WHAT is the state of acute malnutrition in Marsabit and Isiolo Counties and WHO is at risk?

USAID Nawiri
FROM THE AMERICAN PEOPLE

Background

Child acute malnutrition persists in dryland contexts and often exceeds emergency levels despite significant efforts by many actors. Prevention of persistent acute malnutrition is hindered by a lack of attention to the role of the basic drivers, namely, environment and seasonality, livelihoods, and systems and institutions **(Figure 1)**.

Research Methods

The mixed methods study took place in four sentinel sites across Isiolo and Marsabit Counties from September 2021 through September 2023 **(Figure 2)**. Each of the sentinel sites represents distinct livelihood strategies **(Figure 3)**, each comprising multiple villages and fora **(Table 1)**. The study collected 12 rounds of quantitative survey data and iterative qualitative inquiries.
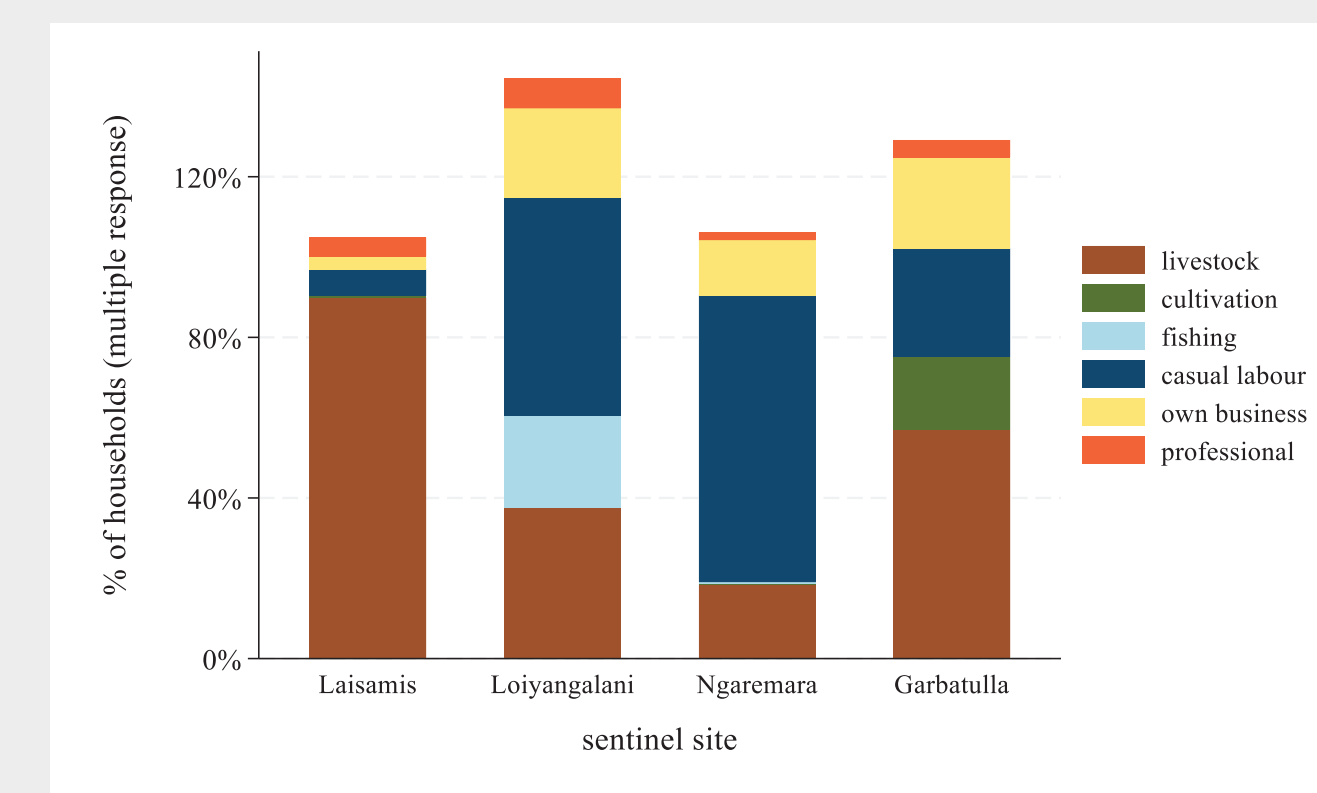

Figure 3. What does your household do for a living by sentinel site?

Sentinel Site	Sub-location	# of individual household level observations across 12 rounds
Laisamis	Koya, Sakardala (and fora)	3,216
Loiyangalani	Loiyangalani, Moite	2,222
Garbatulla	Malkadaka, Muchuro, Kombola	2,723
Ngaremara	Ngaramara, Manyatta Zebra, Attan, Aregae, Kisile, Kiwanja	3,997

Table 1. Sentinel sites, sub-locations and livelihood systems, and sample size.

Figure 2. Map of Marsabit and Isiolo Counties sentinel sites.

1 Key Message

Children in the study sites in Marsabit and Isiolo Counties persistently experience above the emergency threshold of acute malnutrition (15%) (Figure 4).

Across the two years of study, on average, wasting prevalence varied from a minimum of 15% (September 2023) to a maximum of 21% (November 2022), with an overall average of 18.6% (95% CI: 18.0–19.1%).

