

Host community vulnerability analysis to strengthen anticipatory action in fragile settings: A case study of Mekelle, Tigray Region, Ethiopia



INITIATIVE ON
Fragility, Conflict,
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Cover Photo: Drought-affected community in Tigray Region, northern Ethiopia (Photo: Michael Tewelde)

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Acronyms and Abbreviations

AA	Anticipatory Action
AoO	Area of Origin
BoSAR	Bureau of Social Affairs and Rehabilitation
CERF	Central Emergency Relief Fund
DRMC	Disaster Risk Management Commission
DRM	Disaster Risk Management
DTM	Digital Terrain Model
EDRMC	Ethiopian Disaster Risk Management Commission
FCAS	Fragile and Conflict-Affected Settings
FLW	Food, Land, and Water
FEWSNET	Famine Early Warning Systems Network
IDP	Internally Displaced Person
IOM	International Organization for Migration
IPC	Integrated Food Security Phase Classification
KII	Key Informant Interview
MHPSS	Mental Health and Psychosocial Support
PSNP	Productive Safety Net Program
UNOCHA	United Nations Office for the Coordination of Humanitarian Affairs
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WASH	Water, Sanitation, and Hygiene

Executive Summary

This study was conducted in an urban community hosting internally displaced persons (IDP), in Mekelle, the capital city of the Tigray Region in northern Ethiopia. This study assesses multi-sectoral vulnerabilities within hosting communities, examining adaptive and self-organized mitigation strategies that communities have implemented. Through a mixed-methods approach, which integrates remote sensing with participatory mapping, the research enhances the empirical foundation for anticipatory action (AA) frameworks in fragile and conflict-affected settings (FCAS). By combining innovative data-gathering techniques with community-driven insights, this study advances the understanding of resilience-building interventions tailored to complex, dynamic environments.

Secondary research highlighted a sparsity of data to inform humanitarian and development agencies in the implementation of AA measures in the context of IDP-hosting communities in the Tigray region. Demand-driven and informed by consultations across micro-meso-macro levels—including gatekeepers, INGOs, multilateral agencies, regional bureaus, and donors—this study addresses critical data gaps and delivers actionable recommendations for stakeholder uptake. In consultations with demand partners, notably USAID’s Bureau of Humanitarian Affairs, key questions emerged: how can data precision be enhanced to ensure anticipatory action measures align with on-the-ground realities? And, amid funding constraints, how can donor trust in AA be sustained to maximize impact in complex, protracted crises?

These inquiries are framed within the broad context of fragile and conflict-affected settings where intersecting climatic shocks and stressors disproportionately affect vulnerable, IDP-hosting communities. Here, outcomes are shaped by national and regional decision-makers, who may alter conditions by adopting AA frameworks and mobilizing international donor support within a coordinated network of humanitarian, development, and peacebuilding actors, activated through early warning systems. However, sole reliance on “no regret” actions risk procedural lapses, flawed displacement data, and misaligned needs.

Further input from research demand partners, such as the Tigray DRMC and UNOCHA, underscored the need for targeted research in hard-to-reach areas, including Shire in Tigray, where climate shocks and conflict impacts are most severe. The study thus sought to address the critical questions: how can AA strategies mitigate vulnerabilities in food, land, and water systems within Tigray’s IDP-hosting communities, and what role do innovative methods, like remote sensing and participatory mapping play in enhancing these strategies?

Thus, the study has underscored the heightened vulnerability of host community members in Mekelle as a direct consequence of conflict and displacement. A critical stressor identified is the acute shortage of food, driven by the dual pressures of high demand from both IDPs and the host community, alongside a severely constrained agricultural marketplace disrupted by the Tigray War (2020-2022). Respondents of the study were randomly selected members of the urban IDP-hosting community in Mekelle. The respondents reported that before the conflict, they had access to a higher-quality, more diverse diet, whereas the current situation is characterized by a starkly inadequate food supply coupled with inflated market prices. Furthermore, respondents highlighted the insufficiency of water supply, which has been exacerbated by the influx of IDPs. Beyond the scarcity of water, infrastructural damage and fragmented coordination between humanitarian organizations and government agencies have further stymied any meaningful change specific to the statuses of hosting communities (Oyedotun 2017).

Before the conflict, the host community in Mekelle had diverse and stable sources of income. However, with the onset of the war, these opportunities have sharply diminished, compelling many to seek alternative livelihoods. A significant portion of the population now depends on humanitarian aid or remittances. Those most severely affected by the economic downturn are residents in rented housing, who face inflated rental costs following the influx of IDPs. There has been a strain on public services, notably in terms of hygiene and access to clean water. Respondents reported deteriorating sanitation conditions, with open defecation becoming more prevalent due to a lack of functional facilities and water shortages. Remote sensing data corroborates these findings, indicating that both IDPs and host communities are concentrated in densely populated areas with sanitation and water points exposed to contamination and limited access to healthcare services.

Education services have similarly been compromised, as some schools remain occupied by IDPs, restricting access for host community children. The rate of school attendance can be described as moderate, with reports indicating rising dropout rates attributed to multiple challenges including financial barriers, a shortage of schools with limited enrolment capacity, and shifting priorities that deprioritize education.

The security situation in the aftermath of the conflict (post-2022) has markedly worsened, with residents reporting increased incidents of robbery and killings, often financially motivated. Vulnerable groups, particularly women and children, are disproportionately impacted. Traditional arbitration mechanisms have not been adequately reinforced, largely due to weakened social cohesion following the conflict. As a result, the community lacks effective legal recourse in the absence of a judiciary that functions at the level it did before the conflict.

Furthermore, while the famine early warning systems network (FEWSNET) forecasted lower than usual rainfall in northern Ethiopia, there were limited AA measures to alleviate subsequent market shocks, including food shortages, price spikes, limited water supplies, and sanitation equipment that could provide timely interventions to avert the food and water shortages to the local hosting populations. The research fits within an AA framework that broadly includes strategic approaches such as pre-positioning supplies, implementing shock-responsive social protection across slow-onset, rapid-onset, and complex crises (e.g., drought coupled with conflict), leveraging impact-based forecasting, conducting rapid needs assessments, supporting livelihoods, enabling early epidemic detection, and fostering behavior change (Schindler et al. 2023).

Findings from the study pointed to a setting where the host community, during times of conflict and climate-driven stressors and shocks (i.e., drought), has been forced to sell productive assets or engage in petty trade as coping strategies to enhance their income. Residents expressed a strong desire for peace and security, emphasizing the need for support focused on long-term development rather than short-term emergency assistance. Developing supply chains, enhancing infrastructure, and investing in human capital is essential for fortifying response mechanisms and establishing enabling conditions for early AA interventions, particularly in contexts serving already vulnerable populations.

As the study aimed to explore strategies for mitigating vulnerabilities in IDP-hosting communities, the following recommendations are essential for fostering an enabling environment that supports anticipatory action. These measures will help ensure communities are prepared to address emerging risks and mitigate future impacts.

- Implement economic reconstruction initiatives by focusing on employment creation, micro, small, and medium enterprise (MSME) development, as well as vocational training. This approach will create resilient livelihoods, reducing dependency on external aid and promoting stability ahead of future crises.
- Strengthen educational continuity through programs designed to prevent school dropouts. These interventions should deliver both education and financial support to conflict-affected regions, ensuring children stay in school and communities can build human capital for long-term recovery.
- Strengthening water management through infrastructure investment and improved sanitation is key to resilience. Clean water is often one of the first systems to collapse in crises, causing health risks and resource conflicts. Proactively developing and rehabilitating water systems helps mitigate shortages before they escalate, ensuring access during times of stress.
- Improve healthcare and education infrastructure to increase capacity and enhance the quality of services. This will ensure systems are capable of addressing immediate needs and resilient enough to meet future demands, reducing vulnerability in the face of ongoing crises.
- Develop affordable housing policies that improve living conditions while enhancing security measures. Stable housing and improved safety are crucial to reducing tensions and providing a solid foundation for community resilience.
- Strengthen protection and access to services for vulnerable populations such as women, children, and the elderly. By safeguarding their needs, the community can better withstand future challenges and protect its members who are most at risk.

- Encourage community integration and support by promoting social inclusion and equitable resource distribution. Long-term integration strategies for IDPs who wish to remain will foster social cohesion and reduce the potential for conflict, enhancing the community's resilience to future shocks.

1. Introduction

1.1 Conflict, displacement, and host community vulnerability in urban settings

The Tigray region of Ethiopia, home to approximately 7.3 million people—predominantly of Tigrayan ethnicity—had shown promising development indicators before the outbreak of conflict, with investment and a robust regional government in place. However, endemic poverty levels remained the highest in the country, leaving many communities highly vulnerable (Weldegiargis et al. 2023, Habtu and Aregawi 2024).

On 4 November, 2020, tensions erupted into conflict, rapidly escalating from localized skirmishes to a full-scale civil war involving the Ethiopian National Defense Force, the Eritrean Army, the Amhara militia (Fano), and the Tigray People's Liberation Front (TPLF) (Matfess and Lyons, 2023, Dessie et al. 2024). This multi-actor conflict created a severe humanitarian crisis. It triggered mass displacement and exposed millions to serious vulnerabilities, including food and water insecurity, and inadequate healthcare (UNOCHA, 2024a).

While reliable data collection has been limited, conflict modeling estimates that the human toll may have ranged from 400,000 to 800,000 fatalities, including both civilians and combatants. Infrastructure damage and systemic collapse further strained humanitarian resources, impeding critical aid. The Ghent University Tigray War Project provides what is considered one of the most robust empirical assessments of excess deaths resulting from both direct conflict and the impeded humanitarian response. Their estimates range from 311,000 to 808,000 civilian fatalities, with a midpoint estimate of approximately 518,000 (Ghent University 2023). Despite a ceasefire agreement in November 2022, the region faces ongoing challenges, including the complexities of transitional justice, which addresses historical injustices by promoting accountability, reconciliation, and institutional reform during periods of societal transition.

Tigray region in general and Mekelle City in particular have experienced significant humanitarian stress due to the combined impacts of conflict and climate change. Understanding the key stresses affecting food security, water supply, and land use, along with the additional vulnerabilities affecting both IDPs and the host communities, requires an in-depth exploration of the context. This analysis summarizes the findings related to the research questions of a study conducted to examine the vulnerability of IDP hosts in the community, focusing on Mekelle City.

1.2 Humanitarian status and stabilization efforts in Ethiopia

During the conflict, Northern Ethiopia (Tigray, Amhara, and Afar regions) was classified as a Level 3 (L3) emergency under UNHCR, UNICEF, and IOM's crisis classification, indicating a global emergency response and an IASC System-Wide Scale-Up—the highest level (IASC 2018). Recently, UNICEF downgraded its emergency status to Level 2 for the period of 5 September 2023 to 5 March 2024, and the IASC deactivated its System-Wide Scale-Up for Ethiopia.

Significant strides were made to enhance peace and security, highlighted by the African Union Commission's Chairperson who hosted the First Strategic Reflection Meeting on Ethiopia's Permanent Cessation of Hostilities Agreement (COHA)—otherwise known as the Pretoria Agreement, on 29 February 2024. This meeting aimed to review progress and address challenges of transitional justice. Challenges were exemplified by demonstrations—led by pensioners in Mekelle at the same time. They demanded the resumption of pension payments that stopped in November 2020, as well as the implementation of the Pretoria Agreement between the government and Tigray People's Liberation Front (TPLF). Since November 2022, these frequent protests have pressed the Tigray Interim Regional Administration to tackle financial instability, displacement, and healthcare issues for ex-Tigray Defense Force soldiers.

