

# SMART+ surveys in Arsi zone, Oromia region

May, 2024

Ethiopia

## KEY MESSAGES

- The overall prevalence of global acute malnutrition (GAM) in children aged 6-59 months was 5.4%, considered Medium by global classification thresholds and requiring preventive measures. A higher GAM rate was found in Shanan Kolu woreda (11.6%), suggesting the need for targeted intervention.
- Results reveal largely inadequate dietary intake for children aged 6 to 23 months, which is a direct cause of acute malnutrition. Only 8.3% of children aged 6 to 23 months met the minimum acceptable diet (MAD), and 14.8% met the minimum dietary diversity (MDD) threshold, indicating a high risk to very high risk of deterioration of acute malnutrition.
- Results indicates that 13.4% of the population has a Poor food consumption score (FCS), while 32.1% of the population experience moderate (31%) to severe (1.1%) hunger. Shanan Kolu, Jeju and Seru woredas had higher severity scores, indicating a risk of deterioration during the lean season.
- Only 53% of households reported having access to safe or improved water for drinking and cooking, while only 12.5% of households reported having access to improved sanitation facilities. Insufficient access to drinking water and sanitary facilities is a key driver to worsening nutrition and health outcomes.
- Vitamin A coverage (66.5%) was below the UNICEF threshold of 70%, and the measles vaccination rate (78% for 9-59 months and 71% for 9-23 months) is below the global threshold of 95% herd immunity.

## CONTEXT & RATIONALE

Ethiopia faces significant food assistance needs, with around 10.4 million individuals requiring support annually, particularly in highland areas.<sup>1</sup> The drought, worsened by the El-Niño phenomenon, has led to reduced harvests and heightened food insecurity, raising concerns about malnutrition.<sup>2</sup> In the Arsi zone, the Meher 2023 season experienced varying weather patterns, including instances of both flooding and drought.<sup>3</sup> Following thorough consultations with the Emergency Nutrition Coordination Unit (ENCU) and analysis of health facilities' reports, REACH, in collaboration with the Regional Emergency Nutrition Coordination Unit (RENCU), chose 14 lowland woredas in Arsi zone for the SMART+ survey. This decision was based on the understanding that the remaining highland woredas generally have a surplus of food production and lower rates of malnutrition.

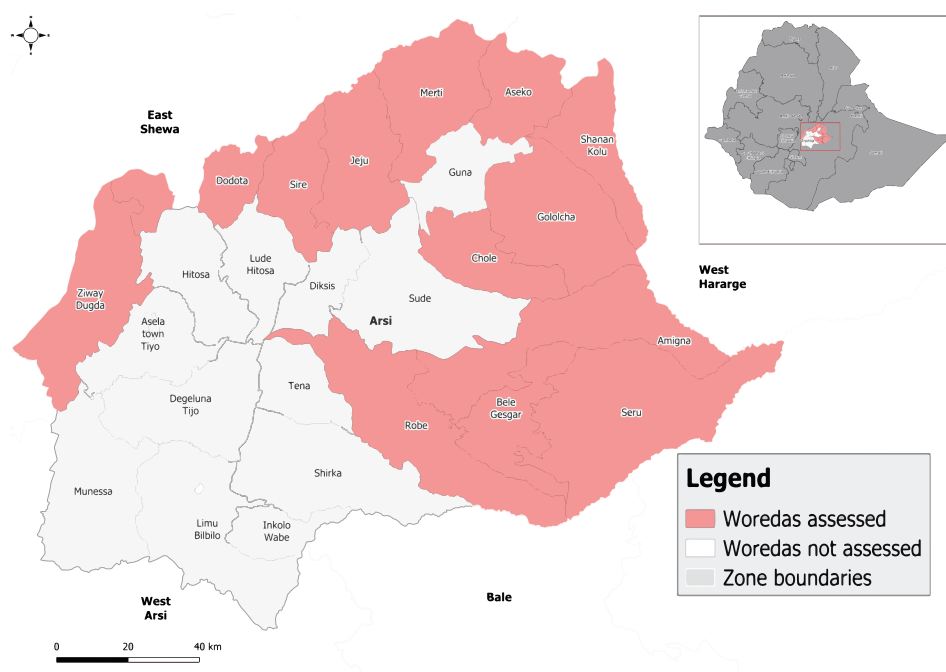
## Survey Aim

To address information gaps, REACH conducted a SMART+ survey in Arsi zone, assessing vital indicators such as malnutrition, mortality, infant feeding, health, WASH conditions, and food security. The collected data supported evidence-based decision-making in the nutrition cluster and partner organisations. For more details on the survey aim, please refer to the long report.

