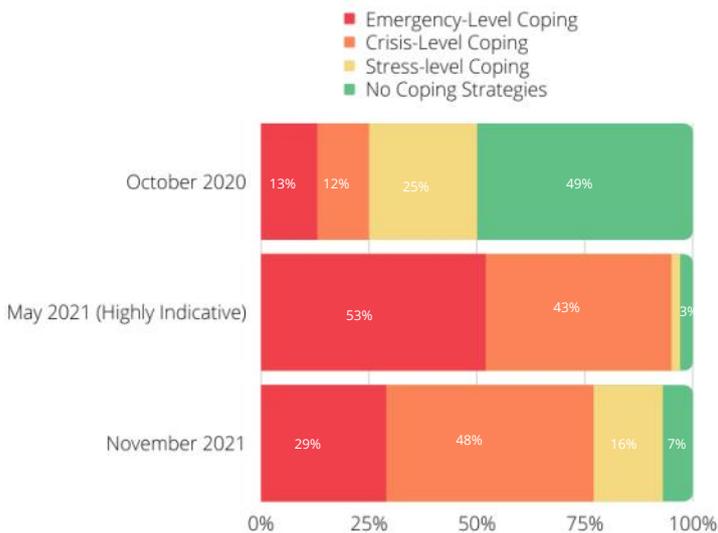


Tigray Region were found to experience severe or very severe hunger (IPC 2020).

However, when comparing current HHS findings to those observed in May as reported through both computer-assisted telephone interviews (CATI) as well as the hard-to-reach assessment, an improvement is shown, particularly when it comes to households facing very severe hunger. Whereas this ranged between 27 and 34 percent between the two datasets in May 2021, rates nearly halved by November 2021 to 15 percent.

Levels of household-reported experiences with hunger in the 30 days prior to data collection were found to differ depending on the primary food source for the household during that same time period. Those relying primarily on community donations and support to cover their basic food needs were reporting higher levels of severe or very

PERCENTAGE OF HOUSEHOLDS RESORTING TO COPING STRATEGIES SINCE OCTOBER 2020



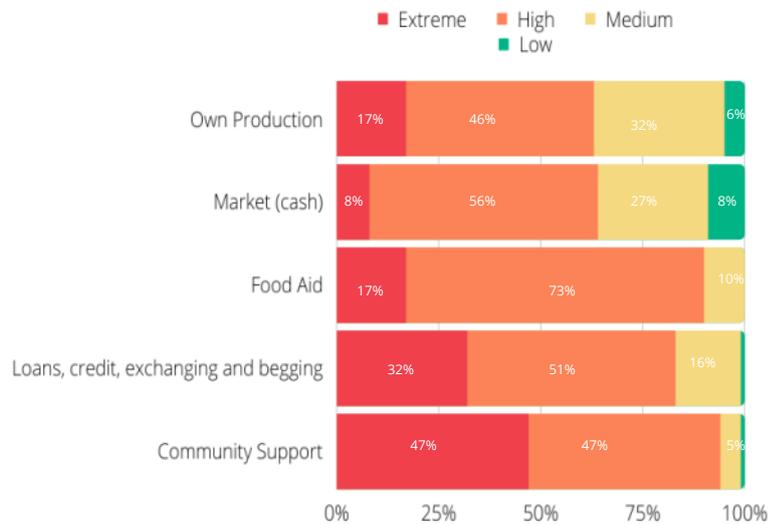
severe hunger, particularly as compared to households relying on their own production. Similar trends of higher severe levels of hunger were found for female-headed households as compared to their male-headed counterparts, likely driven by the aforementioned higher reliance on informal community-based networks to cover their food and income needs.

As with the Food Consumption Score, geographic trends did not produce statistically significant differences, but may suggest more severe experiences of hunger in the Central, Eastern, North western and South eastern zones. A disaggregation by urban and rural household typologies also did not produce notable differences.

REDUCED COPING STRATEGIES³⁹

Consumption-based coping strategies households adopt can give an indication of their food security situation during seven days preceding the survey. During this survey the vast majority of households (76 percent) were classified as engaging in high or extreme levels of consumption-based coping strategies. The reported behaviours of

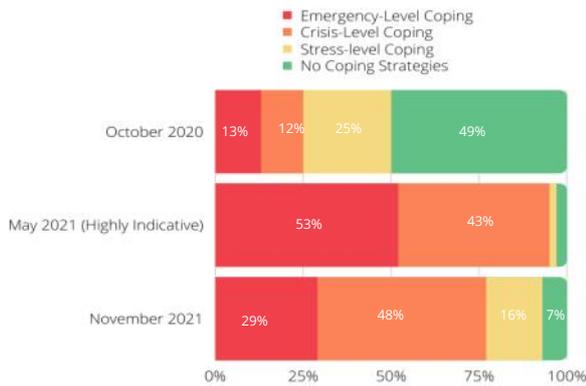
REDUCED COPING STRATEGIES BY FOOD SOURCE



limiting portion sizes, reducing the number of meals per day, and reducing amounts for adults so that children and/or pregnant women may eat corroborate qualitative and informal reporting from respondents about engaging in careful and strategic planning of remaining food stocks within the household to space out consumption over time, either due to depleted stocks within the household or due to fears of additional shocks during the coming period that may threaten their future access to food.