Displacement and humanitarian need

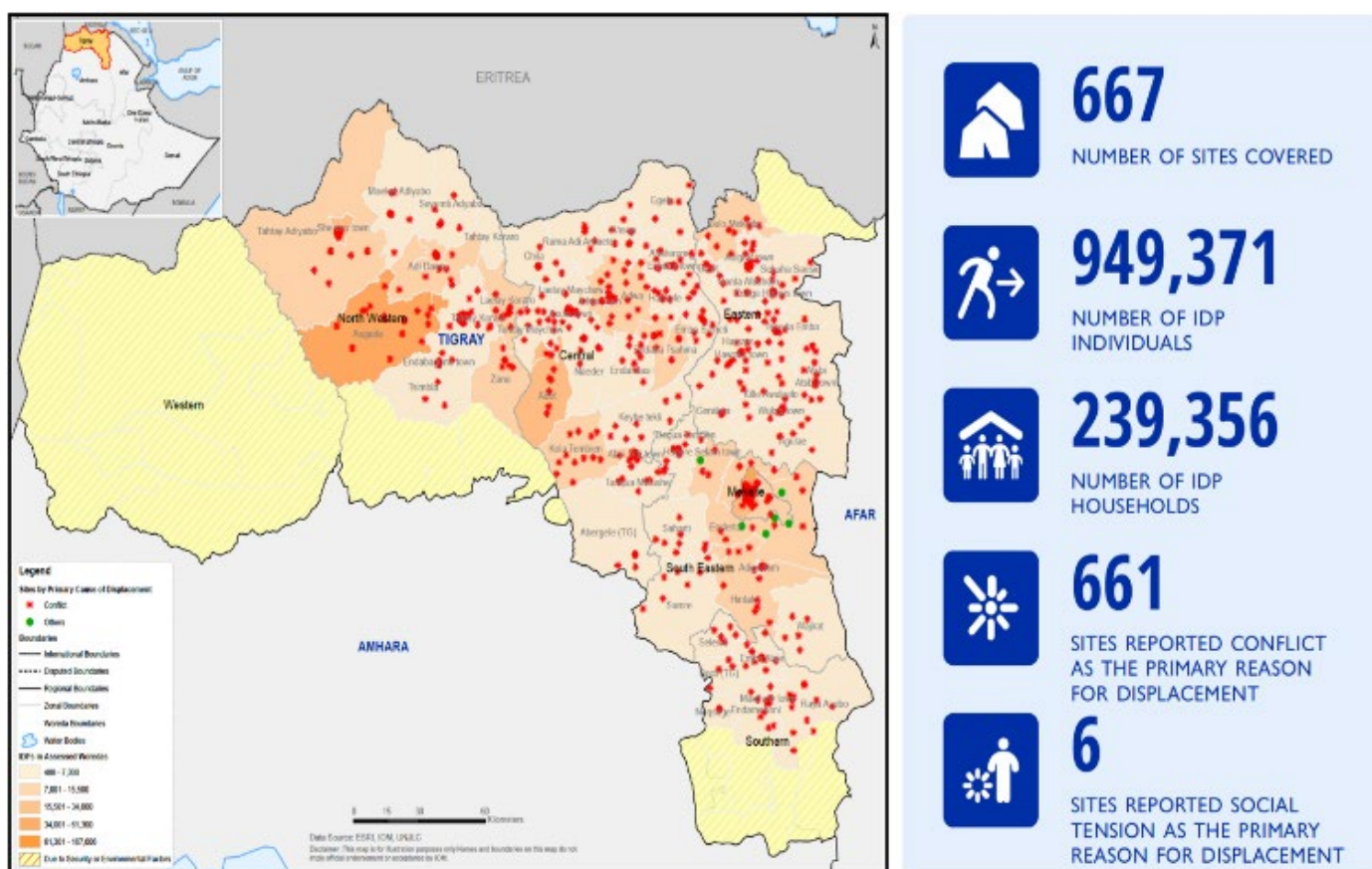
Tigray hosts the highest number of conflict-driven IDPs (intra-regional displaced persons) in Ethiopia (950,000 IDPs, 53% female). The majority of intra-IDPs are in the Northwestern (343,165) and Central (211,083) zones of Tigray (Figure 1). Approximately half of Tigray's population—3.4 million people, and 16% of Ethiopia's 21.4 million people in need, require humanitarian assistance (UNOCHA 2024a). Furthermore, Tigray has the highest number of inter-IDPs (inter-regional displaced persons from one region to another) returning to their areas of origin (AoO) with 1,503,141 people displaced during the war—59% of Ethiopia's total population (IOM 2023, UNOCHA 2024b). Tigray, in addition, has had an influx of returning conflict-driven Ethiopian refugees from Sudan since mid-2023, now totaling 100,000, primarily in Tigray and Amhara.

Figure 1: Internal displacement flows in Tigray, Ethiopia

IOM, December 2023

Food, Land and Water (FLW) statuses

Despite a downgrade in emergency levels, the region faces ongoing crises and repeated shocks associated with both climate change and conflict, which are worsening conditions. The 2024 food insecurity in the local market stems from irregular rainfall, poor harvests, high food prices, low wages, and a stalled economic recovery post-conflict (FEWS NET 2024). The situation has been aggravated by a period in 2023, which saw seven months



without food aid and a non-functional safety net (Productive Safety Net Program, PSNP), resulting in minimal livelihood recovery and insufficient incomes. Due to governance and oversight challenges, the U.S. placed a temporary hold on food aid to Ethiopia in 2023. Moreover, the Ethiopian government's capacity to finance the PSNP was severely constrained by funding shortfalls, logistical issues, and the Ukraine conflict's impact on global food supply chains.

By 21 January 2024, only 14% of those designated for food aid had received assistance, and child malnutrition rates stood at 27%. Moreover, the Tigray Bureau of Health reported a rise in household hunger from 3% pre-war to 60%, with malnutrition rates as high as 70% among pregnant and lactating women (Miller 2024) and with a similar study mentioning families reducing the size of their meal or even skipping meals as a coping strategy

(Gebregziabher et al. 2023). The failed 2023-2024 *meher* (summer) harvest and residual effects of the conflict have now resulted in emergency (IPC Phase 4) and crisis (IPC Phase 3) conditions according to data obtained from famine the early warning systems network (FEWS NET 2024). The Integrated Food Security Phase Classification (IPC) system categorizes food insecurity severity. The distinct phases of the IPC refer to levels of food insecurity and malnutrition severity, ranging from Phase 1 (Minimal) to Phase 5 (Famine), used to guide humanitarian responses and policy decisions. Crisis (Phase 3) indicates acute malnutrition and high hunger, while emergency (Phase 4) represents critical shortages demanding urgent intervention to avert famine.

The country and region are limited in their early warning capacity (Cullis and Bogale 2024) and are also bracing for climatic shocks linked to El Niño and the Indian Ocean Dipole (IOD). These phenomena have historically triggered significant rainfall discrepancies and increased insecurity, as the region experienced in 2002-2003 and 2015-2016 (Kasie et al. 2020), leading to drought and widespread food insecurity (FEWSNET 2024a). Early warning policy recommendations by Cullis and Bogale (2024) advocate for the Ethiopian Disaster Risk Management Commission (EDRMC) and its partners to establish a dedicated El Niño and IOD response facility within the EDRMC, to promote preparedness and mitigate the anticipated impact on millions.

Climate context

Exacerbating these immediate concerns are the severe climate vulnerabilities in Tigray, where rising temperatures, recurrent droughts, and erratic rainfall further destabilize the socio-political landscape (Kahsay et al. 2019, Gebrehiwot and van der Veen 2013). Dependence on rain-fed agriculture amplifies food insecurity, as climate shifts undermine agricultural productivity and heighten malnutrition risks. The 2020 locust invasion, fueled in part by climate-driven ocean warming, devastated 200,000 hectares of farmland and intensified food shortages (Salih et al. 2020, Negeri 2020). These compounded stressors, coupled with the UN's 2021 famine declaration, highlight the urgent need for AA to address climate-induced risks and strengthen resilience in this conflict-affected region (Mach et al. 2019).

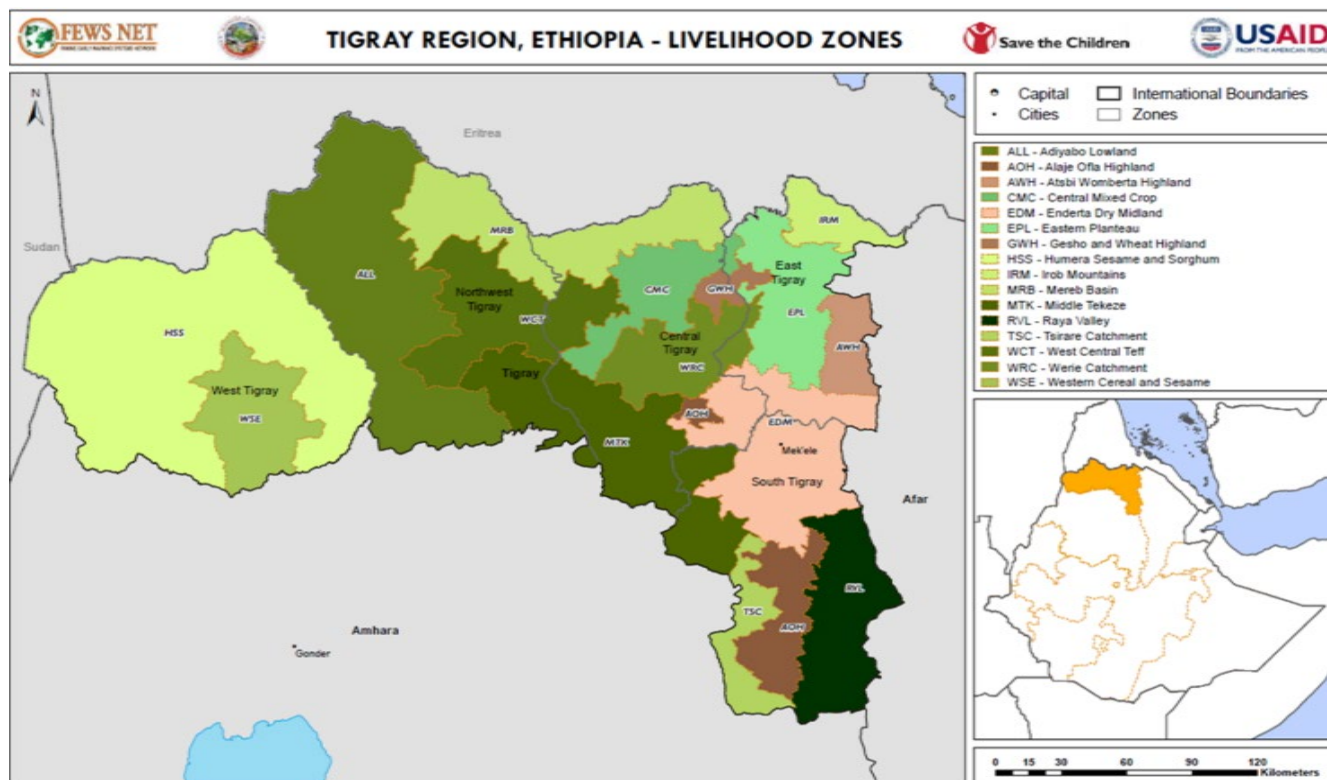
Water, Sanitation and Hygiene (WASH) infrastructure and healthcare facility damage

The conflict has halved rural and urban water supply coverage in the region, with substantial damage to the water systems of health facilities—87% in Central Tigray, 92% in East Tigray, 76% in Northwest Tigray, and 80% in South-east Tigray (Shishaye et al. 2023). The destruction of water infrastructure has left 3.7 million Tigrayans—80% of whom are farmers—without adequate or stable water supplies. This has severely impacted the water needed for 18,000 hectares of cultivable land and left over 2,503 irrigation systems in disuse (BOANR 2022).

1.3 Market shocks

The Tigray economy has seen a dramatic increase in poverty, with the headcount rate rising from 27% in 2015/16 to 45% by the end of 2022 (UNDP 2022). The region's market network has collapsed, with restricted migratory labor and drastically reduced livestock productivity due to low crop residues. This situation has stifled economic activity across Tigray, with the Middle Tekeze (MTK) Livelihood Zone (Figure 2) highlighted in the April 2024 FEWS NET report (2024) as particularly vulnerable.

Figure 2: Livelihood zones (LHZs) of Tigray



Livelihood zones are classified based on predominant economic activities and agroecological conditions, using spatial data on LHZs from FEWS NET (ACAPS 2021).

Shocks from the ongoing conflict

In the first quarter of 2024, recent clashes in disputed Tigray territories involved forces from both Amhara and Tigray, threatening the Pretoria Peace Agreement and highlighting unresolved territorial disputes (ACLED 2024). These conflicts underscore the fragility of the peace agreement and the complex regional dynamics that are still playing out in many parts of the region, compounding the drivers of negative coping strategies (e.g., climate, food, land, and water insecurity). This situation poses major risks to regional stability and the peace process in northern Ethiopia.

Gender Equality and Social Inclusion (GESI)

In Tigray, female-headed households, which represented 34% of households in 2018—higher than the national average of 26% (UNICEF 2019)—are particularly vulnerable to climate change, due to limited access to resources and the adverse impacts of extreme weather. These women employ various adaptation strategies but face barriers such as poor access to credit and agricultural inputs, which compound their challenges (Assefa and Gebrehiwot 2023). Risk levels in southern and western Tigray are higher for women due to the presence of armed militias, unresolved territorial disputes, and political pressures, all of which create unsafe and precarious conditions (ACLED 2024).

1.4 Global good practice for anticipatory action in fragile and conflict-affected settings

AA driven by early warning systems, is essential for improving humanitarian response efficiency, particularly in IDP-hosting communities. By predicting crises and acting early, these systems reduce risks and prepare both responders and communities. For instance, an anticipatory action can minimize impact and costs, saving up to \$6 for every dollar invested (FAO, 2020).