## METHODOLOGY:

The survey utilized a two-stage cluster sampling method based on the SMART methodology, which covered 80 clusters (95% of the planned clusters), resulting in data from 869 households with 783 children (aged 6-59 months). The survey was carried out from March 29 to April 9, 2024, which coincided with the *belg* (short rains) season.

Map 1: Assessment coverage, Arsi zone



## Nutritional status for children between 6 and 59 months

Table 1: WHO/UNICEF Classification for severity of malnutrition, by prevalence<sup>4</sup>

Indicators	Prevalence Thresholds Level (%)				
	Very Low	Low	Medium	High	Very high
Wasting (WHZ)	< 2.5	2.5 - < 5	5 - < 10	10 - 15	> 15
Overweight (WHZ)	< 2.5	2.5 - < 5	5 - < 10	10 - 15	> 15
Stunting (HAZ)	< 2.5	2.5 - < 10	10 - < 20	20 - > 30	> 30
	<b>Acceptable</b>	<b>Poor</b>	<b>Serious</b>	<b>Critical</b>	
Underweight (WAZ)	< 10	10 - < 20	20 - > 30	> 30	

### Prevalence of acute malnutrition in Weight for Height Z-score (WHZ)

Table 2: Prevalence Acute Malnutrition by WHZ (and/or oedema) by severity, by sex.

Indicator	All (N=772)	Boys (N=389)	Girls (N=383)
Prevalence of GAM (<-2 z-score and/or oedema)	5.4% [3.6 - 8.1]	5.7% [3.3 - 9.4]	5.2% [3.4 - 8.0]
Prevalence of moderate acute malnutrition (MAM) (<-2 to >= -3 z-score, no oedema)	5.2% [3.4 - 7.8]	5.1% [2.9 - 9.0]	5.2% [3.4 - 8.0]
Prevalence of severe acute malnutrition (SAM) (<-3 z-score and/or oedema)	0.3% [0.1 - 1.0]	0.5% [0.1 - 2.1]	0.0% [0 - 0]

The prevalence of GAM based on weight-for-height (WHZ) among children 6-59 months was **5.4%** (3.6-8.1, 95% CI), **which is classified as medium (5-<10) according to WHO/UNICEF classification for severity by prevalence for wasting for GAM.**

Severe acute malnutrition (SAM) was found for 0.3 percent of children (0.1-1), while 5.2 percent (3.4-7.8) had moderate acute malnutrition (MAM). Boys accounted for all cases of severe acute malnutrition (0.5%, 0.1-2.1), while no cases of SAM were observed amongst girls with WHZ.

### Prevalence of acute malnutrition based on Mid Upper Arm Circumference (MUAC)

Table 3: Prevalence of acute malnutrition based on MUAC cut offs and/or oedema, by sex.

Indicator	All (N=779)	Boys (N=393)	Girls (N=386)
Prevalence of global acute malnutrition (<125mm and/or oedema)	5.1% [3.4 - 7.6]	3.6% [1.9 - 6.5]	6.7% [4.2 - 10.7]
Prevalence of moderate acute malnutrition (<125 and >=115 mm, no oedema)	3.9% [2.5 - 5.9]	3.3% [1.8 - 6.1]	4.4% [2.6 - 7.5]
Prevalence of severe acute malnutrition (<115 mm and/or oedema)	1.3% [0.7 - 2.3]	0.3% [0.0 - 1.8]	2.3% [1.2 - 4.3]

The MUAC-based GAM prevalence stood at **5.1%** (3.4-7.6), including 1.3% (0.7-2.3) of children that were found to be in SAM, with a higher prevalence observed among girls (2.3%, 1.2-4.3) than boys (0.3%, 0.0-1.8). Children aged 42 to 59 months showed higher rates of wasting, with 8.2% (WHZ) and 8.1% (MUAC) classified as experiencing wasting respectively, suggesting heightened vulnerability to acute malnutrition in this age range.