Despite these alarming results, our study shows that achieving a prevalence below 10% is possible.
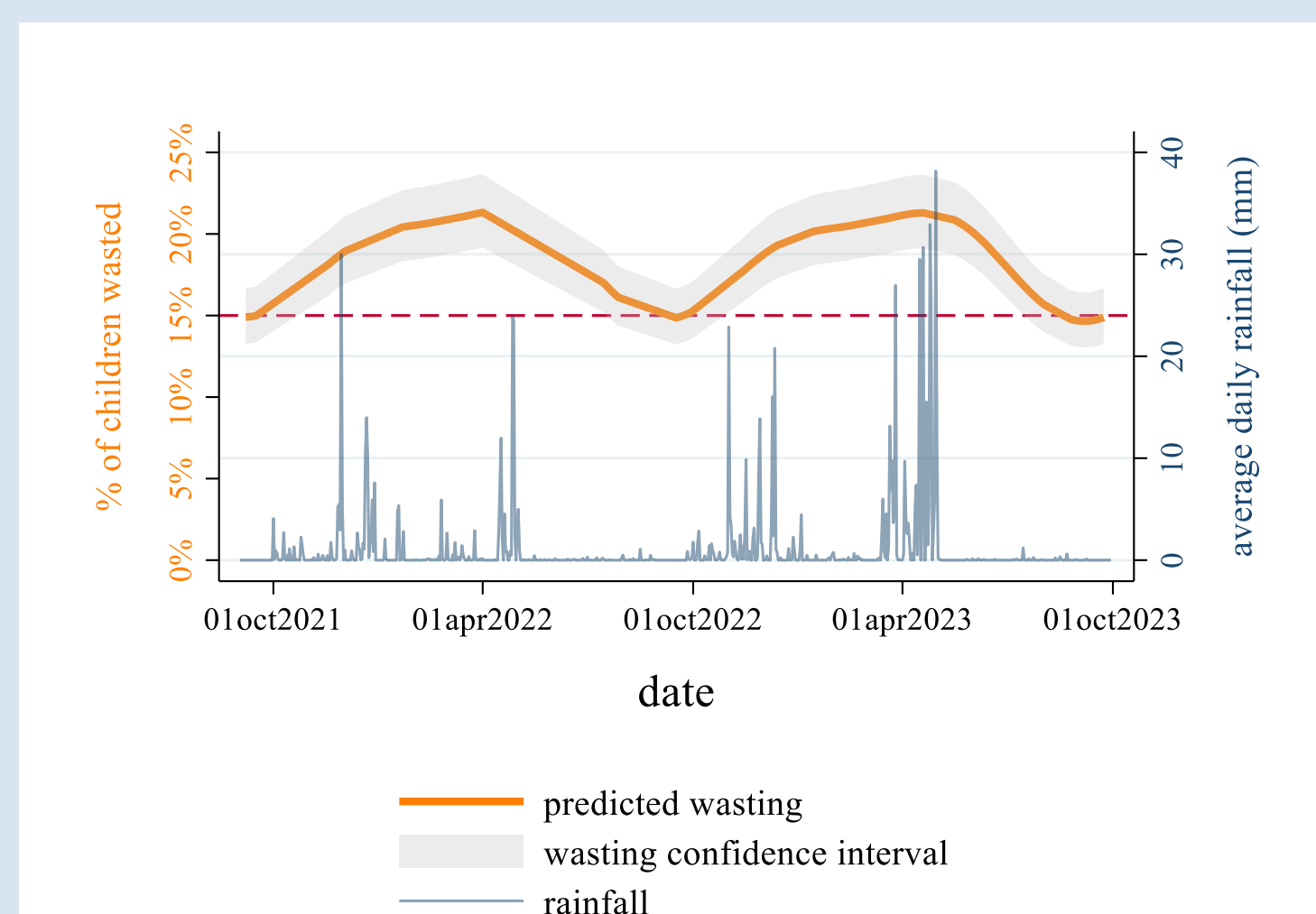

Figure 4. Seasonal patterns of child acute malnutrition (WHZ) in Laisamis, Loiyangalani, Ngaremara, and Garbatulla sentinel sites

2 Key Message

Child age, sex, and female caretaker nutritional status were most consistently associated with acute malnutrition (weight-for-height/WHZ (Figure 5).