In health, anticipatory actions—such as stockpiling vaccines and medicines and preparing facilities—can prevent the escalation of outbreaks. During the West African Ebola crisis, pre-deployment of medical staff and supplies

curtailed disease spread (Kellerborg et al. 2020), reducing morbidity and mortality by 40% (Shucksmith-Wesley 2020). Early health interventions are crucial for mitigating health crises.

Anticipatory action in camp management involves pre-planning layouts, expanding services, and implementing early registration. In Bangladesh, early WASH facility setups during the Rohingya crisis eased camp expansion and reduced disease outbreaks (Yasmin et al. 2023). Stockpiling shelter materials and pre-identified land plots enabled rapid deployment, reducing response times by 60% during Mozambique's cyclones (Shelter Cluster 2020).

Proactive measures in WASH systems are critical for crisis mitigation, particularly in fragile contexts where water and sanitation infrastructure are vulnerable. Prepositioning water purification supplies and sanitation equipment is a core strategy to ensure swift responses to water scarcity or contamination during emergencies. Training community-based WASH committees before crises is equally important, ensuring sustainable resource management and solid waste disposal during emergencies. Empirical evidence suggests that communities with trained WASH committees are better able to manage water scarcity and maintain sanitation standards (Oxfam 2018).

Anticipatory actions in food security utilize early warning systems to forecast food shortages and price spikes, facilitating timely interventions. For example, in Malawi, early warning data predicted maize price hikes, enabling the government to distribute food stocks and prevent market shortages during the 2016 drought (FAO 2017). Despite the utility of these systems, they often rely on government data, which can be prone to manipulation or delay. Effective anticipatory action requires robust data-sharing mechanisms with partners to ensure buffer stock management and contingency plans for food distribution are actionable.

In agriculture, anticipatory actions involve promoting resilient crop varieties and drought-tolerant agricultural practices ahead of adverse weather forecasts. A case in point is Ethiopia's use of drought-resistant teff varieties, which were distributed to farmers ahead of predicted droughts, helping sustain crop yields and supporting livelihoods (Kebede et al. 2022). Additionally, early livestock vaccination and feeding programs mitigate the effects of drought or floods on pastoral communities, safeguarding animal health and market viability. Mapping high-risk access and market transport routes allows for contingency measures that ensure continuity in agricultural value chains during crises. Evidence from Kenya's livestock vaccination programs shows reduced livestock mortality during severe droughts, directly improving household food security (FAO 2023).

Anticipatory action in protection involves preparing staff to manage risks specific to displaced populations. For example, training protection staff to anticipate and respond to gender-based violence during crisis. Establishing safe spaces and child-friendly areas before displacement waves ensures that vulnerable populations are safeguarded early on. Additionally, integrating mental health and psychosocial support (MHPSS) into anticipatory frameworks can mitigate long-term psychological impacts on displaced children.

Protection also extends to the environment. Mapping areas at risk of environmental degradation and implementing soil and water conservation techniques can pre-emptively reduce the ecological impact of displacement and overexploitation. Education programs on sustainable resource management further equip communities to avoid overexploitation during crises, thus promoting resilience and environmental sustainability.

Capacity-building is vital to ensure local responders are equipped to implement anticipatory action protocols. Training and simulations strengthen local networks and communication channels, enhancing the timely dissemination of early warning alerts. For example, capacity-building initiatives in Bangladesh equipped local disaster management committees with technical skills in early warning interpretation, improving response times during the 2019 cyclone season (Haque and Doberstein, 2021). Research into the reach of impact-based forecasting at the community level highlights both the opportunities and gaps in ensuring anticipatory actions are effectively implemented. A comprehensive evaluation of local leadership and technical capacities can identify key areas for improvement, ensuring anticipatory frameworks are locally owned and operational.

In light of the intersecting shocks of conflict, climate, and displacement, this study responds to the critical need for localized AA initiatives tailored to regional needs, in this case, Tigray's Mekelle's distinct vulnerabilities as an IDP-hosting community. Frequent climate-induced shocks—such as drought, erratic rainfall, and warming temperatures, compound socio-political instability, deepening the multi-sectoral risks faced by the population. These combined stressors demand a nuanced approach that recognizes both immediate and long-term

vulnerabilities across food, land, and water systems. Through a mixed-methods approach, which integrates remote sensing with participatory mapping, the research enhances the empirical foundation for AA frameworks in fragile and conflict-affected settings. By combining innovative data-gathering techniques with community-driven insights, this study advances the understanding of resilience-building interventions tailored to complex, dynamic environments.

2. Methodology

2.1 Study rationale and objectives

This study is premised on the understanding that effective AA frameworks not only address immediate vulnerabilities but also support long-term resilience within IDP-hosting communities. The study's design was shaped through consultations with demand partners—including USAID, DRMC, and UNOCHA—who emphasized the urgency of AA measures that reflect on-the-ground realities. This demand-driven research addresses critical data gaps by examining vulnerabilities and current mitigation strategies within Mekelle City's IDP-hosting communities. Through an innovative approach combining remote sensing and participatory mapping, this research case study in Tigray provides actionable insights to strengthen anticipatory actions, aiming to improve resilience against food, land, and water stresses induced by climate and conflict in FCAS.

Research objectives

1. To systematically identify and assess vulnerabilities and current mitigation strategies within Mekelle's IDP-hosting community as a basis for improving the design of anticipatory actions aimed at enhancing climate resilience and adaptation in FCAS.
2. To investigate the use of innovative methodologies, using remote sensing and participatory mapping, to enhance the quality of data that can then be used to inform AA in FCAS.

Research questions

How can anticipatory action in FCAS be better designed to mitigate food, land, and water vulnerabilities in IDP-hosting communities, and what role do innovative methodologies such as remote sensing and participatory mapping play in enhancing the quality of data to inform these designs?

Sub questions

1. What are the key food, land, and water stresses and other underlying vulnerabilities in IDP-hosting communities of Tigray? (Explorative)
2. How have increased levels of conflict and the impacts of climate change exacerbated the food, land, and water stresses and other underlying vulnerabilities in hosting communities? (Explorative)
3. Are there early warning or anticipatory action systems in place that support operations to proactively address these impacts? (Confirmative)
4. How can the early warning to anticipatory action system be improved or optimized to promote climate resilience in IDP-hosting communities? (Explorative)
5. How can innovative methodologies, using remote sensing and participatory mapping, enhance data quality to inform anticipatory actions in conflict-affected populations? (Explorative)

2.2 Study area

The study site for this research project is Mekelle City, the regional capital and principal commercial hub of the Tigray Regional State, situated in northern Ethiopia, approximately 780 kilometers from Addis Ababa. Mekelle is

recognized as one of the fastest-growing urban areas in Ethiopia and is classified as an intermediary city. The city has a population of approximately 537,822 people, with a demographic composition of 48% men and 52% women, and an annual growth rate of 4% since 2019 (Gebremedhin and Raman, 2020). Geographically, Mekelle is located between 13° 25' 24" and 13° 33' 44" N, and 39° 25' 26" and 39° 33' 14" E, with an elevation ranging from 1930 to 2353 meters above sea level.

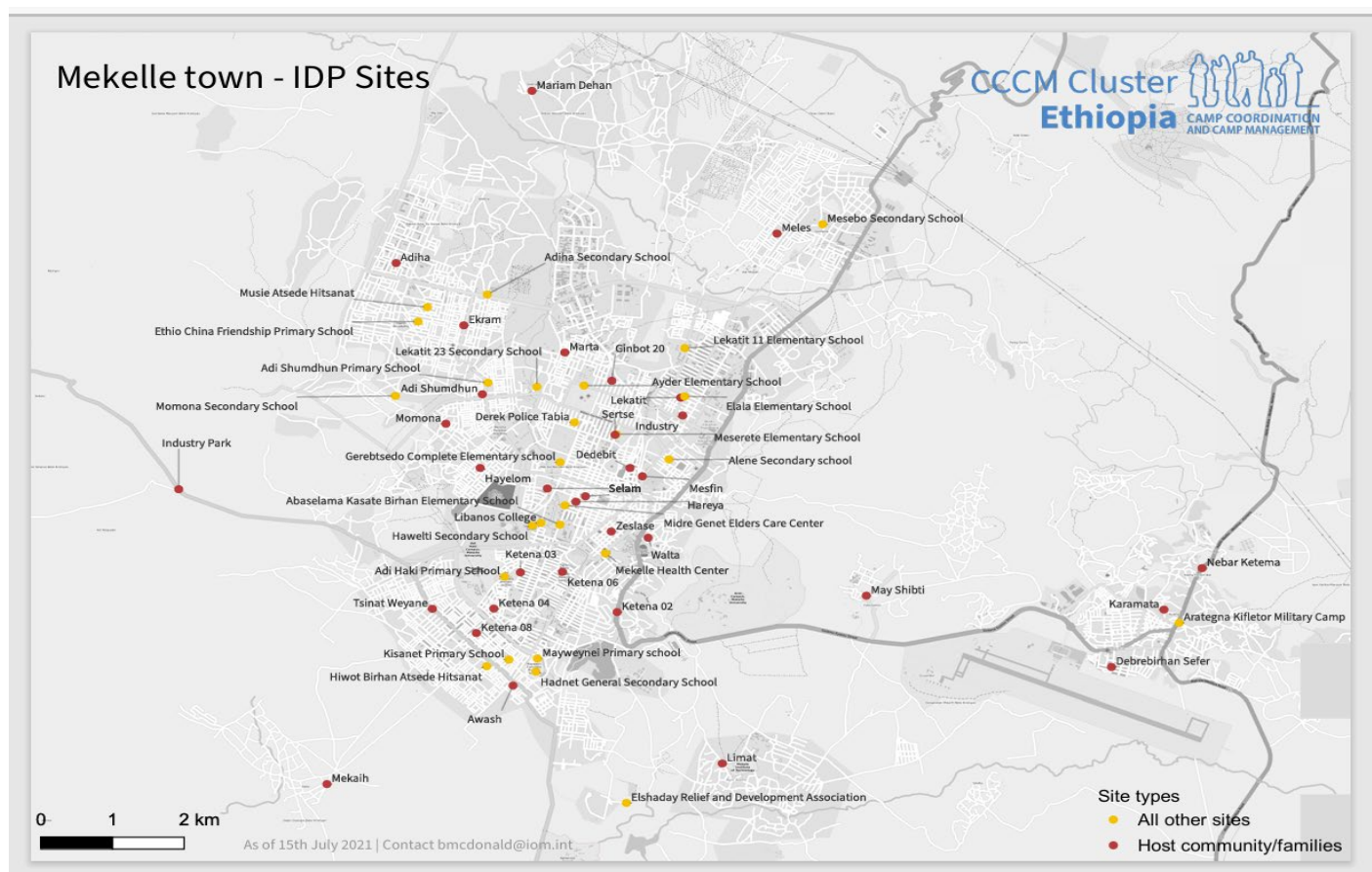
The climate of Mekelle is characterized by an average annual rainfall of approximately 615 millimeters, with 75% of the precipitation occurring during the wet season from June to September. The average daily temperatures during this period range from a minimum of 11°C to a maximum of 27°C (Fenta et al. 2017).

Administratively, Mekelle is divided into seven sub-cities: Kedamai Weyane, Quiha, Ayder, Hawelti, Adi Haqi, Hadnet, and Semein. These sub-cities are further subdivided into 33 kebeles, the lowest administrative units in Ethiopia, each encompassing approximately 1,000 households. The study focused on the host communities in three sub-cities: Adi Haqi, Kedamai Weyane, and Hadnet. Six tabias, namely Amora, Debregenet, Hayelom, Simret, Tsin'at Weyane, and Selam were selected based on the suggestion made by the local administrators that these places have a relatively higher number of IDPs residing either in UNHCR and IOM-managed IDP camps or integrated within the hosting community.

Mekelle's historical establishment as a municipality dates back to 1940, with its origins tracing back to the 14th century A.D. The city's economic vitality has been significantly bolstered by local microfinance institutions, which have facilitated business growth and improved household incomes (Abraham and Getachew 2014). However, rapid urban expansion has encroached upon surrounding farmlands, resulting in the displacement of farmers often without adequate compensation (Kahsay and Tamir 2020).

The recent conflict has profoundly impacted Mekelle, undermining many of the city's socio-economic gains in areas that included small and medium-scale manufacturing enterprises, and agri-business (Mezgebe et al. 2024). Recent data indicate that the city officially accommodates 224,548 IDPs within at least 25 main IDP centers (Figure 3) (IOM 2023). However, a substantial number of IDPs, part of the estimated 967,000 in the region, are believed to be integrated within the host community across the region, accounting for 80% of the displaced population (IOM 2024).