### Prevalence of combined GAM and SAM based on WHZ and MUAC cut offs

Table 4: Prevalence of combined GAM and SAM based on WHZ and MUAC cut offs and/or oedema, by sex.

Indicator	All (N=779)	Boys (N=393)	Girls (N=386)
Prevalence of combined GAM (WHZ <-2 and/or MUAC < 125 mm and/or oedema)	8.9% [6.4 - 12.2]	7.6% [4.8 - 12.0]	10.1% [7.0 - 14.3]
Prevalence of combined SAM (WHZ <-2 and/or MUAC < 125 mm and/or oedema)	1.5% [0.8 - 2.8]	0.8% [0.3 - 2.3]	2.3% [1.2 - 4.3]

The prevalence of combined GAM, as defined by WHZ <-2 and/or MUAC < 125 mm and/or presence of oedema, was slightly higher for girls (10.1%, 95% CI: 7.0% - 14.3%) compared to boys (7.6%, 95% CI: 4.8% - 12.0%). **These combined results also indicate a slightly higher prevalence of SAM among girls (2.3%, 95% CI: 1.2% - 4.3%) compared to boys (0.8%, 95% CI: 0.3% - 2.3%).**

## Prevalence of chronic malnutrition

**Table 5: Prevalence of chronic malnutrition by HAZ, by sex**

Indicator	All (N=745)	Boys (N=380)	Girls (N=365)
Prevalence of stunting (HAZ < -2 SD)	40.7% [36.2 - 45.3]	44.2% [38.6 - 50.0]	37.0% [31.1 - 43.3]
Prevalence of moderate stunting (HAZ >=-3 to -2 SD)	25.0% [21.4 - 28.9]	25.8% [21.0 - 31.2]	24.1% [19.5 - 29.5]
Prevalence of severe stunting (HAZ <-3 SD)	15.7% [13.0 - 18.8%]	18.4% [14.8 - 22.6]	12.9% [9.5 - 17.3]

Stunted growth or a low Height-for-Age Z-score (HAZ) means persistent undernourishment, hindering children from attaining their complete physical and cognitive capabilities.<sup>3</sup>

The prevalence of chronic malnutrition (HAZ < -2 SD) was **40.7%** (95% CI: 36.2% - 45.3%) among all children which **indicate very high undernutrition according to the WHO/UNICEF classification for severity of malnutrition by prevalence (≥ 30%)**. A slightly higher prevalence of chronic malnutrition was observed among boys, with 44.2% classified as stunted compared to 37.0% among girls. Furthermore, stunting peaked at 47.2% among children aged 18 to 29 months.

## Prevalence of Underweight

**Table 6: Prevalence of underweight by WAZ (severity and sex among children 6-59 months (SMART exclusion))**

Indicator	All (N=772)	Boys (N=391)	Girls (N=381)
Prevalence of underweight (WAZ < -2 SD)	21.6% [17.9 - 25.9]	22.0% [17.3 - 27.6]	21.3% [16.5 - 27.3]
Prevalence of moderate underweight (WAZ >=-3 to -2 SD)	17.0% [14.0 - 20.4]	17.6% [13.8 - 22.3%]	16.3% [12.5 - 20.9]
Prevalence of severe underweight (WAZ <-3 SD)	4.7% [3.2 - 6.8]	4.3% [2.7 - 6.9]	5.0% [2.8 - 8.7]

Underweight or a low Weight-for-Age Z-score (WAZ) is a combined metric of height-for-age and weight-for-height, taking into account both acute and chronic malnutrition.<sup>5</sup>

About **4.7%** (3.2%,6.8%) of children in the surveyed area were severely underweight. Girls were slightly more severely underweight 5.0% (2.8%,8.7%) than boys 4.3% (2.7%,6.9%). The prevalence of underweight increased in older age groups, reaching **30.6%** among children aged 54 to 59 months. The youngest age group (6 to 17 months) had the lowest prevalence of underweight at **17.8%**.