Mirroring potential trends from previous household outcome indicators, the reported levels of consumption-based coping were associated with household reported food sources but produced indicative-only geographic

SEVERITY OF COPING STRATEGIES SINCE OCTOBER 2020



trends. Households reporting reliance on informal networks such as community support and/or loans and credit-based purchases reported higher levels of extreme coping strategies (35-59 percent and 25-40 percent, respectively). These levels were higher than households reporting primarily accessing their food through cash purchases or their own production (4-12 percent and 10-22 percent, respectively). Those reportedly relying primarily on food assistance were not found to have different patterns in the severity of consumption-based coping strategies as compared to other food sources.

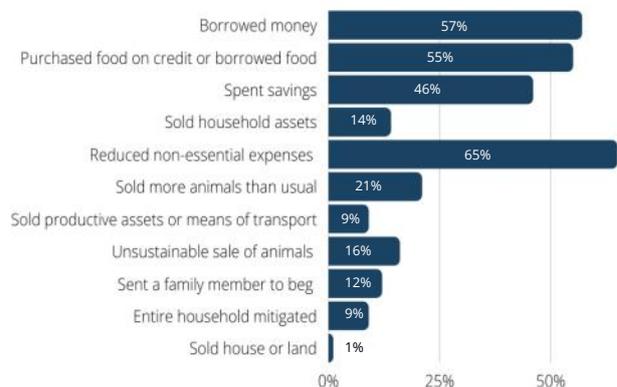
While geographic trends did not suggest differences in r-CSI levels across the region, findings indicatively suggest slightly higher extreme levels of household consumption-based coping strategies in the Central, Eastern, North western and South eastern zones, with very similar findings across urban and rural areas.

LIVELIHOOD COPING STRATEGIES

The multi-faceted effects of the aforementioned disruption to livelihoods, along with region-wide shutdown of banking and financial services, have forced households to significantly adapt their behaviours in order to cover their basic needs. The reported need to engage in increasingly unsustainable livelihood-based coping strategies specifically to cover food needs has been reported over the past year. In October 2020, immediately prior to the outbreak of conflict, 49 percent of households were reporting not needing to adopt livelihood coping strategies in order to cover their food needs, while this percentage has dropped to 7 percent for households in accessible areas in November 2021. On the other hand, while 25 percent of the region previously reported engaging in Crisis or Emergency-level livelihood coping strategies, this proportion has increased to 77 percent by November 2021. On the other hand, while 25 percent of the region previously reported engaging in Crisis or Emergency-level livelihood coping strategies, this proportion has increased to 77 percent by November 2021.



PERCENTAGE OF HOUSEHOLDS RESORTING TO EACH LIVELIHOOD-BASED COPING STRATEGY



As with many sudden onset conflict scenarios, the set of livelihood coping strategies captured within this survey module is likely an incomplete picture of the variety of new ways in which households have needed adapted over the past year but provide an indicative view of the significant erosion of household resilience that remains following months of engaging in high levels of Crisis and Emergency-level coping strategies in order to cover their food needs and likely other basic needs.

In May 2021, categorised reported livelihood coping strategies⁴⁰ were reported at similarly high levels as November 2021, pointing to the prolonged nature of the erosion of coping capacities within the region. Despite the May 2021 CATI survey coverage primarily reaching respondents in limited areas where phone network remained functional, highly indicative findings suggest only 3 percent reported engaging in no coping strategies, 2 percent reported Stress-level coping, 43 percent reporting Crisis-level coping, and 53 percent reporting Emergency-level coping strategies. The prolonged nature of elevated and severe levels of negative and often irreversible coping behaviours points to diminishing resilience for the region as a whole to respond to any potential shocks in the near to medium-term.

The below chart summarises specific behaviours that households across the region reported engaging in during the 30 days prior to data collection in order to cover their basic food needs. Qualitatively during this section, many households also expressed that they have adapted by engaging in different forms of casual labour that was previously not needed (such as selling of vegetables on the road, hair braiding and barbers) not only to obtain a minimal amount of income to cover basic food needs but also as a way to 're-pay' community members for support over the past months even if the monetary amount was negligible. Additionally, many respondents mentioned sending their children or other family members to eat with extended family due to lack of food within their own household, either in the short term (one to two meals a week) or in the medium-term (sending children to live with family members with higher means). One final important note on the interpretation of the level of engagement in coping behaviours is that numerous households expressed that they attempted engage in some of the behaviours, but due to external factors and a lack of demand to purchase the items they were attempting to sell, they ultimately were not able to take advantage of certain coping behaviours. This was mentioned primarily for the coping strategies of selling household assets, furniture, and livestock, with the inability to bring their goods to market or to find buyers reported as the primary hindrance. On one hand while this may suggest that households continue to possess a certain level of assets, it may be indicative of reduced community-

wide coping capacities and will be a key aspect to be monitored in the coming months, especially in light of the high levels of reported community sharing for food and monetary support.

The above findings provide an indication on the increasingly protracted nature of disrupted food and livelihood systems and its implications on household behaviours and abilities to cover their basic food needs.