Figure 3: Mekelle City, showing IDP hosting community sites, July 2021



Source: Camp Coordination and Camp Management (CCCM) Cluster Ethiopia

2.3 Data collection and analysis

This study utilized a concurrent mixed-methods design, combining quantitative and qualitative approaches to assess the vulnerabilities of IDP-hosting communities in fragile and conflict-affected environments. The quantitative component, based on survey data, provided a descriptive analysis of socio-economic vulnerabilities, resource constraints, and access to services. This quantitative analysis established a foundational understanding of key risk factors impacting these communities.

To complement this, qualitative data from key informant interviews (KIIs) and focus group discussions (FGDs) with host community members enriched the analysis, offering deeper insights into social dynamics, displacement challenges, and local coping mechanisms. These qualitative findings provided critical context, helping to explain the statistical patterns identified in the quantitative data.

The research further incorporated innovative data sources, including remote sensing and drone footage, to validate and cross-check findings. These tools allowed for the observation of spatial changes in land use and infrastructure, corroborating the vulnerabilities highlighted in both the quantitative and qualitative data. This triangulated approach enhanced the study's overall rigor, ensuring a more comprehensive and reliable assessment of the complex vulnerabilities faced by IDP-hosting communities in conflict settings.

Data collection methods

The quantitative component of the research involved a survey (Annex A) of 408 randomly selected respondents from areas identified as hosting the highest number of IDPs. This approach provided a representative sample of the broader community, allowing for a robust analysis of multi-sectoral, FLW related vulnerabilities and displacement-related challenges. Data collection complied with ethical guidelines, ensuring all participants provided informed consent. Aligning with IWMI's Institutional Review Board (IRB) recommendations, all enumerators completed mandatory ethics for data handling courses. Clearances by the Tigray DRMC were granted in writing to undertake the research.

In parallel, nine KIs were conducted with stakeholders from various organizations, humanitarian agencies, and local administrators. These individuals were selected for their involvement in addressing displacement-induced issues within the community, offering expert perspectives on institutional responses and resource allocation.

Qualitative insights were further deepened through focus group discussions. Four FGDs were held during an inception workshop, followed by three additional FGDs with selected members of the host community. This included government bureaus, donors (USAID) community representatives, members of the humanitarian community (INGOs, NGOs, and UN agencies), and local administrators. Special attention was given to gender representation, with a 60:40 ratio of men to women across groups, by design, ensuring that gender-specific challenges were adequately addressed in the analysis. This balanced representation allowed for a more nuanced understanding of how displacement uniquely affects different segments of the population.

Remote sensing for IDP host vulnerability analysis

Remote sensing and open-source mapping platforms have been employed to conduct vulnerability analysis in conflict-affected host communities in Mekelle City. Drone footage was captured in selected areas within the IDP-hosting community for hazard mapping, aiming to identify regions vulnerable to flooding. This effort, combining remote sensing with participatory mapping activities, involved using drones for data collection and engaging community members to enhance the resilience of vulnerable populations. Further details of the workflow for these activities are shown in Annex B.

3. Findings

3.1 Quantitative data analysis

The quantitative analysis captures the conditions and experiences of the IDP host community of Mekelle City, based on data from 408 survey respondents. Data was collected through household surveys, administered using mobiles and tablets with the preinstalled remote data collection software tool KoBoCollect. The data were analyzed using descriptive statistical methods in SPSS, covering demographic profiles, livelihood and economic vulnerabilities, access to services (water and food), social cohesion, security, and psychological well-being. This multidimensional approach highlights both challenges and opportunities within the community, revealing critical areas of vulnerability that threaten resilience, such as economic fragility and gaps in service delivery. Simultaneously, it uncovers potential strengths in social cohesion and community relations.

These findings provide an evidence base to inform anticipatory action (AA) and early intervention strategies aimed at strengthening community resources (including assets, social networks, and other resources), enhancing local resilience capacities, and mitigating exposure to risks. These risks include a multi-layered environment of climatic challenges (such as drought and erratic rainfall), social fragmentation, heightened security threats, economic instability, food insecurity, and limited access to clean water and healthcare in fragile and conflict-affected settings.

Participants were selected from administrative units identified as hosting a high number of IDPs. Additionally, measures were implemented to anonymize all data to protect respondent confidentiality. The average residency of respondents in their respective kebeles was 17 years, with a mean age of 42 years.

3.1.1 Food, land, water stresses, and other underlying vulnerabilities

Availability and sufficiency of food

Before the conflict, 65% of respondents reported having access to quality food, and 27% indicated dietary diversity. However, during the conflict, more than half of the respondents (51%) stated that there was insufficient food availability in local markets. This shortage was attributed to several factors: increased demand and reduced supply (44%), poor harvests from the previous season (32%), and disrupted food supply chains due to security issues (30%). These findings underscore the need for AA in strengthening food supply systems and addressing market vulnerabilities during crises.

The economic impact of the conflict

Before the conflict, income sources were diverse, including trade (32%), salaried employment (30%), and daily labor (27%). However, after the conflict, 75% of respondents reported a shift in income sources, primarily due to reduced employment opportunities (97%). Women disproportionately bore economic (65%) and domestic (48%) burdens, highlighting the importance of gender-sensitive interventions in economic recovery and livelihood support.

The conflict had a notable impact on housing security, particularly for renters, who made up 49% of respondents. Nearly 59% of the host community experienced increased financial strain due to the arrival of IDPs, with 45% reporting higher rents and 41% forced to live with relatives. In contrast, 39% of respondents owned their homes, suggesting relatively better financial stability. This data underscores the need for targeted housing stability programs to alleviate pressures on both renters and owners, ensuring secure living conditions in post-conflict recovery.

Impact of the conflict on basic services

The influx of IDPs significantly strained basic services, with 80% of respondents reporting a decline in service quality. Sanitation was a major issue, identified by 62% of respondents, while 62% reported a reduction in access to in-house potable water compared to pre-conflict levels. Additionally, 78% observed the breakdown of regular water distribution schedules, reflecting the overburdened infrastructure. Figure 4 shows Amora Kebele Primary School, which was used as an IDP shelter from 2021 to September 2024 preventing attendance by local children. These findings highlight a need for AA to mitigate WASH service disruptions in displacement-affected areas and to improve water and sanitation systems.

The school attendance rate among school-age children within the surveyed IDP-hosting community was moderate, with an average attendance rate of 0.86 children per 1.46 school-age children per household. Of the children not attending school, 39% were recorded as dropouts, a result of various factors, including financial constraints, academic challenges, and school closures induced by the conflict. This highlights significant educational barriers in displacement-affected and hosting areas, where children face heightened risks of dropout due to compounded personal, familial, and systemic challenges associated with conflict-induced placement.

Figure 4: Amora Kebele Primary School in Tigray, Ethiopia served as a shelter for IDPs from 2021 until September 2024, disrupting regular classes and preventing local children from attending school



Photo: Mitchell McTough

The majority of respondents (80%) reported a deterioration in health services following the arrival of IDPs. While 59% of households have access to piped, seated toilets, open defecation persisted in 7% of areas due to insufficient sanitation facilities. Water storage practices, using 20-liter jerry cans, a role mostly overseen by women, indicated uneven distribution, with 58% of households citing unequal access to water.

Daily water consumption varied across households, with 41% reporting usage of 20-50 liters, 25% using less than 20 liters, 24% consuming 50 to 100 liters, and small proportions using 100 to 150 liters (7%) or over 150 liters (3%). In Tigray, the average household size is 4.2 individuals, consistent with national averages in Ethiopia, which stand

at approximately 4.6 members per household (World Bank 2021b). A minimal 1% of respondents were unable to specify their water usage. These figures highlight significant disparities in water access, with nearly half of the respondents consuming less than 50 liters daily per household. For households using less than 20 liters of water per day (25% of respondents), this translates to approximately 4.8 liters per person per day in Tigray. Similarly, for those using between 20 to 50 liters per day (41% of respondents), this would equate to 4.7 to 11.9 liters per person per day. These figures are below international standards for basic water needs, which suggest a minimum of 15 liters per person per day for drinking, cooking, and hygiene (Sphere Association 2018).

In terms of water sources, 50% of households relied on in-house tap water, while 46% used uncontrolled public sources. Additionally, 27% utilized public wells or boreholes, 14% relied on rainwater harvesting, 5% used public taps, and 1% depended on natural water sources such as rivers. These findings underscore the widespread reliance on alternative water sources despite the availability of in-house tap water, suggesting limitations and inconsistent access to the water supply.

Households primarily relied on communal or on-street bins for waste disposal with waste collection from households occurring once per week for 64% of households, while the remaining respondents (36%) reported irregular or unknown waste collection times. The findings highlight disparities in waste management practices, with infrequent collection schedules and variations in bin capacities noted across the community. Additionally, 59% of respondents indicated that waste management challenges had worsened following the arrival of IDPs, citing increased strain on existing systems. These patterns underscore the need for more efficient waste management systems to maintain cleanliness and reduce environmental health risks in IDP-hosting areas.

Security after the conflict

A significant majority of respondents (90%) reported a deterioration in security following the conflict, with the city perceived as less safe than before. Robbery (87%) and financially motivated killings (87%) were major concerns, though 83% perceived increased violence. While 8% of respondents noted minor improvements, the overwhelming majority expressed persistent concerns about personal safety. These findings underscore ongoing security challenges that continue to disrupt daily life in the community.

In response to the security situation, efforts by community leaders and civil society organizations to strengthen traditional arbitration mechanisms were acknowledged by 58% of respondents in the absence of a functioning legal system. However, 41% indicated they did not benefit from these efforts, suggesting inconsistencies in access. Additionally, 42% noted that IDPs were excluded from these processes, raising concerns about equitable access to conflict resolution.

The impact on vulnerable groups was particularly severe, with 79% stating that women and children were disproportionately affected by insecurity. Alarming, 80% of respondents reported that no formal or informal protective measures—such as increased policing or community-organized safety patrols—had been implemented to protect these groups. This highlights widespread concern over their heightened vulnerability in an increasingly unsafe environment.

3.1.2 Existing early warning or anticipatory action systems

An anticipatory action framework is designed to provide timely, pre-emptive support to communities facing imminent crises, enabling them to mitigate the impacts of disasters before they fully unfold. In Ethiopia, this framework aims to address a range of hazards, such as drought, conflict, and displacement, through coordinated, multisectoral efforts led by various agencies (Ruckstuhl and Laauwen, 2023). The multiparter AA framework, facilitated by the United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA) and funded by the Central Emergency Response Fund (CERF), coordinates contributions across agencies to address food security, health, and protection needs.

While this framework has provided crucial support, significant gaps remain in reaching host communities affected by crises in Tigray (Easton-Calabria et al. 2022). Under the first CERF anticipatory allocation in 2021, data reveals a pronounced disparity in resource distribution: IDPs receive 28% of the support, and other affected groups receive a substantial 68%, whereas host communities receive only 3%. This limited allocation underscores a critical shortfall in AA aimed at host communities, which are essential in supporting displaced populations yet remain underserved in crisis response (UNOCHA 2022).

Before the Tigray conflict, nearly two-thirds of respondents from host communities reported having access to quality food. However, 72% indicated they had not received support during the conflict, with only 11% receiving food aid once, and an additional 10% receiving it twice, revealing deficiencies in anticipatory systems intended to provide timely support. Furthermore, only 36% of host households attended health programs focused on disease prevention, such as hygiene promotion and water purification, highlighting the limited reach of pre-emptive health initiatives.

Income shortages led 66% of respondents in host communities to pursue alternative income-generating activities, indicating their potential self-sufficiency if provided with financial support for small enterprises. Additionally, 30% relied on food aid, while 19% depended on remittances, underscoring the economic strain these communities endure. Moreover, 51% of host respondents expressed concerns over food availability due to high demand and limited supply, emphasizing the urgent need for enhanced early warning systems and food security policies that can proactively address such issues.

The opportunity for anticipatory action to address the impacts of conflict and displacement across multiple sectors is evident. In healthcare, 90% of respondents from host communities reported worsening conditions over three years (2020–2022), with 64% noting disease outbreaks. Host community respondents observed increased health issues, such as malnutrition (44%) and mental health challenges (37%), with 67% calling for improved healthcare services. Concerns about inadequate medication (62%) and insufficient healthcare staff (42%) were widespread, with children identified as the most affected group (54%). Additionally, 88% of respondents reported stress-related behaviors within households, highlighting the need for mental health support as part of anticipatory frameworks.

Existing early warning systems, such as the Famine Early Warning Systems Network and Ethiopia's National Meteorological Agency (NMA), play a role in forecasting climate and food security risks. However, these systems often lack the real-time, localized insights needed to inform timely and targeted anticipatory action for host communities. Expanding these systems to better predict and address the compounded impacts of conflict, drought, and food insecurity could strengthen Ethiopia's anticipatory capacity.