Older children (36–59 months), boys, and children with a female caretaker with lower mid-upper arm circumference (MUAC) were significantly more likely to be wasted.
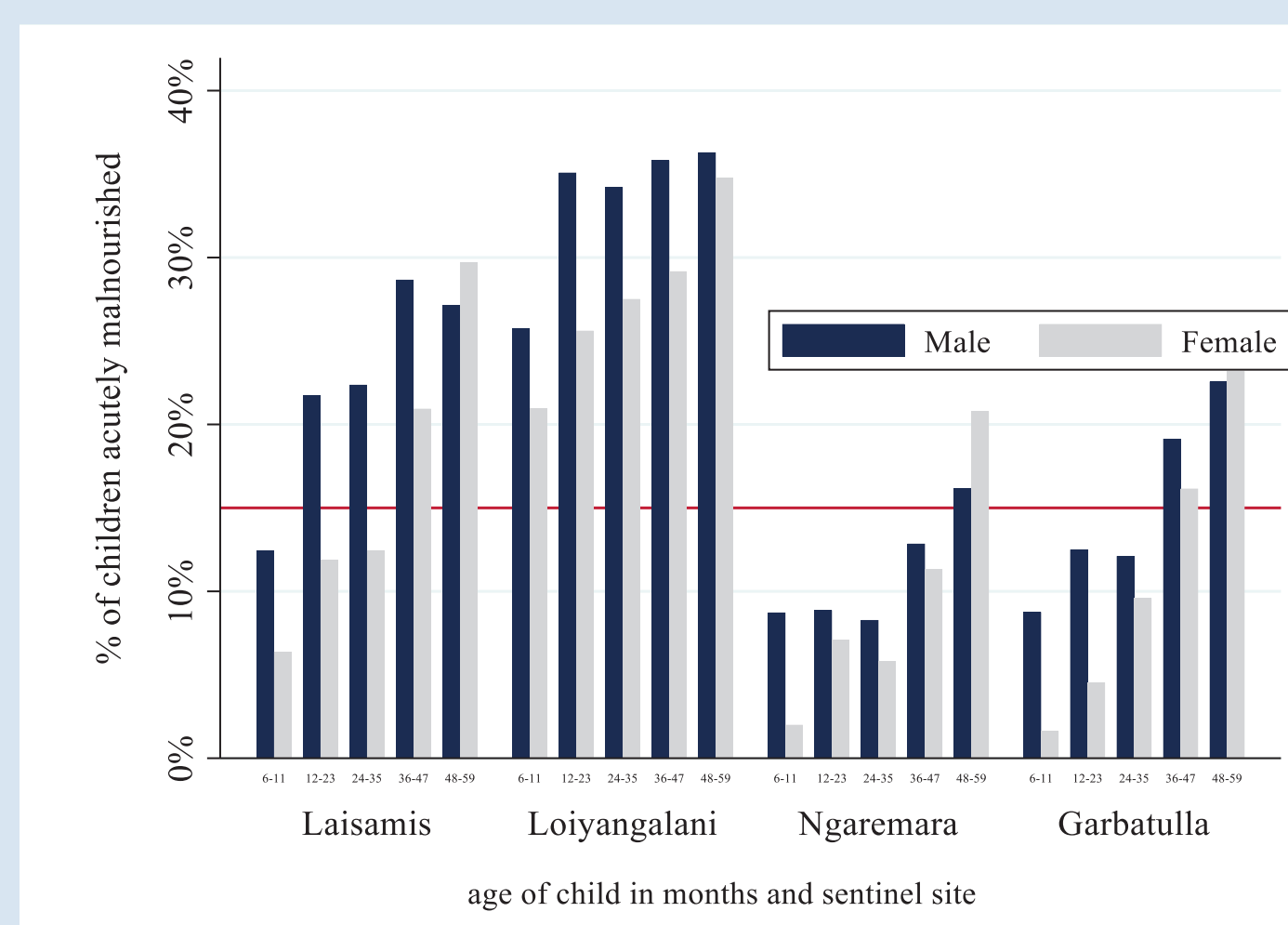

Figure 5. Acute malnutrition (using WHZ) by sex and age (in months) by sentinal sites.

3 Key Message

Few individual- and household-level variables were consistently associated with acute malnutrition, pointing to the role of basic drivers at the community level (Figure 1).