## Prevalence of malnutrition in women (MUAC measurement)

### Physiological status

**Table 7: Prevalence of MUAC Malnutrition in women aged 15-49**

Level	Freq.	Proportion	95% CI
Prevalence of MUAC <210mm, non-pregnant/non-lactating women	42	7.7%	(5.8%,10.2%)
Prevalence of MUAC < 230mm, non-pregnant/non-lactating women	195	35.8%	(31.4%,40.6%)
Prevalence of MUAC <210mm, pregnant women/lactating women with an infant less than 6 months	22	9.0%	(6.0%,13.2%)
Prevalence of MUAC < 230mm, pregnant women/lactating women with an infant less than 6 months	92	37.6%	(31.4%,44.1%)

The adjusted national threshold for malnutrition of MUAC < 230 mm indicate the prevalence of malnutrition increased of 35.8% for non-pregnant/non-lactating women and 37.6% for pregnant and/or lactating

women.<sup>6</sup> Maternal malnutrition is a critical factor in maternal, neonatal, and child health outcomes. Malnutrition during pregnancy is linked to increased risks for children's outcomes.<sup>7</sup>

### Skilled attendant delivery

**36.5%** of women that gave birth in the five years prior to data collection had assistance from a skilled provider during delivery.<sup>12</sup>

**Figure 1: Of those who reported not having received assistance from a skilled provider during delivery (63.5%), the assistance received was:**

Traditional birth attendant **29.5%**  
 No assistance **11.3%**  
 Relative / friend **8.4%**  
 Community health worker **7.3%**  
 Other **7%**

## ♥ Mortality

Under-five Mortality Rate (U5MR) was 0.13 deaths per 10,000 children per day, while adults aged 18 to 49 Crude Mortality Rate (CMR) showed a higher rate at 0.54 deaths per 10,000 people per day (95% CI: 0.27 to 1.08). Males had a Crude Mortality Rate (CMR) of 0.30 deaths per 10,000 people per day, while females had a slightly lower rate of 0.23 deaths per 10,000 people per day, both with minimal variation (95% CI: 0.10 to 0.61). **Both the CMR and U5MR were below the emergency thresholds of 1/10,000/day and 2/10,000/day respectively.**

**Table 8: Crude and under five mortality rate (deaths per 10,000 people per day)**

Population	Unit	Rate (95% CI)
Crude Mortality Rate	Death/10000 people/day	0.26 (0.15-0.47)
U5 Mortality Rate	Death in children under five/10000/per day	0.13 (0.02-0.74)

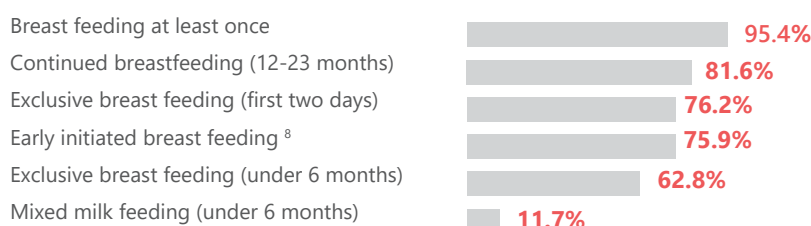
**41.7%** of deaths in assessed households were attributed to non-traumatic causes, while 50% remained

## 🍼 Infant and Young Children Feeding (IYCF) Practice

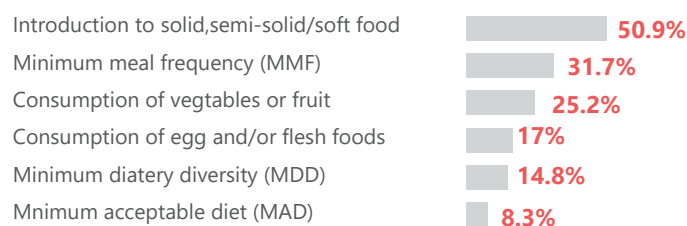
**62.8%** of children aged under 6 months were reported to be exclusively breastfed

**24.7%** of children under two years were reportedly bottle fed

**Figure 2: Prevalence of infant and young children feeding practices**



**Figure 3: Prevalence of complementary feeding among children 6-23 months**



While only half (50.9%) of children aged 6-8 months had been introduced to complementary solid, semi-solid, or soft foods at the recommended age (6-8 months), **only 8.3% of children aged 6-23 months received a minimum acceptable diet (MAD), 14.8% of children achieved the minimum dietary diversity (MDD), and 31.7% of children met the minimum meal frequency (MMF) requirements**, which is respectively indicative very high, high and medium risk of deterioration of acute malnutrition.<sup>9</sup>

Egg and/or fresh food consumption was reported for 17% of children, while 19.1% consumed sweet beverages. Another concerning finding is that **74.8%** of children in this age group did not consume any vegetables or fruits.