The current AA framework in Ethiopia has enabled agencies to address urgent needs, largely in Somali and Afar regions; a caveat likely due to a lack of access to the two Tigray regions during the conflict (2020 – 2022). Outside of Tigray, FAO has provided food security and livelihood support, including parasite treatment, animal feed, seeds, and cash assistance. UNICEF's efforts have spanned nutrition, WASH, protection, and education, focusing on malnutrition screening, water system rehabilitation, and child protection initiatives. WHO deployed Rapid Response Teams to bolster emergency healthcare, while UNFPA, UNHCR, and UNICEF worked collaboratively on protection initiatives, such as GBV (Gender Based Violence) referral pathways and raising awareness on sexual exploitation and abuse.

However, these anticipatory actions primarily focus on displaced populations, and agro-pastoralist populations, with limited emphasis on host communities. As a result, host communities that share resources originally intended for smaller populations, experience strain, including supply shortages (72%) and extended waiting times in healthcare facilities (62%).

Anticipatory action–Mekelle City

There is an opportunity to adopt locally led anticipatory action (AA) initiatives in IDP host communities within FCA contexts, similar to Mekelle. In such settings, creating resilient AA systems is crucial due to fragmented and weak institutions. Research shows that 83% of the host community regularly interacted with IDPs, with 71% providing direct in-kind support (token financial support, food, and small household goods). However, 84% expressed concerns about the inadequate living conditions of IDPs, and 52% felt the services available were insufficient. Despite initial assistance, many respondents viewed IDPs' presence as temporary, with 77% excluding them from social events, driven by the belief that they would soon return to their AoO.

These findings emphasize the need for AA strategies that address both immediate and long-term needs. Early interventions could focus on improving living conditions through infrastructure upgrades, while fostering social cohesion via community-based anticipatory action (AA) initiatives. These initiatives would integrate IDPs into local life, providing a buffer against shocks and impacts in areas where governmental and humanitarian preemptive measures are lacking. As indicated by the data—83% of the host community regularly interacted with IDPs, and

71% provided direct in-kind support, such as financial aid, food, and essential household items—locally led anticipatory action (AA) can enable timely and effective responses if it incorporates existing community-driven social cohesion and support networks.

Drought was cited by 82% of respondents as the primary climate risk, with extreme temperatures (31%) as a secondary concern. These stressors underscore the fragility of local agriculture and water systems. However, 55% of respondents lacked access to disaster early warning systems, with radio as the sole information source. This reveals critical deficiencies in preparedness for environmental hazards, including flooding. Notably, 88% of respondents had received no anticipatory support before the crisis, exposing significant gaps in disaster management and early warning mechanisms. These findings highlight the opportunity to integrate comprehensive, community-based AA initiatives to bolster resilience against layered crises.

3.1.3 Further considerations for anticipatory action in Mekelle

Negative coping mechanisms among the hosting community were reported from the survey questionnaire. Of the 408 respondents 51% stated that they had sold productive assets and 90% had turned to petty trade as a coping mechanism. Notably, 78% indicated they were unprepared for the challenges they faced due to the changes brought about by the conflict and resulting arrival of IDPs, indicating that AA initiatives in such contexts may need to fit within wider preparedness programs.

The relationship between livelihoods, disaster preparedness, and petty trade suggests that, in the absence of robust support mechanisms, individuals are forced into short-term strategies that undermine long-term resilience. AA typically focuses on pre-emptive interventions—such as cash transfers before shocks like climate disasters—and its application in conflict-driven displacement is less common. However, AA can be instrumental in fragile contexts, like Mekelle, where conflict and protracted displacement are compounded by climate-related risks. In such environments, AA could be leveraged to support IDPs and host communities before secondary shocks arise, ensuring their livelihoods and infrastructure are more resilient.

In terms of desired support, 85% of respondents expressed a preference for development assistance—such as loans or cash support—over emergency aid like flour distributions. Furthermore, 88% called for strategic planning by responsible bodies, while 89% underscored the importance of development support over temporary relief.

3.2 Qualitative data analysis

Qualitative data obtained from key informant interviews and focus group discussions were analyzed using thematic analysis with NVivo 13.1 software. The findings, summarized below, provide key insights into the challenges faced by IDP-hosting communities in Mekelle.

3.2.1 Key food, land, and water stresses in IDP hosting communities

Food and resource depletion

The qualitative data, corroborating the quantitative findings, highlighted significant challenges experienced by host communities in Mekelle due to the influx of IDPs. Informants consistently emphasized that host communities have been severely impacted by the strain of providing and sharing basic needs, such as food and shelter, to displaced populations, leading to the rapid depletion of local resources. The primary food stress identified was the sharp increase in demand for already limited resources (i.e., local vegetables, grains, teff), exacerbating food insecurity for both IDPs and host communities.

Participants reported that Mekelle and its surrounding areas have been overwhelmed by the increased demand for food, driven both by the influx of IDPs and the broader effects of population displacement. Informants further explained that the pressure on food supplies were not solely due to the arrival of IDPs but were compounded by the disruption of surrounding villages that traditionally supplied consumables to urban centers like Mekelle. Conflict and drought have significantly reduced the capacity of these areas to support urban food needs, intensifying the strain on both IDPs and host communities.

One informant summarized the situation succinctly, pointing to the interconnectedness of conflict, resource depletion, and rising vulnerability within the host community, indicating vulnerabilities and opportunities for

informing localized regional AA initiatives that reduce impacts from further shocks and instead build resilience in hosting communities.

“ The urban areas heavily depend on the surrounding agricultural products for consumption. When there is a lack of food items from the said areas, it becomes difficult for both the residents and the IDPs in Mekelle. Thus, it continues to be a difficult year for both the residents and the IDPs who have settled here in Mekelle. The same is true of other places which were hit by drought.

Informant 05

Water access and scarcity

Key informants highlighted significant challenges regarding access to water in Mekelle, which they perceive as being exacerbated by the influx of IDPs. Even before the conflict, Mekelle's water supply was insufficient for its residents, however after the war, there was a significant change noted in secondary sources from 92% to only 27% water supply coverage (Asgedom et al. 2023). The arrival of IDPs placed additional pressure on an already overstretched system. Informants described how water shortages became more severe as IDP sites, such as IDPs sheltering in neighborhood schools, began sharing the same limited water sources allocated for the host community. In some cases, both host and displaced populations have gone without access to water for extended periods.

Host community members recounted instances of searching for water across the city, often resorting to unhygienic sources out of desperation. This water stress was compounded by the damage to the city's infrastructure, caused by conflict and mismanagement, which further reduced the supply of potable water. Informants also pointed to the lack of coordination between humanitarian actors and government offices as a contributing factor, hindering efforts to manage and distribute water more effectively. This disjointed approach has created persistent challenges in meeting the water needs of both the host community and the displaced population, as one informant alluded to:

“ Let me tell you about an experience concerning this. With support from UNICEF, we dug a water well at Hawelti IDP center [264 households (HH), Hawelti Primary School has 1,160 individuals] but there was no power supply to pump the water. We asked partners to supply fuel, but we couldn't get any. We also asked for solar power, but we have been told that it is expensive. Our partners insisted that this should be supplied by the city administration. No matter how hard we tried to convince the local administrators about the urgency of the problem none of the various sectors at the lower level were able to mobilize resources.

Basic service concerns

Informants highlighted that the health challenges facing host communities are complex and deeply interconnected with the conditions of the water supply and sanitation infrastructure. They explained that the lack of access to water and sanitation facilities in IDP settlements has led to widespread open defecation, which had direct health impacts on the host community, including outbreaks of cholera in some areas. The strain on public health is further exacerbated by the inadequate resources of local health centers, which struggle to provide basic services. Figure 5 shows the sole health worker in Amora Kebele.

Informants noted that when IDPs are unable to receive necessary medical care in the designated camps, they often turn to local health centers, further burdening an already overstretched system that the host community relies on. This influx of patients has created gaps in access to health services for both the host community and displaced populations. As one key informant explained:

“ The health system is providing service with limited resources meant for the host community, hence the already inadequate service is impacted when the demand is high as a result of the increased number of IDPs being hosted. They are sharing the service meant for the host community.

Informant 01

Figure 5: Health worker interview, Amora Kebele, Tigray Region Ethiopia



Photo: Mitchell McTough

Informants expressed significant concerns regarding the education sector, highlighting the strain placed on schools in Mekelle due to the influx of IDPs. While there is extensive research on school dropouts as a coping mechanism during crises when priorities shift (Cha 2021, Kunock et al. 2023), there remains a marked scarcity of studies that explore the role of anticipatory actions, such as cash transfers, on mitigating education-related coping strategies, including school dropouts. In Mekelle, schools have been repurposed to accommodate IDPs, severely limiting access for children from the host community. Informants noted that in many cases, schools remain occupied by IDPs due to limited alternative sheltering sites, preventing regular classes from taking place for host community children. In some sites sub-city locations of Mekelle (Hawelti, Adi Haqi, and Hadnet) where education is still possible, classes are only held three days a week, further disrupting the learning process.

One informant explained the severity of the impact of hosting IDPs in the schools as follows:

“ ... children cannot go to schools as the classrooms are occupied by the IDPs. Instead of five days a week, children are taught for three days. ...As a result, the children are not getting access to education properly, nor are they able to reach the level their age-mates have reached. As the schools have no clean restrooms, the people in the IDPs are forced to use open areas within or outside the compound. This exposes the students, teachers, the IDPs, as well as the communities surrounding the schools to various health hazards.

Informant 07

The gap in this area highlights the necessity for a more refined understanding of how anticipatory measures can impact educational outcomes amidst protracted crises. Simultaneously, it presents an opportunity for the development of locally tailored AA initiatives that are responsive to the distinct characteristics and complexities of the specific crisis context. This approach allows for interventions that are both contextually relevant and capable of addressing the unique educational vulnerabilities arising from prolonged instability and protracted displacement.

Mental health and psychosocial support (MHPSS)

Informants highlighted the psychological toll that the ongoing displacement crisis is having on the host community, impacting their resilience. Resilience, conceptualized as the ability to absorb, adapt, and transform in response to shocks, encompasses not only enduring hardship but also evolving to meet new circumstances. In the context of protracted displacement, resilience within both displaced and host communities is being severely tested. While post-traumatic stress disorder (PTSD) is well-documented among conflict-displaced populations (Morina et al. 2018, Tadesse et al. 2024), mental health impacts on host communities are often overlooked in the literature. The ongoing exposure to stressors such as rising market prices, insecurity, and the visible suffering of vulnerable groups – including mothers with infants and the elderly, has led to significant psychological strain. The qualitative evidence reveals a critical need for anticipatory MHPSS interventions.

AA measures could include the pre-emptive establishment or equipping of trauma clinics designed to serve both displaced populations and host communities, mitigating the psychological toll before it manifests in more severe conditions. Anticipatory coping strategies, which encourage individuals to proactively engage with potential stressors rather than reactively address them, are a well-grounded approach in the MHPSS sector (Neupert et al. 2016). By fostering a constructive response pathway, such strategies can reduce reliance on maladaptive coping mechanisms (i.e., substance abuse) and promote psychological resilience. This underscores the need for comprehensive mental health interventions that not only address immediate crises but also strengthen the anticipatory capacities of affected populations, ensuring they are better equipped to handle future shocks, both climatic and conflict-related FCAS.

3.2.2 Existing early warning systems and ongoing preventive strategies

The qualitative data revealed significant weaknesses in early warning systems, with informants consistently reporting a lack of effective infrastructure for proactive response. The conflict and siege severely limited communication capabilities, creating barriers to timely coordination among humanitarian actors and government officials. Despite some initial attempts to prepare for the influx of IDPs—such as health screenings and targeted health awareness training within host communities – these efforts were hampered by inadequate resources and fragmented operational coherence.

There were divergent views among informants regarding preparations for conflict-induced displacement. Some noted that no preparations were made, as the scale of the conflict was unexpected. Others acknowledged that preliminary discussions occurred, with the regional DRMC maintaining some food reserves to pre-emptively act

stitched spatial images) and exported as GeoTIFF files for overlay in land use and land cover analysis. Drone Deploy software was then used for further analysis, including elevation modeling for surface water hazard mapping.