Other than diarrhoea, no other immediate or underlying driver was found to be significantly correlated with wasting across all four sites. Additional, but site-specific, drivers included consumption of specific foods, disease such as malaria and respiratory illness, food insecurity, and open defecation.
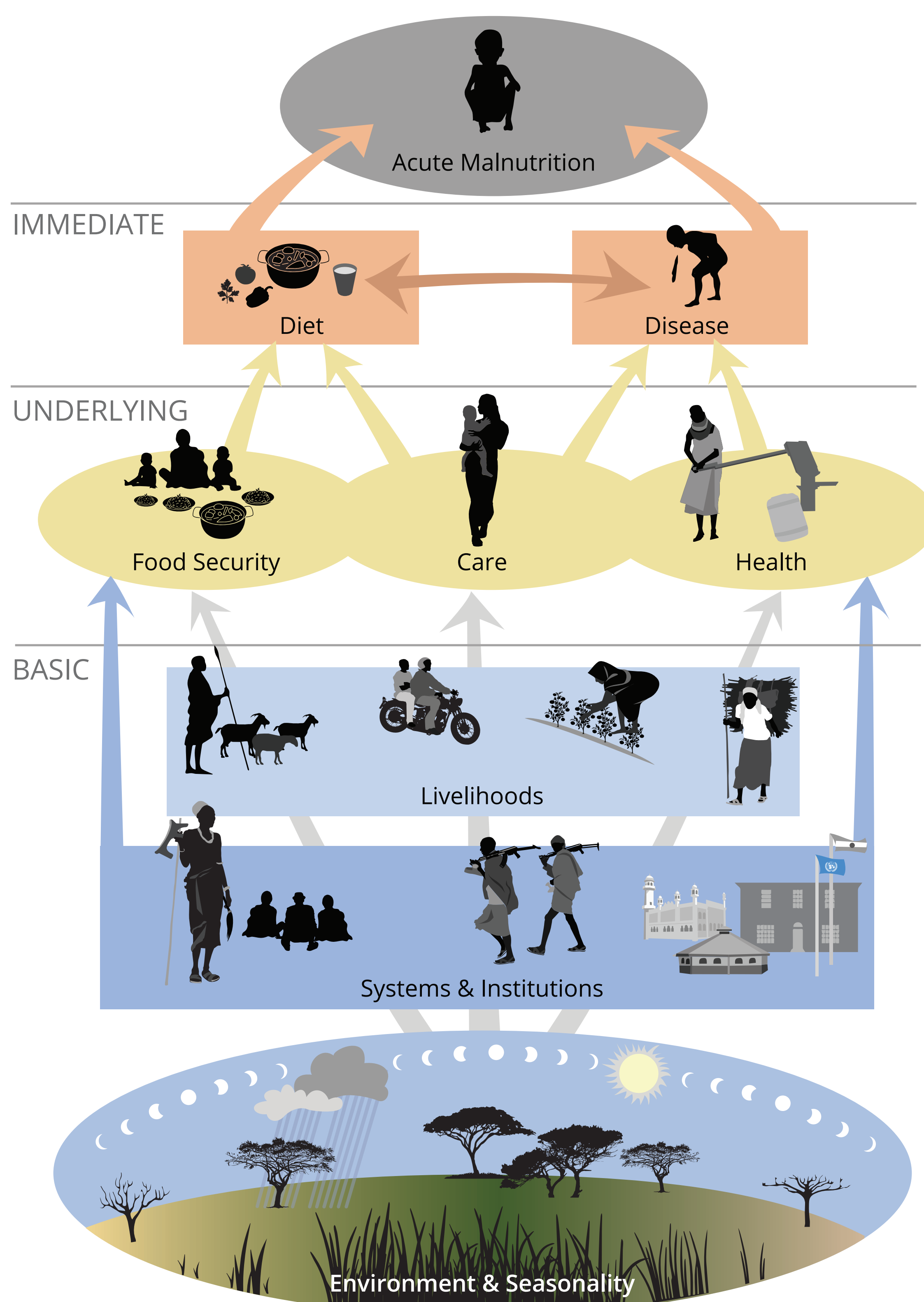

Figure 1. The drivers of child acute malnutrition.

Implications

1 The persistent emergency levels of acute malnutrition indicate the need to review the appropriateness, coverage, and efficacy of typical programs aimed at prevention and emergency response.
- Enhance screening and treatment coverage, using simplified protocols for treating malnutrition and monitor relapse rates
- Tailor response strategies to specific drivers of acute malnutrition within each sentinel site.

2 Older children are more likely to be acutely malnourished across all of our sites and recently for Kenya broadly:
- Review age specific project targeting criteria (consider children older than the first 1000 days from conception) and expand targeting in known malnutrition hotspots
- Nutrition surveys should disaggregate malnutrition rates by sex, age, and geography, avoid simplistic seasonal assumptions, schedule data collection appropriately, improve survey representation of fora children and enhance variables for assessing food security, livelihoods, nutrition and health.
- WHZ might be more appropriate than MUAC for nutrition surveillance, as MUAC is biased by age.

3 Child acute malnutrition is closely tied to the malnutrition of the female caretaker. Programming that aims to alleviate acute malnutrition needs to target and program for not only children of all ages, but also their household, particularly women.

4 To effectively address persistent acute malnutrition, it is crucial to understand community-level and basic drivers as laid out in Figure 1. This shift requires the nutrition community to develop data collection, programming and policy approaches that go beyond the focus on individuals or households and address the basic drivers of acute malnutrition.

Indicators		Ngaremara		Garbatulla		Laisamis		Loiyangalani
		Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 2
Morbidity + health-seeking behaviors**	Child sick (2 weeks recall)	75.9%	71.1%	71.2%	58.5%	53.5%	56.2%	63.1%
	Malaria-confirmed	6.0%	3.9%	20.3%	5.3%	12.4%	7.1%	4.0%
	Watery diarrhoea	13.4%	13.7%	6.5%+++	8.2%	9.4%	4.9%	23.0%
	Fever	20.7%	11.9%	48.5%++++	35.5%	53.7%	21.5%	27.8%
	Respiratory illness	55.1%	50.1%	54.1%	48.5%	43.0%	43.5%	39.4%
	Health seeking behaviour for sick children	96.9%++++	82.0%	87.7% ++++	93.2%	76.6%++++	69.7%	61.5%
WASH**	Distance to main water source (<500 meters)- Yr1	81.3%		67.4%+++		41.4%		
	Distance to main water source (< 1km meters)- Yr2		58.1%		59.7%		21.9%	28.5%
	Household type of toilet (Open defecation/bush/garden)	33.2%	48.0%	40.0%	50.0%	90.6%	95.8%	55.8%
Household Food security	Household Food Insecurity Access Scale (HFIAS) (Severe)	93.9%	95.2%	86.5%	95.0%	75.5%	97.0%	86.4%
Complementary feeding (6-23 months) +	Minimum Dietary Diversity (MDD)	32.8%	18.4%	14.3%	36.2%	9.3%	8.8%	9.4%
Child Immunization++	Fully immunized	74.7%	95.6%	44.1%	96.7%	56.9%	92.3%	86.1%
Bed nets++	Use of bednets	75.9%	55.5%	54.2%	83.3%	49.5%	38.2%	23.4%
ANC+	≥4 times	57.3%	70.6%	71.3%	86.4%	57.4%	55.8%	53.3%
Vitamin A supplementation in the last 6 months+			78.5%	84.3%	81.4%	80.9%	65.7%	84.9%	62.1%
Deworming+		81.7%	82.5%	85.1%	80.2%	74.0%	77.8%	54.4%

Table 2. Summary statistics of program indicators (Years 1 and 2).