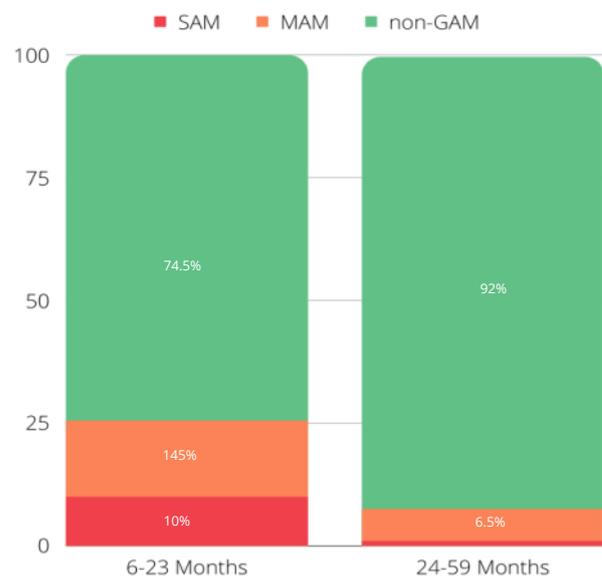
Proxy Global Acute Malnutrition

CHILDREN AGED 6-59 MONTHS

The below table summarises estimated acute malnutrition rates calculated based on mid-upper circumference (MUAC) and/or bilateral pitting oedema – indicators which are sensitive as predictors of child mortality^{41, 42, 43}. Overall proxy GAM rates were estimated at 12.7 percent, of which proxy SAM rates were 3.6 percent. Most pre-conflict reference points for acute malnutrition in the region can only provide a loose source of comparison due to differences in methodology. The 2019 mini-Demographic and Health Survey estimated GAM and SAM rates of 9.1 percent and 0.7 percent in the Tigray Region based off weight-for-height measurements⁴⁴.

An exploration of proxy GAM rates for younger children (aged 6-23 months) and older children (aged 24-59 months) reveals higher rates of proxy GAM and SAM among younger children. This disaggregation suggests proxy GAM rates of 25.5 percent and proxy SAM rates of 10 percent for younger children, compared to proxy GAM of 7.5 percent and proxy SAM of 1 percent for older children.

PROXY GAM RATES OF CHILDREN CALCULATED VIA MUAC



As of September 2021, partners carrying out nutrition support activities had screened more than one million children under the age of five (although some children will have inadvertently been screened more than once), with proxy SAM averages around 2.0 percent and proxy MAM around 16.2 percent⁴⁵. These proxy GAM rates suggest risky to serious conditions especially in light of aggravating factors (e.g., food insecurity)⁴⁶ and since programmatic screening has consistently produced MUAC estimates above this threshold⁴⁷, partners have been trying to maintain nutrition treatment programs despite extreme operational challenges⁴⁸. Among children found with proxy GAM by MUAC in this survey, 45 percent of children were reportedly consuming any supplementary nutritional sachets at all (either therapeutic or blanket feeding supplements) in the 30 days prior to data collection, suggesting a gap in the ability for programmatic partners to reach the majority of children facing malnutrition with sufficient and regular treatments.

PREGNANT & BREASTFEEDING WOMEN

Over the course of this assessment, survey teams encountered a total of 279 pregnant or lactating women among the 979 households. Proxy MAM rates were found to be 60.5 percent, comparable to the average of 53.3 percent from more than 250,000 screened through September 2021⁴⁹, adding to the breadth of information sources indicating persistently and alarmingly high levels of malnutrition among this group particularly vulnerable to undernutrition⁵⁰. Furthermore, only 15 percent of the PLW classified as moderately malnourished were reportedly taking any supplements (e.g., SuperCereal sachets) in the 30 days prior to the survey, potentially underscoring the high caseload of unmet needs for PLW continuing to face inadequate dietary intake and lack of access to essential maternal health care services⁵¹.

INTERSECTIONS BETWEEN FOOD SECURITY, ACCESS TO IMPROVED WATER SOURCES & HEALTH SERVICES

During the food security modules of the survey, 72 percent of households across accessible areas of the Tigray Region reported restricting consumption by adults at least one day in the seven days prior to data collection in order for small children to eat. The average number of days that this behaviour was reported was 4.1 days per week. Qualitatively, when respondents were asked this question, a substantial portion of households with pregnant and/or lactating women would express that other adults would limit their consumption in order to prioritize the consumption of not only young children but also for pregnant or lactating women within the household, and

would mention that they were doing their best to prioritize dietary intake of both women and children.

However, as has been highlighted over the months, the concerning rates of malnutrition should be considered not only in the context of insufficient diets, but also with regards to access to health services and clean water and sanitation that underpin child and maternal health outcomes⁵². The association between selected variables and proxy child nutrition status by absolute MUAC thresholds was examined by performing bivariate analyses; to measure the strength of association between the ordinal response and independent variables (covariates), chi-square tests were used. As part of this rapid assessment, many household or individual characteristics that would be typically included were not included (e.g., child feeding practices, specific morbidities, vaccinations, mother ante- and post-natal care access), therefore a more complete multi-variate model was not considered during the analysis.