Figure 7: Water point, Amora

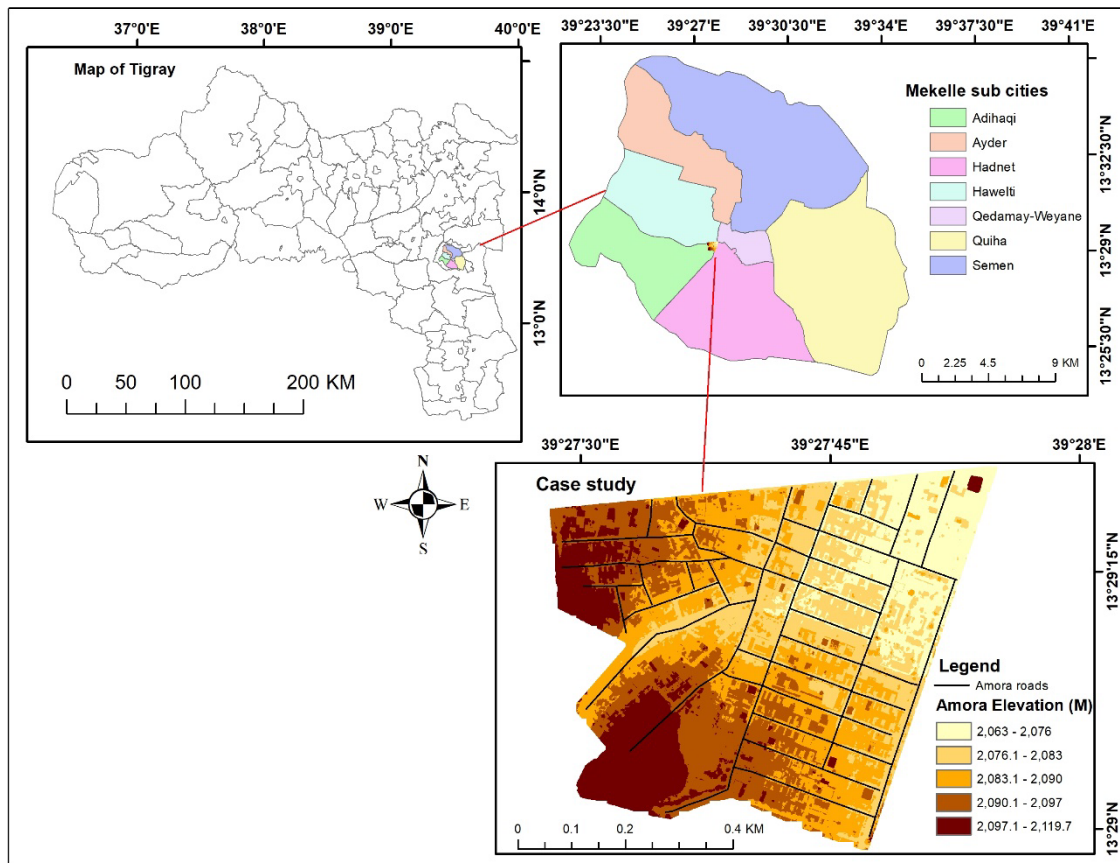


Photo: Mitchell McTough

3.3.1 Participatory community mapping case study

Due to the logistical challenges of implementing participatory community mapping across the entire city of Mekelle, it was necessary to select a focused case study area that exhibited heightened vulnerability resulting from the influx of IDPs. Consequently, Amora Kebele, in the Adi Haqi sub-city, was identified as the most suitable site for this participatory mapping exercise, given its exposure to multiple stressors and resource pressures (Figure 8).

Figure 8: Map of participatory community mapping case study, Amora Kebele Mekelle City, Tigray Region, Ethiopia



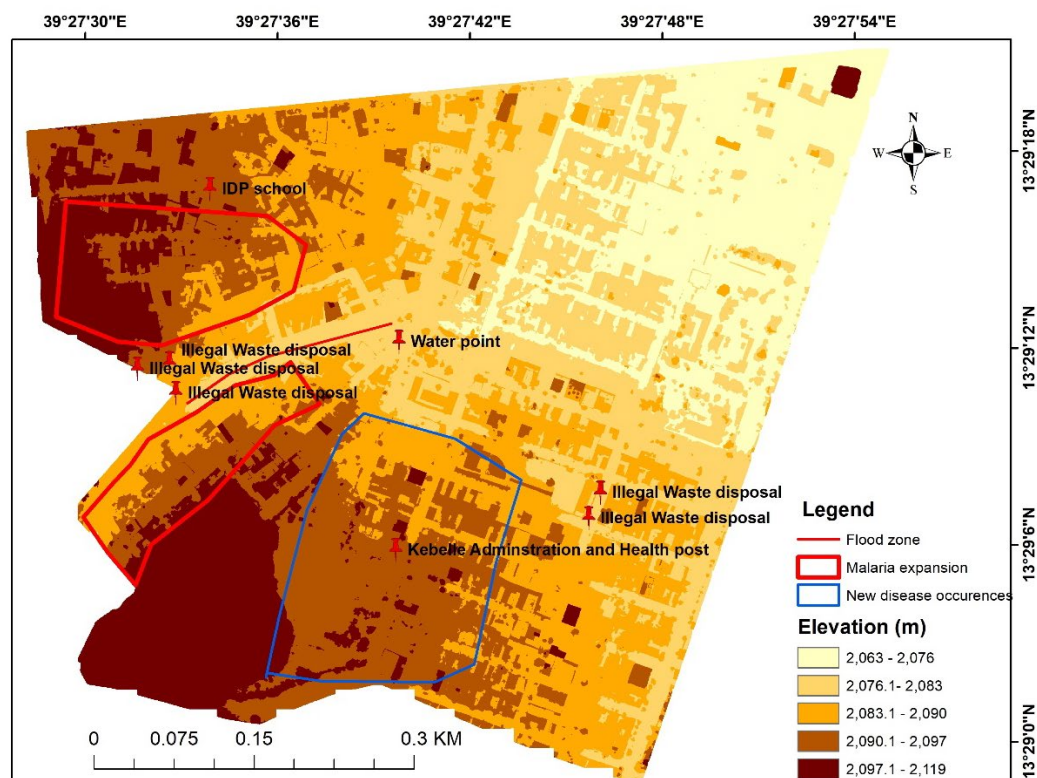
Source: *McTough and Tsamariam*

3.3.2 Findings of the remote sensing data analysis

Anticipatory actions are essential in mitigating the challenges posed by overcrowded living conditions in host communities. In this study, the influx of IDPs into Amora Kebele has significantly strained resources of kebeles, as evidenced by the maps below. The data revealed significant congestion and limited access to essential WASH services. The community well shared between the hosting community and IDPs, is situated near a sewer and solid waste sites (Figure 9), which poses severe public health risks, particularly in fragile settings where WASH infrastructure is already strained.

In similar crisis contexts, studies have shown that proximity to waste sites significantly increases water contamination, heightening the spread of waterborne diseases such as cholera and dysentery (Nouri 2019). For example, research on WASH conditions in emergency settings demonstrates that poorly situated water sources near waste disposal areas can lead to rapid disease outbreaks, as contaminants infiltrate drinking supplies (Bolton 2020) and can risk the integrity of the water chain (Sphere Association 2018). Evidence from the UNHCR indicates that in overcrowded settings, communicable diseases from overcrowding account for 60% to 80% of deaths in displacement settings (Nouri 2019). Additionally, the absence of proactive measures has led to the occupation of the local elementary school by IDPs, leaving students without access to education, as depicted in Figure 9.

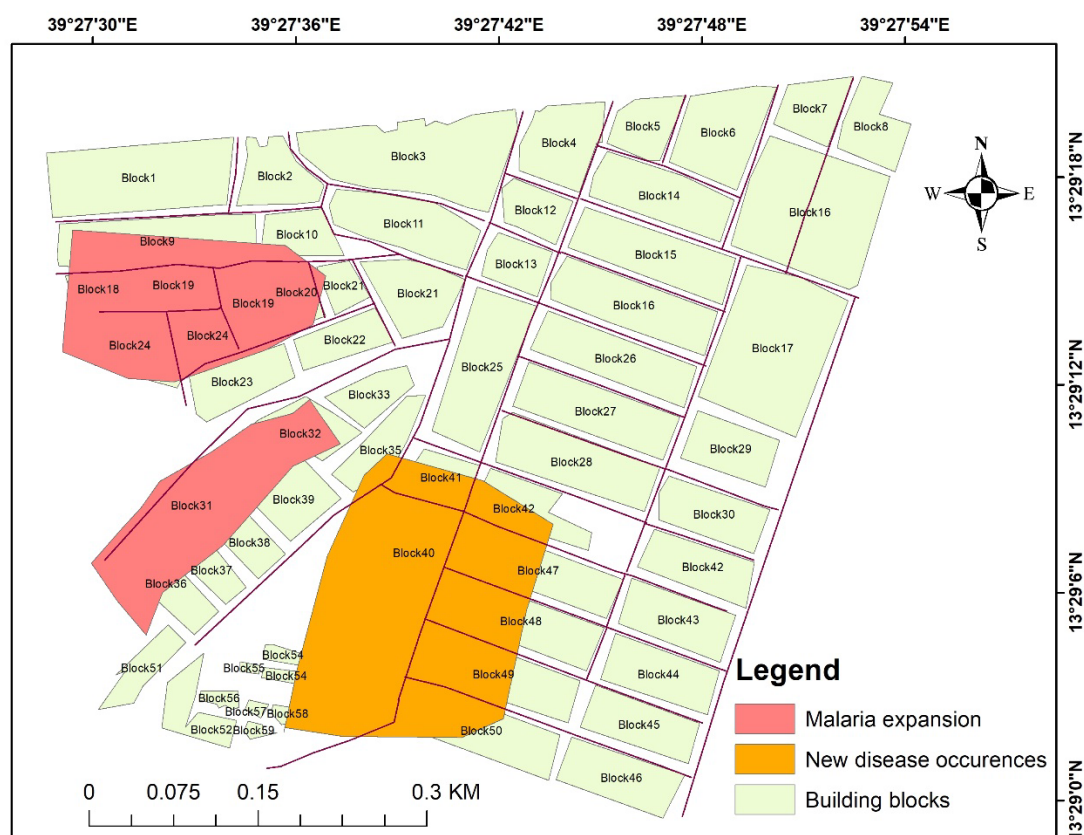
Figure 9: Problems identified by community mapping Mekelle City, Tigray Region, Ethiopia



Source: *McTough and Tsamariam*

Further worsening these challenges, the local health center is critically under-resourced and lacks adequate infrastructure. The health post currently operates from within the local administration's office due to the absence of a dedicated facility, limiting its capacity to provide essential health services (Figure 9). These findings underscore the urgent need for infrastructural, service, and supply improvements as well as enhanced resource allocation to mitigate health and environmental risks in these vulnerable communities, and expansion of diseases (Figure 10). Health workers at the Amora Kebele post are required to serve both IDPs and host community members in a suboptimal environment, further exacerbating service delivery challenges.

Figure 11: Expansion of diseases in Amora Kebele, Mekelle City, Tigray Region, Ethiopia



Source: *McTough and Tsamariam*

Another issue identified through participatory community mapping is the rise in HIV and malaria prevalence—perceived by members of the community as due to the influx of IDPs into Amora Kebele. Several areas, demarcated on QGIS as red overlays in Figure 10, have become hotspots for disease transmission, placing further pressure on health extension workers, who lack the necessary infrastructure to contain the spread. The absence of a formal health post, and health services temporarily accommodated within the kebele administration building (Figure 12 temporary health post), reflects a failure to implement proactive measures to address potential health risks in this vulnerable setting.

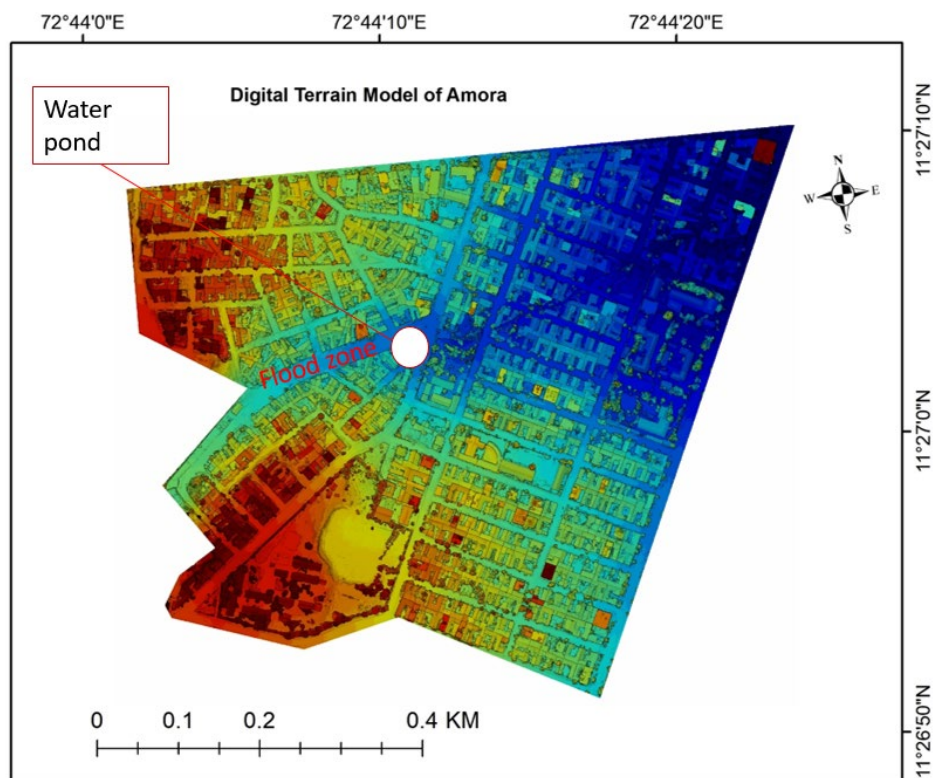
Figure 13: Health post for Amora Kebele, Tigray Region, Ethiopia



Photo: Mitchell McTough

The research team developed a Digital Terrain Model (DTM) of the case study kebele, which now serves as a critical demonstrative tool for analyzing vulnerabilities across key sectors, including environmental science, urban planning, disaster management, and engineering (Annex B). The DTM reveals that the water point (a constructed well) is located within a flood-prone zone, making it highly susceptible to flooding and contamination from wastewater leakage, which significantly increases the risk of water contamination (Figure 12). The problem worsened after the arrival of IDPs, as their increased need for water put extra pressure on local water resources. This increased water extraction from the community well by both groups, for use as potable water, which made them more vulnerable to diseases spread through unsafe and untreated water sources.