Managing Risks and Opportunities for Malnutrition Prevention in the Kenyan Drylands

USAID Nawiri

Background

Child acute malnutrition persists in dry-land contexts and often exceeds emergency levels despite significant efforts by many actors. Prevention of persistent acute malnutrition is hindered by a lack of attention to the role of the basic drivers, namely, environment and seasonality, livelihoods, and systems and institutions **(Figure 1)**.

Research Methods

The mixed methods study took place in four sentinel sites across Isiolo and Marsabit Counties from September 2021 through September 2023 **(Figure 2)**. Each of the sentinel sites represents distinct livelihood strategies **(Figure 3)**, each comprising multiple villages and *fora* **(Table 1)**. The study collected 6 rounds of quantitative survey data and iterative qualitative inquiries.
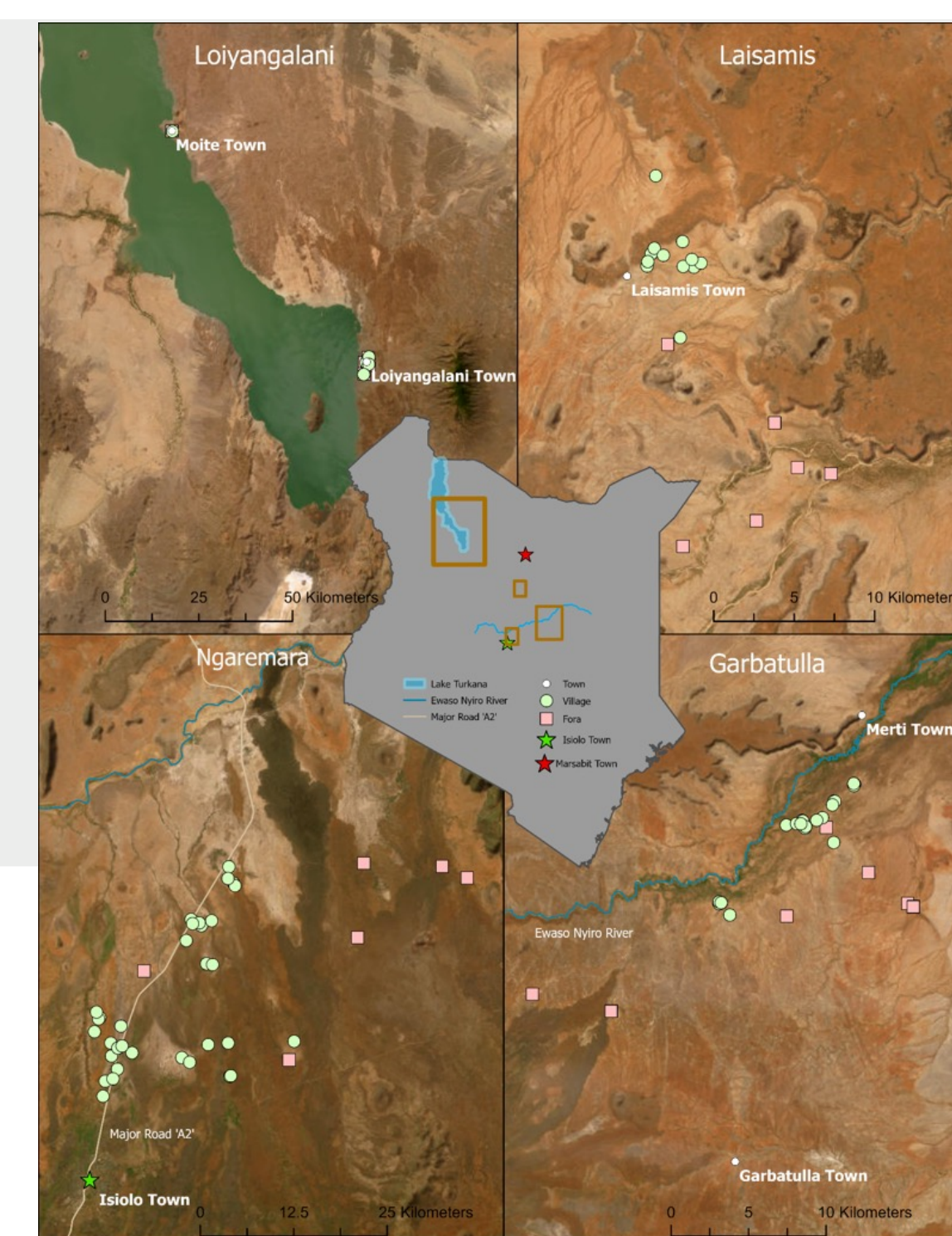

Figure 2. Sentinal site location in Marsabit and Isiolo Counties.