## 👶 Children's health and vaccination

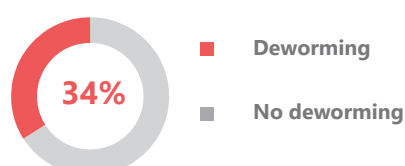
### Vitamin A supplementation

**Figure 4: Percentage of measles vaccination coverage among children 6-59 months old**



### Deworming coverage

**Figure 5: Percentage of children aged 12-59 months receiving deworming treatment in the six months prior to data collection**



Ensuring adequate coverage of deworming interventions is crucial for promoting the health and well-being of children by mitigating the risks associated with parasitic infections.

### Measles vaccination coverage for children age 9-59 months old and 9-23 months old

Figure 6: percentage of measles vaccination coverage among 9-59 months old

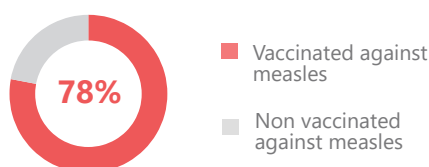
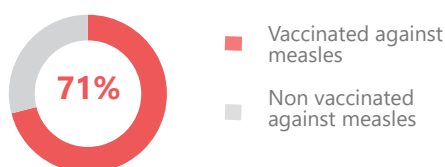


Figure 7: percentage of measles vaccination coverage among 9-23 months old

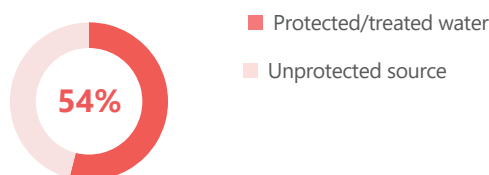


Insufficient immunisation is a key underlying cause to acute malnutrition. The measles vaccination coverage for children age 9-23 months and 9-59 months indicate a medium to high risk of deterioration of acute malnutrition levels.

## Water, Sanitation and Hygiene (WASH)

### Water

Figure 9: Water source for drinking and cooking, by % of households



### Sanitation

Figure 10: Sanitation facilities used, by % of households



## Food security and coping strategies

Food security point towards IPC AFI Phase 2 (Stress) and IPC AFI Phase 3 (Severe), particularly with 13.4% of the surveyed population with a poor FCS and 32.2% experiencing hunger. Specifically, Gololcha, Jaju, Merti, Seru, and Shanan Kolu presented poor to borderline FCS, elevated HHS, and severe RCSi, indicating IPC AFI Phase 3 (Crisis), pointing to a risk of deterioration of food insecurity in the lean season.

Children age 6-59 months supplemented with Vitamin-A coverage is below the UNICEF objectives of 80% coverage, and is indicative of a low risk of deterioration of acute malnutrition.<sup>11</sup>

### Morbidity

Figure 8: Percentage of acute respiratory infection (ARI), fever and diarrhea symptoms among children aged 6-59 months in the two weeks prior to data collection

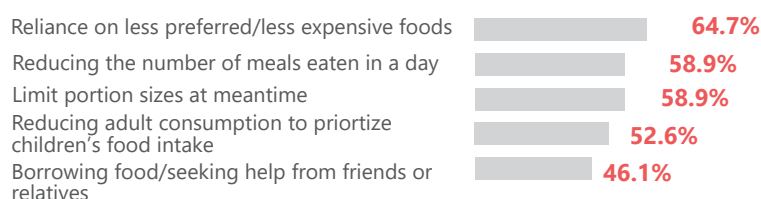


During diarrhea episodes, 27.7% received Oral Rehydration Solution (ORS), 25.0% were administered zinc, and 18.8% received both ORS and zinc.