Figure 14: Digital terrain model (DTM) of Amora Kebele, Mekelle City, Tigray Region, Ethiopia



Source: *McTough and Tsfamariam*

Existing literature highlights the importance of integrated, multi-sectoral approaches to AA. Start Network (2021) stresses that anticipatory action frameworks must be cross-cutting, encompassing food security, healthcare, education, and infrastructure to effectively mitigate risks in conflict-affected settings. The findings from Mekelle point to an urgent need for better coordination between humanitarian agencies, government bodies, and local institutions to reduce the vulnerabilities that persist in the region. Proactive, well-coordinated strategies are essential not only to prevent future crises but also to support long-term recovery and resilience for both IDPs and host communities.

The conflict in Tigray has had a significant effect on both IDPs and host communities in Mekelle. The war's disruption of income streams, food supply chains, and public services (including water and health) has left host communities especially more vulnerable. Figure 13 depicts a woman from the host community in Amora who, during FGDs, expressed solidarity with IDPs but also highlighted the neglect of her community's pressing needs. While IDPs are often the beneficiaries of humanitarian aid—considered in annual humanitarian needs overviews and their complementing response plans, the needs of host communities are considered supplementary in the delivery of aid. The host community of a displaced population is thereafter exposed to the stresses that the settling displaced persons place on already weakened public services. Compounding these challenges is the frequency of climatic stressors including drought and floods, which have further devastated agricultural production, thereby impacting local food production and escalating market prices. These multifaceted stressors (i.e., pressures on public services because of climate-related shocks) have deepened the pre-existing vulnerabilities of both populations.

Figure 15: Conflict-affected host community woman, Amora Kebele, Tigray Region Ethiopia



Photo: Mitchell McTough

While food aid has somewhat stabilized the immediate food supply, the overall economic recovery in host communities has been slow. Many residents are trapped in a cycle of poverty, unable to regain the livelihoods they had before the conflict. Survey data reveals that 51% of respondents were forced to sell productive assets, while 90% resorted to petty trade as a means of coping with their financial struggles. This trend highlights the need for long-term economic recovery programs that go beyond immediate food aid to foster sustainable livelihoods.

4. Discussion

4.1 Food security and agricultural vulnerabilities

Food security remains one of the most critical issues in Mekelle. The conflict has severely disrupted agricultural supply chains from surrounding rural areas, which have historically sustained the city's food needs. Drought has further compounded the situation, leading to poor harvests and diminishing food availability in local markets. Despite the cessation of hostilities, food supplies have not returned to pre-conflict levels, leaving both IDPs and host communities grappling with inflated food prices and inadequate nutrition.

Survey findings showing that 51% of respondents reported food shortages, underscore the critical need to integrate anticipatory action frameworks that strengthen food supply chains and promote agricultural resilience. The FAO (2023) has emphasized the importance of anticipatory actions in fragile contexts, advocating for the pre-positioning of food supplies and the reinforcement of agricultural systems to reduce the risk of future food insecurity. In urban marketplaces where demand outstrips supply, populations experience the impact of climate shocks like drought-related crop losses, through decreased food supply to the market as well as consequently

heightened food prices. This is further exacerbated in complex crises, where populations displaced by conflict place additional pressure on the public sector, intensifying deficiencies and undermining effective service delivery.

4.2 Water, hygiene, sanitation challenges

Water scarcity in Mekelle poses a severe risk to both IDPs and host communities. The conflict severely damaged water infrastructure, and the arrival of displaced populations placed additional strain on the already limited resources. According to the survey, 62% of respondents reported a decline in access to clean water, and 64% noted disruptions in water distribution. These challenges are particularly acute given the heightened risks of waterborne diseases in such fragile settings.

The localized remote sensing data from the study provides visual confirmation of the vulnerabilities to water insecurity facing the host community. For instance, the annotated elevation map (Figure 10) and DTM (Figure 12) of Amora Kebele highlighted exposure to environmental hazards, particularly related to surface water hazards. Remote sensing data (Figure 10) highlighted the community's reliance on a single water point, which is located near illegal waste disposal sites, posing a significant public health risk. The proximity of the well to waste sites and the lack of adequate water management systems amplify the risks of contamination from flooding, which could further degrade water quality and exacerbate health risks.

With 59% of survey respondents reporting that solid waste management challenges worsened after the arrival of IDPs, the findings underscore the inadequacy of current WASH systems and the urgent need for infrastructural investments. Key informants noted that families often had to wait days, if not weeks, to access clean water, with some turning to unsafe water sources out of desperation. The lack of coordination between local authorities and humanitarian agencies made the problem worse, leaving both IDPs and host community members underserved and exposed to further wastewater-related shocks. Shishaye et al. (2023) highlight the need for proactive investment in water infrastructure to protect communities from these public health risks. In the absence of early warning and anticipatory water management initiatives, Mekelle underscores a critical opportunity for a shift in the traditional loci of power in AA measures to localization at the community level.

Research indicates that proximity to waste disposal sites and flood-prone zones significantly raises the risk of waterborne disease outbreaks, particularly in conflict-affected areas where water infrastructure is under strain (WHO 2020, Shishaye et al. 2023). The DTM analysis aligns with these findings, showing that the water sources for Amora Kebele are highly vulnerable to environmental degradation, further exposing both IDPs and host communities. The lack of proactive measures to mitigate these risks, such as relocating solid waste disposal sites or improving water supply systems, suggests a critical gap in both AA and disaster risk reduction strategies. Empirical studies on solid waste management in conflict settings have shown that poor solid waste disposal practices near water sources are a significant contributor to the spread of diseases, such as typhoid and cholera (Oxfam 2018 Haque and Doberstein, 2021). The remote sensing data in Mekelle reinforces these concerns, showing that the mismanagement of waste disposal in conflict-affected urban settings directly impacts water security, sanitation, and public health.

Systems and services require scaling, development, and capacity-building for managing as populations that are displaced change the demand for services. Urban conglomerations may be infrastructurally more developed than rural towns and villages, however, the capacity to absorb shocks, adapt, and transform is rendered weakened by the services on which they rely. In protracted displacements, as in the case of Mekelle, where IDPs have settled for over three years, systems and services cannot remain static, and where they do, localized AA initiatives can impact IDPs displacement, where institutions cannot.

4.3 Health and public service infrastructure

The conflict has severely undermined the health infrastructure in Mekelle. With the influx of IDPs, local health centers have become overwhelmed, struggling to meet the needs of both displaced persons and host community members. According to the survey, 90% of respondents noted a decline in the quality of health services, while 64% self-reported experiencing disease outbreaks, including malaria. Remote sensing analysis (Figure 10) further corroborates these findings, revealing a concerning expansion of disease transmission areas near IDP settlement sites (Amora, Kebele Primary School, Figure 4).

Key informants explained that when IDPs are unable to access medical care in designated camps, they turn to local health centers, further straining these already under-resourced facilities. This creates a vicious cycle of unmet health needs and overburdened healthcare staff, intensifying the healthcare crisis in the region. The WHO (2020) emphasizes the importance of early health interventions in conflict settings, highlighting that proactive investment in healthcare infrastructure—such as stockpiling medical supplies and expanding the capacity of local health centers, can mitigate health risks in fragile environments like Mekelle.

4.4 Education and MHPSS

The education system in Mekelle has also been deeply impacted by the conflict and the influx of IDPs. Schools have been repurposed to serve as shelters, leaving limited space for host community children to attend classes. Survey data shows that 39% of school-age children are not attending school, largely due to a lack of available space and damaged facilities. Key informants noted that in many cases, schools were only open three days a week, further disrupting the learning process.

Remote sensing data (Figure 10) cross-referenced with ground-truthed participatory community mapping marked the site of an overcrowded school and the use of classrooms as temporary shelters in Amora Kebele, sub city of Adi Haqi. One informant pointed out that the damage to educational materials and infrastructure has made it extremely difficult to maintain the same quality of education, with many students falling behind. UN-HABITAT (2020) underscores the importance of maintaining access to education in conflict settings, emphasizing that educational continuity is essential for long-term recovery and resilience-building. However, these critical needs have not been sufficiently addressed to ensure adaption is not at the expense of public services that ultimately weaken the hosting community's capacity to be resilient, or to drive [of] local anticipatory action initiatives when local government lacks resources to do so. In Mekelle, IDPs are still sheltered in schools, for example in Hawleti sub-city Primary School (Figure 14) and Amora Kebele Primary School.

What is more, mental health can be more effectively addressed as an anticipatory action measure by introducing trauma-informed care ahead of time so that communities and humanitarian agencies are informed and empowered when disaster strikes (Easton-Calabria 2022).

Figure 16: Outdoor kitchen (foreground) belonging to IDPs at an informal make-shift camp in a school (background), Mekelle City, Tigray Region Ethiopia



Photo: Michael Tewelde

5. Conclusion and Recommendation

5.1 Conclusion

The findings from this study emphasize the critical need for regionally adaptive and locally led anticipatory action to address vulnerabilities in food, land, and water systems within IDP-hosting communities in Mekelle. This research validates the premise that AA not only mitigates immediate crises but also strengthens climate resilience over the long-term, specifically when it is multi-sectoral and locally led. While food insecurity and water scarcity are among the most pressing challenges, they are compounded by conflict, climate change, and socio-economic disruption, underscoring the urgency for integrated, proactive measures.

Central to this analysis is the understanding that disruptions to food and water systems are primary stress points. The Tigray conflict has disrupted local agricultural production and supply chains, forcing both host communities and IDPs to rely on scarce, high-cost food sources. Addressing these challenges necessitates anticipatory strategies that include pre-positioning food stocks, enhancing agricultural capacities, and building climate-resilient supply chains. In line with FAO's (2023) recommendations, integrating food security into broader AA frameworks is essential for effectively supporting local AA initiatives in conflict-affected regions like Tigray.

Water scarcity further highlights the need for regionally responsive AA. The survey data indicated that 62% of respondents reported reduced access to clean water, exacerbated by Mekelle's strained water infrastructure and the rapid influx of IDPs. Remote sensing data corroborates community accounts, revealing that key water sources are at risk of contamination from nearby waste sites. Localized data further demonstrates the value of innovative methodologies, such as remote sensing and digital terrain modeling, which provide actionable insights and enable local actors to implement timely interventions.

Recent initiatives, like the Ethiopian Humanitarian Fund's (EHF) Second Reserve Allocation Strategy 2024, which allocated USD 7 million for AA in drought-affected areas in southern Ethiopia, reflect the rising importance of anticipatory funding to address health, WASH, nutrition, and food security risks (UNOCHA 2024c). However, as the Tigray context demonstrates, centrally derived frameworks face limitations in politically sensitive and fragile regions. Effective AA in such areas require adaptive, regionally tailored approaches that align with local governance and crisis dynamics. Prioritizing local AA leadership, co-designing interventions, and ensuring flexible resource allocation can bridge the gap between national AA strategies and regional needs. By fostering locally led, regionally responsive AA, Ethiopia can enhance resilience in fragile settings, offering a model for adaptive governance in decentralized contexts.

5.2 Recommendation

The research findings underscore the need for a decentralized, regional level anticipatory action initiative that operates within a broader national disaster risk management framework as emphasized in the Ethiopian Humanitarian Response Plan (HRP) for 2024 (UNOCHA, 2024a) and the EDRMC (2020). This initiative, informed by a detailed host community vulnerability analysis, emphasizes building AA capacities in fragile and conflict-affected regions like Tigray. Specifically, the recommendations prioritize addressing multi-sectoral gaps, clarifying institutional responsibilities, and identifying actionable steps for enhancing AA capabilities in IDP-hosting communities.

Local authorities, NGOs, and community organizations emerge as pivotal actors in AA implementation, especially where national-level support may be inconsistent due to conflict-related disruptions. A quasi-independent, regionally embedded AA model enables agile, site-specific decision-making while maintaining alignment with central authorities as feasible. This approach not only provides a pathway for strengthening immediate AA capacities but also offers a sustainable model for long-term climate resilience and adaptive action.