Sentinel Site	Sub-location	# of household level observations
Laisamis	Koya, Sakardala (and fora)	3,216
Loiyangalani	Loiyangalani, Moite	2,222
Garbatulla	Malkadaka, Muchuro, Kombola	2,723
Ngaremara	Ngaramara, Manyatta Zebra, Attan, Aregae, Kisile, Kiwanja	3,997

Table 1. Sentinel sites, sub-locations and livelihood systems, and sample size.

1 Key Message

Critical linkages exist between pastoralism and human nutrition, but these linkages are under pressure.

Pastoralism remains the bedrock of most livelihoods even as the system of pastoral production continues to evolve. Strategic mobility is critical to pastoral livelihoods and livestock productivity, and—when pastoralists can be mobile—this translates directly into food security, nutrition, and health benefits, particularly for children. Productivity varies, although even during droughts pastoralism remains a vital livelihood **(Table 2)**.

Mobility follows predictable seasonal patterns, with variations to take advantage of opportunities (access to resources or trade) while minimising risks (conflict or disease). **Figure 3** illustrates this mobility.

	Percent of households who own this animal				
	cattle	camel	sheep	goat	TLU[1] (median)
Laisamis	57%	63%	90%	92%	5.00
Loiyangalani	3%	10%	46%	69%	0.96
Ngaremara	8%	0%	49%	57%	0.70
Garbatulla	13%	2%	78%	78%	2.02

[1] The Tropical Livestock Unit (TLU) was calculated using the following coefficients: sheep 0.1, goats 0.1, milking and non-milking cattle and camels.

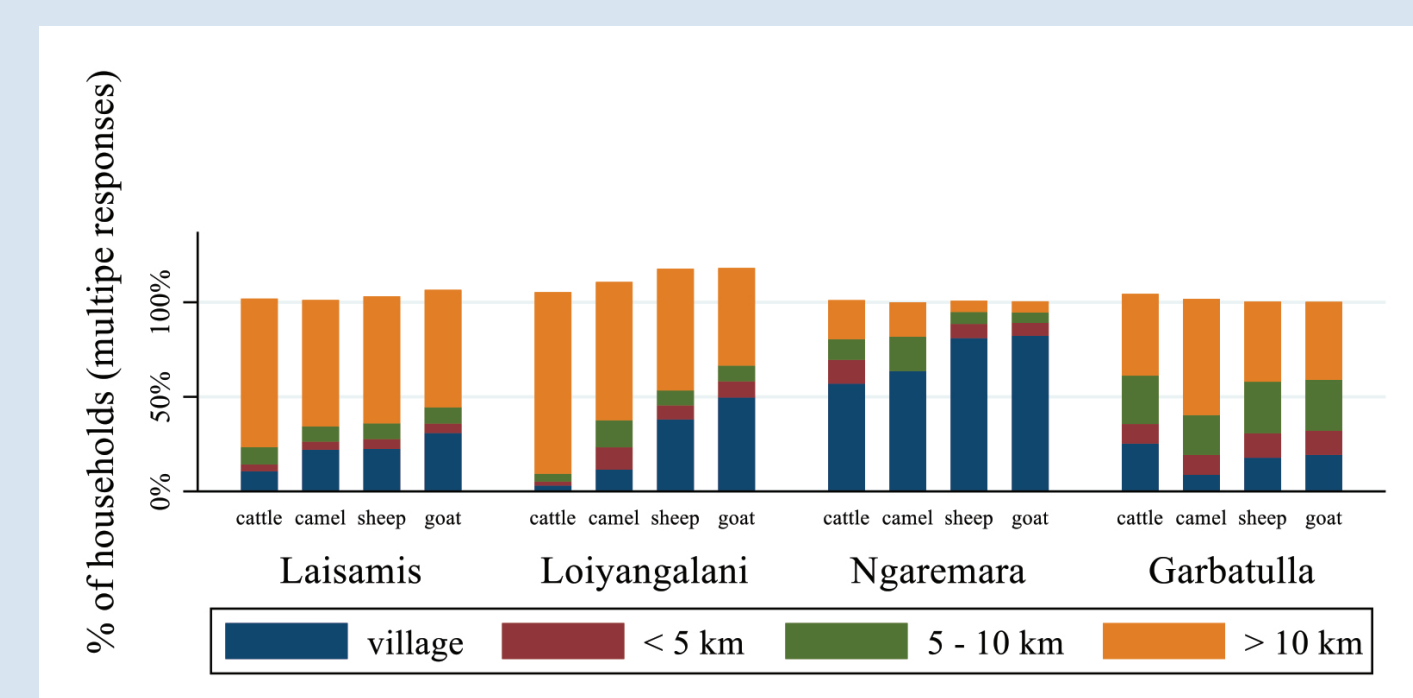**Table 2.** Household ownership of livestock by species (2023 annual survey).

Figure 3. Proportion of households who reported that animals (by species) were more than 10 km distance from the village, by sentinel site.

2 Key Message

Livelihood diversification occurs for many reasons and can both benefit and undermine nutrition.

The increasing diversification of livelihoods since the time of the grandparents **(Figure 4)**, has created a mix of adaptive, coping, and maladaptive strategies affecting nutrition and resilience, with mixed effects on child nutrition.

Small-scale business in Ngaremara and Garbatulla, fishing in Loiyangalani, and motorbike transport everywhere enhance nutrition by bolstering livelihoods, supporting household food security, and spreading risk.