In terms of health-seeking behavior, 39.3% of children exhibiting Acute Respiratory Infection (ARI) symptoms received healthcare services from facilities or providers. Similarly, 33.6% of children with fever and 36.6% of those experiencing diarrhea also received care from healthcare sources.

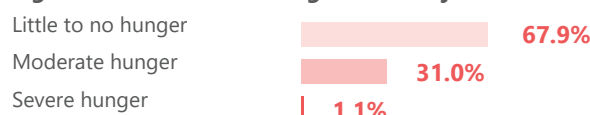
### Negative coping strategies

The Reduced Coping Strategy Index (rCSI)<sup>10</sup> was **13.25**, which indicated Stress (IPC Phase 2) classification thresholds for rCSI, of which the main coping strategies used in the seven days prior to data collection were:



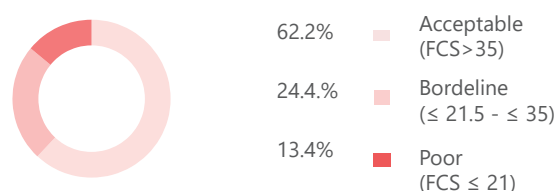
### Household hunger score

Figure 12: Household Hunger Score, by % of households



### Food consumption score

Figure 13: Food consumption score, by % of households





## CONCLUSION

The prevalence of acute malnutrition, though indicating the medium range according to WHO/UNICEF classification, highlights the need for continued monitoring and intervention to address malnutrition effectively. Disparities observed in comparison to previous surveys underscore the dynamic nature of nutritional status and the importance of regular assessments. Furthermore, mortality rates below the WHO emergency thresholds indicate relative stability in terms of health outcomes, but ongoing efforts are needed to sustain these achievements and address underlying determinants of malnutrition.

The survey findings emphasize the need for a holistic approach to address malnutrition, integrating nutrition-sensitive interventions with efforts to improve food security, promote healthy feeding practices, enhance access to clean water and sanitation, boost deworming and Vitamin A supplementation to meet UNICEF targets and prioritize strategies to improve measles vaccination for herd immunity. Looking ahead, the projected outcomes for certain woredas like Shanan Kolu signal potential challenges in the coming months, necessitating proactive measures to mitigate risks and support vulnerable populations. The complex issue of malnutrition in Arsi requires collaborative efforts across sectors, including health, nutrition, agriculture, and water and sanitation.

## RECOMMENDATION

Following consultations with the Ethiopian Emergency Nutrition Coordination Unit (ENCU), the following recommendations were proposed:

### Acute malnutrition and food security

- Targeted Interventions in High-Risk Areas like Shanan Kolu woreda, including CMAM programs, nutrition education/IYCF.
- Targeted intervention of pregnant and lactating women-MAM programs
- Implement food assistance programs, especially in Shanan Kolu, that are at risk of deterioration of IPC AFI levels if conditions worsen due to seasonality.
- Systematic nutrition screening for pregnant and lactating women during antenatal care and postpartum follow-ups, with targeted counseling on diet diversity and micronutrient supplementation.

### Infant and Young Children Feeding (IYCF) Practice

- Enhance maternal and infant care for skilled delivery and early breastfeeding.
- Implement community-based interventions to promote dietary diversity, meal frequency, including the introduction of locally available nutrient-rich foods, fruits, vegetables, and animal-source foods in the diets of children aged 6-23 months.

### WASH and Health

- Intensify outreach programs to increase coverage of vitamin A supplementation, deworming, and measles vaccination among children aged 6-59 months, particularly targeting underserved and remote communities.

## METHODOLOGY

This SMART+ household survey was conducted in thirteen districts of the lowland Arsi zone, from March 29 to April 9, 2024, which coincided with the *belg* (short rains) season. The purpose of the survey was to collect statistically representative data on nutrition, food security, livelihood, and WASH indicators. The survey utilized a two-stage cluster sampling method based on the SMART methodology to ensure accurate results. In the first stage, the required number of clusters was randomly selected using a sampling method called probability proportional to size (PPS). This method ensured that every household had an equal chance of being chosen, regardless of the population size of the village.

For more details on the methodology, please refer to the [terms of reference](#) and the long report.