Independent Variables			Chi-square p-value
Indicator	Categories	N (# of children U5)	
Household with a child U5 reportedly sick in the 30 days prior to data collection	Yes	206	0.0003
	No	435	
Household water source	Improved	512	0.207
	Unimproved	129	
Gender of head of household	Male	477	0.169
	Female	186	
Household Hunger Scale, categorized	None (0)	224	0.347
	Little (1)	102	
	Moderate (2-3)	231	
	Severe (4)	59	
	Very Severe (5-6)	25	
Food Consumption Score, categorized	Acceptable	151	0.130
	Borderline	166	
	Poor	322	
Livelihood Coping Strategies Index, categorized	None	43	0.113
	Stressed	116	
	Crisis	320	
	Emergency	162	
Household reportedly limiting consumption of adults so that young children may eat	Yes	509	0.239
	No	132	
Household relying on humanitarian assistance for at least 25 percent of their food consumption in 30 days prior to data collection	Yes	70	0.983
	No	566	
	No	566	

However even within this rapid assessment, correlations were found between child illness (reported at the household level) and the nutritional status of children (p-value = 0.0003), highlighting the importance of access to not only sufficient food and nutrition services but also to functional health services. While other household characteristics were statistically significant at the p<0.05 level, the below table provides a rough indication of the diverse factors that may be associated with child malnutrition after one-year of prolonged conflict and conflict-related restrictions, spanning the domains household water sources, and household demographics, in addition to household food security conditions measure the strength of association between the ordinal response and independent variables (covariates), chi-square tests were used. As part of this rapid assessment, many household or individual characteristics that would be typically included were not included (e.g., child feeding practices, specific morbidities, vaccinations, mother ante- and post-natal care access), therefore a more complete multi-variate model was not considered during the analysis. However even within this rapid assessment, correlations were found between child illness (reported at the household level) and the nutritional status of children (p-value = 0.0003), highlighting the importance of access to not only sufficient food and nutrition services but also to functional health services. While other household characteristics were statistically significant at the p<0.05 level, the below table provides a rough indication of the diverse factors that may be associated with child malnutrition after one-year of prolonged conflict and conflict-related restrictions, spanning the domains household water sources, and household demographics, in addition to household food security conditions.

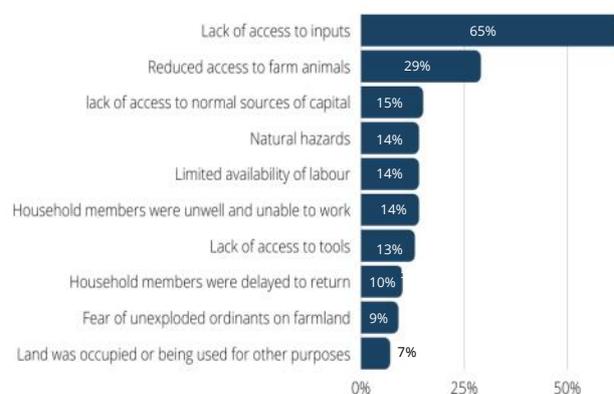
Agricultural Activity

The levels of food consumption reported during this assessment – although overwhelmingly lower than acceptable levels – were maintained largely by the *meher* harvest that was underway during data collection. The significance of the *meher* harvest was echoed by all respondents across the region and regardless of households’ current livelihood patterns. Although the harvest was at one point assumed to be negligible due to conflict-related disruptions, roughly 52 percent of the assessed population in accessible areas of Tigray reported planting during the recent *meher* planting season. However, among those who reported having access to land, significant challenges were reported and only 36 percent reported being able to cultivate on-time in 2021, although the majority (61 percent) reported ultimately being able to plant albeit late and/or having missed crucial land preparation periods. While geographic variations are

highly indicative (as this question was asked as a subset of households), the highest proportion of those who reported delays in planting were in the Eastern and North western zones (roughly three-quarters reporting delays), followed by the Central and South eastern zones (roughly half reporting delays).

Among households who reported currently having access to land but not having been able to plant at all or having been delayed, key reported challenges and constraints align with preliminary findings from the region-wide *meher* agricultural and crop assessment. Households mentioned significant challenges to early season land preparation primarily related to the lack of regular access to land during critical periods. This was driven by a myriad of reasons ranging from temporary displacement away from their land (10 percent), or their cropping fields being occupied or feared to be contaminated with unexploded remnants of war (7 percent and 9 percent). Delays in the preparatory period were subsequently followed by challenges related to lack of inputs such as fertilizer and improved seeds (64 percent), the lack of ability to purchase supplemental inputs without functional financial services (15 percent), and the limited availability of agricultural labour (14 percent reporting reduced labour overall and 14 percent reporting illnesses or household members being too unwell for agricultural labour). Heavy looting and destruction of agricultural assets early in the conflict⁵³, inclusive of farm equipment, working animals, and orchards or bee keeping areas, was also a significant challenge that households reported not having recovered from (29 percent and 13 percent reporting on farm animals specifically and agricultural assets generally); further contextualised by reports from previous months suggesting that assets were depleted when farm animals were beginning to be consumed in some areas due to lack of alternative food sources⁵⁴.

CONSTRAINTS PREVENTING HOUSEHOLDS FROM CULTIVATING ON TIME



Among households who previously had access to land for cropping and/or livestock rearing, the majority (86 percent) reported that the size of land that they currently have access to largely remained equal between 2020 and 2021. Roughly 5 percent reported losing their land altogether, slightly elevated in Eastern Zone (8 percent). In Ethiopia the average smallholder farm size was 0.9 hectares, and an average household of 4 - 5 people needs at least one hectare of land in most cereals-based areas of the country to provide enough basic food plus the cash from produce sales to pay for the bare essentials of life^{55, 56}. Within this survey, the majority of farming respondents reported having planted less than half of one hectare during the 2021 *Meher* season.