However, women's growing work burden increases their reliance on secondary caregivers, especially grandmothers, who have limited resources. The strain on childcare, coupled with acute food insecurity, exacerbates child malnutrition.
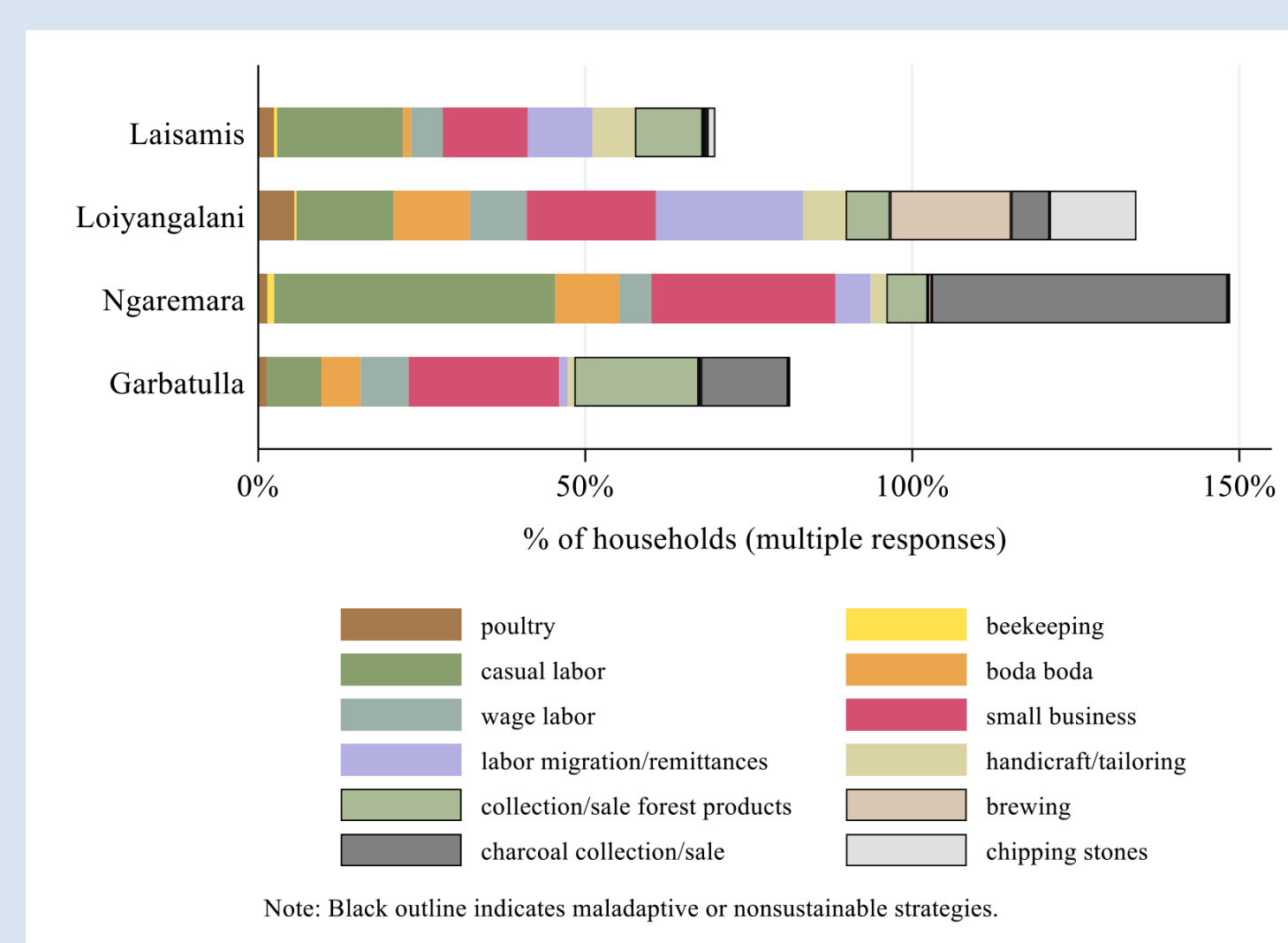

Note: Black outline indicates maladaptive or nonsustainable strategies.