## LIMITATIONS

- Data collection occurred during the rainy season, and the rains led to flooding and increased risks of landslides, posing challenges for the field team. Additionally, the presence of armed forces and security risks further complicated the situation. As a result, one of the planned 4 clusters were avoided due to the security challenges.
- Most respondents (67%) did not have official documentation for age verification. We relied on event calendars for age estimation, which was hindered by poor maternal recall. Consequently, this method impacted the accuracy of age estimation and, consequently, the assessment of stunting prevalence.

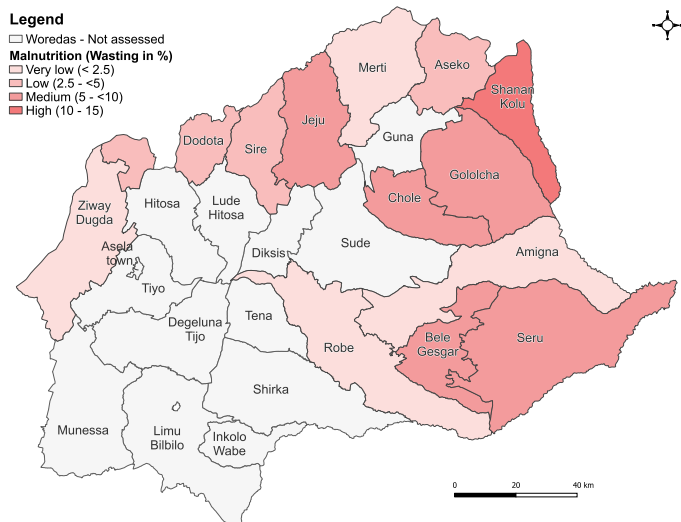
## ENDNOTES

- 1 [OCHA, Ethiopia - Situation Report, 1 Mar 2024, 2024](#)
- 2 Oromia Region Meher 2023 Multi Agency Assessment Report
- 3 [Fews Net, Ethiopia Livelihood Zones, 2018](#)
- 4 [WHO, Recommendations for data collection, analysis and reporting on anthropometric indicators in children under 5 years old, 2019](#)
- 5 [WHO, Malnutrition, 2014](#)
- 6 Ministry of Health, [National Guideline for the Management of Acute Malnutrition in Ethiopia, 2019](#)
- 7 [UNICEF, Maternal Nutrition Programming, 2020](#)
- 8 Early initiation of breastfeeding, defined as beginning breastfeeding within one hour of birth, helps protect the newborn from infections and reduces newborn mortality. [WHO, Early initiation of breastfeeding, 2017.](#)
- 9 IFE Core Group, [Infant and Young Child Feeding in Emergencies, Operational Guidance for Emergency Relief Staff and Programme Managers, 2017](#)
- 10 The [Reduced Coping Strategy Index \(rCSI\)](#) is an indicator used to understand the frequency and severity of change in food consumption behaviors in the 7 days before data collection when households are faced with food shortages.
- 11 Skilled attendants during delivery include doctors, nurse/midwife, auxiliary midwife.
- 12 [UNICEF, Coverage at a crossroads: New directions for vitamin A supplementation programmes, 2018](#)

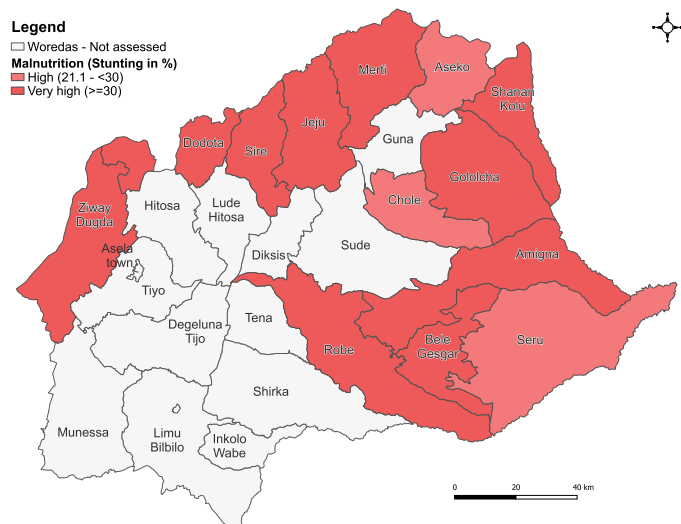
## ANNEX:

## Acute malnutrition

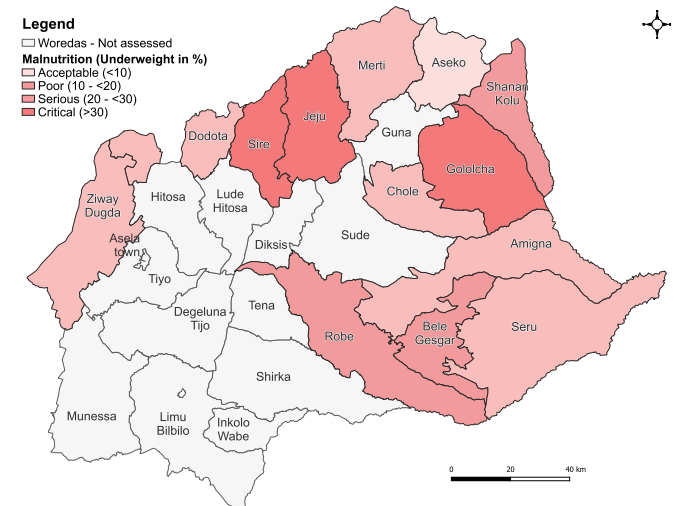
Map 2: Woreda level assessment of Wasting severity



Map 3: Woreda level assessment of Stunting severity

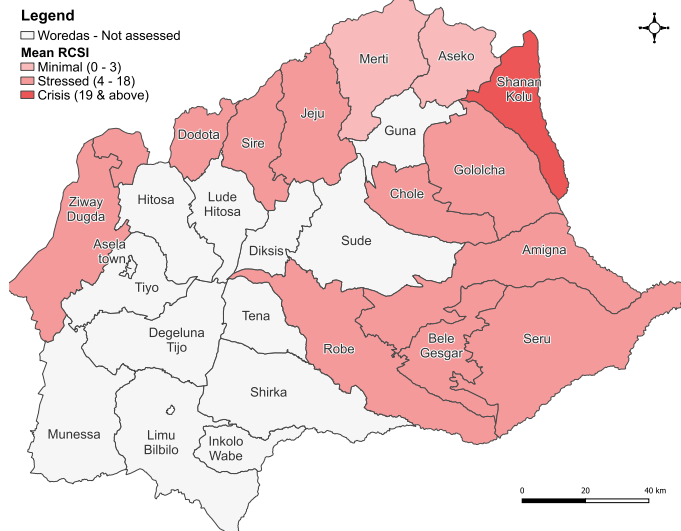


Map 4: Woreda level assessment of Underweight severity

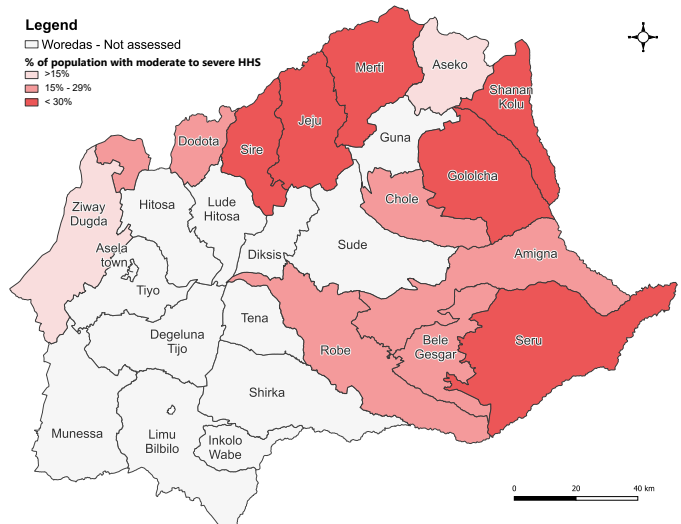


## Acute food insecurity

Map 5: rCSI distribution among woredas



Map 6: Proportion of Moderate to Severe HHS among woredas



Map 7: FCS distribution among woredas