Among these same households, cereals were the overwhelmingly reported items being grown, with a mix of long-cycle crops such as sorghum (37 percent), maize (30 percent), and millet (6 percent) as well as short-cycle crops such as teff (40 percent), wheat (28 percent), and barley (28 percent). While geographic variances in reported crops is highly indicative due to the subset nature of this question, findings may support partner field reporting suggesting shifts towards planting of short-cycle crops. Wheat and barley were reported to be grown by 15-25 percent of farming households in the Central and North western zones, where these crops are not traditionally significantly grown. While the current food security household survey may provide an indication on agricultural activity and linkages to household consumption patterns, it is critical for findings from this household survey to be contextualised via ongoing field assessments to support overall estimated agricultural yields. Initial reporting from region-wide *meher* crop assessments, extrapolated from visits to a tabias in each of the five accessible agricultural zones (North western, Central, Eastern, South eastern and Southern), indicate that *meher* agricultural activities will likely lead to a below-average harvest, although more substantial than was anticipated by food security analysts at the height of active conflict within the Tigray Region. Erratic rainfall especially leading up to and during the beginning of the harvest period may lead to lower yields

than planned, in addition to post-harvest crop losses⁵⁷. Due to these issues related to crop performance, compounded with delayed planting and reduced inputs (fertilizers and improved seeds), expected yield is estimated to be decreased to roughly 40 percent of a reference year⁵⁸.

Prevalence of Food Insecurity

Previously covered food security indicators were aggregated to form the r-CARI, which is an approach used to report on population's overall food security status using remote surveys. This composite indicator is used to determine the number of food insecure people through assessing two dimensions, the current food consumption status of households and current coping capacity of households to meet future needs (including livelihood coping and economic capacity).

Despite being a face-to-face assessment, the r-CARI approach is used instead of the CARI as household expenditure-related information was not collected during the data collection exercise⁵⁹. Sources of main income generating activities and reported economic shocks⁶⁰ were used as proxy for household economic capacity⁶¹.

Food security in the Tigray Region is worrisome with 83 percent of households being food insecure (of which 46.4 percent are moderately food insecure and 37.5 percent are severely food insecure). The zones recording the highest food insecurity rates are the North western zone (93 percent), Eastern zone (86 percent) and the Central zone (84 percent). These zones also recorded the highest prevalence of households consuming poor diets due to the sporadic weekly consumption of nutritious foods such as milk and dairy products (on average consumed 0.4 days on weekly basis) or proteins (0.2 days per week in Central and North West and 0 days in East). In addition, the Central and Eastern zones are among those recording the highest

FOOD INSECURITY PREVALENCE BY ZONE

ZONE	FOOD INSECURE (MODERATELY AND SEVERELY)	SEVERELY FOOD INSECURE	MODERATELY FOOD INSECURE	MARGINALLY FOOD INSECURE	FOOD SECURE
CENTRAL	83.5%	38.1%	45.3%	12.9%	3.6%
EASTERN	86.2%	38.9%	47.3%	13.0%	0.8%
MEKELLE	80.5%	30.7%	49.8%	17.2%	2.3%
NORTH WESTERN	93.1%	45.2%	47.9%	5.9%	1.1%
SOUTH EASTERN	77.6%	30.4%	47.9%	5.9%	1.1%
EASTERN	63.9%	20.3%	43.6%	32.6%	3.5%
TIGRAY OVERALL (EXCLUDING WESTERN ZONE)	83.0%	36.5%	46.4%	14.8%	2.2%

POPULATION ACCORDING TO FOOD SECURITY STATUS⁶⁴

ZONE	TOTAL POPULATION	FOOD INSECURE (MODERATELY AND SEVERELY)	SEVERELY FOOD INSECURE	MODERATELY FOOD INSECURE	MARGINALLY FOOD INSECURE	FOOD SECURE
CENTRAL	1,475,184	1,231,089	562,480	668,609	191,031	53,064
EASTERN	1,273,919	1,098,118	495,554	602,564	165,609	10,191
MEKELLE	422,937	340,465	129,842	210,623	72,745	9,728
NORTH WESTERN	1,139,384	1,060,597	515,147	545,450	66,666	12,121
SOUTH EASTERN	454,693	352,842	138,227	214,615	87,301	14,550
EASTERN	830,877	530,930	168,668	362,262	270,866	29,081
TIGRAY OVERALL (EXCLUDING WESTERN ZONE)	5,596,995	4,614,041	2,009,9188	2,604,122	854,219	128,735

*Source: Central Statistical Services 2022 population estimates.

*Assumption of 90% displaced from the western zone (473,330) of the base population (525,923); 50% each of this displaced population has been distributed to Mekelle and NW base population respectively.