To guide practical implementation, the recommendations are structured into three primary focus areas: water and sanitation infrastructure, food security systems, and data-driven AA frameworks. The following table 1 distills the key actions within these focus areas, laying a structured foundation for AA initiatives that are both regionally responsive and scalable to other IDP-hosting contexts.

Table 1: Recommendations for localized AA initiative in Tigray Region, Ethiopia

Focus Area	Recommendations	Rationale and Key Actions
1. Water and Sanitation Infrastructure	Enhance and regulate informal water providers to improve reliable access and sustainability as anticipatory actions to support more immediate drought-related actions.	The population surge in Mekelle during the conflict has pressured fragile urban water systems, with increased reliance on informal, unregulated water sources exacerbating water insecurity. Key actions: Conduct a comprehensive mapping of water points, assessing quality, quantity, recharge rates, and user demographics; implement regular water quality assessments; engage local authorities to align informal providers with sector standards; use community water points as information hubs for affordable water management.
	Implement a decentralized AA model to adapt water resource management to regional needs.	A quasi-independent AA model at the regional level offers flexibility for swift, localized decisions tailored to community needs while coordinating with central authorities. Key actions: Strengthen local AA capacity for drought-resilient water management; use community water points to disseminate water conservation practices, and foster public awareness of sustainable practices, including rainwater harvesting during forecasted droughts.
2. Food Security Systems	Diversify supply chains through regional storage hubs and decentralized distribution networks.	The failure of the 2023–2024 summer (<i>meher</i>) harvest and climate-driven shocks demonstrate the need for robust food systems to withstand forecasted droughts. Key actions: Establish pre-positioned storage hubs and a contingency distribution network for flexibility in logistics; ensure resilient supply chains to maintain food availability during climate shocks.
	Strengthen institutional capacities for AA preparedness, particularly for drought-related food insecurity.	Recurring climate shocks necessitate institutional capacity. Key actions: Develop frameworks for anticipatory action within government agencies, local authorities, and community-based organizations to define roles for coordination and resource allocation during crises; reinforce logistical flexibility for food distribution during predicted shortages.
3. Data-Driven AA Frameworks	Integrate remote sensing and participatory mapping at kebele (ward) to sub-city levels.	Combining remote sensing and participatory mapping enhances spatially precise, community-validated data, addressing gaps in real-time location-specific data often seen in conflict settings. Key actions: Leverage remote sensing to identify critical vulnerabilities (e.g., WASH, food security); validate data with participatory mapping to improve the accuracy of AA action measures; equip community stakeholders with actionable data; prioritize interventions tailored to site-specific risks.
	Develop locally attuned frameworks that support community ownership and adaptive planning.	Community ownership fosters resilience, particularly when national frameworks are inaccessible or limited. Key actions: Encourage community stakeholders to utilize AA data for informed decision-making; empower local actors to sustain resilience-building measures independently; design AA frameworks adaptable to each site's unique vulnerabilities, ensuring AA initiatives are flexible and regionally responsive.

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Annexes

Annex A - Multi-sectoral Household Survey Questionnaire (Sample)

DEM				
1	Kebele _____			
2				
3				
	18-24 years			
	35-44 years			
	55-64 years			
	75 years and older			
4				
	Single female-headed			
	Two headed household			
5				
				Read/write
				Secondary school
6				
	Number of male adults			
	Number of minors (0-5)			
7	Yes, it is mine			
	It is my family's/relatives'			
8				
	Yes			
9				
	Persons with disabilities			
	Women (pregnant/lact			

	ating mothers)			
				Other (please specify): _____ _____
LEV				
1				
	Salary (employed)			
	Agriculture (has a farmland)			
	Dealer			
2				
	Yes			
3				
	Yes			
4				
				In fact, jobs have increased
				Lots of businesses flourishing recently
5				
6				
	Do other jobs			
	Rely on remittance			
7				
	Yes			
8				
				There is an improvement in our overall

				economic standing
				The economy of the household has been severely impacted
				There is no significant change in our economy or livelihood
9				
	High debt, not able to repay			
	Relied on food aid			
9				
	Yes			
10				
				To buy food for my family
				To buy other needs
11				
				Cash: Once
				Three times
				Food: Once
				Three time
12				
				Access to credit to start my own business
				Improved healthcare service
13				
				Men have taken on more

				economic responsibilities
				Men have taken on more domestic roles than before
				Men have taken on more communal roles
				No significant change
14				
				Yes
15				
16				
				Lack of Access to Resources
				Cultural and Social Norms
ABSH				
1				
2				
	Yes			
3				
	Financial (unable to buy school materials)			
	Schools occupied by IDPs			
4				
	Yes			
5				
	Yes			
6				

	Yes			
	About the same			
7				
	Not enough health professionals			
	Health centers are overwhelmed			
8				
	Women			
	Elderly			
9				
	Yes			
10				
	Yes, right away			
11				
	If no, what are the reasons			
	Yes			
12				
	Disease prevention (i.e. hygiene promotion or water purification campaigns)			
	Psychosocial and Mental Health Support (i.e. counseling services, trauma therapy, mental health workshops)			
				Others (please specify) _____ _____

13				
	Yes			
14				
	Increased waiting times			
	More frequent health outreach programs			
				Others (please specify) _____ _____
15				Are there any common health issues within your community that have increased since the arrival of IDPs?
	Yes			
16				If yes, what are the common health issues?
	Respiratory infections			
	Malnutrition			
17				
	Yes			
18				
	Cultural norms/restrictions (e.g., women not allowed to visit healthcare facilities without a			

	male companion)			
	Distance to healthcare facilities (e.g., elderly women or persons with disabilities unable to travel long distances)			
	Healthcare facility capacity (e.g., overcrowded facilities, long waiting times, affecting women more due to childcare responsibilities)			
	Specific health needs not addressed (e.g., lack of maternal health services, reproductive health services)			
HS				
1				
	Permanent (Solid walls (brick/concrete)			
	Temporary (tents, makeshift shelters)			
2				
	Yes			
3				

	Structural instability			
	Overcrowding			
4				
	Yes			
5				
	Once			
	Three			
6				
	Lack of employment			
	Fear and lack of safety			
7				
	Women			
	Children			
8				
	Yes			
9				
	Increased rent prices			
	Competition for housing			
10				
	Significantly improved the housing situation			
	No noticeable impact on the housing situation			
	Significantly worsened the housing situation			
11				
	Yes			
12				

	Rent disputes			
	Property damage			
CCR				
1				
	They are living in my house			
	I was giving them kind support when they arrived			
2				
	Rented a room			
	They are distant relatives			
3				
	Yes			
4				
	They are contributing to the local economy			
	Some of them have already started new livelihoods here		Others (please specify) _____	
5				
	They are not living a decent life, so they better go home			
	Difficult to easily get jobs for all of us		Not able to get adequate services (water, health etc.)	
	House rent has gone up over the last three years			

6				
	Yes			
7				
	<i>Tsebel</i>			
	<i>Equb</i>			
8				
	They don't permanently live here			
	They have no physical address			
9	Who is part of these savings groups			
	Mostly men			
	Equal men and women			
SP				
1				
	Yes			
	About the same			
2				
	Violence has become rampant			
	Robbery is widespread			
3				
	Yes			
				Yes
4				
	Yes			
5				
	Yes			
6				
	Yes			
PSW				
1				

	Yes			
2				
	Women			
	Elderly			
	Disabled persons			
3				
	Lots of family feuds that was not common before			
	Seeing lots of people with mental illness			
	Government officers not providing adequate services			
4				
	Yes			
	Only for those with severe problems			
5				
				Yes, someone in my family needs help
	Yes, I need some help		No, we are all OK	
	Yes			
6				
	Cultural norms/restrictions (e.g., mental health issues are not recognized or are stigmatized)			
	Distance to care facilities (e.g., elderly			

	women or persons with disabilities unable to travel long distances)			
	Facility capacity (e.g., overcrowded facilities, long waiting times, affecting women more due to childcare responsibilities)			
	Lack of specialized services (e.g., no services tailored for specific groups such as women, children, or persons with disabilities)			
FSN				
1				
	Yes			
2				
	High demand, limited supply			
	Last harvest was destroyed/looted			
3				
				Yes, we used to eat better quality food before the war

				Yes, we used to eat a variety of food before the conflict
				Not much is changed in our food consumption pattern
				In fact, we are eating better quality of food now than before the conflict
4				
	Men			
	Children			
5	Have any checkups been conducted to examine the nutritional status of children and pregnant women?			
	Yes			
6				
	Yes			
VCM				
1				
	Not much is changed			
	Reductions in water supply			
2				
				Yes
3				
				Yes
4				
	Sell productive assets			
	Rent own accommodation to cover expenses			

5				
	Started petty trade			
	Doing some illegal trade			
6				
				Yes
7				
				Yes
8				
	Work to establish peace & security			
	Sensitize the community about disaster risk			
				Provide development support instead of emergency assistance
9				
				Digging boreholes/maintaining waterlines than water rationing
				Consulting the people before providing same packages for all
WASH				
1				
	Well/Borehole			Well, /Borehole
				Public Tap

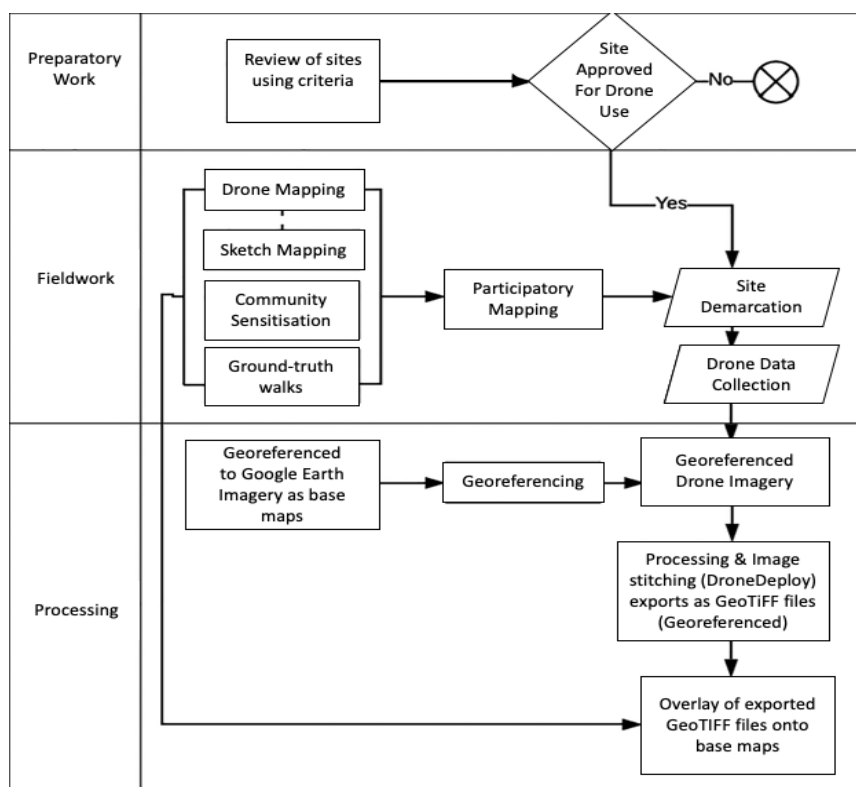
				Natural water source/stream
				Others (please specify)
2				
				Communal facility
				Flush and piped seated toilet
				None available (open toilet)
3				
				Open drainage channel
				Closed sewer drainage channel
				Other (please specify)
4				
				Yes
5				
				Sealed basin/container indoors
				Open basin/container indoors
6				
				< 20 ℓ (less than two 10 ℓ or one 20 ℓ bucket)
				50 -100 ℓ (from 5 to 10 10 ℓ buckets)

				> 150 ℓ (more than 15 10 ℓ buckets)
7				
	Women			
	Children			
8				
				Communal waste bins
				On-street (in bin for collection)
				Open (dump waste on street)
9				
				< 25 ℓ
				30-35ℓ
				40-45 ℓ
				50-55 ℓ
				> 65 ℓ
10				
				1
				3
				5
				7
				Other (please specify):
11				
				Once per week
				Once per month
				No collection service
12				

				Yes
13				
				Improved waste management
				Less waste in your community and less littering
EAEW				
1				
				Yes
2				
				Radio
				SMS
3				
				Very useful
				Not useful
4				
				Drought
				Extreme temperatures (heat)
5				
				Yes
6				
				Stockpiling food and water
				Livelihood diversification (alternative income generation)
				Water storing and collection (rainwater harvesting)

7				
				Yes
8				
				Pre-positioning medical supplies and emergency kits
				Cash-based transfers (before a hazard has occurred)
				None (no support)

Annex B - Remote Sensing Methodology Flowchart



Source:

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