Figure 4. Livelihood diversification activities in the sentinel sites (multiple responses possible, annual survey, September 2023)
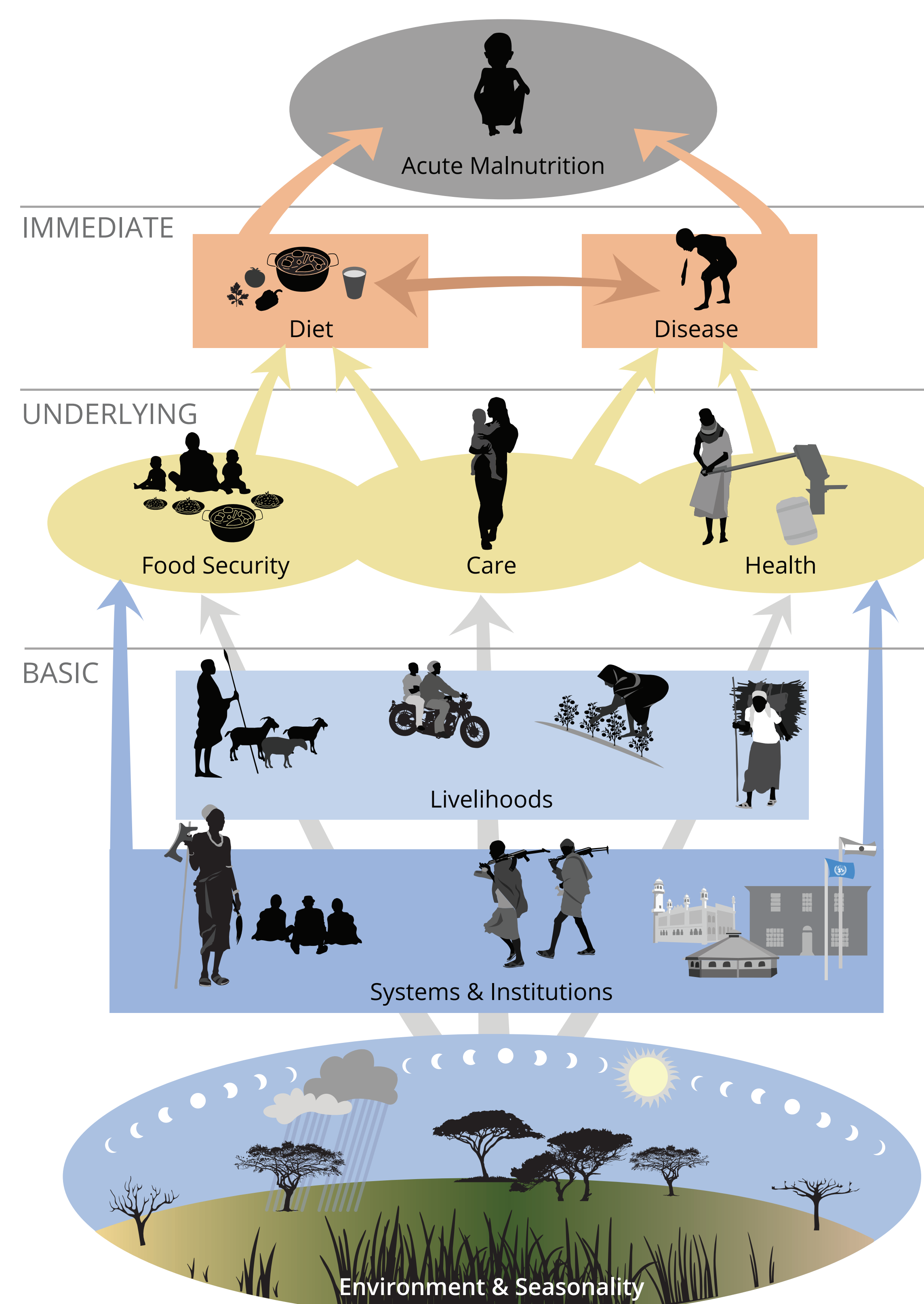
Figure 1 (center diagram)

Figure 1. The drivers of child acute malnutrition.

3 Key Message

Many institutions underpin the pastoralist system and indirectly support human nutrition.

The resilience of pastoralism relies on adaptable local institutions and robust social support systems sustaining communities over the long term. Despite pressures, pastoralist institutions are continuing to evolve and adapt, while social support networks provide vital sharing of food, assistance, and childcare.

Natural resource management (NRM) institutions establish drought reserves, set rules of use, and cooperate with government agencies, showcasing a model for conflict mitigation, rule enforcement, and enhancing local adaptation practices.

Kinship networks enable resource-sharing of livestock, food, and labour and exchanges between the villages and the fora. Motorbike transport and mobile phones boost these exchanges of food, milk, and cash.

Overall, pastoral social support mechanisms help to improve the situation of the most impoverished households thereby reducing the variability in child nutritional status.

Implications

Policy Priorities to Support Pastoralist Systems and Institutions:

- Protection of land and NRM rights and access to grazing reserves.
- Co-management of water resources.
- Conflict sensitivity in program design, conflict resolution and peacebuilding.
- Pastoral mobility, protection of migration routes and access to resources.
- Outreach for treatment, surveys and surveillance to include *fora* children and women.

Stakeholder Awareness and Learning on Nutritional Benefits:

- Understanding of the nutritional benefits of pastoralism.
- Understanding of the significance of livestock mobility in supporting nutrition.

Support for Positive Livelihood Diversification:

- Strengthening value chains for milk products and fish.
- Enhancing transport systems and networks.
- Supporting irrigated farming.
- Supporting secondary caregivers (childcare clubs, grandmother outreach and targeting).

Conclusions

Persistent drought and insecurity have perpetuated a crisis narrative, emphasizing risk and vulnerability, leading to a continuous cycle of emergency response. Humanitarian efforts primarily address immediate and underlying drivers of child malnutrition but offer limited prevention post treatment. Without consistent and effective addressing of malnutrition's systemic basic drivers, this cycle of malnutrition, recovery and relapse persists.

The USAID Nawiri Longitudinal Study findings can inform strategies to address the basic drivers. At County level, priorities must include evidence-based learning to ensure a balanced response, strengthening positive social support systems, and supporting pastoralism's potential for climate adaptation and food security.