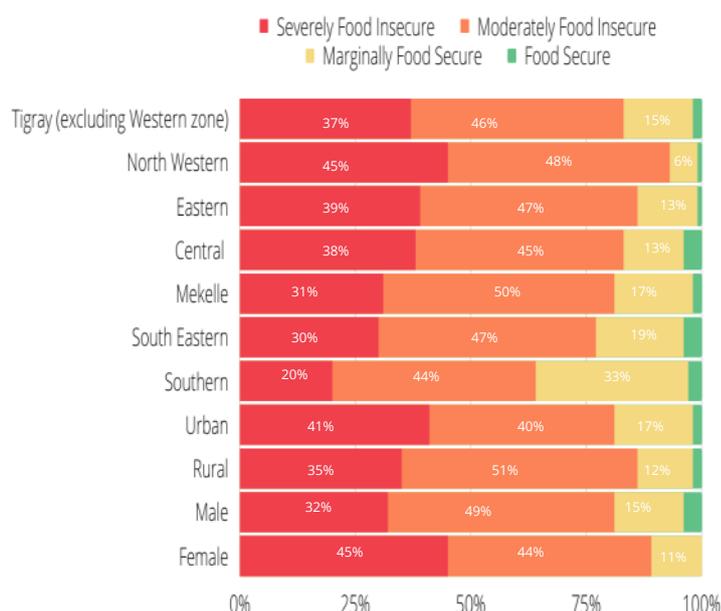
prevalence of households who implement emergency coping mechanisms such as selling last female animals or of households who implement emergency coping mechanisms such as selling last female animals or reproductive animals in unsustainable way (20.9 and 32.1 percent, respectively).

In terms of type of area of residence, a larger share of households located in rural areas were found to be food insecure compared with their urban counterparts (86 vs. 81 percent); however more urban households were severely food insecure (41 compared to 35 percent). Urban households might be more vulnerable to food insecurity compared rural households due to lower reliance on own production as source of food (only 2 compared to 44 percent) and high dependence on community support as the main source of income and main source of food.

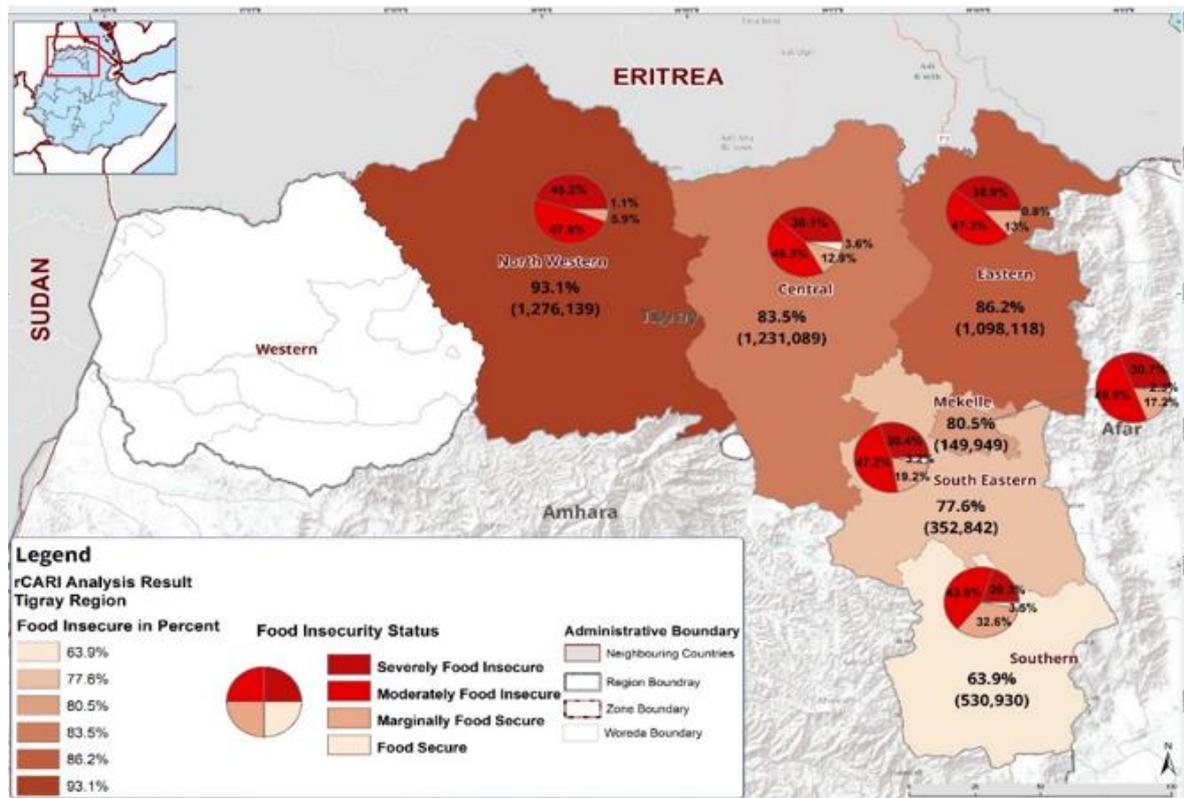
However, it is important to note that not all rural households reported being able to plant during the recent Meher planting period, leaving many households in rural areas without direct access to the harvest that reported as a key food source across the region. In addition to rural households who were historically dependent on seasonal and/or migratory labour or on livestock rearing, most farmers faced significant constraints during this past season, including but not limited to significant delays to land preparation during the early rains⁶², lack of inputs and fertilizers and loss of productive farming assets, as well as moisture stress and crop failure⁶³. As presented in the findings on individual food security outcome indicators, the relationship between household food source and household food consumption revealed significantly worse-off conditions for those relying on informal and likely unreliable food sources, regardless of the household's location in administrative zones or in urban or rural areas.

When disaggregating results by the sex of household head, a larger proportion of female-headed households were more food insecure compared to their male counterpart (89 compared to 81 percent). A larger proportion of female-headed households reported support from the community where they live as main source of income compared to male-headed households (22.1 vs. 16.8 percent). On the other hand, 22.8 percent of male-headed households reported selling off their own produce as main source of income compared to 11.5 percent – making female-headed households more prone to economic vulnerability. In addition, a higher proportion of female-headed households were found to consume poor diets (65.2 percent compared to 52.7 percent of male headed households).

R-CARI IN TIGRAY, BY ZONE, URBAN/RURAL AND SEX OF THE HEAD OF HOUSEHOLD



ESTIMATED CATEGORIES OF HOUSEHOLD FOOD INSECURITY BY ZONE, SUMMARIZED VIA R-CARI METHODOLOGY



WHO IS MOST VULNERABLE TO FOOD INSECURITY?

Conflict coupled with agroclimatic and economic shocks such as high prices of key food and non-food items have hampered households' capability to meet food and non-food needs. This has led to extremely high rates of food insecurity with more than four in five households being food insecure. Despite the deteriorated overall situation, some households were found to be more vulnerable to severe food insecurity⁶⁵. This includes female-headed households, displaced households, households including at least one member reporting being ill in the two weeks prior to the survey or at least one disabled member⁶⁶, household including at least one child reported ill in the two weeks prior to the survey and households including at least one pregnant woman⁶⁷. In case of the need to introduce a prioritization plan due to funding constraints, then the above derived criteria from the EFSA dataset can be considered after discussing with field programme activity managers for context inputs and additional criteria.



Conclusion

Over the past year since the onset of conflict in northern Ethiopia, the population of the Tigray Region has endured multiple shocks affecting their food, market, and basic infrastructure systems. Drivers of food insecurity have compounded over time and remain severe; from direct active conflict and related displacement dynamics to region-wide restrictions on the movement of goods and people, in turn severely disrupting typical livelihood patterns.

One effect of these repeated and prolonged shocks has been a significant deterioration of household food security outcomes compared to this period last year immediately prior to the crisis. In a region that is typically food secure (especially following the *meher* harvest period), 84 percent of residents were found to be food insecure in November 2021, and the overwhelming majority were found to be facing food consumption gaps requiring immediate and urgent assistance.

The high proportion of households facing food insecurity is despite the availability of limited humanitarian food assistance at key periods in mid-2021, despite seasonal improvements related to the ongoing harvest, and despite extreme levels of coping that households and communities have reportedly engaged in over many months in order to maintain minimal levels of food consumption.

The need for the population to engage in extreme negative coping mechanisms has been reported for months and has led to a much less resilient population vulnerable to additional or continued shocks. The introduction of new shocks, such as possible crop losses or resumption of conflict, or the extension of existing drivers of extreme food insecurity may be catastrophic for the region and may exacerbate existing vulnerabilities for households already found to face higher levels of extreme food gaps. Sustained elevated malnutrition rates also point to the prolonged and comprehensive nature of the disruption to other basic services, such as the breakdown of health and clean water systems.

Strong social networks and high levels of community sharing of food, cash, and other resources has reportedly remained pivotal in maintaining minimal food consumption for a large share of the population. This dependency is not only worrisome for affected households but for the region as a whole. It may also be indicative of a faster-than-normal consumption of newly harvested crops, of which the total yield is already expected to be significantly below average. This may suggest that the *meher* harvest will serve only as an extremely temporary relief for a region with limited resilience remaining, and external food sources and key commodities will be

required well before region-wide stocks begin to deplete in order to prevent large-scale and widespread hunger-related deaths.

RECOMMENDATIONS

In light of the above conclusions and findings, the food security outlook through mid-2022 will be guided not only by a robust estimate of total crop yield within the region to inform food availability, but also through the close monitoring of specific behaviours and risk factors for vulnerable population groups. With the overall aim of supporting and informing humanitarian actors working to halt the deterioration of region-wide food security, a non-exhaustive list of critical issues and risk factors to monitor is below:

- The evolving situation in hard-to-reach areas that were unable to be included in this FSMS;
- The evolving situation for population groups already found to have higher needs (i.e. those with limited income-generating opportunities, relying on community support and informal sources to cover their food and cash needs, female-headed households);
- The ability to distribute available food stocks within the region;
 - Access to functional markets for buyers, traders, and sellers, including terms of trade and incentives for sellers and purchasing power for buyers;
 - Adapted supply chain dynamics and informal market functionality;
 - The extent of informal and/or organised efforts to share or re-distribute food stocks to high-need areas;
- The ability to meet the urgent need for increased food supplies through external sources. Specifically, the capacity and ability for humanitarian emergency supplies and/or commercial goods to scale-up and operate within the region, prior to the expected; depletion of newly harvested stocks in early-2022;
- The dynamic ways in which communities will continue to adapt and cope in order to cover the most basic essential needs and the strength of related social networks over time;
- Critical monitoring of nutrition, mortality, and health outcomes to monitor the severity of the situation over time and to immediately flag any further deteriorations and;
- Monitoring of household outcomes and contributing factors to acute food insecurity in areas of highest concern, to inform operational partners and to prioritise assistance to communities most in need.

Annex: Methodological Note on Remote CARI Dimensions

The Remote CARI (rCARI) is a household food security composite indicator including two dimensions:

- Current food security status and;
- Current coping capacity to meet future needs.

The rCARI dimension is used when collection of expenditure data is not possible as the data collection process is likely to make expenditure data highly unreliable – e.g., in the case of phone or web-based surveys. In the case of this assessment, expenditure data was not collected due contextual constraints, which would have made the quality of expenditure data collected, questionable time constraints and collection of expenditure data might have slowed down the data collection process which was not advisable given the food security concerns in the Tigray Region.

The below sections illustrate how each dimension of the r-CARI was computed and how they were synthesized to classify households according to the r-CARI.

Dimension 1: Food Security Status

Following the latest guidelines for r-CARI, Food Consumption Groups and rCSI were combined to generate food security status indicator grouping households who:

- Consume acceptable diets (FCS > 35)
- Consume acceptable diets but implement food-consumption based coping strategies (FCS > 35 and rCSI >=4)
- Consume borderline diets (21 < FCS < 35)
- Consume poor diets (FCS < 21).

Dimension 2: Current Coping Capacity to Meet Future Needs

LIVELIHOOD COPING

There is no difference between CARI and r-CARI for the calculation of this component of Dimension 2: households are grouped according to the severity of the livelihood coping strategies implemented. The table on the top left summarizes the categorization of livelihood coping strategies according to the severity level.

Severity Level	Strategy implemented
Households not adopting coping strategies	
Stress coping strategies	Purchased food on credit or borrowed food Spent savings Borrowed money Sold household assets/goods
Crisis coping strategies	Sold productive assets or means of transport Reduced expenses on health and education Sold more animal (non-reproductive) than usual but in a sustainable way
Emergencies coping strategies	Sold more animal (reproductive) than usual or last female animal Begged Entire household migrated

ECONOMIC CAPACITY

Instead of share of food expenditure over total expenditure, household economic capacity was calculated by determining the change in income generating activities (compared to November 2020) by combining the current economic activities with either crop failure or loss/reduction of income (reported as main shock experienced by the household in the last three months). As shown in the below table, income generating activities were categorized in three groups, according to the regularity and sustainability of each activity.

Categorization of activities	Income generating activity
Regular income	Professional salary and wages Pension Selling of agricultural products (crops, honey, sesame) Selling of animal products (dairy, meat) Savings
Informal or remittances	Migratory / seasonal labour - sending HH members to work on farms Remittances or support from family member Daily labour (construction, distributions) Preferred not to answer
Assistance or no income	Loans from community Begging No work Other

After combining the above with I) change in main income source (compared with November 2020) or II) crop failure or loss/reduction of income as main shock experienced; household were grouped into four categories.

Categorized income generating activities	Crop failure or loss/reduction of income in the last 3 months	Change in income generating activity compared to October 2020	Economic vulnerability
Regular employment	No	No	Regular employment
Regular employment	Yes	No	Regular employment but loss/reduced income or informal income and remittances
Informal labour or remittances	Yes	Yes	Informal or remittance and income decreased or lost
Assistance or no income			No income or assistance

R-CARI

The final food security classification was obtained by combining the above indicators in the following way:

Dimension	Indicator	Indicator weight	Food Secure (1)	Marginally Food Secure (2)	Moderately Food Insecure (3)	Severely Food Insecure (4)
Current status	Food security status (weight 0.5)	0.5	Acceptable FCS	FCS acceptable but rCSI >4	Borderline FCS	Poor FCS
Coping capacity	Livelihood coping strategies	0.25	Households not adopting coping strategies	Stress coping strategies	Crisis coping strategies	Emergency coping strategies
	Economic vulnerability	0.25	Regular employment	Regular employment decreased or informal income and remittances	Informal or remittance and income decreased or lost	No income or assistance

Endnotes

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Endnotes

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- 66 A disabled household member is defined as an individual reporting one or more difficulties in the following activities: I) seeing – even with glasses –, II) walking or climbing steps, III) remembering or concentrating, IV) self-caring (e.g. washing all over or dress), V) understanding or being understood using the usual language
- 67 Results for “presence of at least one pregnant woman” are significant at $p=0.10$.

Acronyms

CATI	Computer Assisted Telephone Interview
FCS	Food Consumption Score
FEWS NET	Famine Early Warning Systems Network
FHH	Female Headed Households
GRID	Geo-Referenced Infrastructure and Demographic Data for Development
GAM	Global Acute Malnutrition
HHS	Household Hunger Scale
IPC	Integrated Food Security Phase Classification
MAM	Modern Acute Malnutrition
MHH	Male Headed Household
MUAC	Mid-Upper Arm Circumference
PLW	Pregnant and/or Lactating Women
PSNP	Productive Safety Net Programme
R-CARI	Remote Consolidated Approach for Reporting Indicators of Food Security
rCSI	(reduced) Coping Strategies Index
SAM	Severe Acute Malnutrition
SMART	Standardized Monitoring and Assessment of Relief and Transitions
WHZ	Weight-for-height Z-score

Administrative Levels

Region	Level 1
Zone	Level 2
Woreda	Level 3
Tabia or Kebele	Level 4

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